Euphrates–Tigris River Basin

GEOGRAPHY, CLIMATE AND POPULATION

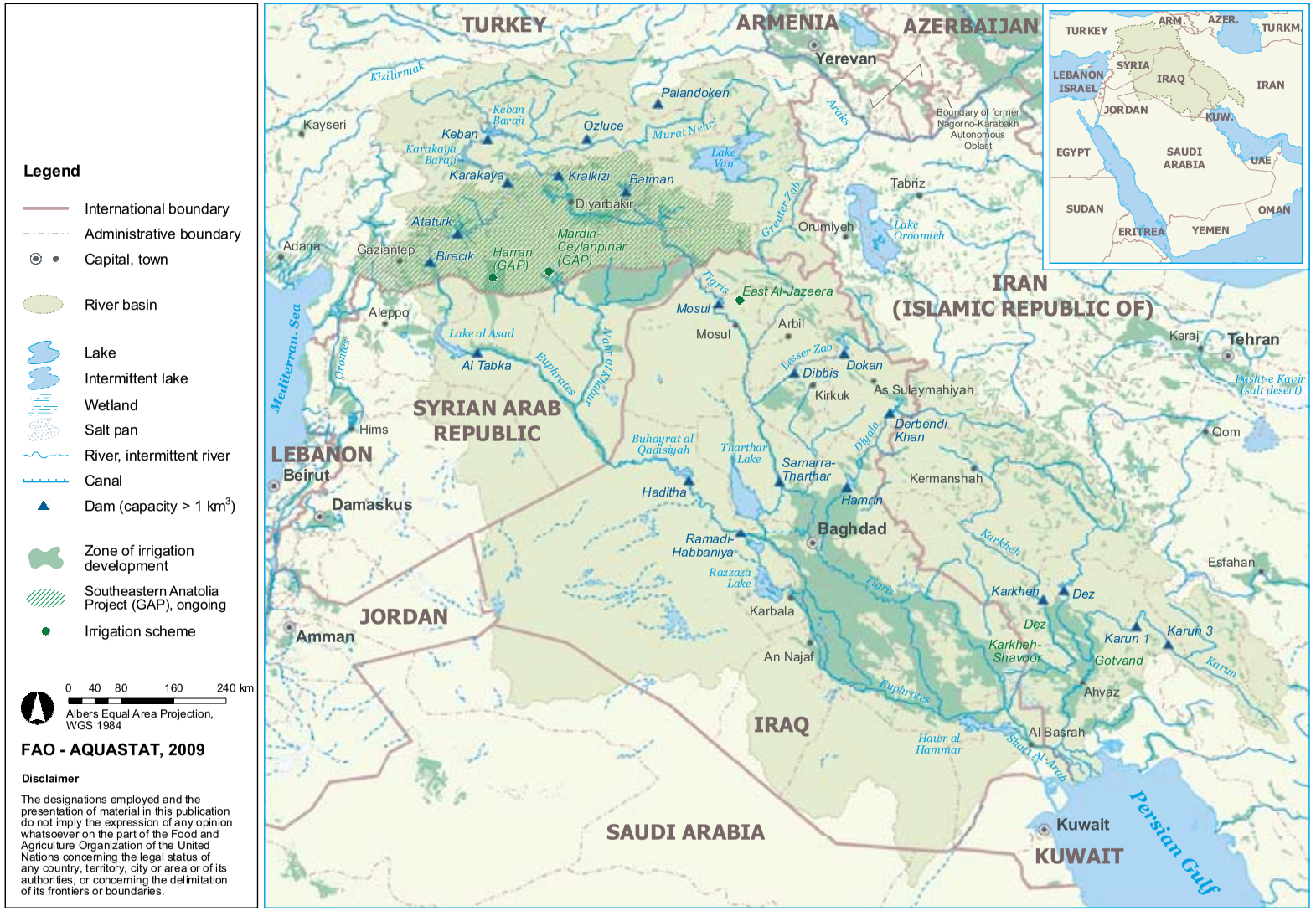
The Euphrates–Tigris River Basin is a transboundary basin with a total area of 879 790 km² distributed between Iraq (46 percent), Turkey (22 percent), the Islamic Republic of Iran (19 percent), the Syrian Arab Republic (11 percent), Saudi Arabia (1.9 percent) and Jordan (0.03 percent) (Lehner *et al*, 2008) (Table 1 and Figure 1). The Islamic Republic of Iran is riparian only to the Tigris, and Jordan and Saudi Arabia are riparian only to the Euphrates. Both the Euphrates and the Tigris rise in the mountains of eastern Turkey and the basin has high mountains to the north and west and extensive lowlands to the south and east. Two-thirds of their courses go through the highlands of eastern Anatolia in Turkey and the valleys of the Syrian and Iraqi plateaus before descending into the arid plain of Mesopotamia (Kibaroglu, 2002). The Euphrates and Tigris join near Qurna (Iraq) in a combined flow called Shatt Al-Arab, which empties into the Persian Gulf. However, more upstream within Iraq both rivers are also connected through the construction of several canals.

