

Transboundary Water and Transboundary Aquifers in the Middle East: Opportunities for Sharing a Precious Resource

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ABSTRACT

Surface and groundwater resources in the Middle East are to a large extent transboundary. While much attention is given to the surface water and river courses crossing national boundaries in the region little has been achieved in understanding the sometimes hydrogeological complex transboundary aquifer systems. Much political attention is given to the rivers Euphrates, Tigris, Jordan and Nile as they connect Arab and non Arab countries. However, also between the Arab countries surface and groundwater crosses political boundaries and only few regional organizations address the need for improved internal Arab cooperation on shared water resources.

An overview of confirmed and potential transboundary shared surface water and aquifers between ESCWA member countries and between ESCWA member countries and non member countries will be presented. Often detailed hydrogeological knowledge is still limited at national or trans-national level on the individual transboundary shared aquifer, some bilateral or multilateral cooperation between riparians (water course and aquifer states) have been taken place and are taking place in the region. In most cases the principles underlying the UN 1997 Convention on the Law of the Non-navigational Uses of International Watercourses and the UN General Assembly 2008 Resolution on the Law of Transboundary Aquifers as well as basic principles of IWRM applied in a transboundary context are already considered to some extent as guidance for individual cooperation mechanisms that may eventually develop into bilateral, multilateral or regional agreements and/or conventions.

ESCWA supports its member countries towards bilateral as well as regional cooperation mechanisms through a number of tools such as the cooperation through the Committee of Water Resources and activities of the ESCWA work plan, shared water resources assessments and guidance, development of negotiation skills, dispute resolution and regional advisory services responding to specific requests from member countries.

Keywords: transboundary water, transboundary aquifers, cooperation, regional organisations, regional mechanism

1. INTRODUCTION

Processes at global level led to the 1997 United Nations General Assembly resolution on the Convention on the Law of the Non-navigational Uses of International Watercourses (so-called watercourse convention, UN GA, 1997) and the 2008 United Nations General Assembly resolution on the Law of Transboundary Aquifers (UN GA, 2009). Additionally a number of regions have addressed transboundary water resources (sometimes also with direct reference to groundwater) through adapted regional legal instruments such as the water convention and related protocols of the United Nations Economic Commission for Europe (UN ECE, 1992), the revised water protocol of the Southern African Development Community (SADC, 2000) or the European Union Water Framework Directive (EU, 2000) with its EU Groundwater Directive (EU, 2006).

In the Middle East most of the larger surface water as well as groundwater systems are of transboundary nature and considered shared systems. So far no regional legal instrument is available to assist the countries in the region in the management and cooperation of these shared resources. Lately, the League of Arab States (LAS) through the Arab Ministerial Water Council (AMWC) agreed

per resolution to prepare a regional legal framework to serve as a basis for cooperation and management of shared water resources within the Arab region. The present paper elaborates on the situation at the global and regional levels while discussing also possible options for a future regional legal framework applicable in the ESCWA / Arab region.

2. PROCESSES AT GLOBAL LEVEL AND IN OTHER REGIONS

Based on a number of processes and discussions, particularly the processes towards and following the 1966 Helsinki Rules on the Uses of the Waters of International Rivers (ILA, 1966) the global discussion led after thirty years to the 1997 United Nations General Assembly resolution on the Convention on the Law of the Non-navigational Uses of International Watercourses (so-called watercourse convention, UN GA, 1997). 13 years later and despite the fact that a large majority of states who initially voted for the UN GA resolution¹, the watercourse convention is one of a few multilateral environmental agreements that has still not come into force due to the fact that it has not fulfilled the required 35 ratifications by member states. A number of publications have reviewed reasons for this delay (e.g. Salman, 2007).

The definition of the term “watercourse” formulated in this convention focussed mainly on the actual water in a surface water body or in groundwater connected to a respective surface water body (“*system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus*”, Art. 2, UN GA, 1997). It was recognised that this watercourse definition does not reflect on so-called fossil, i.e. non-renewable groundwater resources or groundwater with negligible recharge which is normally not connected to a surface water body and/or not flowing into a common terminus. Furthermore the suitability of groundwater for different uses often depends on its mineral content/composition (i.e. groundwater quality) which again is closely related to the interaction between water and rock and/or potential human interference in the natural system (i.e. pollution). This led to an additional focus on aquifers or aquifer systems comprising the groundwater within the saturated zone and its actual reservoir rock (“*container*”), instead of only the groundwater itself.

