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GWSP
Global Water
System Project

Overview activities GWNI (Global Water Needs Initiative)

Claudia Pahl-Wostl, GWSP SSC Oct 2012

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GWNI highlights

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- **Workshop Nov 2011 – *Determining sustainable environmental flow requirements and resulting challenges for water management and governance***
- **Review Paper for COSUST**
- **Belmont Forum Call proposal - *Enhancing water security for the benefits of humans and nature – EWAS***

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Knowledge Gaps

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- Prevalence of case specific approaches in the field of EFR assessments with the consequence that EFR determinations and results are not readily transferable.
- Lack of consistent information on flow, water use and the state of aquatic ecosystems in basins that vary with respect to their socio-environmental context.
- Lack of robust mechanistic understanding of the relationships between flow modifications and impacts on ecosystem functioning and related services.
- Lack of a widely accepted classification scheme for eco-hydro-climatic and socio-economic types of river basins as a basis for testing concepts and developing transferable flow rules.
- Methodological gaps in science – in particular data, classification schemes, and large-scale model parameterizations - for including EFRs in global water assessments.

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Knowledge Gaps cont.

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- Lack of research on the governance of environmental flows, in particular, use of scientific and local knowledge, decision-making processes and policy implementation.
- Lack of research on the usefulness of the ecosystem services concept in the estimation and implementation of EFRs.
- Lack of transferability of insights due to the prevalence of case study specific analyses with no comparative analyses across a larger number of cases.
- Lack of widely accepted models of coordinated water use by sectors within a basin.
- Lack of capacity, despite sophisticated policy and research, to implement EFRs.

