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**ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)**



**Shared Waters –  
Shared Opportunities**  
World Water Day  
March 22  
Transboundary Waters  
in the ESCWA Region



UNITED NATIONS  
ESCWA



**BGR** Federal Institute for  
Geosciences and  
Natural Resources



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### **Abbreviations Used In Map Credits**

|       |   |
|-------|---|
| CNRSL | Lebanese National Council for Scientific Research       |
| GORS  | General Organization of Remote Sensing                  |
| BGR   | Federal Institute for Geosciences and Natural Resources |

## **Introduction**

Shared water is a vital resource for many people around the world. In the ESCWA region, major shared rivers include the Nile, Tigris, Euphrates and Jordan. Many less well-known underground water reservoirs are also shared. Opportunities for negotiation and mutually beneficial use of water also exist in riparian countries, many based on principles of international law and resolutions on shared water.

This fact sheet opens with an outline of the general principles of international water law and the major international conventions on shared water, before delineating the major transboundary river basins and shared water aquifers in the ESCWA region.

In highlighting some of the most important transboundary water bodies in the region, it is hoped that increased focus and renewed effort will be exerted in creating cooperative agreements for better management of our most precious resource – water. In so doing, the theme of World Water Day 2009: “Shared Waters – Shared Opportunities” can be achieved.

## General Principles Of International Water Law

The general principles of international water law have emerged from customary international law and various water-related agreements. While international law can serve as a guideline for water negotiations, enforcement and implementation of international treaties or conventions requires the commitment of the signatories to such agreements, as no international enforcement body exists.<sup>1</sup>

1. The principle of **limited territorial sovereignty** stipulates that a State may use a watercourse in any way it chooses, as long as such use does not cause significant harm to reasonable utilization by other States sharing the watercourse. This is the foundation upon which the following principles rest and has been recognized by expert publications and judicial decisions around the world.
2. The principle of **equity** requires that international law should not operate in favour of any particular State or group of States.
3. The principle that gives a State the **right to use** shared waters is limited by the rights of the co-basin States to use the resources of the same watercourse without being harmed significantly.
4. The principle of **equitable apportionment** entitles every basin State to an equitable and reasonable share of the international watercourse.
5. The principle of **reciprocity** stipulates that when a State acts within its rights and in accordance with the obligations set by international law, it should expect the same conduct from other States.
6. The obligation to **settle disputes peacefully** requires the harmonious application of national laws in the case of conflict between these principles and international law.

## **Major International Conventions On Shared Water**

### **1996 Helsinki Rules<sup>2</sup>**

The Helsinki Rules provide for the prevention of pollution of transboundary watercourses and lakes, as well as the equitable and reasonable use of transboundary waters. The Helsinki Rules include provisions for monitoring, research and development, consultation, warning and alarm systems, mutual assistance, institutional arrangements, information exchange and public access to information.

### **The United Nations Convention on the Law of the Non-navigational Uses of International Watercourses (“United Nations Watercourses Convention”)<sup>3</sup>**

The United Nations Watercourses Convention was developed to help prevent and resolve conflicts over transboundary water resources and to promote sustainable development and protection of global water supplies. The Convention offers principles to which States are required to conform their conduct in order to reflect customary international law. While the Convention was adopted by the United Nations General Assembly in 1997, it is not yet in force. Three States voted against the Convention: China, Burundi and Turkey; Burundi being a riparian to the Nile river, and Turkey a riparian to the Tigris-Euphrates and Orontes rivers. Egypt and Israel, riparians to the Nile and Jordan river basins, abstained. Iraq, Jordan, Lebanon, Qatar and the Syrian Arab Republic have ratified the Convention, while Yemen has signed the Convention, but has not yet ratified it.

### **The Law of Transboundary Aquifers<sup>4</sup>**

Following the recommendation of the International Law Commission, the Law of Transboundary Aquifers was adopted by consensus by the United Nations General Assembly on 11 December 2008. The Law addresses shortcomings in existing instruments of international law, among them the United Nations Watercourses Convention, and is intended to offer States a guiding framework for agreements and cooperation on shared groundwater resources. The Law affirms the sovereignty of each nation over aquifers located within its territory. The Law also calls on States to act according to the principle of equitable and reasonable utilization. States should also take all appropriate measures not to cause significant harm to other States. States who agree to the Law are required to share data on aquifers.

