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# Transboundary River Basin Overview – Jordan

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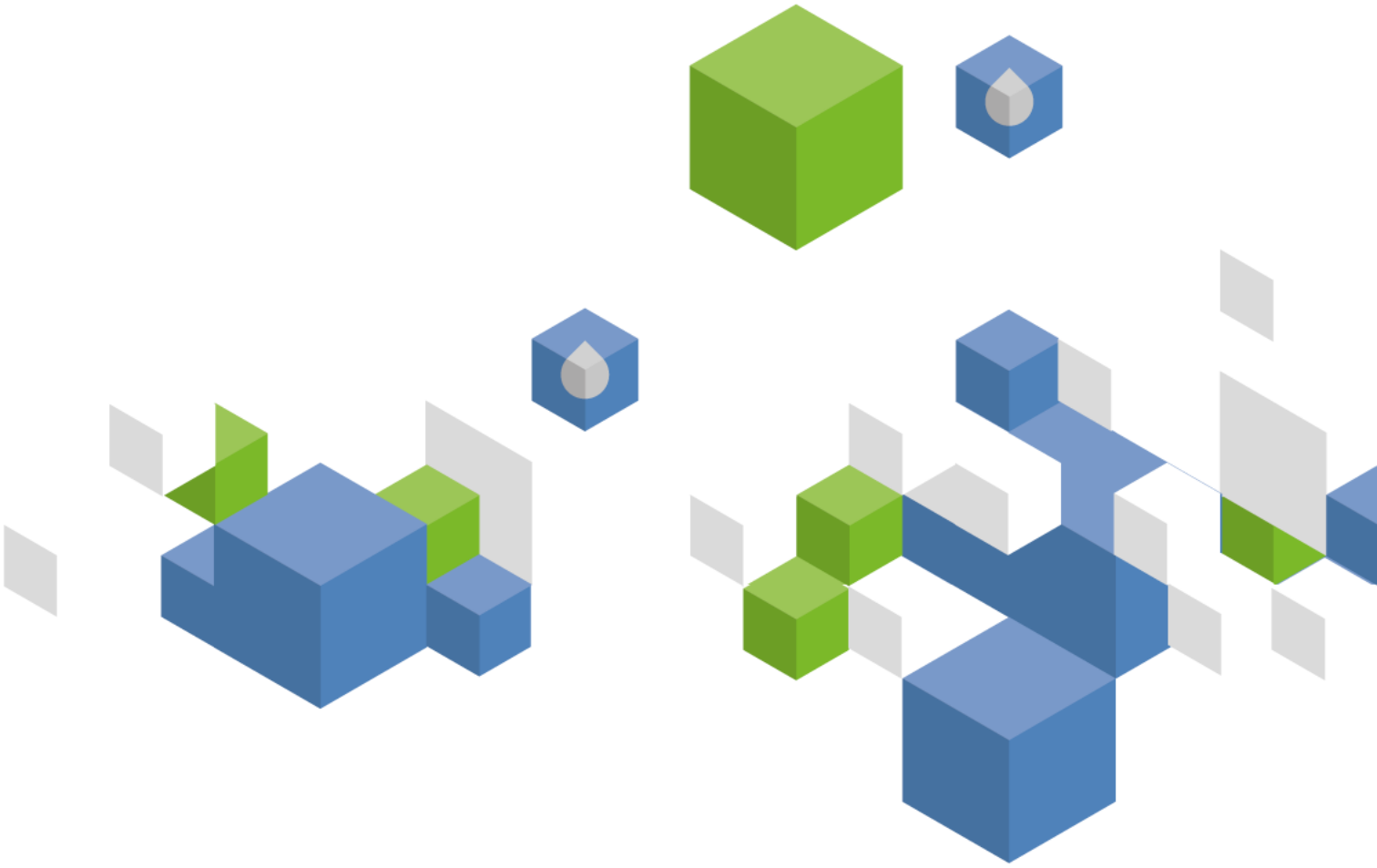

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# Jordan transboundary river basin

