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# GLOBAL WATER NEWS



Global Water  
System Project

## GWSP focus 2011 : Global Water Governance

- ▶ The role of UN-Water
- ▶ Twin2Go Project
- ▶ Water Ethics



Earth System  
Science Partnership

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## Editorial

by Claudia Pahl-Wostl

The overarching role of water governance for dealing with the challenges for a sustainable management of water resources in times of global change is hardly disputed anymore and the importance of the global dimension has gained increasing acceptance. Global environmental change and socio-economic phenomena at the global level frequently create situations in which the driving forces behind water related problems and conflicts lay outside the reach of local, national or basin oriented water governance

regimes. Despite the scientific, practical and political importance of the theme, work on global water governance is yet scarce. Furthermore there is little exchange between governance scholars working at the global level with those working at basin and community levels. To improve this situation GWSP has started to establish an international community of scholars working on global and basin water governance issues by organizing a suite of activities related to the topic of global multi-level water governance. These activities included workshops and conference sessions and recently a European Science Foundation Conference on "Global Water Governance-Meeting the Challenges of Global

**Bridging social and natural science is a unique feature of our work**

Change" which was co-sponsored by GWSP. As the results of these efforts several books, special issues in peer reviewed journals and policy recommendations were published or are being prepared. The emerging scholar community is vibrant, open and innovative and brings together people from diverse scientific and cultural backgrounds.

In my new role as co-chair of the GWSP since December 2010 I will continue to give research on the human dimension a key role. Bridging the social and natural sciences is a unique feature of our work and still a challenge rarely mastered satisfactorily. Barriers persist and we need to

move from discourse to action despite an incentive structure in the scientific community that often discourages the cross-over of disciplinary boundaries and the involvement in science-policy dialogues. This Newsletter presents some of our activities and an outlook on our further work and I hope that many experts will be encouraged to join the GWSP family and the wider network and become actively involved in an intellectually fascinating and societally highly relevant research field.



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The political dilemma, on the other hand, emanates from the fact that UN-Water basically is an expert mechanism, not a UN Water Organization. It is directly governed by representatives of its member organizations, and not by representatives of the UN member states. So the highest decision-making power resides within the assembly of senior program managers, but this entails that there actually is no real decision-making power within UN-Water. Finally, the dilemma of inclusiveness – exclusiveness relates to the interaction between UN-Water's member and partner organizations – or more generally, with the involvement of non-UN actors in the various activities of the coordination mechanism.

When UN-Water was established in 2003, it was conceived as an apolitical, underfunded, and rather exclusive mechanism, with the explicit aim not to create a UN -Water Secretariat, yet another formal UN body. Over the years, however, the mechanism has attracted more funding, more members and even more partner organizations. It has initiated a number of programs, established subsidiary offices and taken over responsibilities for coordinating major events on behalf of the whole UN system, such as the World Water Day, or reports such as the World Water

Development Report and the Global Annual Assessment on Sanitation and Drinking-Water. This evolution has resulted in the fact that UN-Water is often perceived as a Water Organization, not only by 'outsiders', but also by people within the UN.

There seems to be no consensus within UN-Water on how the mechanism should develop with respect to these conflicting priorities and opportunities. Such a consensus, however, is a prerequisite for the mechanism to work efficiently and to effectively fulfil its mandate to coordinate.

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## Towards Adaptive Water Governance. Insights from the Twin2Go Project

by Christian Knieper, Annika Kramer & Claudia Pahl-Wostl

Which characteristics of a water governance system bring about high performance and facilitate adaptation to climate change? How can water governance practices be transferred from one river basin to another? In which way does the natural and socio-economic context affect the performance of water governance? Several hypotheses about water governance are currently debated in science. But hardly any comparative analysis exists based on a data set that is large enough to test the robustness of these hypotheses and to allow developing sound recommendations to policy-makers.

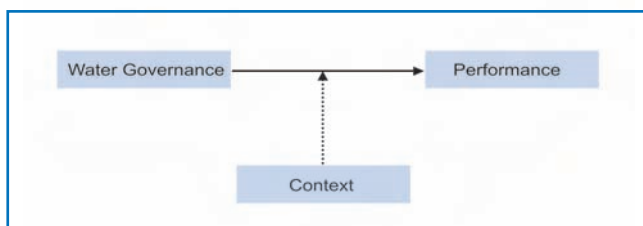
Twin2Go's mission has been to review, compare, synthesise and consolidate outcomes from international research projects that addressed water governance in the light of climate change (see Global Water News no. 9). Twin2Go aims to identify context-sensitive but transferable approaches for adaptive water governance. To this

end, Twin2Go involved numerous experts from science and practice, who provided their knowledge on water governance systems and practices in river basins around the world. The resulting case study data were the basis for two comparative studies:

- An analysis to detect relationships between basic properties of water governance systems and their performance, taking into account impacts of the natural and socio-economic context
- An investigation of tangible best practice examples in water governance, opportunities and barriers for their application, as well as possible ways to transfer best practices to other basin contexts.

