Introducing the Sustainable Water Futures Programme

...and its links to the NEXUS

Charles J. Vörösmarty, Claudia Pahl-Wostl (co-Chairs)
Anik Bhahuri (Executive Director)
on behalf of the GWSP Scientific Steering Committee and Int'l Project Office (Bonn)

Opening Plenary Session of the
Sustainability in the Water-Energy -Food Nexus Conference
Bonn GERMANY
19 May 2014

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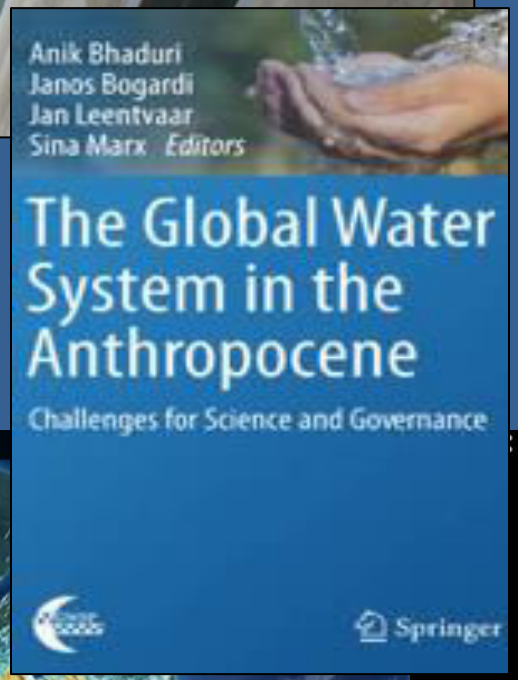
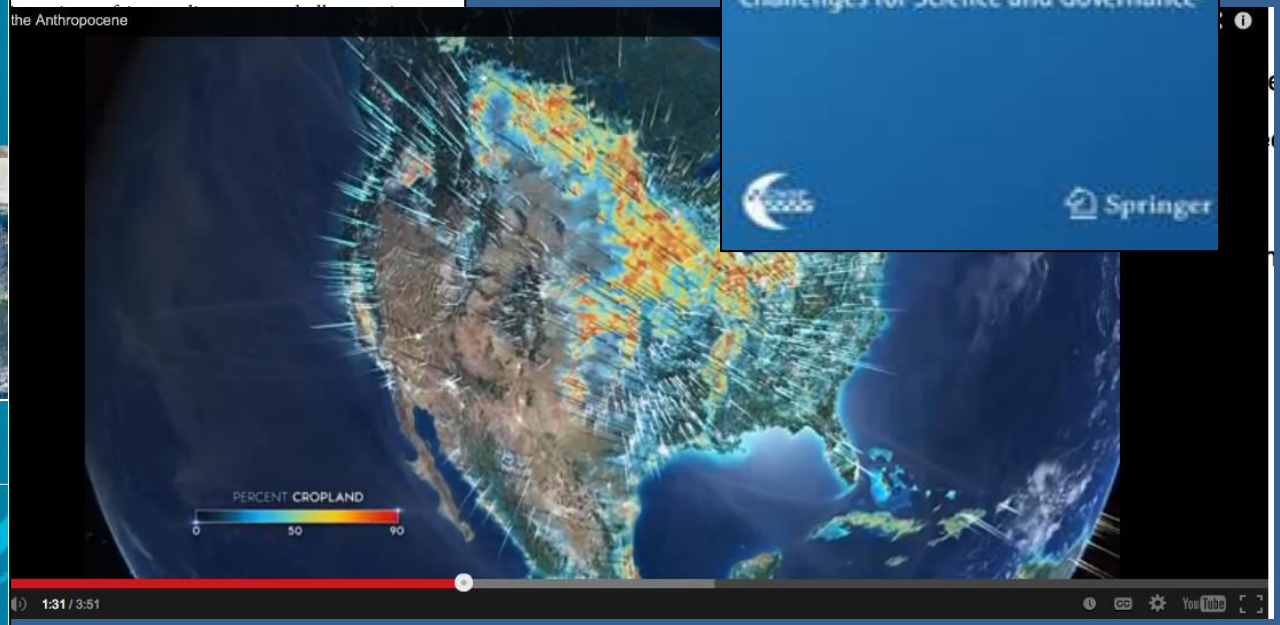
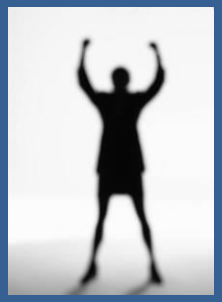
THE BONN DECLARATION ON GLOBAL WATER SECURITY

esource base, and negatively affects the health of
quatic life forms and human beings.