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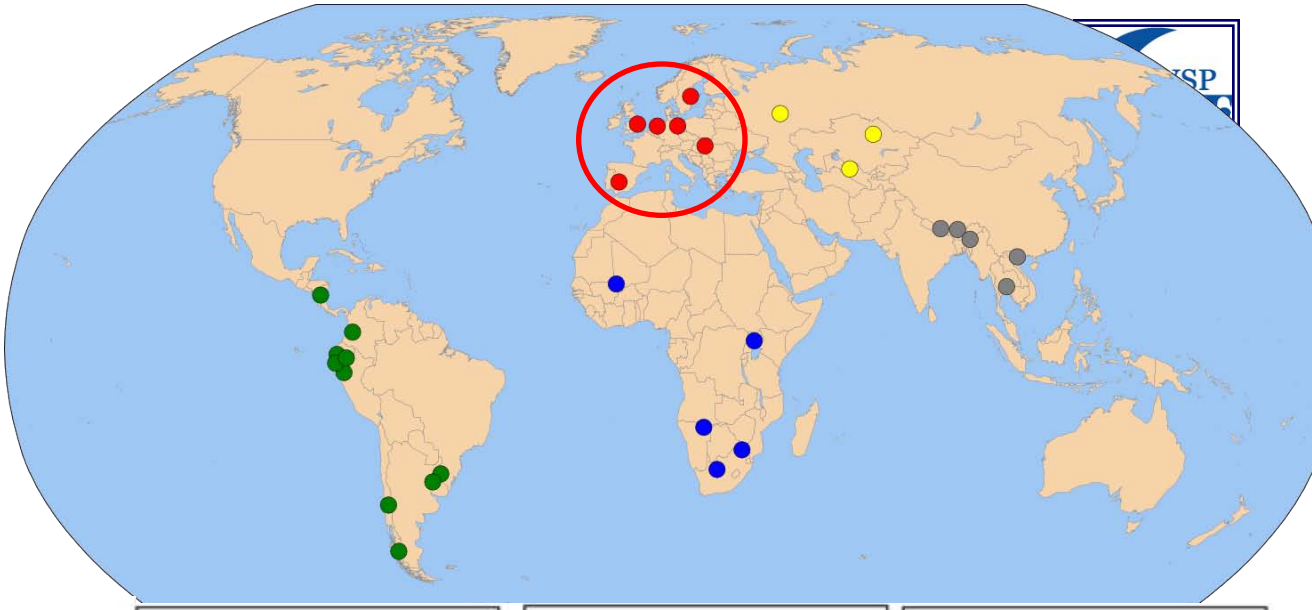
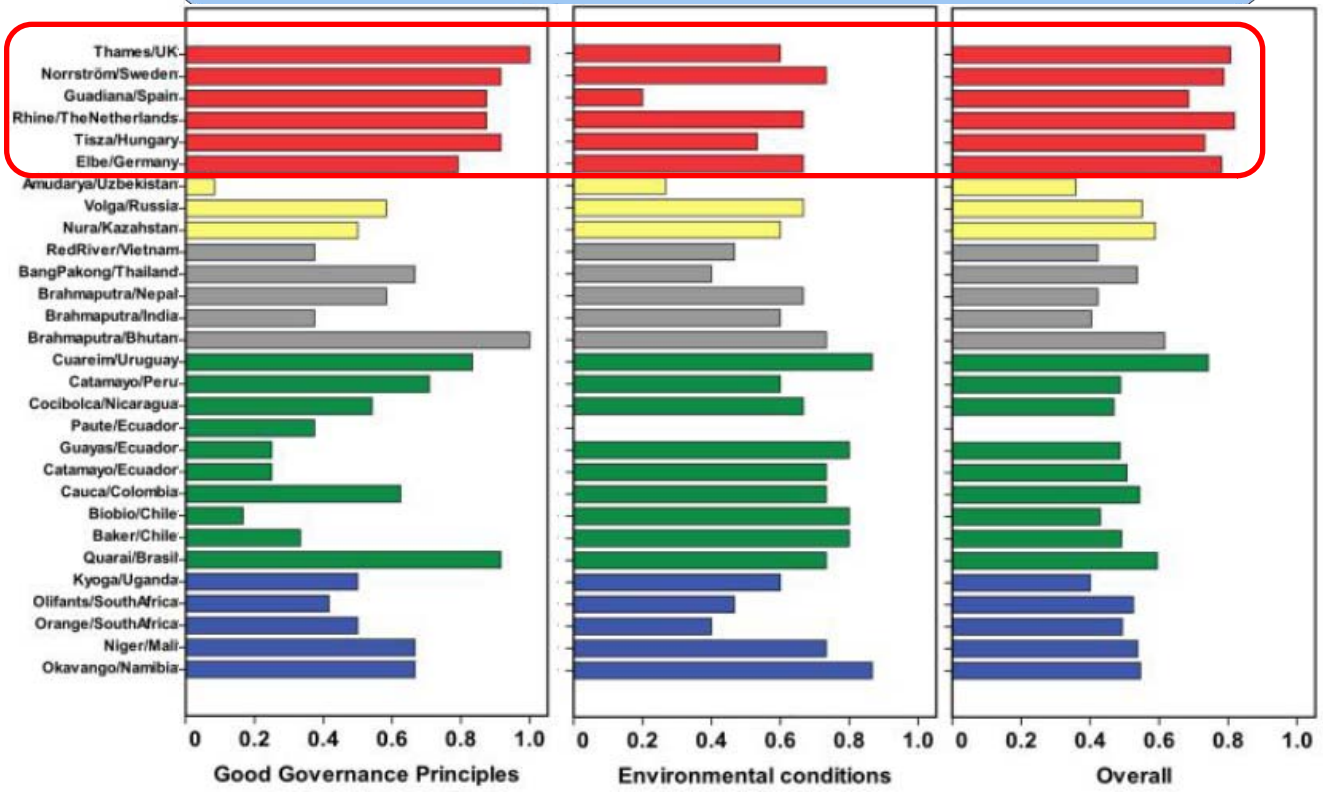
Twin2Go
Performance in geographic regions