Both comparative studies brought about valuable findings that help to design and implement more adaptive water governance.

The analysis of water governance systems shows that polycentric governance structures, characterised by distribution of power and effective coordination mechanisms, are conducive to climate change adaptation. Moreover, polycentric structures support the implementation of water management processes that actually follow the good governance principles and are thus transparent, participatory, inclusive and equitable, as well as effective and efficient. The capacity to adapt to climate change increases if uncertainties are dealt with in a comprehensive way (e.g. use of scenarios, consideration of different kinds of uncertainties). Innovative ways of addressing uncertainties are also associated with the realisation of the good governance principles in water management processes. Open access to information and the integration of scientific and local/traditional knowledge improve environmental management practice (e.g. sound response to pollution incidents, comprehensive monitoring).



Twin2Go has investigated the interplay of water governance, context and performance

On the contrary, the achievement of the water-related Millennium Development Goals (access to improved drinking water and basic sanitation) seems not to be determined by water governance, but rather depends on the general economic and institutional development of a society. Similarly, no clear influence of water governance properties on the ecologic state within a river basin could be identified. A possible reason is that improved governance structures are usually only established after certain ecological degradation has occurred, and favourable governance structures cannot entirely compensate the damage done. This highlights the necessity to pro-actively establish effective governance systems in river basins where human impact is still low.

The natural and socio-economic context explains much of the variation in associations between governance properties and performance, but contextual conditions seldom confound such relations. A favourable economic and institutional development apparently supports the adoption of good governance principles and improves

environmental management practice. Large per-capita water availability on the country-level seems to have a positive effect on the ecological state.

For the investigation of best-practice examples, practices and tools were identified with regard to the following foci: Application of national water frameworks in river basins, engagement and coordination among actors, forms of interaction/partnerships and enabling learning and building adaptive capacity.

The analysis of the diverse set of practices and tools revealed that these face common barriers to implementation. The core reason for failure in introducing new practices and tools is often not rooted in the design of the practice or tool but in the execution stage, for example if there are inadequate human and technical resources, or when the introduction of new practices leads to competition, overlap of mandates or loopholes between different institutions or actors. In several examples, the barriers to implementation were actually vested interests of single powerful actors or authorities who were able to hinder implementation. Another barrier that was often encountered was the fact that the tools did not fit with existing institutional frameworks or cultural context. Opportunities for the introduction of new practices and tools exist in building on existing scientific and technical networks that can act as drivers of change. Moreover, reforms of institutions and management strategies can be used as windows of opportunities.

In the next steps, Twin2Go has started to discuss results of the comparative studies with policy and decision-makers in Policy Workshops carried out as side events to major water conferences. The detailed outcomes of the analyses will feed into Best Practice Guidelines for the use of practitioners and will be summarised in Policy Briefing Papers that target national and local policy-makers. The publications will be made available on the Twin2Go website ([www.twin2go.eu](http://www.twin2go.eu)). Furthermore, Twin2Go is currently developing a web database on adaptive water governance that will allow to include data on additional case studies. The aim is to provide an extended data base for continuing and further improving the comparative analysis of water governance systems that Twin2Go has started.

The research leading to these results has received funding from the European Community's Seventh Framework Programme [FP7/2007-2013] under grant agreement no. 226571.





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## Water Ethics and Water Governance

by David Groenfeldt

What are we governing water for? What are our objectives, and more broadly, what are our aspirations? What are we trying to achieve? It may sound overly philosophical but unless we ask these questions, we can easily end up with well governed rivers that are in ecological decline. Indeed, that is a good description of a great many rivers today.

### The Case of the Santa Fe River

An example from my own experience is the Santa Fe River in New Mexico, declared “America’s Most Endangered River” in 2007, and not much better off today. Who killed the Santa Fe River? I would suggest that the river was killed not by bad governance, but by bad values and flawed ethics about human responsibility to the natural world.

In the Western United States, water rights are private property and dewatering rivers is legal if you own the water. The water in the Santa Fe River is almost wholly owned by the municipal water utility and stored in reservoirs upstream from the City of Santa Fe. No water is allowed to escape the reservoirs unless they are nearly full, which in the arid climate is only a few months of the year. For

most of the year, the Santa Fe River is a dry ditch running through the middle of the historic city. Is this a governance problem? Not entirely. Governance of the Santa Fe River is democratic and transparent. Elected city councilors determine whether to release water from the dam. Local citizens are resigned to the notion that since they live in a dry climate, they cannot expect a wet river. Environmental groups and the city’s own water staff have challenged this complacency and are promoting a re-regulation of the river to allow for a minimal environmental flow. There is hope for the future, but there is also no denying the recent past. The Santa Fe River has been dry in spite of a reasonably effective governance system.

Photo © David Groenfeldt



Dry Santa Fe River in New Mexico

If good governance is not the path to a healthy river, what is? The answer, in my view, is “ethics”. A new ethic about living in harmony with Nature can be the motivation for restoring the river. Sustainable urban development in Santa Fe needs to give priority to the river and build around and with the natural environment.

