The UNEP GEMS/Water

A Global Water Quality Monitoring and Assessment Programme

3rd GEOSS African Water Cycle Coordination Initiative (AfWCCI) Workshop
Venue: L’Hotel Art Suites, El Jadida, Morocco.
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This presentation

- **Brief history** – what is GEMS/Water?, the global network, its management
- **Network building and strengthening** at national, global and watershed levels to improve water quality - objectives and outcomes
GEMS/Water brief history and partnerships…

- A comprehensive global water quality monitoring system and network.
- Provides evidence-based information on the state and trends of global inland water quality.
- In place since 1978… some 35 years, supported by Environment Canada.
- Initially implemented as a collaborative effort of UN agencies (UNEP, WHO, UNESCO, WMO, the IAEA) and other relevant water organizations globally with member countries.
## Participants in GEMS/Water

### Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Africa</th>
<th>Americas</th>
<th>Asia</th>
<th>Europe</th>
<th>Oceania</th>
<th>Totals</th>
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The growth of GEMStat

GEMStat Holdings: >3850 stations; >4.5 million data; Date Range 1965-2012

No. of Stations 1987- Sept 2012

No. of Data points 1987- Sept 2012
<table>
<thead>
<tr>
<th>Region</th>
<th>Physical/Chemical</th>
<th>Nutrients</th>
<th>Major Ions</th>
<th>Metals</th>
<th>Organic Matter</th>
<th>Organic Contaminants</th>
<th>Microbiology</th>
<th>Hydrological &amp; Sampling Variables</th>
<th>Date Range</th>
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<tr>
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<td>198451</td>
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The GEMS/Water's hydrological counterpart

The Global Runoff Data Centre in Koblenz, Germany

Under the auspices of the WMO and hosted by the German Government

7362 stations with monthly discharge data, including data derived from daily data (Status: 07 January 2010)
Koblenz: Global Runoff Data Centre, 2010.
Several UNEP’s Governing Council decisions called for furthering the development and the strengthening of GEMS/Water (Decision 23/2, GC 23rd Regular Session, February 2005; Decision 24/16, GC 24th Regular Sessions, February 2007)

GC Decision 26/14 (UNEP GC 26th Regular Session, February 2011)

“Encourages Governments and other organisations to participate actively in the GEMS/Water Programme by contributing water quality data and information, and invites Governments and others (…) in a position to do so to provide financial and in-kind support to the GEMS/Water Programme, capacity building and transfer of technology efforts in developing countries.”
The UNEP Operational Water Strategy 2014-17: *Addressing vulnerable connections in the water cycle*

Build **ecosystem resilience** and **improve water quality** by providing tools and building capacity for:

- Global, regional and national assessments
- Data, monitoring & reporting
- Water quality standards and guidelines for freshwater ecosystems
- Ecologically-based solutions
1) Global Water Quality Database and Information
   - Enhance accessibility to credible data
   - Promote interoperability with other environmental information systems

2) Data Quality
   - Develop QA/QC tools and resources for developing countries (e.g. manuals, training courses)
   - Deliver services that enhance data quality and reliability (e.g. Performance Evaluation studies, on-site lab assessments)

3) Water Quality Assessments
   - Contribute to UN water publications (e.g. WWDR, GEO)
   - Contribute to policy development for issues affected by water quality (e.g. climate change and human health)

4) Capacity Building and International Network
   - Increase participation of developing countries in water quality monitoring, assessment, research and reporting
   - Develop training courses and promote partnerships to deliver via regional centres of excellence
Challenges in developing countries

- Inadequate water quality data, access and dissemination, regular monitoring
- **Capacity building** – technical/institutional to address water challenges under global climate change; trans-boundary issues…
- **Financial input** for data gathering, monitoring, assessment
- Need for effective networks
- Relevance of WQ in policy making
GEMS/water activities, projects and coverage

• The global water quality assessment (2013-17),

• Strengthening National Focal Points, CFP and regional organization networks (2012-13),

• Support to basin wide ecosystems projects e.g. Water quality and ecosystem monitoring in the Lake Tanganyika basin (2013 - ?).
Assessment of World Water Quality to Meet the Global Water Quality Challenge

*A global water quality assessment* – policymakers, stakeholders, and scientists better understand the extent and type of water quality problems around the world.

**Partners:** Helmholtz Center for Environment Research (UFZ), University of Kassel, UNEP, UN agencies, Stakeholder and Scientists.