## GEOGRAPHY, CLIMATE AND POPULATION

### Geography

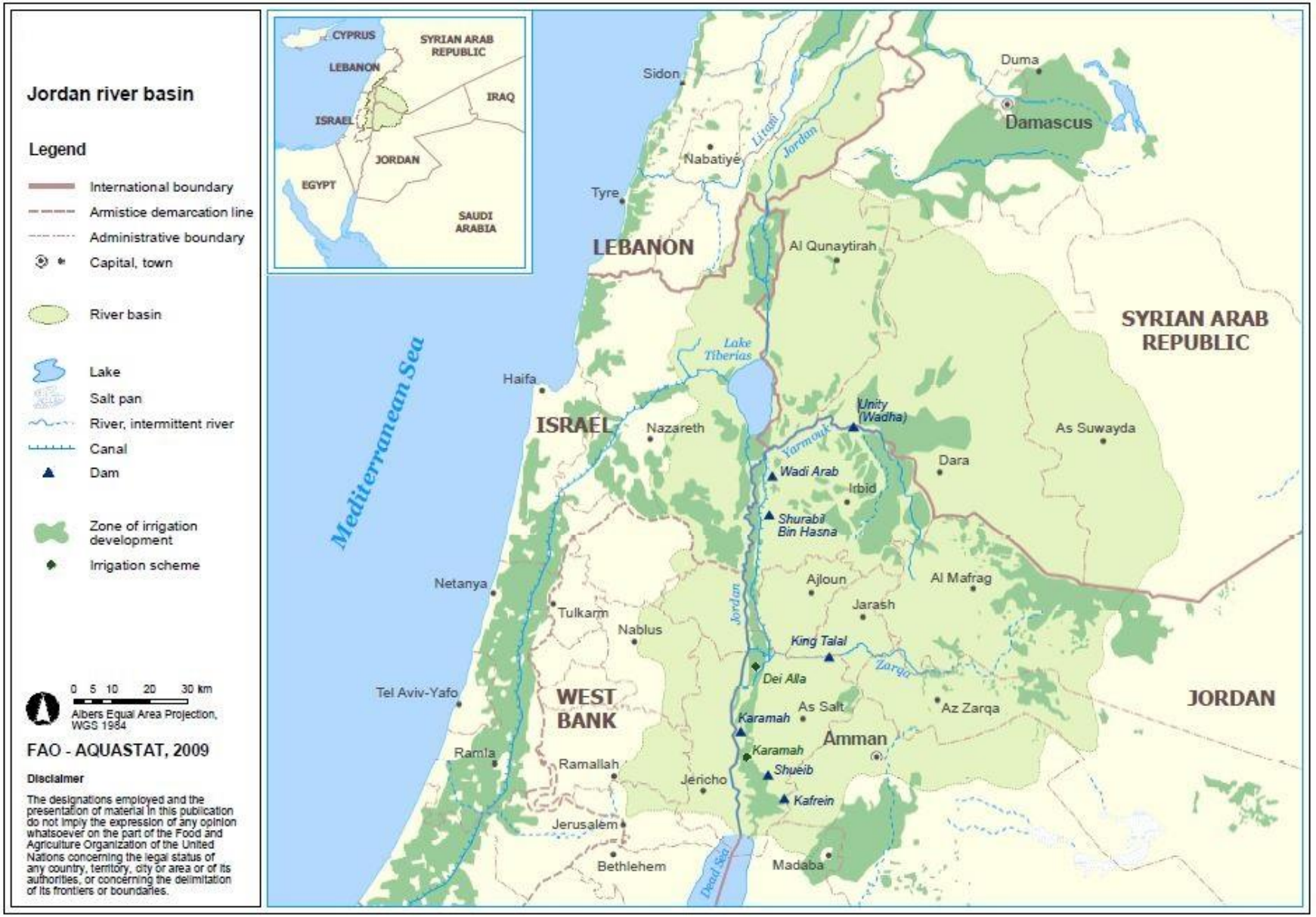
The Jordan River Basin is a transboundary basin with a total area of about 18 500 km$^2$ of which 40 percent is located in Jordan, 37 percent in Israel, 10 percent in the Syrian Arab Republic, 9 percent in the West Bank, and 4 percent in Lebanon (Lehner et al, 2008) (Table 1). The headwater of the 250 km long Jordan River originates from three rivers, the Dan, the Banias and the Hasbani, which merge at a point 5 km south of the northern Israeli border then flow south through the Hula Valley to join Lake Tiberias. With the outflow of the Jordan River from Lake Tiberias, the Lower Jordan River receives the water from its main tributary, the Yarmouk River. The Yarmouk River originates in Jordan, then forms the border between Jordan and the Syrian Arab Republic and then between Jordan and Israel, before flowing into the Lower Jordan River. The river then continues flowing south, forming the border between Israel and the West Bank to the west and Jordan to the east and finally ends in the Dead Sea (Green Cross Denmark, 2006).