Improving the governance structure of the Santa Fe River could help. A stakeholder council would be a useful check to ensure that a diversity of views get reflected in management decisions. But tinkering with the governance structure can also be a distraction from addressing directly the underlying values (ethics) that motivate behavior.

### Uncovering Values

What to do? The hidden values that drive water policies and behaviors need to be uncovered and exposed to public debate where they can be informed by science, religion, politics, and economics. This value-assessment process is



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part of what good governance should include as standard practice but it also warrants special attention. Even the most enlightened water governance arrangements, such as Europe's Water Framework Directive, could benefit from exploring the underlying values.

The study of water ethics is slowly emerging as a serious topic because "getting the ethics right" is just as important to effective water governance as "getting the prices right." Ethics, like economics, explores human motivations. We are only too familiar with thinking about the economics of alternative water scenarios. We need to become equally conversant with ethics.

### Understanding Ethics

One of the reasons that water values and ethics are not talked about more is that we lack a basic set of terms, and the few terms that we do have are used in conflicting and confusing ways. Take the term, ethics: Does this refer to the set of values we would like to see in a sustainable world (prescriptive ethics) or does it refer to the set of existing values that are a cause of our currently unsustainable world (descriptive ethics)?

Another cause of confusion is determining the object of ethical concern. Are we interested in the ethical management of water bodies (rivers, lakes, aquifers, wetlands), or are we talking about the ethical use of the water that is extracted from those bodies, e.g., for agriculture, urban/municipal supplies, or industry. Are we concerned about individual human rights (e.g., the human right to water and sanitation), or community rights, or cultural rights? The diversity of values and ethical principles adds a dimension of relativity to the study of ethics. A hydropower dam that brings benefits to downstream users might seem unethical to the indigenous community whose ancestral lands will be inundated; indeed, the project might even be deemed illegal under new interpretations of international law.

### A Water Ethics Network

We need a much more complete understanding of ethics in relation to water governance. There have been a number of recent books and articles as well as a session in the GWSP Conference on "Global Dimensions of Change in River Basins" held in Bonn from 6-8 December 2010. As follow-up to that conference, a new Water Ethics Network has been created by the Water-Culture Institute in partnership with GWSP and several other organizations.

The purpose of the Water Ethics Network is to bring the study of water ethics into the everyday discourse of water policies and management decisions, so that choices about water use and water ecosystem management are consciously informed by values. The Network facilitates sharing of experience, ideas, and information about events and activities. Anyone professionally involved in water and/or ethics is invited to join the Network. For more information visit:

[http://www.waterculture.org/Water\\_Ethics\\_Network.html](http://www.waterculture.org/Water_Ethics_Network.html)

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## Global Water Governance and the UN System

GWSP Workshop, 13-15 October 2010, Bonn, Germany

The global dimension has gained increasing importance in water governance. Water problems have traditionally been considered to be local or regional problems. However, there are strong arguments to take the global dimension into account (Alcamo, J. et al. 2008; Pahl-Wostl, C. et al. 2008). The hydrological system is a global system and exchange processes occur at global level over relevant time periods (e.g. climate change impacts; other teleconnections for instance between deforestation and precipitation). Global environmental change (GEC) and socio-economic phenomena at the global level increasingly create situations in which the driving forces behind water related problems and conflicts lie outside the reach of local, national or basin oriented governance regimes (e.g. global

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Global phenomena: Poor quality of drinking water in poor countries

trade impacts on water quantity and quality, climate change). Many local phenomena occur globally such as erosion, eutrophication, urbanisation, biodiversity loss, or the introduction of invasive species. The same is valid for many human health issues like the poor quality of drinking water supply and of sanitation in poor countries. Such local phenomena may imply alarming global trends.

Given these developments one may ask if current fora and processes of global water governance provide the necessary institutional framework to meet present and future challenges. In their analysis of the current state of global water governance Pahl-Wostl et al. (Pahl-Wostl, C. et al. 2008) noted the diffuse and fragmented character of today's Global Water Governance with heterogeneous players without indications of emerging global leadership. The lack of strong motivation within UN agencies and states to push water management has been compensated by the rise of pluralistic bodies trying to deal with these issues. UN Water, the

coordination platform for water related issues in the UN system, is thus far comprised of functional and nongovernmental agents of various water-related 'partners', not organizations representing governmental units, or the water governance system.

In particular the following questions have been addressed in the workshop:

- What are the present and emerging challenges for global water governance?
- Is the current global water governance system capable of dealing with present and emerging challenges?
- Does UN Water as a body that coordinates water activities of UN entities offer a sufficiently suitable forum for engaging in, discussing and taking decisions on water governance to meet the present and emerging governance challenges?
- What could and should be the role of the UN system in global water governance taking into account experiences regarding UN activities in global water governance and experiences regarding the role of the UN system in other areas of global environmental governance?

This workshop, a part of the Global Water Governance Initiative led by Claudia Pahl-Wostl, was organized by the GWSP IPO. The workshop initiated the preparation of articles for a special issue of the journal "Ecology and Society".

