3rd International Conference on Water & Climate
Basin management, key to adaptation and achieving the Sustainable Development Goals

Session 2: Groundwater Management: Challenges and Prospects
Joint Management Groundwater Surface Water & Climate Change in the Circum Sahara

July 6, 2023, Fès (Morocco)
3:45 pm - 5:30 pm

By
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Executive Secretary, OSS
OSS | Strategy 2030

To support Member Countries in the implementation of their Sustainable Development Policies

Scientific and Technical Program:

INTEGRATED AND CONCERTED MANAGEMENT OF NATURAL RESOURCES

- Sustainable Land Management and Mitigation of the drought effects
- Contribution to the satisfaction of water needs through integrated management tools
- Development of tools for the assessment of biodiversity and ecosystem services
- Strengthening the resilience of populations and ecosystems

Cross-cutting programs:

- Monitoring and Forecasting
- Communication and Information
- Capacity Building
The 6th goal of sustainable development is to ensure availability and sustainable management of water and sanitation for all. More specifically, 8 targets need to be attained by 2030:

6.5. Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
Several climate zone
Mediterranean, arid, dry-tropical, humid-tropical, equatorial-tropical

Africa is the second driest continent

670 mm of annual rainfall
VS. 814 mm at world level
From less than 50 mm to more than 3000 mm

Water is unequally distributed
*Annual ratio per inhabitant (m³/year/inhabitant):*
- North Africa: 400 - 700
- West and East Africa: 1 000 - 5 000
- Central Africa: > 13 000
- Southern Africa: 5 000 - 9 000


Africa's climate has warmed more than the global average
since pre-industrial times (1850-1900),
and projections for 2100 show worsening
(WMO, 2022)

Climate classification (1980-2016)
Projection (2071-2100)

Source: Beck et al., 2018
OSS | Substantial water potential ....

83 Transboundary aquifer systems (World: 608)

80 Transboundary river basins (World: 276)

<table>
<thead>
<tr>
<th>Groundwater (billion m$^3$)</th>
<th>Surface water (billion m$^3$/year)</th>
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<tbody>
<tr>
<td>357 355 North Africa</td>
<td>91</td>
</tr>
<tr>
<td>56 178 West &amp; Central Africa</td>
<td>943</td>
</tr>
<tr>
<td>47 807 East Africa</td>
<td>268</td>
</tr>
<tr>
<td>198 660 South Africa</td>
<td>2 698</td>
</tr>
<tr>
<td>660 000 Africa</td>
<td>4 000</td>
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• About 99% of all freshwater is in the **Groundwater** aquifers *(Making the invisible visible : UNESCO 2022)*
• River flows: Congo River ranks 2nd (flow) with 41 000 m$^3$/s; Nile: 2 830 m$^3$/s Vs Amazon: 209 000 m$^3$/s

Opportunities
Temperature and precipitation changes over Africa from the MMD-A1B simulations...

**Temperature:**
- All of Africa is likely to warm during the 21st century
- Future warming: above 3 °C, in the Western Sahara

**Precipitation:**
- Annual rainfall is likely to decrease in much of Mediterranean Africa and northern Sahara (10 to 20% drying)
- There is likely to be an increase in annual rainfall in East Africa

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**Top:** Annual mean, DJF and JJA temperature change between 1980 to 1999 and 2080 to 2099, averaged over 21 models.

**Middle:** same as top, but for fractional change in precipitation.

**Bottom:** number of models out of 21 that project increases in precipitation (Christensen et al., 2007).
OSS | Challenges

Substantial resources difficult to mobilize
Pressure on resources exacerbated by climate change

Lack of consultative management tools for shared waters
Limited financing of the water sector, especially for groundwater resources
Lack of reliable and accessible data, for planning and sustainable management

TRANSBOUNDARY MANAGEMENT TOOLS AND MECHANISMS ARE REQUIRED
### IMPLEMENTING COOPERATIVE TRANSBOUNDARY WATER GOVERNANCE (OSS-GEF APPROACH)

Building consensus among countries on common resource degradation and long-term mitigation measures

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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Improving knowledge / Transboundary Diagnostic Analysis (TDA)</td>
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<td>2</td>
<td>Testing solutions on Sustainable Water Management for CC mitigation/adaptation</td>
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<tr>
<td>3</td>
<td>Developing/Adopting Strategic Action Programme (SAP)</td>
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<td>4</td>
<td>Ensuring technical, institutional and legal consultation for cooperation and exchanges</td>
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<tr>
<td>5</td>
<td>Establishing Concerted Management Framework at decision making level</td>
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Water Management & Governance: OSS Action
Objective

Enhancing sustainable management of the North-Western Sahara Aquifer System (NWSAS) water resources
ALGERIA, LIBYA AND TUNISIA

Duration
15 years (2000 – 2015)

Financial partners
FGEF - GEF - DDC-Suisse - FIDA

Outcomes
- Hydrogeological conditions assessed
- Common information system established
- Consultation mechanism established
- Best practices capitalized
Objective

Improving knowledge-based management, governance and resource conservation of the Niger River Basin and the Iullemeden-Taoudeni/Tanezrouft Aquifers (ITTAS), to support IWRM for the benefit of communities and the resilience of ecosystems

ALGERIA, BENIN, BURKINA-FASO, CAMEROUN, CÔTE D’IVOIRE, CHAD, GUINEA, MALI, MAURITANIA, NIGER, NIGERIA

Outcomes

- Knowledge improved
- Ground & Surface water interaction highlighted
- Strategic Action Program SAP developed
- Inter countries consultation framework set up
- 100 actors in the water sector trained

Duration

5 years (2011 – 2024)

Financial partners

AWF - FGEF - GEF
OSS | IGAD project

Supporting sustainable transboundary water resources management policies, open up opportunities for water-related development activities and facilitating regional economic integration.

DJIBOUTI, ERITREA, ETHIOPIA, KENYA, SOMALIA, SOUTH SUDAN, SUDAN AND UGANDA

Objective

Duration
6 years (2007 – 2013)

Financial partners
AWF

Outcomes

- Knowledge of water potential updated
- Regional thematic maps developed
- Capacity-building organized
- Vision and strategic action plan shared
Significant water reserves under pressure exacerbated by CC

- Improve knowledge and sustainable resource management through participatory and innovative approaches
- Reinforce cooperation for joint management of transboundary aquifers to concerted actions
- Strengthen advocacy for the mobilization of additional funds for better resilience
Thank you for your attention!

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