## **ESCWA Ministerial Resolutions**

### **Resolution 233 (XXI)<sup>5</sup>**

This resolution, passed in 2001, urges ESCWA member countries to increase their level of cooperation in the field of water resources and, in particular, shared groundwater, water-related legislation and demand management. A vehicle for this cooperation is the ESCWA Committee on Water Resources, under which technical working parties should harmonize the management of shared water resources.

### **Resolution 244 (XXII)<sup>6</sup>**

This resolution, passed in 2003, urges the approval of memorandums of understanding for bilateral shared water resource projects.

## Nile Basin

Modified from World Bank, 2000. [http://commons.wikimedia.org/wiki/File:Nile\\_watershed\\_topo.png](http://commons.wikimedia.org/wiki/File:Nile_watershed_topo.png).



**Countries:** Egypt, the Sudan, Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Rwanda, Tanzania and Uganda

Despite competing needs and demands for the waters of the Nile, the Nile riparian countries have recognized the need to cooperate, resulting in a basin-wide framework for the long-term development and management of the Nile waters. The Nile Basin Initiative aims to develop the Nile basin as a single entity.

The Nile Basin Initiative is the result of many years of negotiation, information sharing and confidence-building measures between the 10 riparian nations. Agreement has been achieved based on the shared benefits of water development projects. Negotiations have been successful as a result of agreed principles of cooperation and participation, equitable use of the waters of the Nile and a win-win strategy of mutual gain.<sup>1</sup>

## Tigris-Euphrates Basin

Modified from Le Monde Diplomatique, 2001. [http://maps.grida.no/go/graphic/regulation\\_of\\_the\\_tigris\\_and\\_euphrates\\_rivers](http://maps.grida.no/go/graphic/regulation_of_the_tigris_and_euphrates_rivers).



**Countries:** Iraq, the Syrian Arab Republic, Turkey, Saudi Arabia and Iran

Bilateral agreements on cooperative management of the Tigris-Euphrates river basin between Iraq and the Syrian Arab Republic abound. While these have emerged from water conflict, they have proved enduring, being based on common interests and the principle of equitable use.

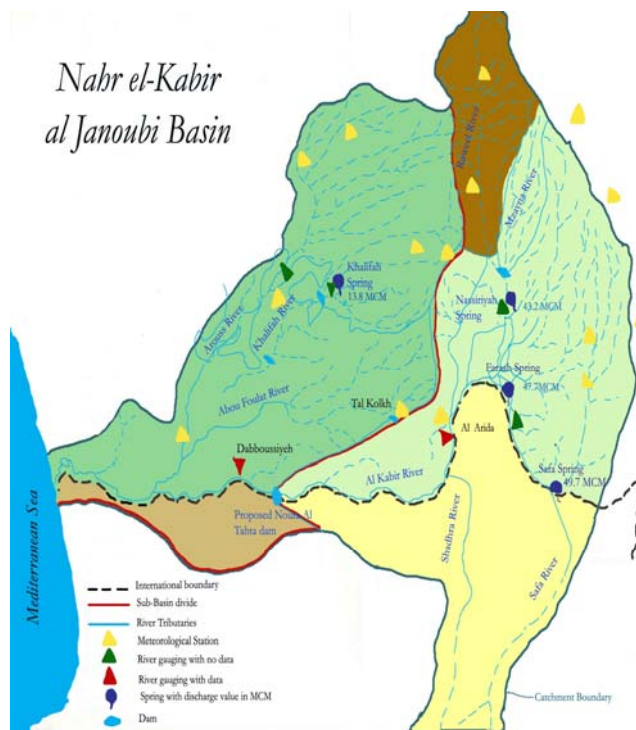
Historically, the Treaty of Friendship and Good Neighbourliness between Iraq and Turkey provided the foundations for a basin-wide management framework, but this failed as a result of conflict over the development of Turkey's Southeastern Anatolia Project and the filling of the Ataturk Dam.