TABLE 1
**Country areas in the Amazon River Basin**

| Basin | Area | | Countries or territories included | Area of country in basin (km$^2$) | As % of total area of the basin | As % of total area of the country |
|---|---|---|---|---|---|---|
| | km$^2$ | % of the Middle East | | | | |
| Jordan | 18 500 | 0.28 | Jordan | 7 470 | 40.4 | 8.4 |
| | | | Israel | 6 830 | 36.9 | 32.9 |
| | | | Syrian Arab Republic | 1 910 | 10.3 | 1.0 |
| | | | West Bank | 1 620 | 8.8 | 28.7 |
| | | | Lebanon | 670 | 3.6 | 6.4 |

Ecosystems in the region are extremely diverse, ranging from sub-humid Mediterranean environments to arid climates across very small distances. Climate projections for the eastern Mediterranean indicate future aridification (GLOWA, 2007). The average annual precipitation in the basin is estimated at 380 mm, although it varies all along the basin area (New et al, 2002). The Upper Basin, north of Lake Tiberias, has an annual precipitation of up to 1 400 mm, while the Lower Jordan Basin has an average annual precipitation rate of 100 mm only at its southern end. The largest part of the fertile land in the basin is located in Jordan and the West Bank, along the eastern and western banks of the Jordan River and the side wadis, in an area with annual rainfall of less than 350 mm. Other portions of the catchment area in the Syrian Arab Republic and Israel enjoy higher annual rainfall, more than 500 mm per year (Venot et al, 2006). The average annual temperature of the entire Jordan River Basin is around 18 ºC. The average temperature of the Jordan River Basin in January is 9 ºC, although it can drop to 5 ºC in the coldest places. In August, the average temperature of the Jordan River Basin reaches 26 ºC, rising to 30 ºC in the hottest places (New et al, 2002).

Figure 1
**Jordan River Basin**



## WATER RESOURCES

The Upper Jordan River Basin, north of Lake Tiberias, contributes the vast majority of the water while the Lower Jordan River Basin, which represents 40 percent of the entire Jordan River Basin, makes a much smaller contribution (Venot et al, 2006). The Yarmouk River, which is the main water course in this latter part of the Valley, joins the Jordan River in an area partly occupied by Israel. During the summer, most side streams dry up completely and capturing the winter floodwaters is one of the most critical aspects of water resources management in the Jordan River Basin. If these waters are not diverted or stored, they flow directly to the Dead Sea (Green Cross Italy, 2006).

The total natural discharge of the basin is subject to extreme seasonal and annual variations. In February, for example, the river may carry as much as 40 percent of its total annual flow, but in each of the summer and autumn months, when water is most needed, it carries only 3–4 percent of its annual discharge. In drought periods like 1987–91 the water discharge of the Jordan River Basin can be reduced by up to 40 percent over the whole year (Libiszewski, 1995). The annual flow entering Israel corresponding to the Jordan Basin includes 138 million $m^3$ from Lebanon (Hasbani River), 125 million $m^3$ from the Syrian Arab Republic and 20 million $m^3$ from the West Bank. The natural annual flow of the Yarmouk River from the Syrian Arab Republic to Jordan is estimated at 400 million $m^3$. However, the total actual flow at present is much lower as a result of the drought and upstream Syrian development works done in the 1980s. The Yarmouk River is the main source of water for the King Abdullah Canal (KAC), the backbone of development in the Jordan Valley. A main tributary of the Jordan River in Jordan, controlled by the King Talal Dam and also feeding the KAC, is the Zarqa River. There are also 6–10 small rivers, called "Side Wadis", going from the mountains in Jordan to the Jordan Valley.