Most of the Euphrates–Tigris River Basin has a sub-tropical Mediterranean climate with wet winters and dry summers. In the mountainous headwater areas freezing temperatures prevail in winter and much of the precipitation falls in the form of snow. As the snow melts in spring the rivers rise, augmented by seasonal rainfall which reaches its maximum between March and May. In southeastern Turkey as well as in the north of the Syrian Arab Republic and Iraq the climate is characterized by rainy winters and dry warm summers. Average annual precipitation in the Euphrates–Tigris River Basin is estimated at 335 mm, although it varies all along the basin area (New *et al*, 2002). In the Mesopotamian Plain the annual rainfall is rarely above 200 mm, while it reaches 1 045 mm in other places in the basin. The summer season is exceedingly hot and dry with midday temperatures approaching 50 °C and with daytime relative humidity as low as 15 percent. These climatic conditions demonstrate that both the Euphrates and the Tigris flow through arid and semi-arid regions within the Syrian Arab Republic and Iraq, since 60 percent of the Syrian territory receives less than 250 mm/year of precipitation and 70 percent of Iraq receives on average 400 mm/year (Kibaroglu, 2002). The annual average temperature of the entire Euphrates–Tigris River Basin is 18 °C. The average temperature of the basin in January is 5 °C, though it can decrease to -11 °C in the coldest places in the basin. In July, the average temperature of the Euphrates–Tigris River Basin reaches 31 °C, although in the hottest places it can increase to 37 °C (New *et al, 2002).*

TABLE 1
Country areas in the Euphrates-Tigris River Basin

Basin	Area		Countries included	Area of country in basin (km²)	As % of total area of the basin	As % of total are of the country
	km²	% of the Middle East				
Euphrates–Tigris	879 790	13	Iraq	407 880	46.4	93.1
			Turkey	192 190	21.8	24.5
			Iran (Islamic Republic of)	166 240	18.9	9.5
			Syrian Arab Republic	96 420	11.0	52.1
			Saudi Arabia	16 840	1.9	0.8
			Jordan	220	0.03	0.2

FIGURE 1
Euphrates-Tigris river basin



WATER RESOURCES

The Euphrates originates in the eastern highlands of Turkey, between Lake Van and the Black Sea, and is formed by two major tributaries, the Murat and the Karasu. It enters the Syrian territory at Karkamis, downstream from the Turkish town of Birecik. It is the joined by its major tributaries, the Balik and Khabur, which also originate in Turkey, and flows southeast across the Syrian plateaus before entering the Iraqi territory near Qusaybah. Of the Euphrates Basin 28 percent lies in Turkey, 17 percent in the Syrian Arab Republic, 40 percent in Iraq, 15 percent in Saudi Arabia, and just 0.03 percent in Jordan. The Saudi Arabian stretch of the Euphrates dries in summer; there are no perennial rivers. The Euphrates river is 3 000 km long, divided between Turkey (1 230 km), the Syrian Arab Republic (710 km), and Iraq (1 060 km), whereas 62 percent of the catchment area that produces inputs into the river is situated in Turkey and 38 percent in the Syrian Arab Republic. It is estimated that Turkey contributes 89 percent of the annual flow and the Syrian Arab Republic 11 percent. The remaining riparian countries contribute very little water.

