Supporting the monitoring and implementation of the SDGs in the Arab region:
Transboundary water cooperation SDG 6 Indicator 6.5.2
5 March 2020, UN House
Overview

The Inventory is...
the first UN-led effort to take stock of the region's shared surface and groundwater resources in a comprehensive, systematic and standardized manner.

Key Themes:
• hydrology, hydrogeology
• water resources development and use,
• agreements and cross-border management efforts.

Objectives:
• Identify, and document the state of shared water resources and their use
• Improve the knowledge base and facilitate information access
• Create awareness and stimulate informed dialogue within and between riparian countries
• Support regional processes towards improved dialogue and cooperation over shared water resources

Launched in September 2013

www.waterinventory.org
waterinventory@un.org

Euphrates River – Syrian Arab Republic
Scope

Covers surface and groundwater resources shared between Arab Countries of Western Asia. Also covers water resources shared with Iran, Israel and Turkey.

Sub-regions:
- Arabian Peninsula
- Mashrek
- Mesopotamia
## Mandate

**ESCWA Committee on Water Resources**

<table>
<thead>
<tr>
<th>Year</th>
<th>Session</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 Dec</td>
<td>8th Session</td>
<td>Build national capacities on IWRM and shared waters; update assessment of legal and institutional tools for shared water management.</td>
</tr>
<tr>
<td>2011 Mar</td>
<td>9th Session</td>
<td>Recommendation to nominate focal points to support the finalization of the Inventory, and consider its outcomes.</td>
</tr>
<tr>
<td>2013 Mar</td>
<td>10th session</td>
<td>Final report on preparation of Inventory and discussion of findings.</td>
</tr>
</tbody>
</table>
Process

- Pre-screening and compilation of the existing literature
- Consultation with regional and international experts

Involvement of nominated Focal Points:
- Questionnaires and basin packages (2011)
- Regional Consultative Meeting (2011)
- Commenting on chapters and full report (2012 – 2013)
Content

- A total of 22 shared aquifer systems and 6 shared river basins were identified.
- 9 chapters on shared surface waters and 17 chapters on shared aquifer systems, each following a standardized structure and methodology.
- 624 pages of detailed information with 60 new maps and over 200 figures, tables and boxes.
Shared River Basins

- Jordan River
- Orontes River
- Euphrates-Tigris-Shatt Al Arab
- El Kabir River
- Qweik River
Shared Aquifer Systems
Mesozoic and Paleozoic Era
Shared Aquifer Systems
Cenozoic Era
### Overview: Shared aquifer systems in the Inventory

<table>
<thead>
<tr>
<th>Shared Aquifer Systems</th>
<th>ESCWA member countries</th>
<th>Non-ESCWA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARABIAN PENINSULA</strong></td>
<td>BH EG IQ JO KW LB OM PS QA SA SY UAE YE IR IL TR</td>
<td></td>
</tr>
<tr>
<td>SaqRam Aquifer System (West)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Wajid Aquifer System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wasia-Biyadh-Aruma Aquifer System (South)</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Wasia-Biyadh-Aruma Aquifer System (North)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>U er R’ Dammam Aquifer System (South)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>U er R’ Dammam Aquifer System (Centre)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>U er R’ Dammam Aquifer System (North)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Tawil-Quaternary Aquifer System</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td><strong>MASHREK</strong></td>
<td>BH EG IQ JO KW LB OM PS QA SA SY UAE YE IR IL TR</td>
<td></td>
</tr>
<tr>
<td>Anti-Lebanon</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Western Aquifer Basin</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Coastal Aquifer Basin</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Basalt Aquifer System (West)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Basalt Aquifer System (South)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td><strong>MESOPOTAMIA</strong></td>
<td>BH EG IQ JO KW LB OM PS QA SA SY UAE YE IR IL TR</td>
<td></td>
</tr>
<tr>
<td>Taurus-Zagros</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Jezira Tertiary Limestone Aquifer System</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Neogene Aquifer System (North-West)</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Neogene Aquifer System (South-East)</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>
Overview: Shared aquifer systems without basin chapter

<table>
<thead>
<tr>
<th>NAME</th>
<th>LITHOLOGY</th>
<th>RIPARIAN COUNTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Hammad Basin</td>
<td>Basalt, carbonates and marl</td>
<td>Jordan, Syria</td>
</tr>
<tr>
<td>Eastern Aquifer Basin</td>
<td>Limestone</td>
<td>Israel, Palestine</td>
</tr>
<tr>
<td>Ga’ara Aquifer System</td>
<td>Sandstones/ carbonates</td>
<td>Iraq, Jordan, Saudi Arabia, Syria</td>
</tr>
<tr>
<td>North-Eastern Aquifer Basin</td>
<td>Predominantly limestone</td>
<td>Israel, Palestine</td>
</tr>
<tr>
<td>Western Galilee Basin</td>
<td>Limestone and dolomite</td>
<td>Israel, Lebanon</td>
</tr>
</tbody>
</table>

