

Review

Integrated Water Resources Management work in the Euphrates and Tigris River-Basin

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The water crisis in the Middle East is worsening. The indicators of this crisis include increasing population, scarce and unequally-distributed water resources, competing claims of co-riparian countries, conflicts in utilizing of transboundary waters, and deficiencies in international water law. The pressure that these problems cause in terms of water resources is most evident in transboundary river basins. These conditions have led to the emergence of the concept of integrated water resources management as a potential solution to this issue on an international level. The purpose of this study was to address the obstacles to management of integrated water resources in Euphrates-Tigris basin from the viewpoints of Turkey, Iraq and Syria. Also, certain principles originating from national and international law, as well as current specific data were taken into consideration.

Key words: Integrated Water Resources Management, Turkey, Syria, Iraq, River Basin, Euphrates and Tigris.

INTRODUCTION

Many rivers around the world cross the borders of neighboring, which leads to the term "transboundary water". 145 countries are riparian to one or more of the world's 263 international basins; these basins, in which approximately 40% of the global population lives, cover nearly half of the earth's surface area (Giordano and Wolf, 2003). This fact reveals the extent of the problem, as well as the necessity for countries to cooperate in taking common action, within the context of differing economic, politic and socio-cultural structures. The difficulties of agreeing common use policies based on fairness and equity for waters that are shared by many countries inevitable leads to tensions and potential conflicts. Throughout history, there have been numerous conflicts involving many water basins – a situation which persists to the present day. The history of international water agreements goes back to 2500 BC, when two Sumerian cities, Lagash and Umma, involved in the first documented conflict over water resources, concluded an agreement that concerned the Tigris River. The number of such agreements has increased until the present day. The Food and Agricultural Organization of the UN has identified more than 3600 treaties dating from AD 804 to 1984 (FAO, 1978, 1984). From an initial emphasis on the

utilization of waters for transportation purposes, such agreements have changed in scope to include international non-navigational issues (Biswas, 1999). However, no internationally-agreed and binding legal principles have been established, as no framework has been accepted which would successfully achieve a balance between the rights of the nations and which also fulfils their competing demands. This has resulted in increased problems related to water management. These problems are becoming increasingly interconnected and intertwined with other development issues, and also with social, economic, environmental, legal and political considerations, at local and national levels, and sometimes even at regional and international levels (Biswas, 2008). In particular, the uncoordinated and independent actions of basin countries may result in some problems for which remedies cannot easily be found (Altinbilek, 2004).

There had been many studies at national and international level to establish the principles that would be acceptable to all parties to overcome the present conflicts. During this long-term process, the term "IWRM (Integrated Water Resources Management) has emerged as a potential solution. IWRM promotes the coordinated

development and management of water, land and related resources in an equitable manner in order to maximize the resultant economic and social welfare without compromising the sustainability of vital ecosystems² (GWP, 2000). The integrated management approach eliminates national borders, and takes geographical borders – and, in turn, basins- as the basic management unit and provides for common management amongst riparian countries on a basin basis. Although the definitions of integrated management are easily understood and its principles, in theory, appear easy to adopt, it has been difficult, in practice, to achieve the international co-operation, which is necessary for successful implementation. One of the basins in which this approach has not been successful is the Euphrates Tigris basin, the most important water resource of the Middle East. Despite attempts over many years to agree an integrated management solution, conflicts between the riparian states in the Euphrates and Tigris river basin continue. Three riparian countries: Turkey, Iraq and Syria have presented their requests, expectations and management principles, but a common solution, which provides the optimal benefit, is yet to be achieved.