As a matter of particular interest in additionally addressing those groundwater resources which are not covered in the watercourse convention the UN International Law Commission (UN ILC) was mandated by a UN GA resolution (UN GA, 2003) to address such groundwater as part of their programme of work under the topic “shared natural resources”. In fact the topic “shared natural resources” comprised groundwater, oil and natural gas, recognising some similarities between fossil, i.e. non-renewable groundwater, oil and natural gas resources. .

In a number of sessions the UN ILC decided to widen its approach towards all groundwater, and not only addressing the groundwater being excluded in the water course convention. The final UN ILC draft articles on transboundary aquifers also include provisions for the management of recharge and discharge areas of transboundary aquifers. These may actually already be covered through the provisions of the watercourse convention, esp. in the case of an international watercourse being part of the recharge or discharge zone of a transboundary aquifer. Based on the UN ILC work a list of draft articles on the law of transboundary aquifers incl. commentaries (UN ILC, 2008) was brought into debate at the UN General Assembly and led to the UN GA resolution (UN GA, 2009) to recommend the draft articles for consideration by the member countries. The resolution includes the following decisions:

“4. Takes note of the draft articles on the law of transboundary aquifers (...) and commends them to the attention of Governments without prejudice to the question of their future adoption or other appropriate action;

¹ The resolution received 103 votes in favour to 3 against with 27 abstentions.

5. *Encourages the States concerned to make appropriate bilateral or regional arrangements for the proper management of their transboundary aquifers, taking into account the provisions of these draft articles;*
6. *Decides to include in the provisional agenda of its sixty-sixth session an item entitled “The law of transboundary aquifers” with a view to examining, inter alia, the question of the form that might be given to the draft articles.”*

Due to the nature and content of the individual articles and their interpretation given in the commentaries of the UN ILC the law of transboundary aquifers seems to be partly overlapping with the watercourse convention. Other criticism makes explicit reference to the states’ (limited) sovereignty over natural resources (McCaffrey, 2009). Hence a debate at global level might be necessary to decide how the content of both legal instruments could possibly be used in the future without causing any discrepancies or misunderstandings.

The United Nations Economic Commission for Europe (UN ECE) developed the ECE water convention (UN ECE, 1992) following similar principles of the Helsinki Rules. The convention and its protocols provide a solid basis for the management and cooperation on transboundary water for ECE member states with a particular focus on pollution prevention and a clear follow up mechanism with a secretariat and regular meetings of the parties to the convention. In 2003 the UN ECE decided to open their regional convention also to states not being members of the UN ECE (UN ECE, 2003). This amendment is currently still in the process of ratification and hence not yet in force.

Based on the global watercourse convention the Southern African Development Community (SADC) developed an adapted set of articles in the revised SADC water protocol for the southern African region (SADC, 2000). The provisions of the SADC water protocol already allow a more integrated approach to transboundary surface and groundwater in one legal framework document. The SADC water protocol was further used in the region to provide the basis for a number of specific bi- or multilateral basin agreements and commissions, addressing surface and groundwater according to the local / regional needs.

Within the European Union (EU) another rather water quality and environmental protection related approach led to the EU Water Framework Directive (EU WFD, EU, 2000). Groundwater issues were later incorporated through the EU Groundwater Directive (EU, 2006). Both instruments together constitute a comprehensive tool for the management of transboundary surface and groundwater resources for states which are organised in an interstate mechanism such as the EU. It might be worth mentioning that the EU Groundwater Directive developed a new terminology; specific groundwater or aquifer management units, i.e. aquifer sub-units, so-called “*groundwater bodies*” which do not necessarily comprise the whole aquifer or aquifer system.