Alcamo, J., Vörösmarty, C., Naiman, R.J., Lettenmaier, D.P. and Pahl-Wostl, C. (2008): A Grand Challenge for Freshwater Research: Understanding the Global Water System, *Environ. Res. Lett.* 3, 010202.

Pahl-Wostl, C., Gupta, J. and Petry, D. (2008): Governance and the Global Water System: Towards a Theoretical Exploration, *Global Governance*, 14: 419-436.

# The Global Dimensions of Change in River Basins - Threats, Linkages and Adaptation

Conference of the Global Catchment Initiative (GCI), 6-8 December 2010, Bonn, Germany

An important new insight in river basin research and management is that water in its various forms “operates” in complex social, ecological and economic sectors forming an interlinked system of a much larger scale than an individual river basin or large aquifer. This new awareness of interconnectivities has spawned the concept of the “global water system”, which in return bears important implications for upcoming research. Focus will need to move beyond river basins to seek sustainable solutions within the context of the global water system.

The aim of this conference was to advance understanding concerning the global aspects of river basins and their management by reviewing the state-of-the-art of research, and open a dialogue with professionals and policy makers about this subject.

high interest for participants due to the vivid discussions about what science has to offer to river basin managers, what are opportunities and constraints in the science system, and which institutional arrangements have to be developed to build trust between scientists and river basin managers.

The conference brought together scientists, practitioners and young academics, promoting exchange and feedback between the various actors concerned with river basin research and management.

All together 122 participants from 24 countries attended the conference. It can be concluded that the conference was not only very well attended but also had a good mixture of participants from all over the world as well as high quality contributions when looking at the numbers of keynotes given, the number of panelists being ready to participate in lively and controverse discussions as well as many willing chairpersons, rapportuers and moderators.

## Feedback From Participants

Jonathan Kampata, 42, Zambia:

Why have you been interested in this conference?

► I currently work in the field of water resources management and I am in the process of reforming a river basin management approach. It was a great opportunity to be able to attend this conference in order to learn about ongoing river basin research and management.

Did the conference meet your expectations?

► Yes it did entirely. I was able to meet various experts and to exchange experiences and I learned how aspects of river basin management are being put in practice in various places in the world.

What is the added value for you?

► I was able to meet other experts in person (from world renowned experts to students) and got various new literature and papers for further reference.

Does the conference have any impact on your research?

► Yes, I gained new contacts for new tools and procedures to experiment with. It also gave me feedback on my work and drew lessons on what other researchers are doing.

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Understanding the connection between changes in a river basin and driving forces originating outside of the basin

In particular, this conference focused on understanding the connection between changes in a river basin and driving forces originating outside of the basin, e.g. the impact of climate change on river basin water availability, or the influence of international food trade on land use and resulting hydrologic changes within a basin, or the impact of international financial institutions on the development of water infrastructure within particular river basins.

Besides interesting in-depth presentations given by invited keynote speakers and participants of the conference, there were two panel discussions to involve the audience in debates, one about water ethics and another one about opinion exchange between scientists and river basin managers. The second panel discussion, in particular, was of



Do you have any recommendations for GWSP?

► There would be a need for GWSP to also involve politicians at various levels as those persons are key decision makers in water management issues. The conference was too short given the rich contributions. It would be better to have fewer parallel sessions, say two and have an additional day so that participants benefit from the full programme.

Olusegun Adeaga, 43, Nigeria:

Why have you been interested in this conference?

► I needed to improve my knowledge in river basin research and management within the global water system context.

Did the conference meet your expectations?

► Yes, it provided me with the unique opportunity to learn about current development and methodologies in Global Water System techniques and practices. With adequate focus on resolving current and projected future river basins management options within an environmentally friendly developmental framework context.

What is the added value for you?

► It provided me with a refreshing and newly motivated skill on issues related to sustainable river basins development plan in an enabling working environment. Adequate provisional skill on means of bridging the existing gap between scientist and policy makers also remain an added value.

Does the conference have any impact on your research?

► Yes, through provision of a better understanding and comprehensive knowledge on river basin planning and strategic development plan within the changing world and national development

Do you have any recommendations for GWSP?

► Provision of a strong collaborative institutional research network and capacity building programme among water related scientists. Encouragement of collaborative research programmes between the North and South scientists in the field of river basin management studies.

We thank Mr Kampata and Mr Adeaga for their feedback!

## GWSP 8<sup>th</sup> Scientific Steering Committee Meeting 2010

8-10 December 2010, Bonn, Germany

The annual Scientific Steering Committee (SSC) meeting of GWSP held in December 2010 following the GCI conference addressed the following new lines of activities:

To continue the revitalization of the online GWSP Digital Water Atlas with open source software to be installed on a virtual machine and start the search for a future host.

To continue the initiative of a comprehensive capacity building, strategic meeting and awareness raising concept: "Bonn a Global Water City"

To write policy briefs and a white paper to serve political decision makers. There will be a number of scientific publications in work for 2011 as well, such as the GCI educational book, an outcome of the conference on the global dimensions of change in river basins - threats, linkages and adaptation.