Criteria:
- Limited size / Scale of Inventory
- Limited shared portion
- Limited exploitability (i.e. depth, salinity, oil-bearing, facies change)
# Chapter Features

## GROUNDWATER CHAPTER

### INTRODUCTION
- Location
- Area
- Climate
- Population
- Other aquifers in the area
- Information sources

### HYDROGEOLOGY
- Aquifer configuration
- Stratigraphy
- Aquifer thickness
- Aquifer type
- Aquifer parameters

- Recharge
- Flow regime
- Storage
- Discharge
- Water quality
- Exploitability

## SURFACE WATER CHAPTER

### GEOGRAPHY
- River course
- Climate
- Population

### HYDROLOGICAL CHARACTERISTICS
- Annual discharge variability
- Flow regime
- Groundwater linkages
## Chapter Features II

### Groundwater Chapter

#### Groundwater Use
- Abstraction and use
- Quality issues
- Sustainability issues

#### Agreements, Cooperation & Outlook
- List of agreements
- Cooperation between riparian countries
- Outlook

#### Notes

### Surface Water Chapter

#### Water Resources Management
- Development and use
- Water quality & environmental issues

#### Agreements, Cooperation & Outlook
- List of agreements
- Cooperation between riparian countries
- Outlook

#### Notes

### Bibliography
Example:
Map of shared tributaries of the Tigris River
• Sub-basin delineation
• Infrastructure
• Agricultural development
Example: Discharge Variability: Orontes River
- visualize trend, drought years

Example: Flow Regime: Euphrates River
- effect of river regulation

INVENTORY OF SHARED WATER RESOURCES IN WESTERN ASIA
Example: Orontes River

Table 8. Water agreements on the Orontes River

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NAME</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1939</td>
<td>Final Protocol to Determine the Syria-Hatay Border Delimitation</td>
<td>The protocol specified the boundaries of the Orontes and Afrin Rivers. Although water of the Orontes River which is used in the Afrin River System is not included in the protocol, it is very important to include this water in the agreement.</td>
</tr>
<tr>
<td>1972</td>
<td>Agreement on Water Use</td>
<td>First bilateral agreement on water use.</td>
</tr>
<tr>
<td>1994</td>
<td>Agreement on the Distribution of the Orontes River Water Originating in Lebanese Territory</td>
<td>The agreement on the distribution of the Orontes River water originating in Lebanese territory is the main agreement for sharing the water resources of the Orontes River. The agreement specifies the rights of the two countries to receipt of 80 MCM.</td>
</tr>
<tr>
<td>1997</td>
<td>Annex to the Agreement on the Distribution of Orontes River Water Originating in Lebanese Territory</td>
<td>The annex identifies a joint entity to be excluded from the agreement.</td>
</tr>
<tr>
<td>2001</td>
<td>Amendment to the Agreement on the Distribution of Orontes River Water Originating in Lebanese Territory</td>
<td>This amendment provided the basis for the agreement.</td>
</tr>
<tr>
<td>2009</td>
<td>Turkish-Syrian Strategic Cooperation Council Agreement</td>
<td>At the High-Level Meeting of the two countries, the next level of cooperation with respect to energy and water was emphasized. As well as the meeting, Syria agreed to sign an agreement related to the Orontes River.</td>
</tr>
</tbody>
</table>

Source: Compiled by ESCWA-BGR based on data provided by Ministry of Energy and Water in Lebanon, 2011.
Added Value: Compilation of various data sources

Example: Water Use
- Remote Sensing Studies

Agricultural Statistics (proxy)

National Sector data
1. There are more shared water resources in Western Asia than generally assumed.

2. Water quantity and allocation dominate the discourse on shared water resources in this water-scarce region.

3. Water quality is rapidly deteriorating, a fact that is largely neglected.

4. The lack of accurate data hampers joint water resources management.

5. Cooperation over shared water exists, but is never basin-wide.

6. There is only one agreement on shared groundwater resources in the region.

7. The region's groundwater is largely non-renewable and aquifers are rapidly being depleted.

8. Groundwater plays an important role in surface water basins, a link which is often overlooked.

9. A new thinking is required to deal with large regional aquifer systems from a shared perspective.

10. It is already too late to save some shared waters.
...thank you for your attention!

VISIT OUR WEBSITE
www.waterinventory.org

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