OBSTACLES TO INTEGRATED WATER MANAGEMENT IN THE EUPHRATES TIGRIS BASIN

The Euphrates and Tigris rivers irrigate a substantial part of the Middle East, and have historically formed the water resource and transportation route for the region, starting with the Sumerians in 3000 BC (Ucarol, 1993). The vital regional importance of the water resources has stimulated conflicts. The history of water-related disputes in the Middle East, particularly in the Euphrates Tigris basin, goes back 6000 years, and is described in many myths, legends and historical accounts that have survived from earlier times (Gleick et al., 1994). Actual “water war” occurred along the Tigris basin between the city-states of Lagash and Umma, over 4500 years ago (Wolf, 1998). Turkey, Syria and Iraq are the three major riparian countries within the basin; the issue of water resources management causes ongoing disputes among these riparian countries and therefore genuine international cooperation cannot be established.

The issue of international cooperation in transboundary waters has gained greater importance for Turkey, which is in accession process of EU Membership, upon introduction of the Water Framework Directive (Water Framework Directive 2000). This is because a primary principle of this Directive consists of the acceptance that river basins do not end on political borders, and establishment of transboundary cooperation. A difficult process awaits Turkey regarding the basins of the Euphrates and Tigris, while the country is undergoing a process of reflecting the Directive in domestic Turkish law. This period of legal harmonization will affect cooperation with Turkey’s co-riparians, Syria and Iraq

(Jagerskog, 2007).

It is obviously important for the region to establish an integrated management approach, which requires the protection of natural resources while aiming to promote economic development and social welfare. The idea of managing the Euphrates and Tigris rivers through an integrated approach is expressed not only between riparian states but also in different international platforms.

Conceptual and perceptual differences; historical conflicts; dissimilarities of legal, economic, cultural and demographic structures, as well as; geological and climatic differences, and; the strategic position of the waters, define relations between the riparian countries and present difficulties to international cooperation. These obstacles must be removed if the countries in the basin want to implement an integrated management approach in accordance with international legal principles and scientific data. Otherwise, the platform required for discussing transboundary cooperation and initiating integrated basin management will not be formed. Those factors which are deemed to be obstacles to integrated management are discussed below.

Basic differences between the riparian countries

Social, economic and cultural qualities; sovereign water resources; forms of water use; climate; consumption; and demands of the riparian countries within the Euphrates Tigris basin differ. Widening differences between countries and changing demands mean that a compromise becomes more difficult to achieve.

Firstly, it must be stated that these three countries are far from possessing vast amounts of water, which is illustrated by the following potentials (Table 1): Syria - 1,200 m³; Turkey - 1,430 m³; Iraq - 2,020 m³. These relatively modest water potentials mean that the riparian countries will be among those which will suffer from water shortages unless a rational and scientific method of water management is implemented.

Claims of sovereignty based on the relationship between the location of the two rivers and national borders are considered to form the basis of principles of use. Turkey’s thesis of limited national sovereignty is based largely on the fact that the rivers originate within Turkey and on the ratio of basin contribution. Contribution and Distribution of Euphrates and Tigris Flow data in this regard are shown in Table 2.

Turkey is currently engaged in the Southeast Anatolian Project (GAP) to build 22 dams 19 hydroelectric plants and also includes 13 water development projects. To date, the project has fulfilled 76% of the planned energy production and 55% of the project-objectives for social development (DPT, Dokuzuncu Kalkinma Planı, 2007). The conflicts between the riparian countries have emphasized Turkey’s implementation process for this project, and severe problems have arisen with respect to the principles of water use. At that time, population

Table 1. Country characteristics.

Country	Population (people)	Area (km ²)	Amount of water per person (m ³)	Number of people per km ² (people)
Turkey	70,586,256 ³	814.578	1,430	86
Syria	18,448,752	185.180	1,200	99
Iraq	26,074,906	437.072	2,020	59

Table 2. Contribution and Distribution of Euphrates and Tigris Flow (Jagerskog, 2007.)