Surface water accounts for 35 percent of the existing water resources in the basin, groundwater aquifers account for 56 percent of the resources, while reused wastewater and other non-conventional sources of water represent around 9 percent. The surface water of the Jordan River Basin is the main surface water resource available for relatively stable use in the region. It is the major source of water for Israel and Jordan and also supports the many aquifers in both countries, extending the reliance on the river (Green Cross Italy, 2006). The three main aquifers in the system are west of the Jordan River and are central to the water supply of Israel, Jordan and the Occupied Palestinian Territories: the western (or mountain) aquifer, the northeastern aquifer, and the eastern aquifer.

The region has one of the lowest per capita water resources worldwide, well below the typical absolute water scarcity threshold of 500 $m^3$/year per capita, except for Lebanon (Table 2). Moreover, water demand continues to increase rapidly due to high population growth rates and economic development.

TABLE 2
**Internal and total actual renewable water resources per capita in 2006 in $m^3$/year**

| Country or Territory | Internal renewable water resources | Total actual renewable water resources |
|---|---|---|
| Israel | 110 | 261 |
| Jordan | 119 | 164 |
| Lebanon | 1 184 | 1 110 |
| Occupied Palestinian Territory | 209 | 215 |
| Syrian Arab Republic | 367 | 865 |

### Water quality

Due to the continuous drop in water levels in Lake Tiberias since 1996, in 2001 regulations in Israel lowered the minimum "red line" from 213 m below sea level to minus 215.5 m. The risks associated with reduced water levels are enormous: ecosystem instability and deterioration of water quality, damage to nature and landscape assets, receding shorelines and adverse impacts on tourism and recreation. Salinity in the lake has been alleviated by diverting several major saline inputs at the northwest shore of the lake into a "salt water canal" leading to the southern Jordan River. This canal removes about 70 000 tonnes of salt (and 20 million $m^3$ of water) from the lake each year. The salt water

canal is also used to remove treated sewage from Tiberias and other local authorities along the western shoreline away from Lake Tiberias and into the lower Jordan River. In the catchment area, a concerted effort has been made to lower the nutrient load by changing agricultural and irrigation practices, by cutting back the acreage of commercial fishponds and by introducing new management techniques. Sewage treatment plants have been improved and a new drainage network that recycles most of the polluted water within the watershed has been constructed. Around the lake, public and private beaches and recreation areas with appropriate sanitary facilities have been developed. Pollution and sewage from settlements and fishponds near the shores are treated and diverted from the lake.

Much of Amman's wastewater treated effluent is discharged in the Zarqa river and is impounded by the King Talal Dam, where it gets blended with fresh floodwater and is subsequently released for irrigation use in the jordan valley. The increased supply of water to Jordan's cities came about at the expense of spring flows discharging into such streams as the Zarqa River, Wadi Shueib, Wadi Karak, Wadi Kufrinja and Wadi Arab. The flow of freshwater in these streams has been reduced as a result of increased pumping from the aquifers, and the flow has been replaced with the effluent of treatment plants, a process that has transformed the ecological balance over time.

## WATER-RELATED DEVELOPMENTS IN THE BASIN

The total area equipped for irrigation in the Jordan River Basin is estimated at 100 000–150 000 ha, of which approximately 32 percent in Jordan, 31 percent in Israel, 30 percent in the Syrian Arab Republic, 5 percent the Occupied Palestinian Territory, and 2 percent in Lebanon. Agricultural water withdrawal is approximately 1.2 $km^3$.

In Jordan, intensive irrigation projects have been implemented since 1958, when the Government decided to divert part of the Yarmouk River water and constructed the East Ghor Canal (later named King Abdullah Canal or KAC). The King Talal Dam on the Zarqa River also diverts the water into the KAC. The canal was 70 km long in 1961 and was extended three times between 1969 and 1987 to reach a total length of 110.5 km. The construction of dams on the side wadis and the diversion of the flows from other wadis have allowed the development of irrigation over a large area. At the same time, wells have been drilled in the Jordan Valley to abstract groundwater, not only for domestic purposes but also for irrigation. Irrigation projects from surface water resources are mainly located in the Jordan River Valley (JRV) and the side wadis linked with the Jordan River Basin. Irrigation schemes in the JRV have been constructed, rehabilitated, operated and maintained by the government. In the first projects in the north, concrete-lined canals were constructed equipped with all irrigation structures to convey and distribute irrigation water on volumetric basis. Additional irrigation schemes were constructed during the 1970s and 1980s following the extension of the KAC, and through the construction of dams, and diversion of side wadis springs and streams. From the 1990s onwards the open canal irrigation schemes were converted to pressurized irrigation systems.