Joint technical committee meetings between the Syrian Arab Republic and Turkey have taken place since the early 1980s and a protocol was signed between the two States in 1987, stipulating minimum guaranteed flows of the Euphrates River into the Syrian Arab Republic.<sup>7</sup>



## Orontes and Nahr el-Kabir

Modified from Shaban, A., Khawlie, M., Abdallah, C. and Awad, M. 2005. Hydrological and watershed characteristics of the El-Kabir River, North Lebanon. *Lakes and Reservoirs - Research and Management*, 10 (2): 93-101.



**Countries:** Lebanon, the Syrian Arab Republic and Turkey

Negotiations between Lebanon and the Syrian Arab Republic over the waters of the Orontes and Nahr el-Kabir rivers have produced two agreements, both based on principles drawn from the United Nations Convention on the Law of the Non-navigational Uses of International Watercourses. These agreements offer incentives for mutual gain, based on the joint construction of two dams, reflecting the interests of both countries in regulating water flows and increasing storage capacity. Progress on the joint dam on the Orontes river is proceeding apace after the two countries recently signed a memorandum of understanding reiterating the call for such a dam to be built.<sup>8</sup>

## Jordan River Basin

Modified from United Nations Department of Field Support, Cartographic Section.  
<http://www.un.org/Depts/Cartographic/english/htmain.htm>.



**Countries:** Jordan, Lebanon, the Syrian Arab Republic, Palestine and Israel

Basin-wide negotiations over the Jordan river basin can be traced back to the Johnston Plan of 1953, which provided an allocation of surface water resources with the incentive of finance for water development projects by the United States of America. Although generally agreed upon, but not ratified, the Johnston Plan failed to address the issue of shared groundwater resources.

There are few bilateral water-sharing agreements over the Jordan. Basin-wide negotiations are hindered both by the Israeli occupation of Arab lands, which have made it the upstream riparian, and by thorny political issues, as yet unresolved. It remains clear that in the absence of a political settlement of the Arab-Israeli conflict, the five riparian nations of the Jordan are unlikely to reach a basin-wide agreement. The conflict is a major factor in the nationalistically-oriented, unilateral and unsustainable water management of the river basin.<sup>1</sup>

## Mediterranean Basin from the West Bank to Gaza

Modified from CNRS/IL, GORS. 2002. *Application of Remote Sensing in Studying the Hydrogeology of Occidental Lebanon*. CNRS, GORS.

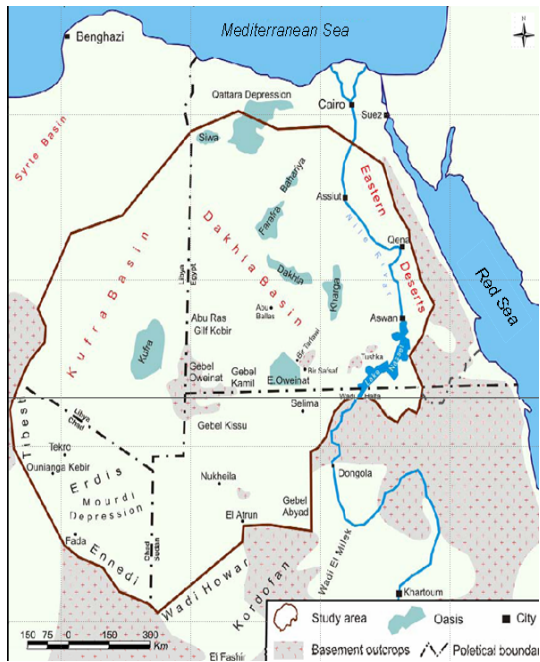


**Countries:** Palestine and Israel

Water continues to be an integral part of the Israeli-Palestinian conflict. Control and access to the groundwater reserves of the Mediterranean basin from the West Bank to Gaza are inextricably linked to the ongoing conflict and peace process. Negotiations are hindered by Israeli reluctance to negotiate over “established rights” over resources in occupied lands, zero-sum thinking, power imbalances, lack of trust, absence of agreed-upon water sharing principles, and linkages to non-water-related political issues. Water-sharing negotiations in the Mediterranean basin from the West Bank to Gaza have therefore reached an impasse.<sup>1</sup>

## Nubian Sandstone Aquifer

Modified from Klitzsch, 1994. <http://sundoc.bibliothek.uni-halle.de/diss-online/07/07/H1/78/14.pdf/>.