Country	River	Length (km)	Length (%)	Distribution of Basin Area (km ²)	Distribution of Basin Area (%)
Turkey	Euphrates	1,230	41	124,320	28
	Tigris	400	22	46.512	12
Syria	Euphrates	710	24	75,480	17
	Tigris	44	2	776	0.2
Iraq	Euphrates	1,060	35	177,600	40
	Tigris	1,418	76	209,304	54

pressures drove unilateral developments, particularly in southern Anatolia, with the Keban Dam (1965-1973), and in Syria, with the Tabqa Dam (Lowi, 1993). Syria and Iraq also utilize the water through dams; however there are many differences between the three states in terms of the quality and quantity of such projects (Table 3).

For a common compromise to be achieved, the national demands and water resource potentials need to coincide. When the sum of the demands of the copriarians exceeds the potential, a conflict is inevitable. This balance has not been established in the Euphrates-Tigris basin. The riparian countries still base their demands on several claims over the water potential. The water potentials of the rivers and the requests of the parties are shown in Table 4.

Conceptual and perceptual differences among the Riparian States *International water - Transboundary water approach*

There is an ongoing dispute among the riparian countries regarding the definition of the Euphrates and Tigris rivers. This dispute arises from the misleading perceptions of the rivers in two separate statuses, namely international waters. Syria and Iraq consider these waters as international waters, which need to be shared among all riparian countries; in contrast, Turkey claims these waters and transboundary are transboundary waters as long as the water flows within its boundaries.

²Different definitions of IWRM have been made by various persons and institutions (Ayanoglu,2008), (Van Hofwegen, Jaspers, 1999); (Mitchell, 1990), (White 1969), (Van der Zaag, 2005), (Moriarty et al, 2004),(Thomas and Durham, 2003), (Calder,1999) (European Commission Guidelines, 1998), (Transboundary Catchments 2006).

Transboundary countries have established a technical committee and strived to establish a common definition among the countries. Several terms have been suggested instead of "international waters", including contiguous waters, non-national waters, boundary waters, successive waters, and transboundary waters (Krishna, 1995). These terms were discussed during the 16th JTC Meeting, held in the presence of Turkey, Syria and Iraq; during the phase of issuing the final report from this meeting, Syria and Iraq stated that they regard the Euphrates as an international river. They have also emphasized the necessity of reaching an agreement on sharing the water of the river and have insisted on the prioritization of the need criteria specified by each country in the agreement (Kibaroglu, 2007a). During this meeting, Turkey argued that the Euphrates and Tigris rivers constitute a single transboundary water basin, and that their waters should be allocated according to objective needs (Kut, 1993). Since no common definitions could be agreed upon during these meetings, it has been impossible to proceed with the principles of use.

There are many different definitions related to water-usage within international agreements, such as "international drainage basins" adopted by The Helsinki Rules on the Uses of the Waters of International Rivers⁶ "transboundary waters" adopted by Convention on the Protection and Use of Transboundary Water Courses and International Lakes⁷. "International watercourse adopted by Convention on the Law of the Non Navigational Uses of International Watercourses⁸.

The Turkish definition is "one that has its opposing

³http://www.tuik.gov.tr/PreTablo.do?tb_id=39&tb_adi=Nufus%20Istatistikleri%20ve%20Projeksiyonlar&ust_id=11

⁴<http://www.wwf.org.tr/su/rakamlarla-su-sorunu/duenyada-su>

Table 3. Existing major dams in the Euphrates-Tigris basin (Altinbilek, 2004)

Country	Euphrates		Tigris		Total number of dams	Total power ⁵ HP(MW)
	Quantity	Area (km ²)	Quantity	Area (km ²)		
Turkey	5	1.844.7	6	166.7	11	6803
Syria	4	804	-	-	4	1505
Iraq	5	2.776	8	340.4	13	980

Table 4. Water potentials and consumption demands of Riparian countries within the Euphrates-Tigris (Denk, 1997).