The overall participation was from 12 countries, which shows the international outreach of GWSP.

Presentations: [www.gwsp.org/87.html](http://www.gwsp.org/87.html)



Participants of the SSC Meeting 2010 in Bonn, Germany

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## Water Governance - Meeting the Challenges of Global Change

Conference by the European Science Foundation Co-Sponsored by GWSP, 5-10 June 2011, Obergurgl, Austria

### What is required of Water Governance to meet the challenges of global change?

This timely question was addressed by a recent ESF research conference on “Water Governance meeting the Challenges of Global Change” co-sponsored by the Global Water System Project. The conference is part of a stream of activities under the umbrella of GWSP in the field of water governance and management. The main objectives of the conference were to assess major insights and advances in concepts and methodologies for analysing water governance and policy, to identify knowledge gaps and priorities for future work, to bridge regional and global scales in multi-level analyses of water governance and to strengthen the emerging community of water governance scholars. The conference design with interactive sessions aimed at supporting exchange among experienced scholars and younger researchers. The open and engaged atmosphere of the lively discussions reflected the spirit of the diverse and highly motivated international research community that was attracted by this conference.

The contributions were organized around the major conference themes global governance of water, water governance addressing global and climate change, conceptual foundations of multi-level water governance, comparative analyses of multi-level governance regimes as well as water governance and the environmental dimension.

There was overall agreement that despite major improvements, major challenges need yet to be tackled. Further development and wider application of shared conceptual and analytical frameworks as base for comprehensive comparative analyses were identified as priority areas for future work. Such work is required to contextualize insights without losing ability of being general. Sharing frameworks does and should not imply to follow bandwagons. To the contrary it might help to develop as a community more self-reflexivity and build cumulative knowledge and develop synergies among yet disconnected research fields. Governance research should not be conducted detached from the problems on the ground. A strong claim was made for more engaged research. A number of concrete steps were identified to foster progress. A detailed summary of the overall conclusions of the conference and planned future activities will be made available under [www.gwsp.org](http://www.gwsp.org).

This conference was chaired by Claudia Pahl-Wostl, University of Osnabrueck, Germany, Joyeeta Gupta, IVM FU Amsterdam, the Netherlands and Theo Toonen, TU Delft, the Netherlands.

The European Science Foundation (ESF) – in partnership with Leopold-Franzens-University Innsbruck (LFUI) – has organized this conference, which was part of the 2011 ESF Research Conferences Programme. GWSP co-sponsored the conference.



## - Global Threats to Human Water Security and River Biodiversity - GWSP Involvement in a Nature Article

In 2010 the activity of GWSPs Global Scale Initiative had its most prominent impact by generating a cover page article in the scientific journal "Nature" in the September 30 issue titled: "Global Threats to Human Water Security and River Biodiversity". Human activity poses a serious threat to global water security. A pioneering analysis of threats to fresh water systems has found that nearly 80 percent of the world's population, around 5 billion people, lives in areas where either human water security or biodiversity is in severe trouble. Multiple environmental stressors, such as agricultural runoff, pollution and invasive species, threaten rivers. According to the GWSP researchers from the City College (CCNY) of The City University of New York (CUNY), the University of Wisconsin and seven other institutions, these stressors endanger the biodiversity of 65 percent of the world's river habitats and put thousands of aquatic wildlife species at risk. The "Nature" article raised enormous media interest world-wide.



Vörösmarty, C.J.; McIntyre, P.B.; Gessner, M.O.; Dudgeon, D.; Prusevich, A.; Green, P.; Glidden, S.; Bunn, S.E.; Sullivan, C.A.; Reidy Liermann, C.; Davies, P.M. (2010) Global threats to human water security and river biodiversity, Nature 467, 7315, 555-561.

## GWSP Participation in other Events

### Presentations held by Janos Bogardi

- Marie Curie Summer School, Venice, Italy, 6-10 September 2010: Session in Facing Hydrological Risk and Environmental Deterioration. Vulnerability Assessment and Integrated Water Resources Management
- Hydro Predict 2010, Prague, Slovakia, 20-23 September 2010: Intersectoral vulnerability indices as tools for framing risk mitigation measures and spatial planning.
- Ringvorlesung Wasser der Katholischen Akademie mit der TU Dresden, Dresden, Germany, 19 October 2010: Eine globale Ressource mit globalen Handlungs Herausforderungen: Wasser im Visier der Vereinten Nationen.
- Center for Development Research (ZEF) PhD Block Course, Bonn, Germany, 21 October 2010: Vulnerability: The Root of Risk.
- GECCH 2010 Symposium, Hamilton, Canada, 31 October-02 November 2010: Water Quality: Human and Ecosystem Health Challenge of the Decade and Beyond.
- AufbauSeminar der Studenteninitiative „Globalgesundheit“, Würzburg, Germany, 17-19 December 2010: Wasser und Gesundheit: Risiken, Herausforderungen und mögliche Lösungen bei der Begegnung der Auswirkungen des globalen Wandels.
- The Future of European Waters, Budapest, Hungary, 23-25 March 2011: From Questions to more Questions: Can the impacts of global change at the level of large river basins be captured?

