

# Integrated Environmental Governance: Opportunities and Constraints

Workshop organized by the Free University Berlin, Environmental Policy Research Centre and the Hebrew University Jerusalem, Department of Geography in the Austrian Hospice, Jerusalem, Austria on December 6-7, 2011

**Workshop “Integrated Environmental Governance: Opportunities and Constraints”  
Collection of Short Bios and Abstracts**

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**Workshop “Integrated Environmental Governance: Opportunities and Constraints”  
Collection of Short Bios and Abstracts**

**Session 1: Introduction**

Tuesday, December 6, 2011

10.15-13.00

**Klaus Jacob und Itay Fishhendler**

**Dr. Klaus Jacob** is research director of the Environmental Policy Research Centre (FFU) and has been a senior research fellow at FFU since 1995. Klaus Jacob is head of the research group “Policy Assessment and Political Strategies”. He is co-coordinator of the European network of excellence LIAISE (“Linking Impact Assessment Instruments and Sustainability Expertise”), a Network of Excellence (NoE), funded in EU-FP7, which develops models in support of impact assessment and studies the conditions under which they can be employed ([www.liaise-noe.eu](http://www.liaise-noe.eu)). Klaus Jacob is chair of the steering committee of the Berlin Conferences series on the Human Dimension of Global Environmental Change. He has been Lead Author for the Global Environmental Outlook 4 and reviewer for GEO 5 of the United Nations Environmental Programme. Klaus Jacob teaches courses in policy analysis as well as political science methods and theories at the Otto-Suhr-Institute of Freie Universität Berlin.

**Itay Fischhendler** serves as the Head of the Environmental Planning and Policy program at HUJ. His research interests focus on environmental conflict resolution; natural resources management and governance and decision making under conditions of political and environmental uncertainties

**Abstract**

As environmental politics become more and more differentiated, the need to ensure for coherent environmental policy processes intensifies. Environmental goals often conflict with each other (e.g. renewable energy production might conflict with nature conservation or low emission electric cars might raise energy consumption), leading to more frequent tensions and trade-offs between different environmental domains. This new generation of environmental problems creates new governance challenges.

To address potentially conflicting and complementary relations between different environmental policies, integrated environmental governance is needed. Integrated environmental governance refers to a process in which all significant environmental consequences of environmental policy decisions are recognized as decision premises, whereby policy options are evaluated on the basis of their effects, and where different policy elements are in accord with each other.

But how are environmental policy makers dealing with the need to integrate and balance between different environmental policy objectives? Which institutions, instruments and strategies are available for integration and which of them were found effective in real life? What are the costs, drawbacks and limits of integrated environmental governance?

In this workshop we will explore the solutions to these questions by discussing the following premises:

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1. different issue areas in which integrated environmental governance become visible (water, energy, urban planning, transportation)
2. governance tools, instruments and approaches for integration (assessing costs and benefits, strategies, planning)
3. capacities, obstacles and requirements for successful and efficient integration

## **Session 2: Integrated Environmental Governance in Practice**

Tuesday, December 6, 2011

10.15-13.00

### **Konstantin Terytze, Ines Vogel**

**Konstantin Terytze** is Professor of Geoecology and Ecological Chemistry at the Department of Geosciences, Free University of Berlin. Moreover, he serves as Head of the Consulting Committee for Soil Examinations of the Federal Ministry for the Environment and as scientific staff in the section Soil Protection of the Federal Environment Agency of Germany. He has conducted manifold research projects in the fields of environmental chemistry, ecotoxicology, geoecology and soil ecology. His works deals with risk assessment and environmental quality as well as the standardization and harmonization of analytical methods for environmental quality (DIN, ISO methods). Since 1997 Konstantin Terytze is also technical assessor for analytical chemistry and ecotoxicological methods. He is experienced in the organization of quality systems, especially of metrology in chemistry and trains persons on the requirements for inspection bodies and certification bodies.