Israel has constructed the Cross Israel Water Carrier, which starts at the northern end of Lake Tiberias and diverts water via massive pipelines across the Jezreel Valley and south along the coastal plain, terminating in Beersheba. Across Israel, the government has built smaller pipelines radiating out over the farmland to bring water for irrigation. The entire system, completed in 1964, forms a water grid, easily controlled and measured.

In the West Bank, localized irrigation systems are used to irrigate vegetables. A small percentage of vegetables is still irrigated by traditional methods, as well as the majority of citrus trees. Farmers usually use plastic lined pools to store their shares of fresh spring water and mix them with brackish well water. Then water is pumped and applied through trickle irrigation systems. From nearly all wells water is pumped into steel pipes which convey the water to the irrigation systems directly in the farms. As the pumping costs are high, the cost per unit water is high and thus farmers need to improve distribution and conveyance efficiency through the use of pipes.

In the Syrian Arab Republic surface irrigation is the prevailing irrigation system. Basin irrigation is the predominant technique used in surface irrigation and most of the irrigated wheat and barley are irrigated by this method. Irrigation field efficiency is reportedly to be in general below 60 percent.

Table 3 shows the large dams in the Jordan 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 m3 according to the International Commission on Large Dams (ICOLD).

TABLE 3
**Large dams in the Jordan River Basin**

| Country | Name | Nearest city | River | Year | Height (m) | Capacity (million $m^3$) | Main use * |
|---|---|---|---|---|---|---|---|
| Jordan | King Talal | Jarash | Zarqa River | 1987 | 108 | 75 | I, F, H, N |
| | Karamah | Al-Balqa (J) | Wadi Al Mallaha | 1998 | 45 | 53 | I, F, R |
| | Wadi Arab | Irbid | Wadi Arab | 1986 | 84 | 20 | I, W, F, N, R |
| | Shurabil Bin Hasna | Irbid | Wadi Ziglab | 1967 | 48 | 4 | I, W, F |
| | Kafrein | Al-Balqa | Wadi Kafrein | 1997 | 37 | 9 | I, F, R, O |
| | Shueib | Al-Balqa | Wadi Shueib | 1969 | 32 | 2 | I, F, O |
| Jordan<br>Syrian Arab Republic | Wadha (Unity) | Irbid (J)<br>Dara (S) | Yarmouk River | 2007 | 87 | 110 | I, W, F, O, H |
| | | | | | **Total** | **273** | |

* *I = irrigation; H = Hydropower, W = water supply; F = Flood protection; R = recreation; N = Navigation; O = Other*

## TRANSBOUNDARY WATER ISSUES

While the idea of developing a water sharing strategy for the whole basin was recognized as early as 1913, when the Franjieh Plan was proposed, and 1955, when the Johnston Plan was devised, not one single plan has been completely adhered to. The Franjieh Plan was intended for the irrigation of the Jordan Valley, to generate hydropower and to transfer Yarmouk River flow (100 million $m^3$) to Lake Tiberias (Sofer et al., 1999). The Johnston Plan called for the allocation of 55 percent of available water in the basin to Jordan, 36 percent to Israel, and 9 percent to the Syrian Arab Republic and Lebanon. However, it was never signed by the countries involved.

In 1951, Jordan announced its plan to divert part of the Yarmouk River via the East Ghor Canal to irrigate the East Ghor area of the Jordan Valley. In response, Israel began the construction of its National Water Carrier (NWC) in 1953. In 1964, the NWC opened and began diverting water from the Jordan River Valley. This diversion led to the Arab Summit of 1964, where a plan was devised to begin diverting the headwater of the Jordan River to the Syrian Arab Republic and Jordan. From 1965 to 1967 Israel attacked these construction projects in the Syrian Arab Republic and along with other factors this conflict escalated into the Six Day War in 1967 when Israel completely destroyed the Syrian diversion project and took control of the Golan Heights, the West Bank, and the Gaza Strip. This gave Israel control of the Jordan River's headwater and of significant groundwater resources. The most recent direct water-related conflict occurred in 1969 when Israel attacked Jordan's East Ghor Canal due to suspicions that Jordan was diverting excess amounts of water (Green Cross Italy, 2006). Later on, Israel and Jordan acquiesced to the apportionment contained in the non-ratified 1955 Johnston Plan for sharing the Jordan River Basin's water (Milich and Varady, 1998). In 1978, Israel invaded Lebanon, giving Israel temporary control of the Wazzani spring/stream feeding the Jordan River (Attili et al., after 2003).