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Classification Scheme

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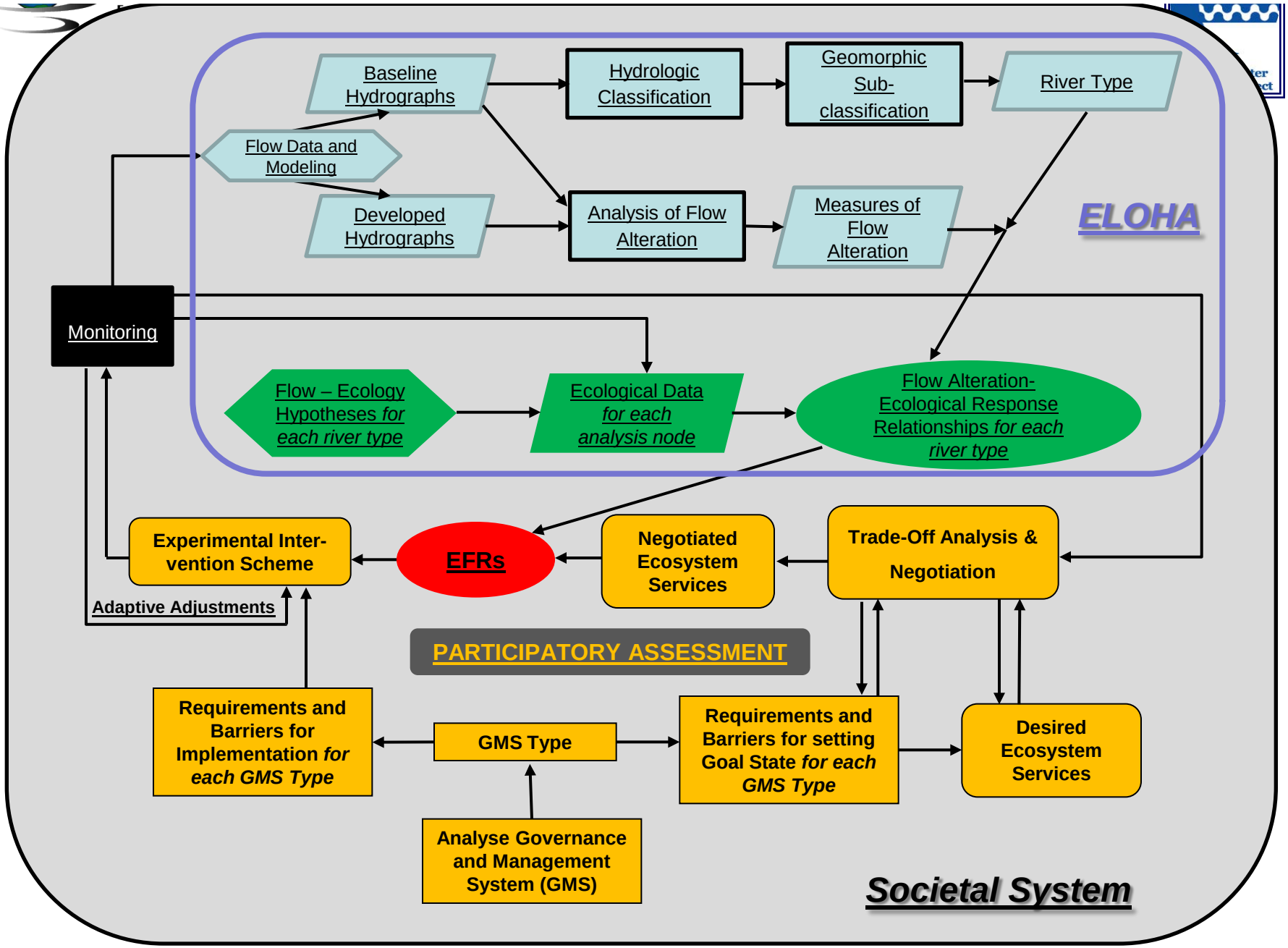
- **Societal and environmental context** - external factors of influence (i.e. economic and institutional development, culture, climate regime and expected trends of climate change impact)
- **Environmental system in a river basin** - current state of aquatic and riparian ecosystems, hydrologic regime, past and expected trends of anthropogenic modification
- **Governance system** - institutions, actors, multi-level structure, existing EFR policies, implementation of good governance principles
- **Interface between human and environmental systems** - ecosystem services which includes availability, valuation, resilience, use of ecosystem services and observed trade-offs or synergies between services
- **Management options and goals** - strategies guiding ecosystem management in general – conservation, mitigation, restoration, intervention