**Ines Vogel** holds a diploma in agriculture and a PhD in soil science and is employed in the Working Group Geoecology at the Free University and in section Environmental Risk Assessment of Pharmaceuticals in the Federal Environmental Agency. As scientific staff in the Working Group Geoecology she has contributed to several research projects on risk assessment of contaminated sites, climate, closed material cycles, soil organic matter, and soil fertility. Moreover, at the Environmental Protection Agency, she deals with terrestrial and aquatic ecotoxicity in connection with environmental impact of pharmaceuticals.

#### **Abstract: Protection of soils through environmental integration**

Soil has to integrate the requirements of a wide range of branches like agriculture, production of renewable resources for the production of materials and energy, waste management, groundwater protection, nature conservation and climate protection. The key to fulfil all this tasks lies in the improvement of soil functions especially regarding to soil fertility and the organic substance/matter of soil.

A new way for integrating all these requirements is the application of biochar substrates to soil aiming in improvement of natural soil functions like capacity for the storage of nutrients and water and revival of soil biological life as well as the enlargement of fertilizing efficiency, higher quality and quantity of harvest success, healthier soil flora and fauna, enlargement of decomposition of organic pollutants and climate protection via long-term carbon sequestration – all this embattled in regional material cycles.

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Two research projects dealing with this topic are presented: LaTerra and TerraBoGa.

In the TerraBoGa project “Closed material cycles by material flow management by using the Terra-Preta-Technology in the Botanic Garden Berlin in terms of resource efficiency and climate protection” are considered. The main focus of this project is the efficient utilization of biogenic waste and residual materials like green waste and faeces of employees and visitors. The research and development project intends to complete the internal, small scale material cycles in the Botanic Garden Berlin. The aim is to make a contribution to sustainable soil management within Urban Farming in terms of carbon reduction and the impacts of climate change processes.

The interdisciplinary and transdisciplinary joint research project “Sustainable land-use by regional energy and material flow management using “Terra-Preta-Technology” on military conversion areas and low-yield-locations (LaTerra)” seeks innovative system solutions for resource efficiency, climate protection and area revaluation by means of an integrative approach. The project’s fundament is set by implementing the zero-emission-strategy, launching a regional resource efficient material flow management as well as utilising “Terra-Preta-Technology” as an innovative system component.

### **Eran Feitelson**

**Eran Feitelson** is a Professor at the Hebrew University of Jerusalem. He holds a Ph.D. from the Johns Hopkins University. He is a former chair of the geography department and of the Federmann School of Public Policy and Government at the Hebrew University.

#### **Abstract: Integration in transportation, water and land use: a comparative perspective**

Integration is a dominant concept in the current discourse in multiple fields. In this paper I compare the meaning of the term in three fields: water, land use and transport. Then I discuss the impediments to the implementation of integration as they arise in the three fields, as well as the successes of integration. Finally, I ask whether integration can be considered across fields, and if so in which fields.

### **Angela Uttke**

**Prof. Dr.-Ing. Angela Uttke**, urban planner and urban designer. She is professor at the Institute of City and Regional Planning in the University of Technology Berlin and head of the Department Urban Design and Urban Development. Before she was a senior researcher and lecturer at the Institute of Urban Affairs (Difu) in Berlin and held advanced training courses for city planning officials on urban planning issues and public participation. Her research interests are in the field of sustainable city development and participatory design methods. She is founding member of JAS Jugend Architektur Stadt e.V., a non-profit association dedicated to built environment education and participation of children and young people.

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**Yuval Laster**

**Yuval Laster** currently heads the policy division at the Israeli Ministry of Environmental Protection (MEP). Before joining the MEP Yuval worked as an environmental policy and legal consultant, headed the Environmental Protection Legal Clinic at the Law Faculty at the Hebrew University

**Abstract: Integrated environmental policy for the energy sector in Israel**

Policymaking in the fields of energy, water and land management involves several competing environmental considerations which often create tradeoffs that need to be identified valued and prioritized. The lecture will demonstrate such tradeoffs and reflect on the need for an integrated environmental policy which simultaneously addresses energy water and land considerations.