The Tigris, also originating in eastern Turkey, flows through the country until the border city of Cizre. From there it forms the border between Turkey and the Syrian Arab Republic over a short distance and then crosses into Iraq at Faysh Khabur. The Tigris river is 1 850 km long, with 400 km in Turkey, 32 km on the border between Turkey and the Syrian Arab Republic and 1 418 km in Iraq. Of the Tigris Basin 12 percent lies in Turkey, 0.2 percent in the Syrian Arab Republic, 54 percent in Iraq and 34 percent in the Islamic Republic of Iran. Turkey provides 51 percent, Iraq 39 percent, and the Islamic Republic of Iran 10 percent of the annual water volume of the Tigris, but because of unfavourable geographic and climatic conditions the latter cannot use the water of the Tigris for agriculture or hydropower (Kaya, 1998). Within Iraq, several tributaries flow into the river coming from the Zagros Mountains in the east, thus all on its left bank. From upstream to downstream there are:

- the Greater Zab, which originates in Turkey. It generates 13.18 km³/year at its confluence with the Tigris; 62 percent of the total area of this river basin of 25 810 km² is in Iraq;
- the Lesser Zab, which originates in the Islamic Republic of Iran and which is equipped with the Dokan Dam (6.8 km³). The river basin of 21 475 km² (of which 74 percent is in Iraqi territory) generates about 7.17 km³/year, of which 5.07 km³ of annual safe yield after construction of the Dokan Dam;
- the Al-Adhaim or Nahr Al Uzaym, which drains about 13 000 km² entirely in Iraq. It generates about 0.79 km³/year at its confluence with the Tigris. It is an intermittent stream subject to flash floods;
- the Diyala, which originates in the Islamic Republic of Iran and which drains about 31 896 km², of which 75 percent in Iraqi territory. It is equipped with the Derbendi Khan Dam and generates about 5.74 km³/year at its confluence with the Tigris;
- the Nahr at Tib, Dewarege (Doveyrich) and Shehabi rivers, draining together more than 8 000 km². They originate in Iranian territory, and together bring into the Tigris about 1 km³/year of highly saline waters;
- the Karkheh, the main course of which is mainly in the Islamic Republic of Iran and which, from a drainage area of 46 000 km², brings about 6.3 km³ yearly into Iraq, namely into the Hawr Al Hawiza during the flood season, and into the Tigris River during the dry season

The Shatt Al-Arab is the river formed by the confluence downstream of the Euphrates and the Tigris and it flows into the Persian Gulf after a course of only 190 km. The Karun River, originating in Iranian territory, has a mean annual flow of 24.7 km³ and flows into the Shatt Al-Arab just before it reaches the sea, bringing a large amount of freshwater.

The average annual discharge of the Euphrates and Tigris rivers together is difficult to determine due to the large yearly fluctuation. According to the records for 1938–1980, there have been years when 68 km³ were observed in the two rivers in the mid–1960s, and years when the amount was over 84 km³ in the mid–1970s. On the other hand, there was the critical drought year with less than 30 km³ at the beginning of the 1960s. Such variation in annual discharge makes it difficult to develop an adequate water allocation plan for competing water demand from each sector as well as fair sharing of water among neighbouring countries (UNDG, 2005). The annual flow of the Euphrates River Basin from Turkey to the Syrian Arab Republic is 28.1 km³, of which 26.9 km³ corresponds to the Euphrates main river, and 30.0 km³ from the Syrian Arab Republic to Iraq. The annual flow of the Tigris River Basin from Turkey to Iraq is 21.3 km³. The Tigris borders the Syrian Arab Republic only over a short distance in the east and therefore very little annul flow, estimated at 1.25 km³/year, can be available for the Syrians (Abed Rabboh, 2007). The annual flow of the tributaries of the Tigris from Iran to Iraq is 10 km³.

Turkey finds itself in a strategically strong position as the only country in the Euphrates–Tigris River Basin to enjoy abundant surface water and groundwater resources. The Syrian Arab Republic depends heavily on the water of the Euphrates. Iraq is also reliant upon the Euphrates, but uses the Tigris River as well as an alternative source of water (Hohendinger, 2006).