- Universität Bochum, Bochum, Germany, 26 May 2011: Wasser, Rauch und Verwundbarkeit: Gedanken zur Nachhaltigkeit, Entwicklung und humanitäre Hilfe.
- Visit of the UNESCO-IHE at the Center for Development Research (ZEF), Bonn, Germany, 01 June 2011: The Global Water System Project. A short introduction.

### Presentations held by Charles Vörösmarty

- COP 10 Biodiversity, Nagoya, Japan, 21 October 2010: Global Analysis of Threats to Freshwater Ecosystems: Links between Biodiversity and Water Security.
- Annual Meeting of North American Benthological Association, Providence, USA, 23 May 2011: Global Water Crisis? Yes... and Closer Than You Think.

### Presentations held by Claudia Pahl-Wostl

- Resilience, Innovation and Sustainability: Navigating the Complexities of Global Change, Tempe, USA, 11-16 March 2011: Water Governance in the Anthropocene.
- The Future of European Waters, Budapest, Hungary, 23-25 March 2011: Challenge for Water Governance in Times of Change.
- Sentinels of Global Change, Lewiston, USA, 10-15 July 2011: Building the Foundations for Adaptive Water Management in the Face of Global Change.



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## New Initiatives

### Riverthreat Initiative (DIVERSITAS-GWSP)

This joint initiative started in 2008 following a series of workshops, produced in 2010 the first multi-factor, high resolution geospatial assessment of the state of contemporary river ecosystems, presenting global-scale geographies of impairment, arising from the management and mismanagement of water, watersheds, and fisheries; local and transboundary pollution; and introduced species. This initiative is also unique by exploring the issue from two perspectives, one associated with threat to human water security and the other to riverine biodiversity. It thus unites otherwise distinct and often contrary viewpoints traditionally pursued in the water security scholarship arena. The work identified the chief determinants of threats to human water security and riverine biodiversity and ranked their global and regional importance. It also uncovered and continues to study the impact of economic and governance-related determinants of the beneficiary effects of existing water management infrastructure investments, in particular as they reduce potential human water security threat, and drew conclusions on the value of parallel investments to riverine biodiversity through integrated water resource management and ecosystem protection.

The results were published in a Nature article (see p. 14). ESSP DIVERSITAS and GWSP organised a media campaign on this paper leading to an important media coverage for this project. The results were also presented at a side event during the COP10 of the Convention on Biological Diversity.

Based on these results, three avenues are currently developed:

- Prediction of future global threats to freshwater services in relation to climate change, population change, landuse change. This activity explores what shifting threats mean for ecosystem services (e.g. water consumption, agro-industrial uses, fisheries) and how to integrate global flows of trade.
- Global freshwater biodiversity hotspots analysis: the data for freshwater biodiversity used in the Nature paper were strongly approximated (fish species richness). The goal of this activity is to extend it to other taxa.
- Global mapping of freshwater fisheries as a key service: comparison of data from fisheries catches with those of fish species richness. It will be used to assess the diversity-productivity and diversity-stability relationships.

For more information see under: <http://riverthreat.net>

### Study on Energy-Water-Carbon (GCP-GWSP)

This initiative is a joint study of the Global Carbon Project (GCP) and GWSP on Energy-Water-Carbon. After discussion with the GCP SSC two tracks for this collaboration were identified:

- A linked E-H<sub>2</sub>O-C Pilot Project

This is a fast-track, exploratory activity that would demonstrate a capacity to unite data sets from the collaborating joint projects to produce a timely and united view of the geography of energy, water, and carbon variables from the earth systems science community. The focus is on Year 2010 and the demonstration effort could be focused initially on identifying anomalies. The overall goal is to develop a prototype to an operational annual report card on E-H<sub>2</sub>O-C, similar to what the GCP does already with respect to carbon. (e.g. Amazonian drought of 2010). The indicators could be expressed in terms of aggregate measures and/or their time series, amplified by per capita, per unit GDP, and unit per unit of E-W-C terms in order to explore the data compendium. Global-RIMS (Global-Rapid Indicator Mapping System) will be used to generate user-customized indicators, statistical analysis, and output visualization.

- Deeper intellectual exercise

This exercise focuses on a series of specific target areas of interaction among energy, water, and carbon. The main goal of this effort is a high-profile paper (or series of such papers). The six target areas to be considered are:

1. Energy for urban water.
2. Energy for agricultural water.
3. Water requirements for energy extraction.
4. Water requirements for energy transformation and storage.
5. Biofuels.
6. Sequestration.