**Tony Allan**

A pioneer in the development of key concepts in the understanding and communication of water issues and how they are linked to agriculture, climate change, economics and politics, Tony Allan was named the 2008 Stockholm Water Prize Laureate on 19 March 2008.

Tony Allan's research focuses on the social and political contexts which influence and usually determine water use and water policy. The research aims to explain why environmental and economic priorities fail to figure on the agenda of those using and allocating water. The major current research focus takes into account the underlying fundamentals of water in the hydrological cycle and the impact of engineering interventions. Policy issues are a prime concern and especially the difficulties that scientists and professionals encounter in gaining a place for their 'knowledge' in water policy discourses. In the Middle East and North Africa - a major regional focus of research - it has been shown that the water crisis has been ameliorated through the availability of virtual water embedded in the international food trade.

A second research focus is global water resource and the extent to which global resources will be sufficient to meet the needs of future populations. A third research focus is the institutional basis of water policy reform. A fourth is the financing of the water sector. The KCL Water Research Group networks intensively with scientists and professionals in the water sector in the North and the South. The group is recognised both as a major innovator of economic, social and political interdisciplinary theory and as a serious contributor to water policy analysis.

(source: <http://www.kcl.ac.uk/sspp/departments/geography/people/academic/allen/index.aspx>)

**Gideon Mazor**

**Gideon Mazor** - Ms.c environmental sciences, Hebrew University, Jerusalem. Central district director- The Ministry of Environmental Protection

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**Abstract: Construction and demolition waste as a trigger for community environmental responsibility – Sharon region**

The Ministry of Environmental protection has launched a few years ago a project within the 7 Arab villages in the southern Sharon region. The objective was to raise the awareness and responsibility of the public and local municipalities to environmental issues, especially concerning public land littering. Being well into the project, there are some mid-way understandings and results concerning the necessity of a much wider angel of action.

**Session 3: Governance Tools and Methods for Integration**

Tuesday, December 6, 2011

14.30-15.45

**Klaus Jacob**

**Dr. Klaus Jacob** is research director of the Environmental Policy Research Centre (FFU) and has been a senior research fellow at FFU since 1995. Klaus Jacob is head of the research group “Policy Assessment and Political Strategies”. He is co-coordinator of the European network of excellence LIAISE (“Linking Impact Assessment Instruments and Sustainability Expertise”), a Network of Excellence (NoE), funded in EU-FP7, which develops models in support of impact assessment and studies the conditions under which they can be employed ([www.liaise-noe.eu](http://www.liaise-noe.eu)). Klaus Jacob is chair of the steering committee of the Berlin Conferences series on the Human Dimension of Global Environmental Change. He has been Lead Author for the Global Environmental Outlook 4 and reviewer for GEO 5 of the United Nations Environmental Programme. Klaus Jacob teaches courses in policy analysis as well as political science methods and theories at the Otto-Suhr-Institute of Freie Universität Berlin.

**Abstract: Strategic planning – designing and implementing effective and reflexive strategies**

Governments increasingly adopt strategies or strategic approaches to achieve specific goals. In particular in the domain of environmental policy, traditional approaches of policy making, such as regulation or spending programs are increasingly complemented by strategic approaches. Based on an empirical analysis of environmental strategies in Germany, and based on an international comparative analysis of strategies for sustainable development the following questions are addressed in the talk: (1) What is the rationale behind this development? Are strategies replacing “hard” policies or is this trend indicating a new form of governance? (2) What are the potential impacts of strategies? Strategies appear as especially useful to coordinate different actors, but what can be realistically expected? (3) What are characteristics and features of strategies? Are strategies foremost papers and declarations? (4) What processes and tools are being used to develop strategies?

The talk aims to explore the potentials and limits as well as the features of environmental strategies to overcome problems of stalemates in environmental policy, and in coordinating and integrating different issue areas. It is of particular interest, how strategies ensure the constancy with other, potentially competing environmental goals, and what tools can be used for this.