Groundwater aquifers in Iraq consist of extensive alluvial deposits of the Tigris and Euphrates and are composed of Mesopotamian-clastic and carbonate formations. The alluvial aquifers have limited potential because of poor water quality. The alluvial aquifers contain large volume reservoirs: and annual recharge is estimated at 620 million m³ from direct infiltration of rainfall and surface water runoff.

WATER QUALITY

Downstream riparian countries complain about the quality of the water. Turkey's use of water has so far been limited mainly to hydropower generation and irrigation. While the former use is considered non-consumptive and not directly linked to water quality, the return flow from irrigation causes water pollution, which in turn affects potential downstream uses. Equally important are natural causes of environmental concern in the sense that some residual characteristics common to both rivers exacerbate the damaging effects of human pollution. Notable natural causes are the high rate of evaporation, sharp climatic variations, the accumulation of salts and sediments, poor drainage and low soil quality in the lower reaches of the Tigris and Euphrates (Erdem, after 2002).

In Iraq, the present quality of water in the Tigris near the Syrian border is assumed to be good, including water originating in both Turkey and Iraq. Water quality degrades downstream, with major pollution inflows from urban areas such as Baghdad due to poor infrastructure of wastewater treatment. Water quality of the Euphrates entering Iraq is less than the Tigris, currently affected by return flow from irrigation projects in Turkey and the Syrian Arab Republic, and expected to get worse as more land comes under irrigation. The quality is further degraded at such times as flood flows are diverted into off-stream storage in Tharthar and later returned to the river system. Salts in Tharthar are absorbed by the water stored therein. The quality of the water in both the Euphrates and the Tigris is further degraded by return flows from land irrigated in Iraq as well as urban pollution. The amount and quality of water entering southern Iraq from the Iranian territory is largely unknown, although it is clear that flows are impacted by irrigation return flow originating in the Islamic Republic of Iran (UNDG, 2005).

The deterioration of water quality and the heavy pollution from many sources are becoming serious threats to the Euphrates–Tigris River Basin. A problem is that there is no effective water monitoring network, making it difficult to address water quality

and pollution, as the sources of pollution cannot be precisely identified. Hence, the rehabilitation and reconstruction of the water monitoring network is urgently needed for water security.

WATER-RELATED DEVELOPMENT IN THE BASIN

The Euphrates and Tigris were the cradle of the early Mesopotamian civilizations and irrigation made it possible for the local people to develop agriculture. This resulted in the development of great ancient civilizations, where water played an important role. Mesopotamia, the land between the Euphrates and the Tigris, remained the centre of many different civilizations and gave life to millions of inhabitants up to modern times (AU, 1997). Unfortunately, as is usually the case, the seasonal distribution of the availability of water does not coincide with the irrigation requirements of the basin. The typical low water season in the Euphrates occurs from July to December, reaching its lowest point in August and September when water is most needed to irrigate the region's winter crops (Akanda *et al*, 2007). In the area close to the two river systems, rainfed farming is possible, although supplementary irrigation would raise yield and allow several cropping seasons. In the Mesopotamian Plain, however, the evaporative demand is very high and crops require intensive irrigation because of low annual rainfall and hot and dry summers. The total area equipped for irrigation in the Euphrates–Tigris River Basin is estimated to be around 6.5–7 million ha, of which Iraq accounts for approximately 53 percent, the Islamic Republic of Iran for 18 percent, Turkey for 15 percent and the Syrian Arab Republic for 14 percent. Agricultural water withdrawal is approximately 68 km^3.