**Countries:** Egypt, the Sudan, Chad and the Libyan Arab Jamahiriya

The Nubian Sandstone Aquifer covers approximately 2.2 million square kilometres. It is the oldest and largest fossil aquifer in north-east Africa. Large areas of the aquifer have little or no hydraulic data. Regional maps have been developed with the full involvement of the four riparian States. Data and information have also been compiled and stored in a regional information system. This system is designed to assist decision-makers, planners and stakeholders in their policy choices and facilitate transparent sharing of information between the four riparian countries.<sup>9</sup> One of the largest uses of the aquifer is made by the Libyan Arab Jamahiriya, through the Great Man-made River Project, one of the largest engineering and irrigation projects in the world. It is estimated that it conveys 6.5 million cubic metres of water every day for drinking and agricultural purposes.

## Alluvial Aquifer

Martin, N. 2001. BGR.



**Countries:** Oman and the United Arab Emirates

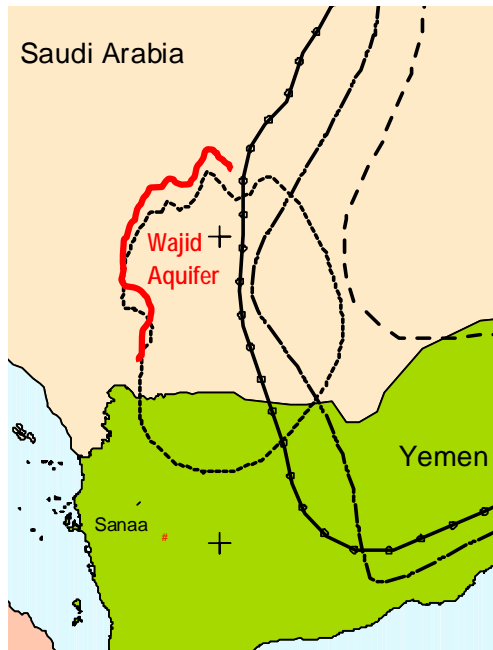
This shared aquifer system is a shallow, generally alluvial aquifer. It is the most important water resource in the eastern region of Abu Dhabi and the Adh Dhahirah district of Oman.

Overexploitation of its fresh groundwater for agriculture is a major problem. A water balance deficit exists on both sides of the shared aquifer, although to a much greater extent in the United Arab Emirates. To deal with this deficit, a number of water demand measures have been implemented and enforced in Oman. Well drilling and changes in well depth or pumping rate require permission, and new groundwater development is generally not permitted. In Abu Dhabi, the groundwater deficit is met by increased conveyance of desalinated water from the coast to the agricultural areas in the eastern region.

Limited cooperation projects exist between the United Arab Emirates and Oman for managing shared groundwater resources.<sup>10</sup>

## Wajid Sandstone Aquifer

Modified from ESCWA. 2008. *The Importance of Inter-State Cooperation in the Management of Shared Aquifers in the Arabian Peninsula*. Internal document.



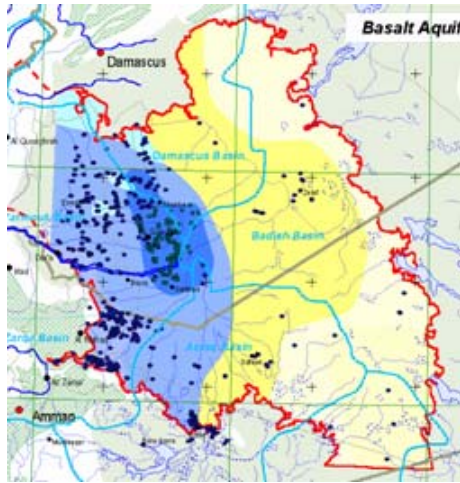
**Countries:** Saudi Arabia and Yemen

The Wajid Sandstone aquifer lies in north-western Yemen and south-western Saudi Arabia. Water from the aquifer is used for domestic and agricultural consumption and is suffering from severe overexploitation. Traditionally, the exploitation of groundwater was limited to dug wells. The abstractions from dug wells were self-regulating and did not exceed the annual recharge. Overdrafting of groundwater from the Wajid Sandstone aquifer started at the time of borehole construction in the early 1980s.<sup>11</sup> The implementation of sound management strategies for the aquifer, however, is facing the additional challenge of political strife in the Yemeni parts of the basin. In recent years, the Wajid Sandstone aquifer has also gained importance for Saudi Arabia in the wake of economic development in the south-western border region. Cooperation between the two countries on the management of