## **Johann Köppel**

**Johann Köppel** is a full professor at the Technische Universität Berlin (Berlin Institute of Technology) and head of the Environmental Assessment and Planning Research Group ([www.umweltpruefung.tu-berlin.de](http://www.umweltpruefung.tu-berlin.de)). He teaches Environmental Impact Assessment, Strategic Environmental Assessment and Environmental Planning. Furthermore, Johann Köppel has for many years been involved in research on the sustainable deployment of renewable energies. Thus, the challenges of integrated environmental governance have been addressed in manifold ways, last but not least highlighting the requirements for a better co-development of climate protection approaches on the one hand and inter alia biodiversity policies on the other hand. Recently he and his working group has been pursuing a comparative analysis of the roles that the USA and Germany play in leading the field of renewable energies. Johann Köppel served as TU Berlin’s vice-president for research 2006 – 2010 and is currently in charge as dean of its School of Planning Building Environment. Contact: [johann.koeppel@tu-berlin.de](mailto:johann.koeppel@tu-berlin.de)

### **Abstract: Environmental impact assessments to identify and mitigate environmental goal conflicts**

Pursuing PORTMAN AND FISHHENDLER’S (2011) definition of “an integrated framework for regulating and managing different environmental resources, as well as the bringing together of fragmented centers of institutional power”, Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) are meant to do so from their very beginning with the US National Environmental Policy Act (NEPA 1970). The mission is “... an anticipatory, participatory, integrative environmental management tool which has the ultimate objective of providing decision-makers with an indication of the likely consequences of their decision relating to new projects or to new programs, plans or policies” as WOOD (2002) has put it in a nutshell. Through SEA, concepts like sustainable development can be incorporated as an integral part of the development of all policies and then ‘trickled down’ through plans programs, and finally to the project level (JONES et al. 2005).

Consequently, EIA is a principal medium through which governmental systems have incorporated the environmental sciences into political decision-making (PORTMAN AND FISHHENDLER 2011). It requires to consider future consequences of current decisions and solutions to environmental problems through the disclosure and evaluation of alternatives and mitigation measures. It fosters intergovernmental coordination and cooperation through the requirement for agencies to deal with other agencies, state and local governments. Through the requirement for public participation concerned citizens and organizations are integrated into planning and decision making.

EIA and SEA must identify the direct and indirect effects of a project on the factors: man, biodiversity, soil, water, air, climate, the landscape, material assets and cultural heritage, and the interaction between these various elements. The assessment of significant environmental impacts must consider different objectives of a multitude of environmental policies established; under NEPA, for example, the Endangered Species Act, the Clean Air Act, Clean Water Act, Historic Preservation Act, Environmental Justice and many more (BASS et al. 2001) as well as the more recent kid on the block Climate Change policies.



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Given the fact of this legal background of Environmental Impact Assessment and Strategic Environmental Assessment, Johann Köppel explores the actual integration performance of EIA and SEA for the deployment of renewable energies and its siting and the subsequent transmission grid extension in Germany and the United States. Finally, current strengths and weaknesses to cope with the overall mission of EIA and SEA to address a more integrated environmental governance will be highlighted. As a matter of fact, empirical research on the integration effectiveness of these tools is still pending a lot and the workshop at Hebrew University might trigger a more thorough exploration of the environmental integration performance of Environmental Impact Assessments.

### **Claudia Pahl-Wostl**

**Claudia Pahl-Wostl** is full professor for resources management and director of the Institute for Environmental Systems Research (USF) in Osnabrück, Germany. Since October 2001 the activities in the socio-economic area and in integrated modeling and analysis at USF have been extended by the chair of resources management. A new research field has been established on the development of innovative concepts of managing transformation processes of complex social-ecological systems towards sustainability with an emphasis on an improved understanding of the role of the human dimension in resources management.

Before moving to USF Claudia Pahl-Wostl worked for more than ten years in the field of mathematical modelling, integrated assessment and human ecology at the Swiss Federal Institute for Science and Technology, Zürich and the Swiss Federal Institute for Aquatic Science and Technology, EAWAG, one of the leading water research institutes in Europe. She is co-chair of the scientific steering committee of the GWSP (Global Water System Project - a joint project of the ESSP – WCRP, IGBP, IHDP and DIVERSITAS) representing the IHDP (International Human Dimension Program) to develop a global change research program on the water issue from a social science perspective and president of TIAS, The Integrated Assessment Society.