Inter-Arab conflicts have also often arisen, but have only been small-scale low-level conflicts. The terms of the 1987 agreement between the Syrian Arab Republic and Jordan defined the Syrian share of the Yarmouk and limited the Syrian Arab Republic to building 25 dams with a holding capacity of 156 million $m^3$. To date, the Syrian Arab Republic has built 37 dams on the four recharge wadis of the Yarmouk River with a total holding capacity of 211 million $m^3$ (i.e. 55 million $m^3$ in violation of the agreement). The Syrian Arabs Republic's continuous well drilling in the Yarmouk Basin negatively impacts the base flow in the river, reducing it by approximately 30 percent (Green Cross Italy, 2006). The Wadha (Unity) Dam on the Yarmouk River was included in the agreement, with a height of 100 m and a storage capacity of 225 million $m^3$. Jordan would receive 75 percent of the water stored and the

Syrian Arab Republic would receive all of the hydropower generated. In 2003 the height of the dam was reduced to 87 m and the storage capacity became 110 million m³. The dam was completed in 2007.

Since the start of the Peace Process in the early 1990s, bilateral agreements and common principles have been signed between Israel and Jordan and Israel and the Palestinian Authority, but no multilateral plan or agreement has been negotiated and even the bilateral ones have been put under pressure and frequently violated in times of natural or political crisis.

In July 1994, Israel and Jordan signed The Washington Declaration and negotiated the Treaty of Peace, signed in October 1994. The treaty spells out allocations for both the Yarmouk and Jordan rivers and calls for joint efforts to prevent water pollution. This peace treaty established the Israel–Jordan Joint Water Committee (IJJWC), comprised of three members from each country. The Committee was tasked to seek experts and advisors as required, and form specialized subcommittees with technical tasks assigned. The two countries undertook to exchange relevant data on water resources through the IJJWC and also agreed to cooperate in developing plans for purposes of increasing water supplies and improving water use efficiency. It also specified the volumes of water to be used, stored, and transferred by and to each country during a "summer" and a "winter" season (Milich and Varady, 1998). Jordan is entitled to store 20 million $m^3$ of the Upper Jordan winter flow on the Israeli side (in Lake Tiberias) and get it back during the summer months. Jordan can build a dam on the Yarmouk downstream of the diversion point of Yarmouk water to the KAC. Jordan can also build a dam of 20 million $m^3$ capacity on the Jordan River and on its reach south of Lake Tiberias on the border between Jordan and Israel. Because Israel is to provide only 50 million $m^3$/year of additional water to Jordan, insufficient to allow the Jordanians to cover their annual deficit, the two countries have agreed to cooperate in finding sources to supply Jordan with an additional quantity of 50 million $m^3$/year of water of drinkable standards, within one year from the entry into force of the treaty. To protect the shared water of the Jordan and Yarmouk rivers against any pollution or harm, each country is to jointly monitor the quality of water along their boundary, building monitoring stations to be operated under the guidance of the IJJWC. Israel and Jordan are each to prohibit the disposal of municipal and industrial wastewater into the Yarmouk or Jordan River before treatment to standards allowing unrestricted agricultural use (Milich and Varady, 1998).

Interpretation of several terms of the treaty has at times had an uneven history. On the positive side is the June 1995 completion of a pipeline making the physical connection between the Jordan River immediately south of its exit from Lake Tiberias and the King Abdullah Canal in Jordan. Moreover, the provision of the additional 50 million $m^3$/year that Israel promised to Jordan went ahead on schedule. However, the article which calls for cooperation so that Jordan acquires 50 million $m^3$ more per year led to a "mini crisis" between the two countries in May 1997. At the heart of the dispute was Jordan's demand for an immediate transfer of 50 million $m^3$, which was to have been obtained by the construction of two internationally financed dams in Jordan. However, neither Jordan nor Israel was successful in obtaining the necessary financing. Finally, Israel agreed to supply Jordan with 25 million $m^3$ of water per year for three years as an interim solution, until the desalination plant is erected.