**Objectives:**
- ✓ provide information about policy options for protecting or restoring water quality;
- ✓ A major awareness-raising exercise;
- ✓ provide capacity building in coping with the water quality challenge.
An overview of the WQ Assessment

Two stages.
Stage 1 (2013-14): a preliminary assessment of the current situation using existing data.
• An evaluation of the current status of water quality in rivers and lakes.
• An assessment of freshwater fisheries and to link food security.
• An identification of hot spot areas of water pollution.
• A preliminary estimate of the causes of water pollution at different locations
• A preliminary campaign to boost the amount of data available on water quality and to identify priority data needs.

Stage 2 (3 years): will assess - current situation more comprehensively, examine trends of water quality, and evaluate a range of policy options to deal with the water quality challenge.
Outputs

Baseline status of global water quality – generate maps and database: of main rivers and lakes in Africa, Latin America, Asia depicting various indicators of hot spot regions:

Fisheries table and maps – of countries and large river basin Report on value of freshwater fisheries to food security and economy.

Hot spots maps
Maps of hot spot areas of rivers and lakes subject to a high level of water pollution

Causes of water pollution: Maps and report on immediate causes of water pollution in different rivers and lakes

Digital data campaigns: to expanded digitized global data base
• Report on use of remote sensing data for global water quality assessment.
National Focal Point (NFP) network strengthening – workshops

- April 2012 NFP workshop for Eastern and Southern Africa countries;
- November 2012 NFP workshop for Asia and the Pacific
- March 12-14-2013 NFP workshop for Central North Africa in preparation...
- Workshops involve regional water organizations
NFP network strengthening – Objectives

- To identify prevailing challenges in WQ data acquisition and sharing, monitoring, assessment and reporting;
- To raise awareness - importance of WQ in freshwater ecosystems to support appropriate decision making;
- To enhance participation of countries and regional institutions in the monitoring of freshwater in river and lake basins.
- To determine the level of technical support, expertise and advice in WQ analysis to laboratories required in the countries and the river and lake basins;
- To reinforce collaboration between and regional water quality monitoring activities and programmes with the GEMS/Water and other relevant networks and programmes of the United Nations.
Regional workshops – outcomes

- **Identification of priority challenges** to acquiring and sharing water quality data, and options to overcome them.

- **Identification of specific capacity building needs** to improve water quality monitoring.

- **Awareness** of what the GEMS/Water network and database (GEMStat) is and a better understanding of its benefits and requirements.
Regional workshops – outcomes

- **Renewed commitment** from (participating) country water institutions to network,

- **Increased communication and sharing of information** and experiences amongst members of the network and capacity building,

- **Agreement on next steps**, viable actions, responsibilities and timelines.
Lake Tanganyika meeting

- The meeting was held 29-31 January 2013 - Bujumbura – Burundi

The UNEP and the Lake Tanganyika Authority (LTA) Secretariat cooperation with respect to the Project / Programme entitled “Institutional arrangements for shared natural resources and trans-boundary environmental issues (TIMS).”
Lake Tanganyika meeting - Objectives

Three objectives:
• To strengthen trans-boundary institutional mechanisms for the management of the shared water resources of the Lake Tanganyika;
• To enhance capacities within the Lake Tanganyika riparian countries and the LTA Secretariat for water quality monitoring, pollution reduction and control; and
• To deliberate on ways of improving the health and diversity of the Lake Tanganyika Basin Ecosystem and services.
LT Conclusions from General Discussions

- agreed that water quality monitoring is the priority component of the regional strategy
- UNEP commitment to support the member states through Lake Tanganyika Authority to develop a multi-stakeholder project proposal that will seek further funding from potential donors
- Need for UNEP to facilitate the development and implementation of the monitoring water quality component with NIGLAS/CHINA playing a complimentary role to the work of UNEP through capacity building of the stakeholders on water quality.
An improved concept note that can be used to develop a full project on water quality monitoring (31/1/2013) focusing on:

- **Identification of priorities** needs for countries on monitoring
- **Activities for standardization of methodologies for data collection**
- **Priority equipment** for monitoring and analysis
- **Mechanisms for data sharing and interpretation among countries**
- **Priorities for capacity building and institutional strengthening activities**
- **Elements for sustainability** of monitoring, analysis and financing
- **Modalities of coordination and roles of** LTA, UNEP, partners, member states, focal points
Thank you
The UNEP GEMS/Water Programme

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