Since the UN GA resolution on the law of transboundary aquifers addresses groundwater and the reservoir rock in a new, more holistic way, it remains to be seen whether amendments to the existing conventions, protocols or directives will be needed at the regional level or if the existing legal instruments may be applicable to cover these groundwater related aspects already.

3. CHALLENGES FOR WATER RESOURCES MANAGEMENT IN THE ESCWA AND ARAB REGION

The alarming situation with regard to water resources availability in most countries of the region has led to greater reliance on: (1) external renewable surface water resources that originate outside their national borders, (2) non renewable groundwater reserves with a trend towards exhaustion of many aquifers, and (3) non-conventional water resources in the form of desalinated sea and brackish waters as well as treated wastewater. Additionally to the overall scarcity concerns, national water governance and management issues are still causing serious concerns esp. with regard to water quality

protection and allocation of large water quantities to less productive and/or less socially relevant sectors.

It is estimated that the bulk of all available surface water resources in the region, represented by the major international rivers (Nile, Euphrates, Tigris, and Senegal), originate outside of the region’s borders, and in some cases lead to political tensions between downstream and upstream countries. Although these major rivers represent a large percentage of the renewable water resources, there are many smaller surface water resources (rivers, streams, seasonal spate flows, renewable groundwater, etc.) that cross borders of the region’s countries and as such need to be managed jointly in an integrated manner in order to maximize their socio-economic returns.

Moreover, due to the development in drilling and pumping technologies during the past four decades, countries in the region are developing and exploiting aquifers at an increasing rate, with groundwater gaining importance for domestic water supplies and increasingly for irrigation purposes. As most shallow aquifers are already extensively used, countries are investing further into the exploration and development of deeper and farther aquifers, which, in many cases are part of more extensive regional cross-boundary aquifers. Large parts of the region are further underlain by extensive rather non-renewable groundwater / aquifer systems. While renewable groundwater often links to surface water courses and may be included in their overall management, non-renewable groundwater resources require specific adapted management approaches.

Non-conventional water resources are gaining prime importance in parts of the region, particularly within the countries of the Gulf Cooperation Council. It is estimated that the desalination capacity of the Arabian Gulf region amounts to half of the world’s capacity. At the same time the region faces serious limitations in industrial capacity, research and development in desalination technologies.