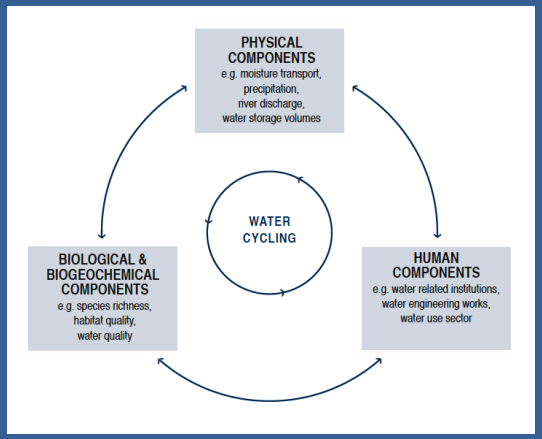




http://www.gwsp.org/products/water-in-the-anthropocene-video.html



CENTRAL TENET OF THE GWSP (ca. 2004)



Humans are changing the global water system in a globally-significant way

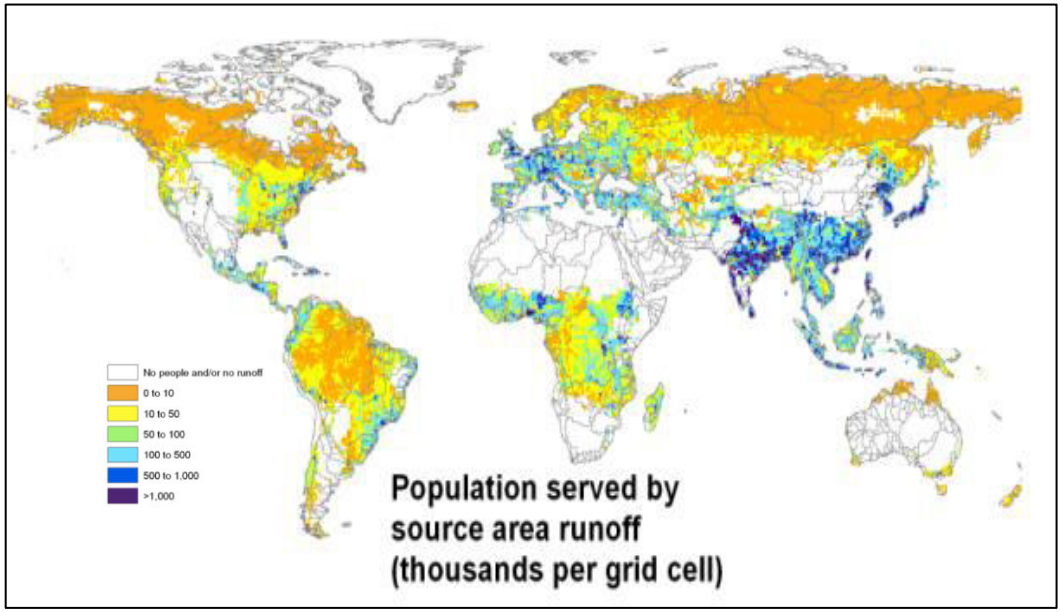
without…..adequate knowledge of the system and thus its response to change

Earth System Science Partnership

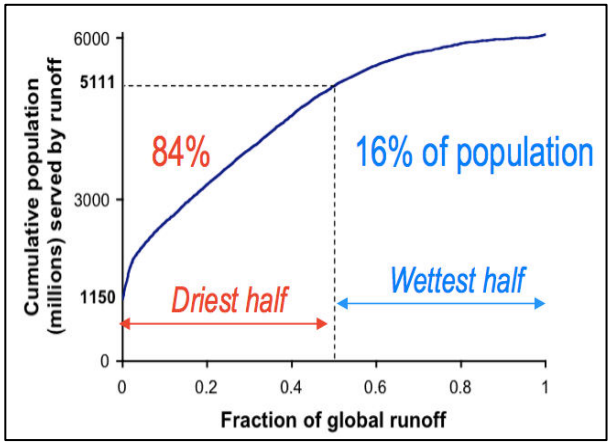
GWSP Global Water System Project

Examples of What GWSP Achieved

- Promoted the legitimacy of fully global scale perspectives, not only from the biogeophysics but also human dimensions