## World Water Week: 21-27 August 2011, Stockholm, Sweden: Annual Meeting Point for the Globe's Water Issues & Debates

### ► History, Ethics, Religious Values: Contributions to Water and Food Security, 22 August 2011

This side event is co-convened by the Water Observatory, Botín Foundation, the Global Water System Project (GWSP) and UNESCO's International Hydrological Programme (UNESCO-IHP). The side event has the objective of spurring dialogue on the role of ethics and religious values in water resources management and in envisaging, with inputs from the audience, future initiatives needed to further explore this topic and, above all, transfer it to the water practitioners' ground. The events will include two parts:

1. Presentation by three experts of the work undertaken by the Water Observatory of the Botín Foundation, UNESCO and the Global Water System Project (GWSP) in relation to water, ethics and culture/religion in a globalised world. The presentations will be based on the results of the 5th Water Workshop Botín Foundation summarized in a short video and on the work carried out by UNESCO's International Hydrological Programme in promoting water ethics

and conflict prevention through building cooperation and peace, as well as on present and future initiatives supported by GWSP in this field.

2. Discussion on the way forward to explore the establishment of new initiatives, programmes or training courses addressing the issue of water and ethics, to be promoted by the Session three conveners in cooperation with international partners and Member States.

The introduction will be given by Janos Bogardi, Executive Officer of GWSP IPO.

For the full programme please visit:

<http://www.worldwaterweek.org/>

### ► Water, Food Security and Care of Nature in a Globalized World, 25 August 2011

The side event is co-convened by the Water Observatory, Botín Foundation, the Global Water System Project (GWSP), UNEP's Division of Technology, Industry and Economics (DTIE) and UNESCO's International Hydrological Programme (UNESCO-IHP). The side event aims at discussing the potential of different IWRM tools and governance challenges at different spatial and temporal scales to assess global and national food and water security and care of nature. Case studies at the global level, regional level (South-East Asia) and national level (Spain) will be presented.

The discussion will provide a venue for debating about both methodological and policy issues.

GWSP delegate Holger Hoff, Potsdam Institute for Climate Impact Research, will give a talk about Water and Food Security Scenarios.

For the full programme please visit:

<http://www.worldwaterweek.org/>

### ► Governing Water Wisely: Adaptive Approaches to Water Resources Management, 25 August 2011

Twin2Go will be present at the World Water Week 2011 in Stockholm. Together with the Global Water System Project (GWSP), the Global Water Partnership (GWP) and the UNESCO International Hydrological Programme (UNESCO-IHP), Twin2Go will host a seminar on August 25. The event will allow to discuss the latest insights into water governance with policy-makers and scientists. The aim of the seminar is to share and discuss Twin2Go's insights and to complement the picture with knowledge and experience of other initiatives such as GWSP, GWP, UNESCO-IHP. A panel-discussion with policy and decision makers as well

as practitioners and researchers will facilitate further exchange of insights from research and practical experience.

The introduction will be given by Claudia Pahl-Wostl, Co-Chair of the GWSP SSC. Janos Bogardi, GWSP Executive Officer, will moderate a panel discussion.

For programme details please visit:

[http://www.worldwaterweek.org](http://www.worldwaterweek.org/)

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## A Global Assessment of Sustainable Environmental Flow Requirements (EFR) and Resulting Challenges for Water Management and Governance

Workshop of the Global Water Needs Initiative (GWNI), 14-16 November 2011, Bonn, Germany

One missing component in global water assessments, in the identification of critical hotspots of water scarcity, and for adaptive and integrated water management strategies is the environmental flow requirements (EFR) which safeguard aquatic ecosystem functions and services.

The scientific challenge addressed in this GWNI activity is to advance a globally applicable methodology that enables assessments of sustainable environmental flow requirements while representing the eco-hydrological and socio-economic dynamics and complexity. It thus should work across all climates and aquatic ecosystems, levels of anthropogenic modification and water use, and management goals, implying the identification of governance challenges at local, national, basin and global levels associated with these conditions.

This GWNI activity starts with a review report of the current status on EFR methodologies, identifying (1) the eco-hydrological and socio-economic characteristics – the key “water indicators” – under which each method is best suited, (2) identifying the minimum data requirements at river basin scale for applying the various methods, and (3) identifying particular governance challenges linked to the

different eco-hydrological characteristics. Based on this review report, an association matrix methodology will be advanced, linking basins with EFR methods and specific governance needs.

This workshop will bring together scientists willing to further explore the questions addressed above of this GWSP activity. The number of participants will be limited to about 20 participants to allow an intense working atmosphere.

During the preparatory phase a draft review report will be developed that will include a review of the state of the art and a first conceptual framework mapping out characteristics of the water system and their interdependence of major relevance to assess sustainable environmental flow requirements and governance challenges associated with implementing them.

Further information can be obtained from the core organization team of this workshop: Claudia Pahl-Wostl (GWSP and University of Osnabrück), Holger Hoff (SEI and PIK Potsdam), Andrea Meyn (GWSP IPO), Carolin Butler-Manning (University of Osnabrueck).