Claudia Pahl-Wostl has participated in and coordinated several European projects. She was coordinator of the EU project HarmoniCOP (Harmonizing Collaborative Planning on the role of social learning and IC-tools in participation). She coordinated the Integrated Project NEWATER (New methods for adaptive water management) which developed new methods for integrated water management taking into account the complexity of the river basins to be managed and the difficulty to predict the factors influencing them. NEWATER focused in particular on the transition from current regimes of water management in a river basin to more integrated, adaptive approaches with strong stakeholder participation. The project had case studies in Europe, Africa and Central Asia, where new methods were developed and tested in participatory settings. She coordinated the EU project Twin2Go (Coordinating Twinning partnerships towards more adaptive governance in river basins) which aimed at drawing general lessons on adaptive water governance in the context of climate change from a range of projects on integrated water resources management. The analyses identified factors influencing performance and assess potential and limitations of transferability of insights among basins with different economic, environmental, social and political characteristics.

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**Abstract: Requirements for and steps towards integrated and adaptive water governance and management**

Over the past decade a series of major revisions to the generation and use of knowledge in the context of natural resources management has started to undermine basic assumptions on which traditional approaches to water management were based. Limits to our ability to predict and control water systems have become evident and both complexity and human dimensions are receiving more prominent consideration. Such considerations are of particular relevance for water governance and management. In the past water related problems were generally dealt with in isolation, and potentially undesirable long-term consequences were not taken into consideration. Furthermore, due to their ubiquitous nature water resources are affected by decisions in many other policy fields. However, due to lacking institutional organisation the water sector has to cope with impacts from such decisions, rather than becoming a guiding principle in environmental policy

Many voices in science and policy have advocated a paradigm shift in water governance and management towards more adaptive and integrated approaches. The paper will summarize the current state of insights on requirements for and transition towards adaptive and integrated water governance. It will argue that adaptive governance and management are a prerequisite for integration, for identification of conflicting goals and transcending seemingly irreconcilable trade-offs by adopting a systemic perspective.

**Carsten Dreher**

**Carsten Dreher** studied Industrial Engineering and Occupational Training at the Technical University of Karlsruhe. He started his career at the European Commission’s Directorate General Research as junior research fellow in Forecasting and Assessment in Science and Technology (FAST). From 1989 to 2006 he worked at the Fraunhofer Institute for System and Innovation Research (ISI) in Karlsruhe. After his visiting scholarship at MIT’s Industrial Performance Center in 1996 he became Head of the ISI Department Innovations in Industry and Services. In January 2006 he was appointed Professor for Innovation Research and Innovation Management jointly at the Institute for International Management at the University of Flensburg and at the Technical Faculty of the University of Southern Denmark. Currently, Prof Dreher is Director of the Center for Cluster Development (CCD) and at the same time Professor for Innovation Management at Freie Universität Berlin.

**Abstract: Technology Dynamics and Strategic Intelligence: Foresight and Indicator-based Assessment supporting Policy Instrument Selection**

One core driver for a successful sustainable economy is the use and proper application of new technologies in energy supply, manufacturing and transport. Many of these technologies are in their infant stage. Hence, assessing the state of science and technology and their development prospects is necessary. Furthermore, the effective use of research, technology and innovation policy instruments fostering their progress depends heavily on the stage of development of the technology and the characteristics of the related technological innovation system.

Theories and concepts of technology assessment, scientometrics and diffusion of innovations have to be combined. Approaches based on evolutionary innovation economics such as Dosi’s trajectory concept or Rogers’ fundamental work on innovation diffusion will be merged with the technometric

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analysis e.g. by Hariolf Grupp. Systematizing policy instruments need a good understanding of mechanisms, target group characteristics and implementation procedures. Both have to be matched in order to synchronize technical progress and its shaping by policy.

The contribution will provide a general model for a science-and-technology cycle as well as a set of indicators. Furthermore, it will discuss the preconditions necessary for a successful use of different policy tools. An illustrating example from energy generation with fuel cells will be shown as well.