From: Vörösmarty et al., 2005



Extreme fraction of human population served by renewable water resources generated by the driest half of the planet

Examples of What GWSP Achieved

- Forwarded and studied the notion of global water governance

Gupta, J., and C. Pahl-Wostl. 2013. Editorial on global water governance. *Ecology and Society* **18**(4): 54.
http://dx.doi.org/10.5751/ES-06115-180454

E&S

Guest Editorial, part of a Special Feature on Global Water Governance: Challenges and Future Scope

Editorial on Global Water Governance

Joyeeta Gupta[1,2] *and Claudia Pahl-Wostl*[3]

Governance as a Cross-Cutting Theme in Human Dimensions Science

Sustainable Water Governance in Times of Global Change

A Major Challenge for the Scientific and Policy Communities

Claudia Pahl-Wostl and Theo Toonen

Available online at www.sciencedirect.com
ScienceDirect
Current Opinion in Environmental Sustainability

ELSEVIER

'Glocal' water governance: a multi-level challenge in the anthropocene

Joyeeta Gupta[1], Claudia Pahl-Wostl[2] and Ruben Zondervan[3]

GWSP News
Recent Events

Global Water Governance and the UN System

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

Available online at www.sciencedirect.com
ScienceDirect
Current Opinion in Environmental Sustainability

ELSEVIER

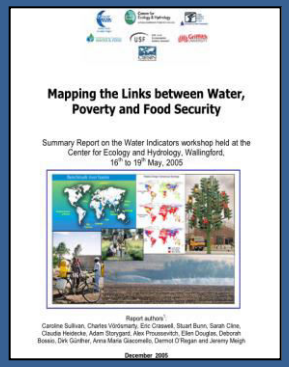
Enhancing water security for the benefits of humans and nature — the role of governance

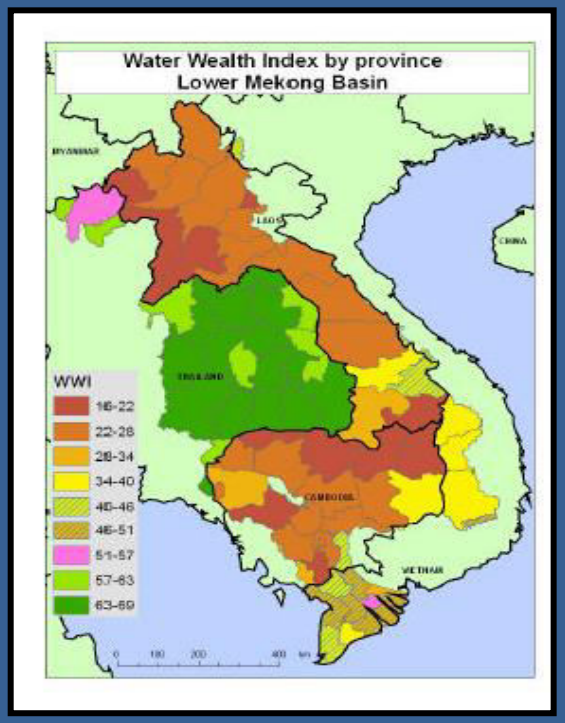
Claudia Pahl-Wostl[1], Margaret Palmer[2] and Keith Richards[3]

Examples of What GWSP Achieved

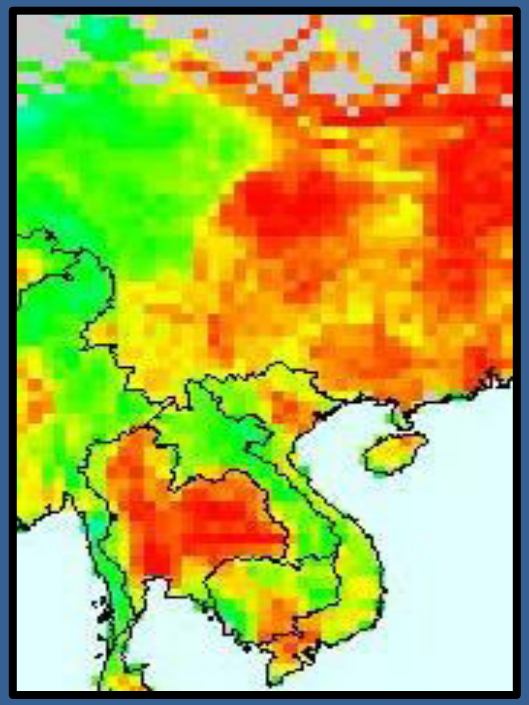
- Extended the dialogue about water and global change beyond climate alone