## 6<sup>th</sup> World Water Forum: 12-17 March 2012, Marseille, France

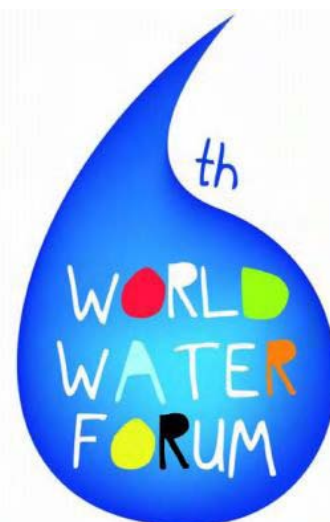
Since 1997 every third year the World Water Forum mobilizes creativity, innovation, competence and know-how in favour of water. The recent five World Water Forums have placed water on the international political agenda and contributed to a global awareness of the water issues.

This year GWSP is actively involved in the Core Group CS3 „Enabling Environment“. Core Group CS3 will work on issues related to research and technology, education & capacity development, communication & networking as well as monitoring and visioning. Janos Bogardi, GWSP Executive Officer, is co-coordinating Target 7 themed „Monitoring and visioning“ together with Luis Da Cunha Vega, Gulbenkian Think Tank on Water and the Future of Humankind.

Target 7: By 2015, build a long-term vision, with appropriate scenario assessment toolkit including the development of relevant key global indicators, for water issues covering educational, technical, historical, ethical, social, economic, environmental and institutional aspects as well as those of cultural diversity.

For more information about the 6<sup>th</sup> World Water Forum please visit:

<http://www.worldwaterforum6.org>







## Planet under Pressure: 26-29 March 2012, London, UK

The 2012 international Planet Under Pressure conference organized by the Earth System Science Partnership (ESSP) will provide a comprehensive update of the pressure planet Earth is now under. The conference will discuss solutions at all scales to move societies on to a sustainable pathway. It will provide scientific leadership towards the 2012 UN Conference on Sustainable Development - Rio+20.

GWSP Co-Chair Claudia Pahl-Wostl, Germany, is one of 11 convenors of a 90 minutes session under theme A (Global Needs) and Day 2 Programme (Options and Opportunities) called „Water: Integrated assessment, governance and management in changing conditions at global, regional and transboundary levels“. The other convenors are Research Institute for Humanity and Nature, Japan; Stockholm International Water Institute SIWI, Sweden; UNESCO International Hydrological Programme (UNESCO-IHP), France; Chinese Academy of Science, China; Global Energy and Water Cycle Experiment (GEWEX-WCRP), USA; Earth System Governance Project (ESG-IHDP) the Netherlands; UNESCO



**PLANET  
UNDER  
PRESSURE**  
2012 MARCH 26-29  
LONDON

Internationally Shared Aquifer Resources Management (UNESCO-ISARM), France; International Association of Hydrogeologists (IAH), UK and the Integrated Water Resources Management Division at the Organization of American States (OAS), USA.

Water, its availability, quality, consumption, management and governance form the core of this session. It explores the interface of physical and governance science as far as water, its occurrence and sustainable use and its long-term security is concerned. An integrated spatial perspective approach is proposed that ranges from global through national/regional basin scales along with a disciplinary perspective that covers social and natural science as well as water resources management and engineering.

## GWSP Transitions

### New GWSP SSC Co-Chair



CLAUDIA PAHL-WOSTL is full professor for resources management and director of the Institute for Environmental Systems Research (USF), University of Osnabrueck, Germany. Her research focuses on understanding requirements for and transformation process towards sustainable and adaptive resource governance and management systems.

Claudia Pahl-Wostl has coordinated several European projects, in particular two projects endorsed by the GWSP: NeWater (New methods for adaptive water management) and Twin2Go (Coordinating Twinning partnerships towards more adaptive governance in river basins). She has been involved with the GWSP from the beginning first as member and since December 2010 as co-chair of the Scientific Steering Committee.

HOLM VOIGT, research assistant from October 2009 - July 2011, recently left GWSP IPO for a new PhD thesis. We wish him all the best for his field trip to Uzbekistan!



### New Scientific Officer, GWSP IPO

ANDREA MEYN is geocologist with a focus on environmental problems related to human impact. In addition she studied forest science at the University of British Columbia in Vancouver, Canada, for a year. After her Diploma in Geocology she worked at the Helmholtz Centre for

Environmental Research (UFZ) in Leipzig. Andrea did her PhD with Prof. Wolfgang Cramer and Dr. Kirsten Thonicke from the Potsdam Institute for Climate Impact Research (PIK) and obtained a PhD degree from Potsdam University in 2010; her thesis focused on fire-climate relationships and recent historical climate change in British Columbia, Canada. She was appointed GWSP IPO associate science officer in May 2011.

EVA RIEDKE, student assistant from November 2009 - July 2011, also left GWSP IPO as she successfully finished her Master degree and prepares her PhD thesis. We wish her a successful start for her research in South Africa!

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## The Global Water System Project (GWSP)

The Global Water System Project (GWSP) is a Joint Project of the Earth System Science Partnership (ESSP) consisting of four Global Environmental Change Programmes: the International Geosphere- Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), the World Climate Research Programme (WCRP) and DIVERSITAS, the international programme of biodiversity science. The overarching question of the GWSP is how human actions are changing the global water system and what are the environmental and socio-economic feedbacks arising from the anthropogenic changes in the global water system.