SUMHA (Sustainable Management of Hydrological Alterations)



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Belmont Forum Proposal

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Major research questions

- What are requirements for governance systems and management to implement environmental flow requirements and reduce trade-offs between ecosystem services under different conditions?
- How can learning and decision making processes be supported to promote change towards adaptive and sustainable allocation of scarce water resources to enhance water security and the resilience of social-ecological systems?

Consortium includes

- Expertise in ecology, hydrology, economics and governance, scientists and practitioners, working at global and at regional levels
- Representatives from Germany, UK, Russian Federation, USA, Canada, Australia, South Africa, Thailand

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Future Activities

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- Submission Belmont Call Proposal (20th December 2012)
- Global assessment using and validating classification scheme
  - Identification of socio-eco-technical regimes
  - Identification of hydro-eco-regions and hotspots
  - Mapping socio-eco-technical regime type with state of river basin in terms of degree of flow modification
- Session at GWSP conference and workshop connected to it
- Proposal to German research programme program

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Some reflections on GWSP

Claudia Pahl-Wostl
Professor for Resources Management
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Co-Chair GWSP

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From the Amsterdam Declaration to Future Earth

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Transition to Future Earth

- The joint projects of the Earth System Science Partnership (ESSP) on water, food and carbon have been platforms for strengthening the collaboration between natural and social sciences.
- GWSP can and should contribute the basis for global water science and also contribute our experience in interdisciplinary work

-> Final phase will both ***take stock of achievements*** and look ahead to ***identify priorities for global water research*** under a Future Earth programme.
GWSP conference will have a key role in this respect.

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ICSU Challenges

- Understanding
- Observing
- Forecasting
- Confining risks
- Responding
- Innovating

Future Earth IRTs

- The State of the Planet
- Responses to Global Environmental Change
- Reducing Risk
- Resources for development and wellbeing
- Pivotal Places
- Living with the Sea
- Transformative Pathways

Transition towards a new Global Change Science requires

- Integration of natural and social sciences including the humanities already at the stage of framing research questions;
- Improvement of the effectiveness of the science-policy interface and support for engaged research that does not proceed detached from real world problems and processes;
- Development of new inter- and transdisciplinary methodologies and knowledge to address global unsustainability and to produce appropriate knowledge for action;
- A revolution in education and training programs to train a new generation of scientific scholars and practitioners;
- A revolution in the funding programs and incentive structures in science to make the change happen.

GWSP forward looking products and activities

- **GWSP conference and book**
- **Handbook on Water Security**
- **Selected Papers**
- **GWSP data base on water (governance) systems**
- **….**

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Handbook on Water Security

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- **Editors:** Pahl-Wostl, Gupta and Bhaduri
- **Publisher:** Edward Elgar Publishing
- **Schedule**: manuscripts ready for publication by the end of 2013, marketing of the book in 2014.

- **Thematic blocks** – about 35 chapters in total
  - Water security - general concepts and theories
  - Water security - thematic perspectives
  - Water security - regional perspectives

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Towing Icebergs?

TOWING ICEBERGS FOR DRINKING WATER?

DASSAULT SYSTÈMES 3D VIRTUAL REALITY SOFTWARE DELIVERS THE ANSWER TO THE POSSIBILITY OF TOWING ICEBERGS LONG DISTANCES TO PROVIDE FRESH WATER

There is no alternative to water and there are shortages everywhere. A gigantic stock of fresh water located in arctic icebergs needed to demonstrate the feasibility and prove it is possible to capture and transport an iceberg. This would make it the biggest

Claudia Pah