Country	Euphrates		Tigris	
	Water potential (billion m ³ /year)	Consumption demands (billion m ³ /year)	Water potential (billion m ³ /year)	Consumption demands (billion m ³ /year)
Turkey	32.58 (88.7%)	18.42 (%51,8)	25.24 (51.8%)	6.87 (14.2%)
Syria	4.00 (11.3%)	11.50 (%32,3)	0 (0%)	2.60 (5.3%)
Iraq	0 (0%)	23.00 (%64,4)	23.43 (48.2%)	45.0 (95.5%)

banks under the sovereignty of different countries renders both rivers transboundary rather than international" (Chalabi and Majzoub, 1995). International organizations, academic environments and enforcers include both terms in their works. Even though the nature of the waters of the Euphrates and Tigris are determined in variance with one another, there are not internationally accepted rules of law in this regard. In order to define a river as international water, an agreement that is signed by all countries in the basin is required. There are no agreements with respect to these two rivers, which involve Turkey, Syria and Iraq as parties to the agreement (Pazarci, 1993). Therefore it does not seem possible to define these rivers as international rivers. Within the current legal framework, each riparian state with access to transboundary waters has the sovereign right to make use of the water (Bagis, 1997).

Single Basin- Two Basins approach

The acceptance of the Euphrates and Tigris rivers as a single basin is also disputed among the riparian countries. Turkey claims that the basin is a whole in terms of their upper water collection and lower distribution basins. Confluence of the natural courses of two rivers in Shatt-al –Arab and the presence of Thartar Canal (both in Iraq) are two supporting arguments for this claim. Iraq states that the hydraulic systems of these two rivers should be considered separate, because the two

rivers irrigate different basins. Iraq therefore intends to keep the common irrigation policy off the negotiation table (Tacar, 1998). A proposed common irrigation policy would involve connecting the confluence of the two rivers by canals and waterways, thereby forming a single basin. The perception of these rivers as either one or two basins is of importance to the water transportation between these two rivers. Turkey and Syria's use of the Tigris River is rather limited, and so there is less potential for problems to arise with respect to the Tigris. Iraq makes great use of the Tigris River and has the ability to confine a portion of it in order to increase the water in the Euphrates through Thartar Lake (Beaumont, 1978; Anderson, 1986).

Despite the possibility of water transfer, Syria and Iraq insist on separate perception and separate water allocation of these rivers. Iraq seeks to obtain the greatest possible share of water from the Euphrates, given that Turkey's and Syria's consumption from the Tigris may not be more than the Euphrates, and the potential benefits from utilizing the Tigris will belong mostly to itself.

Differing views on sovereign rights within the Basin

As a reflection of problems faced by the countries, different theories on the utilization of transboundary waters began to emerge in the late 19th century (Salman,

⁵Since the data that show the total power and coverage area of the dams in Iraq and Syria are also deficient in the source of reference, a table has been formed in accordance with the information that could be accessed. Since comprehensive data on the total power and coverage area of dams in Iraq and Syria are unavailable, the table is based on the information that could be accessed.

⁶Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August (Helsinki Rules, 1966).

⁷Done at Helsinki, on 17 March 1992 (Use of Transboundary Water Courses and International Lakes, 1992)

⁸Adopted by the General Assembly of the United Nations on 21 May 1997 (Uses of Watercourses, 1997).

2007). These theories were based primarily on ideas of the superiority of each nation and reflected their attempts to gain the most benefit from any such agreement. Historically, upstream and downstream riparian states have advocated extreme and self-interested theories to explain the ownership rights of transboundary waters (Hakki, 2006). Subsequently, international scientific organizations proposed more reconciliatory policies that established a balance and prioritized human benefits. Internationally-agreed and binding legal principles have not been established yet. This is because a framework, which met the demands of individual nations, protected their sovereign rights, and also established the necessary balance between competing national interests, could not be agreed.

It might be helpful to have a brief picture of different approaches, which are the absolute territorial sovereignty, the absolute territorial integrity, the limited territorial sovereignty and the community of interest. Many publications can be found on this matter. Some of them are as follows. DPT Dokuzuncu Kalkinma Planı (2007), Birnie and Boyle (2002), Salman (2007) Lammers (1984), McCaffrey (1989), McCaffrey (2001) that are discussed within international law.