the shared aquifer has been limited to a number of informal contacts made in the course of a comprehensive unilateral hydrogeological study currently being conducted by Saudi Arabia.

## Jabal el-Arab Basaltic Aquifer

Martin, N. 2001. BGR.



**Countries:** Jordan, Saudi Arabia and the Syrian Arab Republic

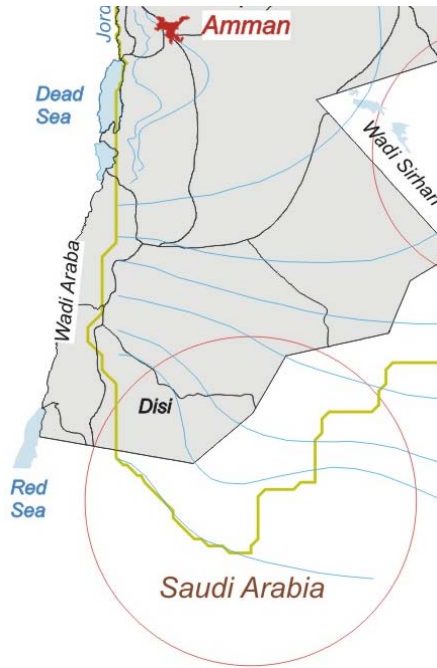
The aquifer covers an area of 15,000 square kilometres. No formal agreement exists between the three countries for managing the shared aquifer. It is a renewable aquifer, but overabstraction has already caused periodic reductions of springs that emanate from it. Drought conditions in recent years have also affected surface water flow in the basin, which is draining to the west through the Yarmouk river.

Under a 1987 bilateral agreement between Jordan and the Syrian Arab Republic, the “Unity” dam was jointly constructed on the Yarmouk river, but reduced water inflow has sparked debate between the riparians on

upstream water use. A memorandum of understanding between Jordan and the Syrian Arab Republic has been drafted for cooperative management of the aquifer, but has not yet been signed, although, as outlined in the memorandum, an existing joint committee between the two countries has the potential to spur cooperative management.<sup>12</sup> In 2007, Jordan and the Syrian Arab Republic agreed on implementing a joint study on the Yarmouk basin, which will also include parts of the Basalt aquifer.

## Rum-Disi-Saq Aquifer System

BGR. [http://www.bgr.bund.de/c/n\\_092/nm\\_324630/EN/Themen/Wasser/Projekte/TZ/TZ\\_Jordaniens/gw\\_modellierung\\_fb\\_en.html&usq=\\_bcxflagXqGU757jCZdujWp2ySbw=](http://www.bgr.bund.de/c/n_092/nm_324630/EN/Themen/Wasser/Projekte/TZ/TZ_Jordaniens/gw_modellierung_fb_en.html&usq=_bcxflagXqGU757jCZdujWp2ySbw=)



**Countries:** Jordan and Saudi Arabia

The aquifer covers an area of 74,000 square kilometres from Tabuk in Saudi Arabia to the northern tip of the Dead Sea. It is considered a fossil aquifer, since no appreciable recharge occurs. The water of the Disi aquifer has historically been used for local agriculture and drinking water for small municipalities. Recently, however, Jordan has launched a project to pump water from Disi to Amman for large-scale municipal drinking water supplies in order to take advantage of the large reserves stored in the Disi. Previous studies have estimated that the water supply will last from 20 to 100 years, depending on abstraction rates, although these estimates are only approximate and depend heavily on the rate of abstraction.