Recent dialogue and peace treaties have lead to increased cooperation regarding the development of future water resources projects. For instance, the 1994 and 1997 Israel–Jordan agreements led to discussions on the possibility of building a canal from the Red Sea to the Dead Sea to produce desalinated water with hydropower. It should be mentioned, however, that in their fervour to reach an accord, apparently both the Jordanians and the Israelis negotiated without coordinating their moves with the relevant ministries. Therefore, important issues remain open or vague and conflicts have arisen as a result. For example, in 1999, due to drought Israel decided to reduce the quantity of water piped to Jordan by 60 percent, which caused a sharp response from that country. Disputes of such nature are not unexpected in the future. However, the peace agreements have had the benefit of restricting such conflicts to political rather than military solutions. The fact that the Joint Water Commission for Israel and the Palestinian Authority have continued to meet to discuss critical issues even during the current period of hostilities illustrates the progress that has already been made (Green Cross Italy, 2006).

More than 30 years of Israeli occupation of the West Bank and Gaza Strip have been accompanied with a series of laws and practices targeting Palestinian land and water resources. In 1993, the "Declaration of Principles on Interim Self-Government Arrangements" was signed between Palestinians and Israelis, which called for Palestinian autonomy and the removal of Israeli military forces from Gaza and Jericho. Among other issues, this bilateral agreement called for the creation of a Palestinian Water Administration Authority and cooperation in the field of water, including a Water Development Programme prepared by experts from both sides, which will also specify the mode of cooperation in the management of water resources in the Occupied Palestinian Territory. Between 1993 and 1995, Israeli and Palestinian representatives negotiated to broaden the provisional agreement to encompass the greater West Bank territory. In September, 1995, the "Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip", commonly referred to as "Oslo II", was signed. The question of water rights was one of the most difficult to negotiate, with a final agreement postponed for inclusion in the negotiations regarding final status arrangements. However tremendous compromise was achieved between the two sides: Israel recognized the Palestinian water rights – during the interim period a quantity of 70–80 million m3 should be made available to the Palestinians – and a Joint Water Committee was established to manage cooperatively West Bank water and to develop new supplies. This Committee also supervises joint patrols to investigate illegal water withdrawals. No territory whatsoever was identified as being necessary for Israeli annexation due to access to water resources (Wolf, 1996). In 2003, the Roadmap for Peace, developed by the United States, in cooperation with the Russian Federation, the European Union, and the United Nations (the Quartet), was presented to Israel and the Palestinian Authority to seek a final and comprehensive settlement of the Israel–Palestinian conflict.

The basis for Israeli–Syrian negotiations is the premise of an exchange of the Golan Heights for peace (Wolf, 1996). In 1967 Israel seized the Golan Heights from the Syrian Arab Republic during the six-day war. The Golan Heights control the main water sources of Israel. Israel's only lake and its main source of freshwater, supplying the country with a third of its water, is fed from the Golan Heights. The Golan Heights, conquered in 1967, have been under Israeli law, jurisdiction, and administration since 1981, which, however, has not been recognized by the United Nations Security Council. The crux of the territorial dispute is the question of which boundaries Israel would withdraw to; the boundaries between Israel and the Syrian Arab Republic have included the international boundary between the British and French mandates from 1923, the Armistice Line from 1949 and the cease fire lines from 1967 and 1974. The Syrian position has been to insist on a return to the borders of 1967, while Israel refers to the boundaries of 1923. The only distinction between the two lines is the inclusion or exclusion of the three small areas with access to the Jordan and Yarmouk rivers (Wolf, 1996). In 2008, negotiations between Israel and the Syrian Arab Republic started with the objective to solve the conflict of the Golan Heights.