Iraq was the first riparian country to develop engineering projects in the basin. The Al Hindiya and Ramadi-Habbaniya dams on the Euphrates were constructed in 1914 and in 1951 respectively, both for flood control and irrigation (Kaya, 1998). By the mid–1960s, the development of irrigated agriculture in Iraq far surpassed the development in the Syrian Arab Republic and Turkey. During this period, Iraq was irrigating over five times as much land in the river basin as the Syrian Arab Republic and nearly ten times as much as Turkey. To continue its efforts to use the water of these rivers efficiently and to provide irrigation water for the land between the Euphrates and the Tigris rivers, Iraq began constructing in the 1960s a 565 km long canal, the Third River (also called Saddam River), between the Euphrates and Tigris, which was completed in 1992. In the late 1970s, as part of the effort to prevent flood damage, Iraq built another canal to divert excess water from the Tigris into Lake Thartar. Since then, Iraq has built other similar canals linking Lake Thartar to the Euphrates and again connecting the lake with the Tigris. Iraq has also built dams on the Euphrates and Tigris to produce hydropower, such as the Haditha Dam completed in 1985 (Korkutan, 2001). In 1991 a large irrigation project, the North Al-Jazeera irrigation project, was launched in order to serve approximately 60 000 ha by using a linear-move sprinkler irrigation system with water stored by the Mosul Dam. Another irrigation project, the East Al-Jazeera irrigation project, involved the installation of irrigation networks on more than 70 000 ha of previously rainfed land near Mosul. These projects were part of a scheme to irrigate 250 000 ha in the Al-Jazeera plain.

The Syrian Arab Republic began exploiting the water of the Euphrates for irrigation and hydropower in the early 1960s. The Tabqa Dam was built on the Euphrates in 1973, mainly with the help of the then Soviet Union. The purpose of this major dam was to meet the Syrian Arab Republic's water and energy needs. The Bath Dam, completed in 1986, was the second Syrian dam on the Euphrates river. However, the hydropower capacity of the Bath Dam was not of the same scale as the Tabqa Dam. The Bath Dam had a limited capacity for electricity generation and provided relatively little water for irrigation. The Tishreen Dam, the third Syrian dam on the Euphrates, mainly designed for hydropower, is still under construction. Since the Tigris river

forms the border with Turkey, the Syrian Arab Republic could not build reservoirs to store or divert the water of this river without the cooperation of its neighbour on the other bank (Korkutan, 2001).

Turkey began constructing its first dam on the Euphrates River, the Keban Dam near Keban Strait, in the mid–1960s and finished the project in 1973. The second dam on the Euphrates was the Karakaya Dam, completed in 1988. This was the first dam built as part of the implementation of the Southeastern Anatolia Project (GAP). Like the Keban Dam, the purpose of the Karakaya Dam was to produce hydropower. The third dam on the Euphrates River was the Ataturk Dam, the most important in the GAP Project, completed in 1992. It was designed to store water for large-scale irrigation as well as for the generation of hydropower (Korkutan, 2001).

Table 2 shows the large dams in the Euphrates–Tigris River Basin, i.e. dams with a height of more than 15 metres or with a height of 5–15 metres and a reservoir capacity larger than 3 million m^3 according to the International Commission on Large Dams (ICOLD).

TRANSBOUNDARY WATER ISSUES

During the 20th century various bilateral attempts at cooperation were made within the Euphrates–Tigris Basin. In 1920 the French and British governments, as the mandatory powers in Mesopotamia, signed a treaty regarding utilization of the water of the Euphrates and Tigris. The Turco–French Protocol, signed in 1930, committed the Turkish and French governments to coordinate any plans to use the water of the Euphrates. The principle of mutual cooperation over water development was extended in a Protocol annexed to the 1946 Treaty of Friendship and Good Neighbourly Relations between Turkey and Iraq. The agreement encompassed both rivers and their tributaries, and both countries agreed that the control and management of the Euphrates and Tigris rivers depended to a large extent on the regulation of flow in the Turkish source areas. At that time Turkey and Iraq agreed to share related data and consult with each other in order to accommodate both countries' interests. The 1946 Treaty mandated a committee to implement these agreements. However, none of this occurred because of different conflicts among the riparian countries (Kaya, 1998).

As the population of the region progressively increases, the demand for agricultural products increases and hence also the number of water supply projects. In 1973, Turkey constructed the Keban Dam in the Euphrates River Basin. The Syrian Arab Republic soon followed suit with the Tabqa Dam, also completed in 1973 and filled in 1975. The filling of these dams caused a sharp decrease in downstream flow and the quantity of water entering Iraq fell by 25 percent, causing tension between the countries (El Fadel *et al.*, 2002). The tension eased when the Syrian Arab Republic released more water from the dam to Iraq. Although the terms of the agreement were never made public, Iraqi officials have privately stated that the Syrian Arab Republic agreed to take only 40 percent of the river's water, leaving the remainder for Iraq (Kaya, 1998). In 1976, Turkey pledged to release 350 m^3/s from the Euphrates downstream and later in the same year increased the minimum flow to 450 m^3/s, also in an effort to reduce tensions.