The first of these approaches is the “absolute territorial sovereignty” notion, known as the “Harmon Doctrine”. This is based upon the principle that a country can use the waters originating within its territorial boundaries as it wishes. According to this notion, a state has absolute control over natural resources within its territory and can do whatever it wants, regardless of the transboundary consequences of such action (Khalid, 2004). This extreme theory is often accepted by upstream riparian countries, which often invoke some variation of the Harmon Doctrine, claiming that water rights originate where the water falls (Kibaroglu, 2007b). The second approach is the notion of “absolute territorial integrity”, which is based on the principle that water flowing through a country is an integral part of that country’s resources. And countries on upstream have no right to change the natural qualities and quantities of this water. According to this notion, whose roots are claimed to have been based on common law in water rights (Teclaff, 1985), a downstream riparian country has the right to ask the upstream riparian country not to break the continuous and natural flow of the source. The third approach is “limited territorial sovereignty”, which states that every riparian country has the right to use the international water. However, during this use, each country is required to provide an “equitable and reasonable benefit” to others so that water usage by one riparian country does not unreasonably disadvantage others. In doing this, factors such as the area of precipitation catchment in each country, the flow rate it provides, past and present use, development necessity, social and economic conditions, and water-saving are taken into account. This right is limited by a responsibility to allow other riparian countries

the same rights (Wouters, 1992). The fourth approach is the “Community of Interest” principle, under which each country benefits in the best way from a water resource on the basis of the whole, irrespective of national borders between countries. According to this principle, the entire river basin is an economic unit and, while benefiting from the rights to use these waters, collective participation of riparian countries must be ensured.

International discussions have rejected the concepts of absolute territorial sovereignty and absolute territorial integrity, which can be summarized as “all or not” and attempts have been made to reach agreement based on theories of community interest.

One of the most important differences is the distinction between the theories, which Turkey, Syria and Iraq rely on. Many international studies have concluded that Turkey’s approach is based on defending the Harmon doctrine, but this is not entirely accurate. Turkey defends the concept of sovereignty within national borders and insists on certain advantages as the upper riparian country (Medzini and Wolf, 2004). This approach, however, does not imply an attitude suggesting absolute control over the waters. Turkey’s published national policy expresses its right to use the waters, but also emphasizes the necessity to ensure that this use must be equitable and reasonable and must also comply with the principles of international law. Therefore it acts under the theory of “limited territorial sovereignty” rather than supporting one of “absolute territorial sovereignty”.

Syria and Iraq are supporters of the theory of absolute territorial integrity due to the fact that they are the lower riparian countries. They suggest that the status of Turkey as the upper riparian country does not grant priority in the utilization of these rivers. On the contrary, they suggest that Turkey should not jeopardize the integrity of the basin and the usage by the lower riparian countries. In this approach, upper riparian countries are not entitled to change the natural flow of the waters in a manner that adversely affects water usage within the lower riparian countries (absolute territorial integrity).

Differing arguments regarding the water rights of Basin States

Riparian countries rely on different arguments concerning the use of waters from the Euphrates and Tigris rivers. Iraq claims a “prioritized right of use” over these waters, and requests that the three countries share the water equally amongst them, which means that Turkey should leave 2/3 of the water to Syria and Iraq. Iraq states that it has a historical right to benefit from these rivers, and Iraq has many water facilities and current irrigation systems, including the some inherited from the Sumerians (Acabey, 2006). It also suggests that international law required that this right, which originated in ancient times, should be respected. Syria has similar claims to the use

of the waters, based on earned rights and availability of alternative resources. Syria adopts an approach based on the foundation of need and proposes a mathematical formula for water distribution, in which each riparian will specify its requests. If the total request does not exceed the available water, then the distribution will take place. In case of combined claims exceeding the available water, the excess will be deducted from each riparian on a proportional basis. Turkey, however, bases its claims on the right of sovereignty. However, as stated above, what is referred to here is not an absolute right of sovereignty. Rather, it is a sovereignty limited by internationally accepted principles such as "righteous and reasonable use" and "causing no harm". However it is clear that the principle of "causing no harm" will not imply a waiver of self-rights in order to ensure that the needs of the neighbors are fulfilled (Giray, 1994).