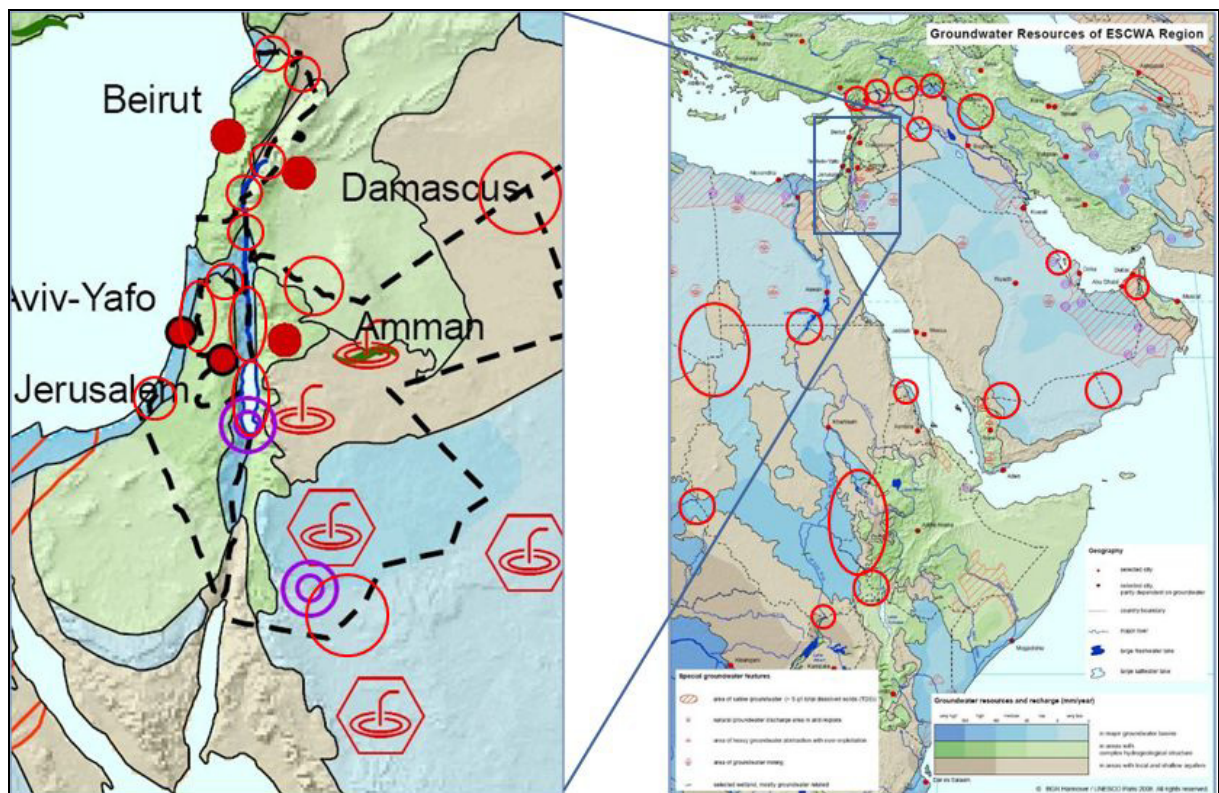


Figure 1: Proven and potential transboundary / shared aquifers between ESCWA member countries or between ESCWA member countries and neighbouring countries (presented with circles and ovals, location and size only indicative, as full horizontal extent often not fully defined), based on WHYMAP (2008)

ESCWA assists its member countries in issues related to shared water resources, based on mandates of two ministerial session resolutions; Resolution 233 (UN ESCWA, 2001) and Resolution

244 (UN ESCWA, 2003). But already since the 1990s ESCWA has continuously worked jointly with its member countries, regional and external partners (such as ACSAD, BGR, Germany and others) towards a better understanding of the hydrogeological features of transboundary aquifers in the ESCWA region. Based on a number of publications (e.g. UN ESCWA, 1992) it is possible to delineate a range of more than 20 transboundary aquifer systems in the region (Fig. 1). An ongoing study together with the German Federal Institute for Geosciences and Natural Resources (BGR) is currently undertaken to build an inventory of the most relevant transboundary water resources (surface water and groundwater / aquifers) in Western Asia. The approach and preliminary results will be presented in a separate paper (Al-Mooji and Renck, 2010).

4. TOWARDS REGIONAL LEGAL INSTRUMENTS FOR SHARING WATER RESOURCES

Realizing the pivotal role of water for sustainable development and the compounded impacts of water scarcity at the local, national and regional levels, the League of Arab States (LAS) established the Arab Ministerial Water Council (AMWC). During its first session in June 2009 the Council agreed that water security is among the key concerns facing the region and set out to prepare a regional strategy for water security in the Arab region. The Council further identified shared water resources as a regional priority and emphasized the importance of using all available international water-related legal instruments to secure and protect Arab water rights.

In this context, the Council passed a resolution during its second session in July 2010 to:

“Invite the Center of Water Studies and Arab Water Security and the United Nations Economic and Social Commission for Western Asia (ESCWA), in coordination with the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD) and the Stockholm International Water Institute (SIWI) to prepare a draft legal framework on shared waters within the Arab Region for its discussion during the next meeting of the Technical Scientific Advisory Committee of the Ministerial Council in January 2011.”

Arab Ministerial Water Council, Session 2, Resolution 4, Item 3 (AMWC, 2010)

In the absence of other regional legal instruments, this development can be viewed as a major step towards improved legal arrangements among the Arab countries. Based on the various regional meetings related to the UN GA transboundary aquifers resolution preceding the Council decision it can also be seen in relation to the UN GA recommendation No 5 of the resolution on the law of transboundary aquifers (*“Encourages the States concerned to make appropriate bilateral or regional arrangements for the proper management of their transboundary aquifers, taking into account the provisions of these draft articles”*, UN GA, 2009).