In 1977, Turkey announced plans for the region's largest water development project ever, the Southeastern Anatolia Project (GAP), which included 22 dams and 19 hydropower projects to be built on the Euphrates–Tigris. This project is intended to provide irrigation, hydropower, and socio-economic development in Turkey. The Syrian Arab Republic and Iraq fear that the project will lead to reduced river flows and leave little water for use in their countries' agricultural and energy projects (Akanda *et al*, 2007). The construction of the Ataturk Dam in Turkey, one of the GAP projects, was completed in 1992.

In 1983, Turkey, Iraq and the Syrian Arab Republic established the Joint Technical Committee for Regional Waters to deal with all water issues among the Euphrates–Tigris

TABLE 2
Large dams in the Euphrates-Tigris River Basin

Country	Name	Nearest city	River	Year	Height (m)	Capacity (million m³)	Main use *
Turkey							
	Keban	Elazig	Firat	1975	210	31 000	H, F
	Karakaya	Diyarbakir	Firat	1987	173	9 580	H
	Ataturk	Sanliurfa	Firat	1992	169	48 700	I, H
	Ozluce	Bingol	Peri	2000	144	1 075	H
	Kralkizi	Diyarbakir	Maden	1997	126	1 919	H
	Kuzgun	Erzurum	SerCeme	1996	110	312	I, H
	Dicle	Diyarbakir	Dicle	1997	87	595	I, H, W
	Batman	Batman	Batman	1999	85	1 175	I, H, F
	Erzincan	Erzincan	Goyne	1997	81	8	I
	Zernek	Van	Hosap	1988	80	104	I, H
	Kockopru	Van	Zilan	1992	74	86	I, H, F
	Kayalikoy	Kirklareli	Kaya	1986	72	150	I
	Demirdoven	Erzurum	Timar	1996	67	34	I
	Tercan	Erzincan	Tuzla	1988	65	178	I, H
	Birecik	Sanliurfa	Firat	2000	63	1 220	I, H
	Sarimehmet	Van	Karasu	1991	62	134	I
	Sultansuyu	Malatya	Sultansuyu	1992	60	53	I
	Mursal	Sivas	Nih	1992	59	15	I, H
	Surgu	Malatya	Surgu	1969	55	71	I
	Polat	Malatya	Findik	1990	54	12	I
	Goksu	Diyarbakir	Goksu	1991	52	62	I
	Kayacik	Karaburun		2002	50	117	I
	Hancagiz	Gaziantep	Nizip	1989	45	100	I
	Camgazi	Adiyaman	Doyran	1999	45	56	I
	Medik	Malatya	Tohma	1975	43	22	I
	Hacihidir	sanliurfa	sehir	1989	42	68	I
	K. Kalecik	Elazig	Kalecik	1974	39	13	I
	Gayt	Bingol	Gayt	1998	36	23	I
	Devegecidi	Diyarbakir	DevegeCidi	1972	33	202	I
	Dumluca	Mardin	Bugur	1991	30	22	I
	Karkamis	Kahramanmaras	Firat	2000	29	157	H
	Cip	Elazig	Cip	1965	23	7	I
	Palandoken	Erzurum	GedikCayiri	1997	19	1 558	I
	Porsuk	Erzurum	Masat	1994	17	770	I
					Total	**99 598**	
Syrian Arab Republic							
	Al Tabka	At Thawrah	Euphrates	-	-	11 200	
					Total	**11 200**	
Iraq							
	Mosul	Mosul	Tigris	1983	131	12 500	I
	Derbendi Khan	Ba'qubah	Diyola river	1962	128	3 000	I
	Dokan		Lesser Zab	1961	116	6 800	I
	Haditha	Haditha	Euphrates	1984	57	8 200	I, H
	Hamrin	Ba'qubah	Diyola river	1980	40	4 000	
	Dibbis		Lesser Zab	1965	15	3 000	I
	Samarra - Tharthar	Samarra	Tigris	1954	-	72 800	F
					Total	**110 300**	
Iran (Islamic Republic of)							
	Karoun 3	Eizeh	Karoun	2004	205	2 970	I, H
	Dez	Andimeshk	Dez	1962	203	2 856	I, H, W
	Karoun 1	Masjedsoleyman	Karoun	1976	200	3 139	I, H
	Masjedsoleyman	Masjedsoleyman	Karoun	2001	177	230	I, H
	Gavoshan	Kamyaran	Gaveh roud	-	136	550	I, H, W
	Karkheh	Andimeshk	Karkheh	2001	127	5 575	I, H, F
	Vahdat	Sanandaj	Gheshlagh	-	80	224	I, H, W
	Eilam	Eilam	Baraftab & Chaviz	-	65	71	I, W
	Guilangharb	Guilangharb	Guilangharb	-	51	17	I
	Shahghasem	Yasouj	Parikedoun	1996	49	9	I
	Hana	Samirom	Hana	1996	36	48	I
	Bane	Bane	Banechay	-	20	4	W
	Chaghakhor	Boldaji	Aghbolagh	1992	13	42	I
	Zarivar	Marivan	Zarivar	-	11	97	I
					Total	**15 832**	
					TOTAL	**236 930**	