Obligations of Basin States arising from International Law

In 1997, the UN General Assembly approved the Convention on the Law of The Non-Navigational Uses of International Watercourses. The Watercourses Convention governs protection, preservation and management of transboundary watercourses. The Convention does not provide definitive rules for water allocation (El-Fadel et al., 2002). General principles related to the utilization of transboundary waters were determined in the Convention. Iraq did not participate in the voting. Syria was in favor of the principles set forth by the Convention. And Turkey rejected the Convention because of objections to its prologue and certain articles, which Turkey believed to cause an inequality between states and fail to form an equitable and reasonable utilization that dominates over the obligation to avoid from significant harm (Shmueli and Shamir, 2001). The UN Agreement is not binding for Turkey, since the country was not a party to the agreement. However, the legal relationship between Turkey and the other riparian countries is not limited to this single Convention. There have been several other agreements between the parties throughout history, regarding the use of the waters from the Euphrates and Tigris rivers.

In 1946, Turkey, with its upstream riparian status, and Iraq signed the *"Amendment to the Treaty of Amity and Good Neighborhood: Protocol on Arranging Tigris, Euphrates Rivers and Their Branches"*. This agreement was intended to ensure the flow of water and to prevent spates. According to this agreement, Turkey agreed to "inform" Iraq about its plans on protection instruments within its means and with the purpose of getting them as proper to benefit of the both countries as possible (Pazarci, 1993).

Between Syria and Turkey, with its downstream riparian status, the first agreement on transboundary

waters was the "Treaty of Ankara" Code III, Order, II, 152, signed between Turkey and France in 1921. According to this treaty, the Kuveik River would be shared between the Turkish section and Aleppo on its south, within a framework of equity and justice. Turkey and Syria agreed to utilize the Kirik River on an equal basis. Syria would be able to receive water from the Turkish part of the Euphrates at its own expense. Also, the "protocol on economic cooperation" was signed between Turkey and Syria in 1987. Under this agreement, Turkey agreed to leave Syria 500 cumecs (m³ per second) of water from the Euphrates, based on an annual average.

A review of the agreements made between Turkey and other riparian countries shows that the "equitable and reasonable utilization" principle has been used together with the "not to cause harm" principle. These two principles have been perceived as constituting a single principle of not causing harm to the other party as a result of ensuring equitable utilization. In some of its agreements, Turkey emphasized territorial sovereignty in parts of transboundary basins that are within its territory. However, this power derived from national sovereignty is limited to an interpretation that does not "cause harm to" the neighbor riparian country.

Legal documents about integrated approach from Turkey, Syria and Iraq

The Integrated management approach has not been fully reflected in the water legislation of the three riparian countries. Although limited provisions are included in the legislative and planning frameworks of these countries, the capacity for implementation seems quite low.

There is no provision within the Turkish Constitution for integrated management principles. Turkish law includes many provisions related to water, but these are dispersed throughout various legal codes. The law about groundwater, The Law about Waters, Shore law, Law on Foundation of Electrical Power Resources Survey and Development Administration, The Law on Geothermal Resources and Natural Mineral Waters, Law of Environment (Coskun, 2003). Among these provisions, there is no provision directly providing for integrated water management. However, an emphasis is placed, even indirectly, on the issue of integrated basin management within nearly all Development Plans prepared in Turkey (the 9th Development Plan is currently in effect). In the last published Development Plan, for the period covering 2007 to 2013, the need for integrated management was underlined more clearly, as a result of the EU harmonization process. Turkey continues attempts to develop sample management models for various basins on the basis of these regulations; however, to date, no national basin management plan defining general principles for all basins in Turkey has been developed. These plans are expected to be

implemented, and the definition of integrated management principles is planned, following the introduction of a legal framework on water.

