WWAP and IHP activities serving the scientific community
IHP-VII: Water Dependencies: Systems under Stress and Societal Responses

3 Pillars

- THEME I: Adapting to the impacts of global changes on river basins and aquifer systems
- THEME II: Strengthening Water Governance for Sustainability
- THEME III: Ecohydrology for Sustainability
- THEME IV: Water and Life Support Systems
- THEME V: Water Education for Sustainable Development

- FRIEND
- HELP

Hydrological Research

- Education, Transfer of knowledge, Capacity building

IHP Initiatives
- PCCP
- ISI
- IFI
- TIGER
- G-WADI
- GRAPHIC
- IAHS-PUB

IHP - VII
New Initiatives
Water Centres

Water Resources Management
MAJOR ACHIEVEMENTS

- Publishing text book on droughts (579 pp) and a manual on low flow design (200 pp) (in co-operation with WMO)
- Generate scientific knowledge (over 480 scientific papers and reports (FRIEND 2010)
- Developing course material (28 courses to 447 participants from 77 countries) on extremes, data bases, GIS, sediments, water quality, glaciers, water resources management.
- Sharing knowledge on low flows and drought through the European Drought Centre (EDC) [http://www.geo.uio.no/edc/](http://www.geo.uio.no/edc/)
Assessment of Flood Forecasting and Warning System for Humid Tropic Regions

Partners: UNESCO-IHP Jakarta office and ICHARM and HTC

Established in Indonesia, Malaysia, the Philippines, Thailand and Vietnam
International Sediment Initiative (ISI)

Objectives:

- promote the elaboration and monitoring of sediment data
- develop appropriate methods and procedures in sediment management

Recent Activities:

- Global evaluation of sediment transport
- Case studies for river basins, review of erosion and sediment related research
- Global erosion and sediment information system (UNESCO IRTCES center, Peking)
- Networking, education and training
UNESCO addressing hydrological extremes: knowledge base and capacity for prediction, adaptation and mitigation

IFI: International Flood Initiative

International Centre for Water Hazard and Risk Management (ICHARM)
(Tsukuba, Japan)
The World Water Assessment Programme is a working example of system-wide cooperation.

As the flagship program of UN-Water, it brings together 28 UN agencies and other stakeholders.

The reporting mechanism of the UN System, WWAP monitors progress towards internationally agreed-upon goals about water.
Topics to be covered

- 4th edition of the WWDR
- Second Generation of Global Water Scenarios
- Capacity Building
- Indicators
  - WWAP Expert Group on Indicators, Monitoring and Databases
  - WWAP Pilot Study on Indicators
  - UN Water Key Indicators
Overarching theme of WWDR4

• Managing Water under risk and uncertainty

- Take water out of being a problem to being a resource that can be used to address and overcome challenges.
- Establish a common understanding and an acceptable definition of the Risk and Uncertainty theme in the context of water resource, their use and management.
- Three modules comprising 14 challenge area and 5 regional reports
Uncertainty, Risk and Possible Futures of Global Water Systems

A Second Generation of Global Water Scenarios
- Exploring alternative futures of the world’s water to 2050
- Stand-alone project; Phase 1 contributing to WWDR4

WHY NEW SCENARIOS?
- The last scenario development exercise dates back one decade
- Important new policy initiatives such as MDGs have emerged since then.
- The need to incorporate additional driving forces such as CC, globalization and security issues and update the information they are based on.
- The evolution of the drivers and the logic behind them, should be re-examined.
- In most cases there are no existing water scenarios at the national and sub-national levels.
- Linkages are possible with other scenario processes being undertaken at the global level.

Drivers researched:
- Climate change and variability
- Water resources, including groundwater and ecosystems
- Governance and Institutions (including the right to water)
- Technology
- Economy and Security
- Agriculture
- Infrastructure
- Demography
- Ethics, society and culture (includes questions of equity)
- Politics
Uncertainty, Risk and Possible Futures of Global Water Systems

Ranking of importance of developments by experts

- Agriculture (Top five)
- Technology (Top five)
- Ethics (Top five)
- Economy and Security (Top five)
- Politics and Governance (Top five)
Supports WWAP’s work on indicators
Open participation of individuals on a rolling basis

- Prepared a short list of key dimensions and indicators
- Drafted a proposal on future work required to report on a useful, feasible and sustainable set of indicators on key water resources issues on an ongoing basis

The proposed areas of focused work:
- Resource availability (TARWR)
- Remote sensing index of water quality
- Wetland status and environmental services
- Resource use
- Trends and variability in precipitation
- Country-level WRM via peer review
<table>
<thead>
<tr>
<th>issue</th>
<th>Indicator</th>
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<tbody>
<tr>
<td>Resource availability</td>
<td>1- TARWR/cap</td>
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<tr>
<td>Investment</td>
<td>2- % national expenditure for water sector (WSS, ...) over total expenditure</td>
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<tr>
<td>Climate change</td>
<td>3- Storage capacity compared to potential</td>
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<tr>
<td>Pressure on Water</td>
<td>4- Intensity of use: Total withdrawals/TARWR</td>
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<tr>
<td>Use off stream</td>
<td>5- Share of agricultural, domestic, industrial withdrawals / Total withdrawals</td>
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<tr>
<td>Use On stream</td>
<td>6- Evolution of inland fish catch (capture) and production (aquaculture)</td>
</tr>
<tr>
<td>Use &amp; Trade</td>
<td>7- Share of blue, green, virtual water used to produce food in a country</td>
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</tbody>
</table>

- **data available**
- **improving data**
- **incomplete data**
### UN-Water “key indicators”

<table>
<thead>
<tr>
<th>issue</th>
<th>Indicator</th>
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<tbody>
<tr>
<td>Water supply</td>
<td>8- % population with access to improved water supply</td>
</tr>
<tr>
<td>Sanitation</td>
<td>9- % of population with access to improved sanitation facilities</td>
</tr>
<tr>
<td>Food production</td>
<td>10- Change in water productivity in irrigated agriculture</td>
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<tr>
<td>Industry production</td>
<td>11- Change in water productivity in industry</td>
</tr>
<tr>
<td>Energy production</td>
<td>12- Change in hydropower productivity (production/ potential)</td>
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<tr>
<td>Water quality</td>
<td>13- Change of quality of freshwater systems (% of samples compared to standards/limits such as concentration of nutrients in freshwater, salt in aquifers)</td>
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<tr>
<td>pollution</td>
<td>14- Urban wastewater treatment connection rates</td>
</tr>
<tr>
<td>Fresh-system</td>
<td>15- Change in wetlands health status (including threatened freshwater species %)</td>
</tr>
</tbody>
</table>
in partnership with GTN-H and GEO/IGWCO

innovative methodology for estimating country-level TARWR, variability and trends (not previously possible)

hydro-meteorological and high resolution (6 minute) river network, ESRI country boundaries and surface elevation data

used in combination with socio-economic data sets (agricultural production, health, GDP et) to create informative country profiles linking water availability and variability to socioeconomics and policies on a comparative annual basis.
Argentina
Australia
Bangladesh
Brazil
Bulgaria
China
Colombia
Costa Rica
Croatia
Ethiopia

Germany
Ghana
Mexico
Pakistan
South Africa
Sudan
Thailand
Ukraine
Uzbekistan
Viet Nam
Participation in related work

• UN-Water Country Profiles (FAO and partners)

• UN-Water Task Force for Rio+20 (WRM at country level)

• UNSD Water Accounts