Water-Poverty-Food Security Mapping
(GWSP-CGIAR-CEH-CIESIN)





Biodiversity-Human Water Security Analysis
(GWSP-DIVERSITAS)



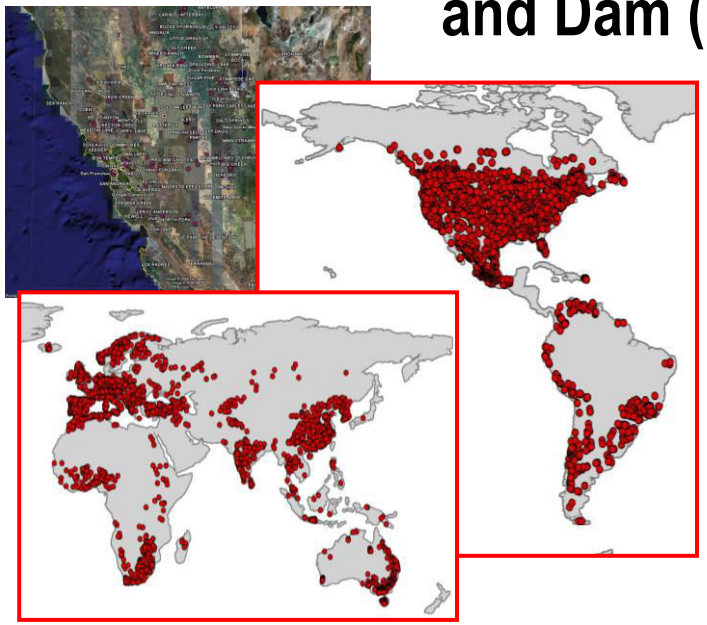
Examples of What GWSP Achieved

- Developed high profile data products and services to the community

  (GWSP Digital Water ATLAS: atlas.gwsp.org)

e.g., Community-developed Global Reservoir and and Dam (GRanD) database

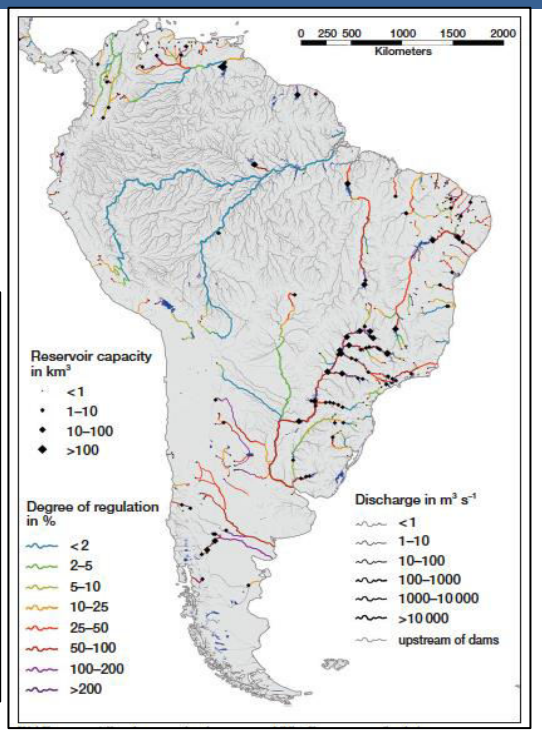
(n>6000, ~80% global storage)



Frontiers in Ecology and the Environment

High-resolution mapping of the world's reservoirs and dams for sustainable river-flow management

Bernhard Lehner, Catherine Reidy Liermann, Carmen Revenga, Charles Vörösmarty, Balazs Fekete, Philippe Crouzet, Petra Döll, Marcel Endejan, Karen Frenken, Jun Magome, Christer Nilsson, James C Robertson, Raimund Rödel, Nikolai Sindorf, and Dominik Wisser