The Arab region has the chance to clearly position itself with regard to the management of shared water resources not only on the wider regional level (between the region and the bordering non-Arab countries), but also between countries in the region. According to discussions with committee members and based on the wording of the above resolution, the ultimate aim of the proposed legal framework is to serve as a guide that sets the main principles upon which riparian countries / aquifer states of shared water resources can develop their specific joint management and allocation agreements. The term “shared water resources” in the context of the resolution is understood as both, surface and groundwater (renewable and non-renewable) that exist, flow across, underneath and/or along common national borders of two or more countries.

Currently the mandated organisations have started a phased approach to the implementation of the AMWC’s resolution and will present the progress during the next meeting of the AMWC’s Technical Scientific and Advisory Committee in January 2011 as requested. Of particular interest is the question to what extent the proposed draft Arab legal framework shall address specific factors or rules for water allocation between riparian or aquifer states, i.e. to specify rules for the implementation of one of the general principles; the equitable and reasonable utilization.

The general guiding principles most often referred to in the different international legal instruments can be summarized as follows: (1) (limited) sovereignty, (2) general obligation to cooperate, (3) equitable and reasonable utilization, and (4) obligation not to cause significant harm. Of these four general principles, it seems that the general obligation to cooperate is the least contentious. While this principle in its generality enjoys a wide consensus among the different countries, it is realized that there might be differences on the degree of details to be included in any legal instrument at the wider international level, i.e. a framework convention. The other three general principles, however, have been a source of contentious discussions.

Generally, positions of riparian countries on these principles are mostly determined by their geographical locations. Upstream countries tend to opt for the inclusion of the sovereignty principle, which gives them greater control over shared water resources. Although the sovereignty principle is aligned with the UN charter, unlike land and fixed borders, water resources are of a mobile nature distributing benefits across borders, and as such are more likely to be justifiably subject to only limited sovereignty. According to the same argument, downstream countries are usually against the inclusion of the sovereignty principle over shared water resources. On the other hand, downstream countries tend to put greater emphasis on the no significant harm principle as the overriding principle that determines water allocation between riparian countries. For the same reasoning, upstream countries are more likely to object to such interpretation and tend to align their position towards placing more weight on the sovereignty principle, or if not successful in that endeavour, towards the equitable and reasonable utilization principle thinking that this gives them an edge over downstream countries.

From the general reading of the countries position towards the equitable and reasonable utilization principle, it seems that all countries are in agreement of its notion of equity and fairness. However, the countries may differ in the weighing of the different factors that determine an equitable and reasonable utilization of a shared water resource. This is especially important when existing legal instruments include a wide range of different factors which have to be considered in defining and identifying an equitable and reasonable use and share of shared water resources. There are some arguments about the question if

- it is advisable to formulate factors determining equitable and reasonable utilization already at the stage of a regional legal framework or alternatively
- to leave the allocation rules to the development of basin-specific bi- or multilateral agreements.

By clarifying the basic factors contributing to the elaboration of allocation rules, the discussions on the principles of sovereignty and no significant harm may become less contentious. The latter approach leaves the weighing of factors which determine equitable and reasonable utilization to the countries in specific basin agreements and may see the Arab legal framework more as guidance on how to proceed in specific basin setups rather than as a prescription of rules to be applied.

5. CONCLUSIONS

While a number of legal instruments already exist at global and at various regional levels, the Arab region only recently decided per resolution of the AMWC to develop a legal framework for the management of shared water resources between its member countries. At global and regional level it might be considered necessary to review existing legal instruments in the light of the UN GA resolution on the law of transboundary aquifers. The recent developments in the Arab region, to go into the drafting of a legal framework document, allow taking into account all different legal instruments at global level and from other regions to develop the best possible set of legal principles and arrangements for the needs in the Arab world. UN ESCWA continues to serve its member countries and support the LAS in the processes towards better inter-state management and cooperation on shared transboundary surface water resources and aquifers through mandates by ESCWA Ministerial Session resolutions, its regular programme of work, meetings of the Committee on Water Resources, Expert Group Meetings and through Regional Advisor services based on requests from the member countries.

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