There is no provision for integrated management principles within the Syrian Constitution. Syrian Water Law No. 31 (2005) is considered a legal framework regulating the development, reservation and use of water resources, and protecting them from depletion and pollution. The Water Law is harmonized with legislation on the environment and land use. The law also expresses the national water policy (Khaldoon, 2006). The existing water legislation cannot be considered in the context of an IWRM plan, as no specific, quantitative targets are identified (Jagerskog, 2007).

There are integrated management principles in the Syrian planning framework. The Strategy and National Environmental Action Plan (2003 to 2015) sets a strategic objective of "implementation of integrated management of water and land resources" (NEAP, 2003). Syria has a Water Strategy (2003), prepared by the Ministry for Irrigation (Regional Document Mediterranean, 2009). This explicitly states that the Strategy will form the basis for the elaboration of an IWRM Plan up to the year 2030. The IWRM Plan will determine water resources, human resources and soil classification, as well as possible new water projects and the rehabilitation of old projects. It is also envisaged that the IWRM Plan will entail the necessary mechanism for its revision and updating every five years, depending on future developments. Another sign of Syria's commitment to IWRM is the establishment in early 2006 of the Directorate of Integrated Water Resources Management within the State Planning Commission of Syria (GEF, 2007).

The Iraqi Constitution provides general guidelines for natural resource development and management, including the water sector. The Constitution stipulates that the Central Government will be responsible for dealing with transboundary water issues. The forthcoming water law is envisaged to be a framework law, and will provide further guidance for the water sector.

Iraq pursues a relatively progressive policy on the issue of water. The Iraqi government has demonstrated the importance it pays to the issue by establishing the Ministry of Water Resources (MWR). And the main duty of the MWR has been defined as providing Integrated Water Resources Management for the Iraqi People (<http://www.mowr.gov.iq/english>). MWR is the bulk water supplier for the country and responsible for national water planning throughout the country.

Water resources development and management plans were drawn up in the 1960s and 1980s. These studies included a comprehensive and detailed analysis of needs, opportunities and plans for the development and management of Iraq's water resources (Aquastat, 2008). The National Master Plan, supported and financed by the US, is assisting the Ministry of Water Resources in a five-

year study process to develop a National Water Plan 3-phase plan envisaged to be completed in 2010, first implemented in 2005. The first phase was completed at the end of 2006 and the second phase is planned to be completed in 2 to 3 years.

This study provides for an integrated approach, coordinated with national institutions, and with the prospects of preparing the ground for data exchange and, potentially, joint analysis with upstream riparians (World Bank, 2006).

The National Development Strategy (2007 to 2010) of Iraq includes regulations on integrated water management. In accordance with this strategy, The Iraqi Government requested the UNDP to develop a strategic framework of assistance towards integrated water management and institutional development. The UNDP therefore developed a concept paper entitled "The Road to 2050 - Iraq Waters". To that end, UNDP with the support of other UN agencies and specialized water institutions, will organize an international water conference to better understand the current situation of water resources in Iraq, and to share regional and international experiences and lessons learnt in integrated water resources management.

From the policy review, it is clear that each of these three countries has adopted an integrated management approach, in principle. Attempts have been made to advance these resolutions through national and international efforts, but progress on implementation has been slow.

EVALUATION

The Integrated management approach is of national and international importance for Turkey, as a major portion of the country's water resources consist of transboundary waters; this increases Turkey's responsibility to establish cooperation with other riparian countries. Legal resolution in international sense has not been established completely; even though approximately 300 agreements in the area of transboundary waters between the countries, these agreements have not been associated with definitive rules that are accepted by all countries (Postel, 1996). There are still bilateral or multilateral agreements, which are only binding for the signatories. The inability to establish a supranational authority, recognized by all states, has resulted in countries developing localized or regional strategies towards their own objectives, which involve a certain degree of insecurity (Oktem, 2006). In addition to these problems, the perception of water as a political tool further complicates the resolution of conflicts.