Planning, Health and Environmental Policy: Integrating HIA (Health Impact Assessment) into Policy Making.

**Oren Perez, Nadav Davidovitch**

**Oren Perez** is a Professor at Bar Ilan U. Faculty of Law and holds a PhD from London School of Economics. He has written widely on issues related to environmental law and policy and transnational governance.

**Nadav Davidovitch** is an epidemiologist and public health physician with a PhD in history and sociology of health. He is an associate professor at the Department of Health Systems Management, and Chair of the Center for Health Policy Research in the Negev, Ben Gurion University. His current research deals with public health policy; health disparities and environmental health policy.

**Abstract: Planning, Health and Environmental Policy: Integrating HIA (Health Impact Assessment) into Policy Making**

The paper will discuss the practice of Health Impact Assessment (HIA) as a potential contribution to environmental policy making. Closer cooperation between environmental and public health disciplines could support more effective and politically acceptable solutions to both local and global environmental problems. Impact assessment (IA) practices sit at the junction of science, policy, and politics. The recent emergence of HIA as an independent form of IA has created both a setting for inter-disciplinary health and environmental coordination as well as a driver for greater consideration of health in existing forms of IA. Nevertheless, the integration of HIA into policy making involves a variety of barriers and challenges. We will discuss the various existing legal schemes for such integration and its potential contribution to the democratization of risk governance.

**David Schorr**

**David Schorr** teaches environmental law and legal history at Tel Aviv University, where he heads the Law and Environment Program. His book on the development of property rights in water in the western United States is due out with Yale University Press next year, and his current research focuses on the history of water law and environmental regulation in Mandate Palestine and in the British Empire.

**Abstract: Integrated permitting in environmental law - a historical perspective**

The lecture will look at early legislative tools for integrated pollution permitting, and speculate on possible reasons for its replacement by legislation mandating medium-specific permitting.

## **Session 4: Potentials and Constraints to Integration**

Wednesday, December 7, 2011

11.15-12.30

### **Valerie Brachya**

**Valerie Brachya** became Director of the Environmental Policy Center at the Jerusalem Institute for Israel Studies in June 2009. She retired from her previous position as Senior Deputy Director General for Policy and Planning in the Ministry of Environmental Protection, where she had been responsible for 5 departments. Ms Brachya qualified in Geography and Planning in England before immigrating to Israel in 1972. She joined the academic staff of the Hebrew University nearly 20 years ago to initiate a course on environmental planning

#### **Abstract: Cross sectoral integration in the Ministry of Environmental Protection**

Decisions by Ministries, such as whether or not to support a development proposal, may reflect the relative strength of one department over another, rather than a thorough analysis of the consequential effects of a proposal on all environmental media. Despite the use of integrating instruments, such as an environmental impact assessment, priority may be rightly or wrongly given to promoting the goals of an environmental media of high profile rather than to an environmental media of high importance. An example worth reviewing is the promotion of wind turbines, which are very visible though ineffective, to reduce greenhouse gas emissions over the importance of protecting sensitive natural landscapes of high value for biodiversity and ecosystem services

### **Yossi Inbar**

**Yossi Inbar** is an environmental specialist with more than 30 years of experience. He is director General of the Israel Ministry of Environmental Protection (MOEP) until January 2011. Joined the MoEP in 1991 and over the years headed various sections and departments including recycling and MSW. He was later Deputy Managing Director in charge of Infrastructure and Industries. Headed many inter-ministerial committees and led national strategies and legislation on various environmental issues such as: solid waste, water, effluent reuse, air quality, IPPC, climate change, sea, rivers and streams and more. Dr. Inbar represented Israel in numerous UN and OECD committees on environmental issues.

In 1995 he took leave of his government duties and worked for 3 years for Browning-Ferris Industries in London as head of Business Development in England and Head of Europe Organic Waste Treatment.

Dr. Inbar received his BSc, MSc and PhD (summa cum laude) from the Hebrew University, Faculty of Agricultural, Department of Soil & Water Sciences.