* I = irrigation; H = Hydropower, W = Water Supply; F = Flood protection

Basin riparian countries and to ensure that the procedural principles of consultation and notification were followed, as required by international law. However, this group disintegrated after 1993 without any progress (Akanda *et al*, 2007).

In 1984, Turkey proposed a "Three-staged plan for optimal, equitable and reasonable utilization of the transboundary watercourses of the Euphrates–Tigris Basin". This plan, which conforms to the principle of equitable utilization, proposes that the riparian countries jointly conduct and complete inventory studies and evaluation of water and land resources. This plan would promote objective data-gathering in the basin. After evaluation of all the data the proposed projects could be compared, based on their economic and social merits, and those deemed more beneficial could be implemented. The plan considers the basin to be a whole system, underlining the interdependence of its elements, as required by the UN Watercourses Convention (Kaya, 1998). For its part, the Syrian Arab Republic has proposed the following formula for water allocation: each riparian country will notify the other riparian countries of its demands on each river separately; the capacities of both rivers in each riparian country shall be calculated and, if the total demand exceeds the total supply of a given river (as is sure to be the case), the exceeding amount will be deducted proportionally from the demand of each riparian country (El Fadel *et al*, 2002).

In 1987, an informal agreement between Turkey and the Syrian Arab Republic guaranteed the latter a minimum flow of the Euphrates River of 500 m^3/sec throughout the year (15.75 km^3/year).

According to an agreement between the Syrian Arab Republic and Iraq signed in 1990, the Syrian Arab Republic agrees to share the Euphrates water with Iraq on a 58 percent (Iraq) and 42 percent (the Syrian Arab Republic) basis, which corresponds to a flow of 9 km^3/year at the border with Iraq using the figure of 15.75 km^3/year from Turkey (FAO, 2004b).

In 2001, a Joint Communiqué was signed between the General Organization for Land Development (GOLD) of the government of the Syrian Arab Republic and the GAP Regional Development Administration (GAP-RDA), which works under the Turkish Prime Minister's Office. This agreement envisions supporting training, technology exchange, study missions, and joint projects, but is limited because it only involves Turkey and the Syrian Arab Republic (Akanda *et al*, 2007).

In 2002, a bilateral agreement between the Syrian Arab Republic and Iraq was signed concerning the installation of a Syrian pump station on the Tigris River for irrigation purposes. The quantity of water drawn annually from the Tigris River, when the flow of water is in the average, will be 1.25 km^3, with a drainage capacity proportional to the aimed surface of 150 000 ha (FAO, 2002)

In April 2008, Turkey, the Syrian Arab Republic and Iraq decided to cooperate on water issues by establishing a water institute that will consist of 18 water experts from each country to work towards solving water-related problems among the three countries. This institute will conduct its studies at the facilities of the Ataturk Dam, the dam with the largest reservoir capacity in Turkey, and plans to develop projects for the fair and effective use of transboundary water resources (Yavuz, 2008).

Table 3 lists the main historical events in the Euphrates–Tigris River Basin.
with an advanced industry, which increases the pollution in the Kura–Arak rivers.