An integrated management approach, based on the boundaries of the basin instead of the boundaries of the country, is gaining prominence at the international level as a means of resolving conflicts. This resolution has also

been accepted within EU. The process of Turkish accession to the EU is in progress, and this has been reflected in recent legal documents. During this accession phase, it is not difficult to foresee that the EU may specify the resolution of the Euphrates and Tigris water issue as a pre-condition of Turkey's further progress towards EU membership. As a matter of fact, EU progress reports on the Turkish accession process frequently emphasize the necessity for integrated management and international cooperation on the basis of basins. Therefore the subject of IWRM, within the context of the Euphrates-Tigris basin, represents a very special and sensitive balance for Turkey. It is clear that Turkey's one-sided efforts to achieve optimal use, equitable distribution and sustainable management of these waters would not suffice, and that the riparian countries need to take common action and cooperate on this issue.

In light of these additional political implications, the implementation of IWRM in the Euphrates-Tigris basin seems to be the most efficient solution to one of Turkey's most pressing challenges. It does not appear straightforward, however, to successfully implement IWRM under the current social, demographical, economical, historical and legal conditions of the region. It has not been possible to establish a common ground for discussing the principles of IWRM. All three riparian countries continue to express their own arguments and appear far from reaching a compromise. Therefore, these perceived obstacles to IWRM must be eliminated. However, the review of the historical process of efforts to achieve a scientific, technical and legal compromise between the riparian countries illustrate that this has not been achieved. Despite the obstacles in question, it is necessary for the riparian parties to abandon historical differences, prejudices and approaches to negotiation based on strict self-interest, which seek to impose their preferred management approaches on others. After this phase, national borders must be disregarded and inventory studies must be performed with regard to the water and soil resources of the three riparian countries; factors that may reduce the efficiency of natural resource-use must be eliminated; projects that will ensure efficient use must be developed, and; the water needs of each riparian must be objectively determined. In order to achieve this aim, Turkey has prepared a three-phase plan that reveals Turkey's intention to cooperate, and submitted it to approval of the other riparian countries. The history of the three-stage plan goes back to the 1960s. It has recently undergone several revisions, to conform to the principles designed for transboundary waterways by the International Law Commission of the UN. This plan was submitted to the Tripartite Technical Committee, which convenes meetings among Turkey, Syria and Iraq, in 1984. To date, Syria and Iraq have failed to respond positively to this plan (Tomanbay, 2000). The first stage of the "Three-stage plan" proposed

by Turkey requires measurement of total water potential of the basin, irrespective of national boundaries. The second stage involves designation of locations suitable for energy production with respect to the soil type and irrigable agricultural lands. And the final stage involves evaluation of water and soil data. With the emergence of genuine water needs to be determined by scientific studies, Turkey suggests that the use of the water resources by all three countries would be possible by means of an "equitable, reasonable and optimal utilization" method. Turkey has adopted a policy based on reliability-increasing measures with principles of equitable, rational and optimal usage; which shares the benefits of the water instead of the water itself, and observes transparent and consistent applications as a whole on the basis of the basin.

In recent years, Turkey has undergone several changes with respect to water management. Studies for application of the IWRM have been conducted at a corporate level, and efforts to reflect the EU *acquis* within domestic law are currently in progress. It is inevitable that this process will influence the principles and rules governing transboundary waters. Also, other riparian countries need to keep up with this change and adopt approaches enabling them to evaluate all aspects of a resource based on sustainable resource-management. They also have to abandon approaches, which are based solely on national self-interest, and which consider water as a political income tool throughout this transition process.

CONCLUSION

It is obvious that it is necessary to adopt an integrated approach to water management in the Euphrates Tigris basin, and national and international efforts have been made to achieve this. However, despite these efforts achieving a successful management does not appear to be an easy goal under the present conditions.

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