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#### **Abstract: Conflicts in implementing integrated waste management in Israel**

The Israeli Ministry of Environmental Protection strategy of integrated waste management aim at reducing the total quantity of waste and the quantity reaching landfills, and to increase waste

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recovery and recycling. There are many optional solutions and there are debates on many issues such as: how "deep" should separation at the source should go; is thermal waste to energy facility is an option; composting vs. anaerobic digestions and more. These and other environmental conflicts will be discussed.

**Doron Lavee**

**Doron Lavee**, Phd in Environmental Economics (from Ben Gurion University, Economic dep.), head of Economic and Management, Dep. Tel-Hai College.

Main research field: Environment, water, transportation, public policy.

**Abstract: Cost benefits analysis as a tool for integrative decision making**

Cost Benefit Analysis (CBA) is a tool that can be used as a platform for an integrated policy decision making. The mythology was used in several public committees and assisted to convince all the different members to select a specific policy. This mythology is a powerful tool that translates quality parameters into quantitative parameters, so it can compare costs and benefits and convince all the policy makers of the best practice.

In the last few years we implemented a CBA in:

1. Cost Benefit Analysis of Accelerated vehicle retirement Program.
2. Cost-Benefit Analysis of Constructing a Filtration Plant for the National Water Carrier.
3. The benefits and costs of Noise reduction.
4. A Cost-Benefit Analysis of a Deposit-Refund Program for Beverage containers.
5. Cost-Benefit Analysis of removal an industrial plant from an urban area: The case of TaasMagen.
6. Cost-Benefit Analysis of Alternative Wastewater Treatment Standards.
7. A Cost Benefit Analysis of treating a contaminated urban area remediation.

**Session 5: Capacities and Incentives for Integration**

Wednesday, December 7, 2011

14.00 -15.30

**Klement Tockner**

**Klement Tockner** is full professor for Aquatic Ecology at the Free University Berlin and director of the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB). He is Adjunct Senior Scientist at EAWAG and Titulary Professor at ETH. He has special expertise on freshwater biodiversity, ecosystem functioning, and river and wetland restoration and management. He is Editor-in-Chief of the journal Aquatic Sciences and Subject Editor of the journal Ecosystems. He has published more than 150 scientific papers including 100 ISI papers. In 2009, he edited a comprehensive book on European Rivers (Rivers of Europe, Elsevier). Klement Tockner has successfully managed large inter- and transdisciplinary projects, actually coordinates the EC-funded project BioFresh

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([www.freshwaterbiodiversity.eu](http://www.freshwaterbiodiversity.eu)). He is member of several scientific committees including the crosscutting group on freshwater biodiversity of DIVERSITAS and GEO-BON.

**Abstract: Managing Large River Landscapes as Domesticated Ecosystems**

As the Anthropocene unfolds, there is clear and growing scientific evidence that we are on the verge of a major biodiversity crisis. This crisis is of an unprecedented scope and rate, and may lead to half the species on Earth going extinct; and may cause a rapid erosion of related ecosystem services. These major changes are among the biggest global challenges for humans, similar to climate change, securing energy supply, or feeding a growing world population.

Large rivers are particularly human-dominated ecosystems caused through land reclamation, floodplain drainage, navigation, water pollution, and species invasion. Today, large rivers can be considered as novel ecosystems - with no analogous state in the past. Native communities are being rapidly replaced by novel exotic-dominated assemblages leading to a strong homogenizing of biota and potentially large alterations of related ecosystem processes. Hence, it remains a major challenge to understand how novel communities alter ecosystem functioning, or stimulate evolutionary processes; and how to manage these novel ecosystems and its communities.

In the face of these drastic alterations it is becoming evident that most conservation and restoration strategies simply do not work or may achieve their goals because of non-linear relationships and time-lag effects between the causes and the effects of biodiversity decrease and ecosystem functioning; similar to what is seen for human demographic development and CO<sub>2</sub> increase. Concurrently, restoration targets compete with other targets and directives implemented at national, continental, and global scales. For example, strategies to reduce greenhouse gas emission have led to large-scale conversion of land for bioenergy production, further accelerating biodiversity and ecosystem service loss.