NEXUS Studies Help Propel Design of New Global Water Programme

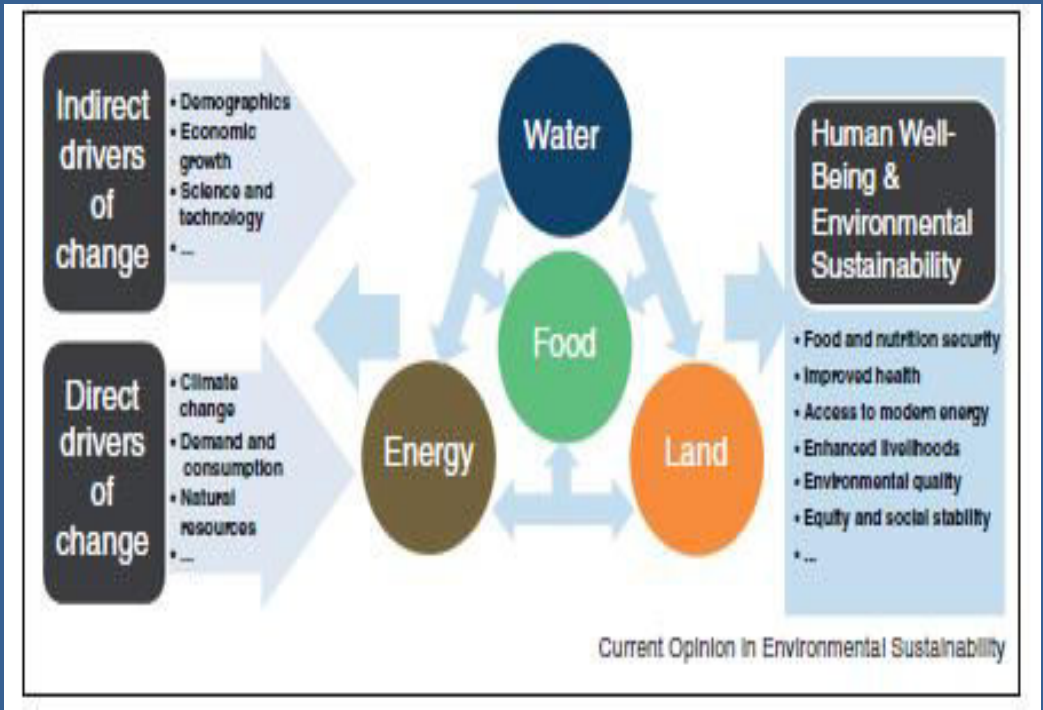
GWSP research was fundamentally interdisciplinary and NEXUS-oriented at its core, yet framework is needed for next stage: ***solutions***

GIVEN:

-- strong push from policy in framing Nexus debate and seeking solutions

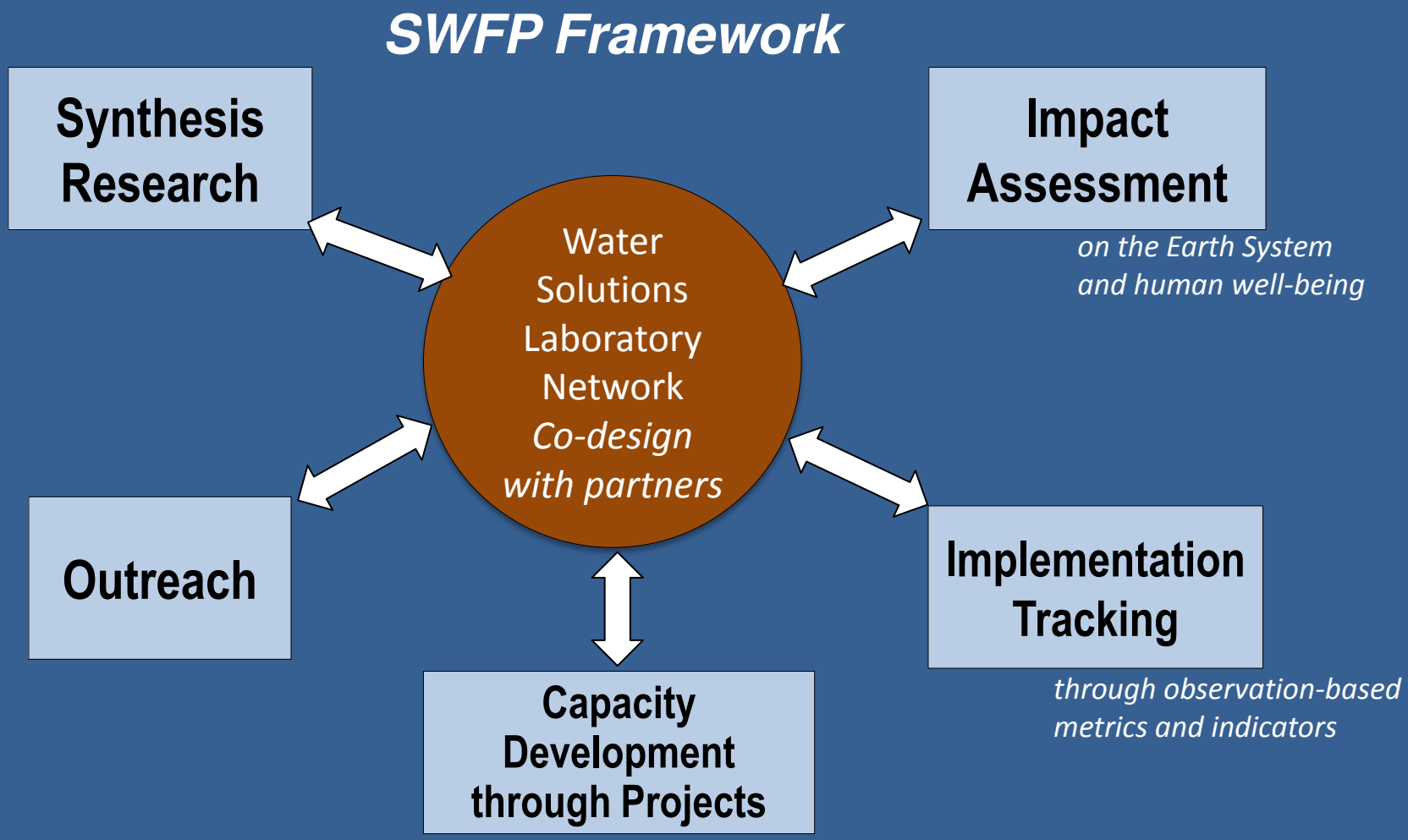
-- NEXUS problems have many connections, no simple solutions, multi-level and multi-scale

-- scientists require frameworks to rise to the challenge



Looking forward…

The Sustainable Water Futures Programme:
A solutions-oriented legacy of the GWSP



Looking forward…

The Sustainable Water Futures Programme: *A solutions-oriented legacy of the GWSP*

Flexible SWFP framework enables strategically important water-relevant problems/solutions to be addressed:

FULLY GLOBAL

- SDGs-as-NEXUS*
- Global Trade Policies
- Support to UN Conventions
- NEXUS Trade-offs
- Climate adaptation

REGIONALLY SIGNIFICANT

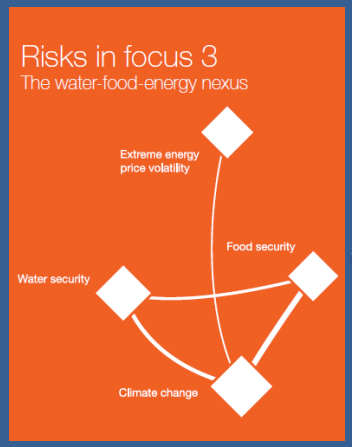
- Combating water-borne disease
- Optimizing irrigation
- Urban water
- Assessment of regional energy mix (e.g., fracking)

FOCUSED TOPICS

- Opportunistic collaborations
- Support to NGOs, gvts, private sector
- Technology development

** Full suite, not just drinking water & sanitation*

Example: Implementation Tracking of Interventions, Investments & Policies Requires Observations



- Work to develop integrated water <u>data products</u>, <u>indicators</u> & <u>metrics</u>, for <u>biogeophysics</u> AND the <u>social sciences</u> *(e.g. WEF nexus issues; water-related SDGs)*

- Continue designing agenda and priorities for the water program of Group on Earth Observations (GEO)

Example of Opportunistic Focus Topic:

Reversing global syndrome of sedimentation problems on ecosystems and infrastructure investment

A new "client base" for SWFP's knowledge products and a model for private-sector engagement

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Global Water System Project

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Global Water Research turns into Business Solution

Interview with Dr. Dietrich Bartelt, founder and associate of DB Sediments

How did you come to invent "DB Sediments" to solve sediment problems sustainably?