No official agreement exists between Jordan and Saudi Arabia regarding the use of the aquifer.<sup>13</sup>



## **Recommendations For A Shared Water Strategy**

All the above-mentioned basins, and many others not touched upon in this brief overview, are vital to the water supply of countries in the ESCWA region. In some of these basins, formal agreements for cooperation and sharing exist, while in others there are only informal or de facto arrangements. In others still, disagreement on the status quo means that a solution has yet to be found. Recommendations that would bring negotiation and cooperation to the forefront include the following:

- The general principles of international water law should be adhered to by all countries. These principles can create a common framework for discussions to take place and basin-specific arrangements to be made.
- The United Nations Watercourses Convention and the Law on Transboundary Aquifers should be reviewed by States and ratified. Together, they represent the apex of international consensus on the use of transboundary water.
- Joint technical activities, such as monitoring or data collection, can serve to build trust between States on a technical level. Skills and knowledge can also be shared through joint activities.
- A regional water databank should be created to compile data on water resources in the region. This databank could serve as a legitimate source of information on the state of water resources for the mutual benefit of negotiation partners.

For more information or to request further copies of these fact sheets, please e-mail ESCWA at: [escwa-h2o@un.org](mailto:escwa-h2o@un.org).

## Endnotes

<sup>1</sup> Adapted from United Nations Economic and Social Commission for Western Asia (ESCWA), BGR and GTZ. 2004. *Enhancing Negotiation Skills on International Water Issues in the ESCWA Region*. Beirut: ESCWA.

<sup>2</sup> International Law Association. 1996. *The Helsinki Rules on the Uses of the Waters of International Rivers*. In Report of the Sixty-seventh Conference, Helsinki. Full text available from the United Nations Food and Agriculture Organization at: <http://www.fao.org/docrep/005/w9549e/w9549e08.htm#bm08.4.10.13>.

<sup>3</sup> United Nations. 1997. *Convention on the Law of the Non-navigational Uses of International Watercourses*. New York: United Nations. Full text available from the United Nations Treaty Collection at: [http://untreaty.un.org/ilc/texts/instruments/english/conventions/8\\_3\\_1997.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf).

<sup>4</sup> United Nations. 2008. *Law of Transboundary Aquifers*. New York: United Nations. Full text available at: <http://documents.un.org> under A/C.6/63/L.21.

<sup>5</sup> ESCWA. 2001. *United Nations Economic and Social Commission for Western Asia Resolution 233 (XXI) on the Strengthening of Cooperation Between Member Countries in the Field of Shared Water Resources*. Beirut: ESCWA. Full text available at: <http://www.escwa.un.org/about/gov/resolutions.asp#33>.

<sup>6</sup> ESCWA. 2003. *United Nations Economic and Social Commission for Western Asia Resolution 244 (XXII) on Cooperation Between ESCWA Member Countries With Respect to Shared Water Resources and the Arab Network for the Integrated Management of Water Resources*. Beirut: ESCWA. Full text available at: <http://www.escwa.un.org/about/gov/session22/Engresol.pdf>.

<sup>7</sup> Adapted from ESCWA. 2003. *The Potential Role of ESCWA in Conflict Resolution and Management of Shared Water Resources*. Unpublished working paper.

<sup>8</sup> Syrian Arab News Agency. *Text of Understanding Memo between Syria and Turkey*. 17 October 2007.

<sup>9</sup> Adapted from ESCWA. 2003. *Characterization of the NSAS*. Unpublished internal report.

<sup>10</sup> Adapted from ESCWA. 2001. *Interim Report on the Proceedings Regarding the Shallow Aquifer Shared by Oman and the United Arab Emirates*. Unpublished internal report.

<sup>11</sup> Al Shami, A.A. and Al-Dubby, S.A. 2004. *Yemen-Saudi Shared Aquifer (Wajid Sandstone)*. ESCWA and BGR Desk Study. Beirut: ESCWA.

<sup>12</sup> Adapted from ESCWA. *Knowledge Mapping and Analysis of ESCWA Member Countries' Capacities in Managing Shared Water Resources*. To be published in 2009.

<sup>13</sup> Adapted from ESCWA. 1998. *Transboundary Water Resources in the ESCWA Region: Utilization, Management and Cooperation*. Beirut: ESCWA.