We urgently need integrated guidelines for setting priorities to concurrently manage biodiversity and ecosystem processes along novel river systems. In this presentation, I will discuss the formation and establishment of novel river ecosystems, its corresponding communities and related ecosystem processes, and then to present innovate ideas and concepts on how to manage theses cultural freshwater ecosystems.

**Yeshayahu Bar-Or**

**Yeshayahu Bar-Or** serves as the Deputy Director General, Natural Resources, Ministry of the Environment, Israel. Previously to that Yeshayahu was the Head, Department of Water and Streams, Ministry of the Environment, Israel.

**Andreas Thiel**

**Andreas Thiel** holds a Ph.D. from Oxford Brookes University and a Degree in Economics from Technical University of Berlin. Currently he is lecturer at the Division of Resource Economics at Humboldt-Universität zu Berlin, where he teaches Environmental and Resource Economics and Institutional Economics and Political Economy. His research addressed water management in

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Southern Europe, and the Science Policy Interface. His current research looks at the scalar reconfiguration of natural resource governance in Europe and its implications for natural resource use, specifically water and marine environment. His theoretical and methodological interest is the role of institutions in social-ecological system analysis.

**Abstract: Incentives, tradeoffs and political priorities in the integration and segregation of social-ecological system’s governance**

This exploratory presentation starts out with characterizing the challenge of social-ecological systems governance from an institutionalist perspective. It specifically discusses the relation between characteristics of social-ecological transactions and their governance. It argues that an evaluation of matching between characteristics of transactions and governance promises a valuable research program. The problem is conceptualized through the lens of Integrative and Segregative Institutions, which provide for differential incentives concerning the integration of intertemporal, multi-scalar and cross-sectoral interdependence of actors into decision-making. This reasoning is subsequently transposed to the realm of transactions between sectoral public regulators and private service providers (e.g. water management administration and water users). The aim is to evaluate different configurations of governance in regard to their integrativeness and segregativeness. It is argued that either depends also on the scalar organization of public governance.

In order to carry out such an assessment a framework will be outlined to guide reasoning about what would cost effective scalar organization of natural resource governance. Specifically, it will consider the way characteristics of social-ecological transactions are related to setting up natural resource governance. It turns out that iterative consideration of transaction specific spatial boundaries and cross-transaction aggregation of transactions of great similarities concerning both the social and ecological systems involved should guide cost-effective natural resource governance, in which the scalar organization of governance takes centre stage. The role of boundaries of media will be discussed in relation to near decomposability and hierarchical interdependence and their implications for Integrative and Segregative Institutions. In addition, we argue that for guiding processes of scalar reorganization of natural resource governance political and historic aspects adopt a significant role in prioritizing specific sets of transactions (e.g. provision of ecosystem qualities or water for agriculture) in the way natural resource governance is set up. It is argued that the scalar organization of natural resource governance requires political prioritization of specific social-ecological transactions, as no ideal governance is possible in the face of the complexities encountered and the predominant role of the social construction of management challenges and ever changing knowledge status. This process of setting political priorities therefore needs to be understood as a vital component of the re-structuring of social ecological system governance.

If time allows, the process of reorganizing the scalar configuration of governance is then selectively illustrated for the re-configuration of natural resource governance in the water and marine sectors in Europe (Spain, Germany and Portugal). The reconfiguration of the landscape of water and marine governance in the respective countries is evaluated against the background of Integrative and Segregative Institutions and the respective characteristics of social-ecological transactions and their scalar reorganization. We argue that changes in marine governance, to integrate across marine waters, reflect enhanced political and administrative drive to consider the ecosystem quality of

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marine waters and require cross-territorial coordination structures. In Portugal and Germany, reconfiguration of water governance according to basin boundaries similarly represents shifts in the kind of ecosystem services that governance prioritizes while in Spain Integrated, cross-medium management is prioritized and reflected in the reorganization of governance. The scalar reorganization of governance therefore integrates decision making on one scale while segregating it on another.