Our business is about the sustainable use of water. It targets processes that happen in rivers - erosion and sedimentation. Before we started the business in 2009, I was very curious to find scientific information about sedimentation and siltation. I was very happy to discover the GWSP knowledge base with information on all different kinds and shades of the water business. It was a crucial point. From the maps that (GWSP Co - Chair) Charles Vörösmarty created, we came to the idea that sedimentation and siltation is a global issue. At the time we developed our business approach, very few publications on the value of sediments to the ecosystem existed. The GWSP knowledge base as a very sound database really helped in providing the information we needed. From that we developed our business idea. We address the global market and now operate in many countries all over the world.

What are the challenges which global hydro installation face and how do you approach these?

The capacity of rivers to transport solids (sand, gravel, stones) depends on the speed of the water flow. A naturally floating river has a high capacity of transporting solids. When the speed is reduced, large particles settle down and only small particles move on. Once you want to use water and store it, you influence the flow regime of the natural river in the way that you reduce the maximum speed, starting at the intake point of the reservoir to zero speed at the dam. It is only a matter of time until the solids which are transported through the river deposit in the reservoir. Once sediments fill up the reservoir, storage capacity is lost. This is in my opinion a neglected global issue which needs awareness. We have a global population which is steadily growing and a rising global demand for freshwater. We need water storage capacity for drinking water, irrigation purposes and hydro power generation. Additionally, we need storage capacity for floods and retention volume. This is an issue that was not well addressed on a global scale so far. The GWSP knowledge base helped a lot to quantify the risks of siltation and sedimentation. Based on the provided information, we were able go ahead with our company DB Sediments.

How to solve sediment problems in an environmentally friendly way?

The storage of water is an impact to the river as an ecosystem. When building a dam, the natural flow regime of the water is cut. An unbalanced sediments deposit in front of the dam and a lack of sediments on the downstream side are the result. It is very important that sediments are passed on through the river to the delta in order to avoid problems such as river and coastal erosion. With our approach we simulate the

DB Sediments®
System Sensitive Solutions

Contact:

Dr. Dietrich Bartelt

d.bartelt(at)db-sediments.com

http://www.db-sediments.com/

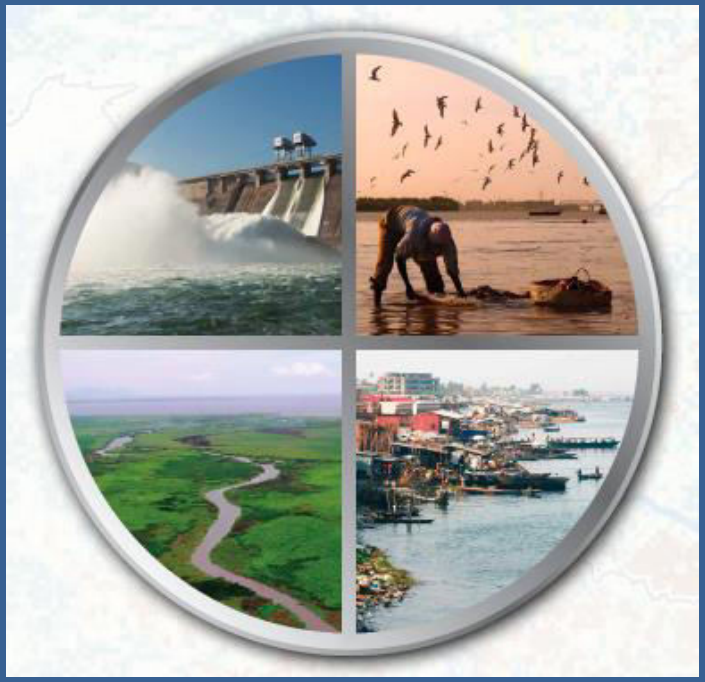
Welcome to all!

…and thank you to all of the institutions, and sponsors and individuals who have made this possible

Particular thanks go to

Anik Bhaduri
Sina Marx
Anna Schürkmann
Lynn Schüller *Talin Holtermann*
at the GWSP IPO here in Bonn.

Thank you!



Additional information at: www.gwsp.org

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Bundesministerium
für Bildung
und Forschung

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