TABLE 3
Chronology of major events in the Euphrates-Tigris River Basin

Year	Plans/projects/treaties/conflicts	Countries involved	Main aspects
1914	Al Hindiya dam on the Euphrates	Iraq	For flood control and irrigation purposes
1920	Treaty regarding utilization of the waters of the Euphrates and the Tigris rivers	France and Great Britain	
1930	Turco-French Protocol	Turkey and France	Coordinates any plans to use the waters of the Euphrates.
1946	Treaty of Friendship and Good Neighbourly Relations	Turkey and Iraq	Extended the principle of mutual cooperation over water development in both rivers. Sharing of related data.
1951	Ramadi Habbaniya dam on the Euphrates	Iraq	For flood control and irrigation purposes.
1960s	Start of the construction of the "Third River"	Iraq	565 km canal between the Euphrates and the Tigris (completed in 1992).
1970s	Construction of several canals	Iraq	Linking Lake Thartar to the Euphrates, and connecting the lake with the Tigris.
1973	The Kevan dam	Turkey	First dam on the Euphrates for Turkey. Construction started in the 1960s. For hydropower purposes.
1973	The Tabqa dam	Syrian Arab Republic (with the help of the USSR)	First dam on the Euphrates for the Syrian Arab Republic, to meet water and energy needs.
1975	Filling of the Tabqa dam conflict	Syrian Arab Republic and Iraq (Saudi Arabia and possibly USSR mediated)	Major sources of conflict between Syrians and Iraqis addressed. Finally the Syrian Arab Republic released more water from the dam to Iraq.
1976	Release of 350 m^3/s from the Euphrates downstream	Turkey	Prevented tension between the Syrian Arab Republic and Iraq, regarding the filling of the Tabqa Dam.
1977	Southeastern Anatolia Project (GAP)	Turkey	Turkey announced plans for GAP, which included 22 dams and 19 hydropower installations on the Euphrates-Tigris.
1983	Establishment of Joint Technical Committee for Regional Waters	Turkey, Iraq, and the Syrian Arab Republic	Dealing with water issues between the basin riparian countries, to ensure principles of consultation and notification as required by international law. This group disintegrated after 1993 without any progress having been made.
1984	Turkey proposes a "Three-staged plan"	Turkey (indirectly Syrian Arab Republic and Iraq)	For optimal, equitable and reasonable utilization of the transboundary watercourses of the Euphrates-Tigris basin. Conforms to the principle of equitable utilization.
1985	The Haditha dam	Iraq	Dam on the Euphrates river to produce hydropower.
1986	The Bath dam	Syrian Arab Republic	Second dam on the Euphrates for the Syrian Arab Republic. Small-scale electric generation and small amount of water for irrigation.
1987	Informal agreement guaranteed 500 m^3/s of the Euphrates from Turkey to the Syrian Arab republic	Turkey and the Syrian Arab Republic	The Syrian Arab Republic has accused Turkey of violating this agreement a number of times.
1988	The Karakaya dam	Turkey	Second dam on the Euphrates. First dam built under the GAP. For production of hydropower.
1990	Agreement between the Syrian Arab Republic and Iraq to share the Euphrates water	Syrian Arab Republic and Iraq	The Syrian Arab Republic agrees to share the Euphrates' water with Iraq on a 58 percent (Iraq) and 42 percent (the Syrian Arab Republic) basis. Corresponds to a flow of 9 km^3/year.
1992	Completion of the Ataturk dam	Turkey	Third dam on the Euphrates for Turkey, the most important one under the GAP project. For irrigation and hydropower. The filling of the dam, shutting off the river flow for a month, causes conflict with Syrians and Iraqis.
2001	Joint Communiqué	GOLD (Syrian Arab Republic), and GAP-RDA (Turkey)	Supporting training, technology exchange, study missions, and joint projects.
2002	Bilateral Agreement concerning the installation of a Syrian pump station on the Tigris river	Syrian Arab Republic and Iraq	For irrigation purposes.
2008	Cooperation on water issues by establishing a water institute	Turkey, the Syrian Arab Republic and Iraq	18 water experts from each country to work toward the resolution of water-related problems.