In 2002, the water resources of the Hasbani Basin became a source of mounting tensions between Lebanon and Israel, when Lebanon announced the construction of a new pumping station at the Wazzani springs. The springs feed the Hasbani River, which rises in the south of Lebanon and crosses the frontier ('Blue Line') to feed the Jordan River and subsequently the Sea of Galilee, which is used as Israel's main reservoir. The pumping station was completed in October 2002. Its purpose was to provide drinking and irrigation water to some 60 villages on the Lebanese side of the Blue Line. The Israelis complained about the lack of prior consultation whereas the Lebanese contended that the project was consistent with the 1955 Johnston Plan on the water resources of the region.

In 2004 and 2005 Jordan got only around 119 and 92 million $m^3$/year from the Yarmouk River and from Lake Tiberias respectively. This is only around 10 percent of the total flow of the Upper Jordan and Yarmouk rivers. It is also much less than the water share from these two basins proposed by the Johnston plan through his negotiations in 1950s.

In 2007, Jordan and the Syrian Arab Republic agreed to expedite the implementation of agreements signed between the two countries, especially with regards to shared water in the Yarmouk River Basin. They also agreed to continue a study on the Yarmouk River Basin based on previous studies. Currently, the Joint Jordanian–Syrian Higher Committee is discussing how to make use of the Yarmouk River

Basin water and how to protect Yarmouk water against depletion. Talks will also include preparations for winter and storage at the Wadha (Unity) Dam in the Yarmouk River.

Table 4 shows the main historical events in the Jordan River Basin.

TABLE 4
**Chronology of major events in the Jordan River Basin**

| Year | Plans/Projects /Treaties/Conflicts | Countries, territories or organizations involved | Main aspects |
|---|---|---|---|
| **1913** | Franjieh Plan | Ottoman Comission | Irrigation Jordan Valey, transferring Yarmouk River flows to Lake Tiberias, generating electricity |
| **1951** | Jordan announced Plan | Jordan | Jordan Plan to divert part of the Yarmouk River via the East Ghor canal |
| **1953** | Israel begun construction of National Water Carrier (NWC) | Israel | Resulting in military skirmishes between Israel and the Syrian Arab Republic. |
| **1955** | Johnston Plan | USA. Riparian countries | Allocation of water: 55% for Jordan, 36% for Israel, 9% each to the Syrian Arab Republic and Lebanon. Not signed because Arab riparians insisted the USA was not impartial |
| **1964** | The NWC opened and began diverting water from the Jordan River Valley | Israel | This diversion led to the Arab Summit of 1964 |
| **1964** | Arab Summit | Arab League | A plan was devised to begin diverting the headwaters of the Jordan River to the Syrian Arab Republic and Jordan |
| **1965-1967** | Israel attacked construction projects in the Syrian Arab Republic | Israel, Syrian Arab Republic | This conflict, along with other factors escalated in the Six Day War in 1967 |
| **1967** | Six Day War | Egypt, Israel, Jordan, Syrian Arab Republic, Occ. Palestinian Territory | Israel destroyed Syrian diversion project and took control of Golan Heights, WB and GS. Palestinian irrigation pumps on the Jordan River were destroyed or confiscated after Six Day War and Palestinians are not allowed to use Jordan River water. Israel introduced quotas on existing palestinian irrigation wells and didn't allow new ones. |
| **1969** | Israel attacked Jordan's East Ghor Canal | Israel and Jordan | Beacause of the suspicions that jordan was diverting excess amounts of water. Later on, Israel and Jordan acquiesced to the apportionment contained in the non-ratified Johnston Plan. |
| **1978** | Israel's invasion of Lebanon | Israel and Lebanon | Giving Israel temporary control of the Wazzani spring/stream feeding the Jordan |
| **1987** | Syrian Arab Republic and Jordan agreement | Syrian Arab Republic and Jordan | Defined the Syrian share of the Yarmouk and limited the Syrian Arab Republic to 25 dams with a capacity of 156 million $m^3$. The Wadha (Unity) Dam was included. |
| **1993** | Declaration of Principles on Interim Self-Government Arrangements | Israel, Occ. Palestinian Territory | Called for Palestinian autonomy. Creation of the Palestinian Water Administration Authority. Water Development Program |
| **1994** | Washington Declaration and Treaty of Peace | Israel and Jordan | Israel and Jordan signed The Washington Declaration, ending the state of belligerency and negotiated the Treaty of Peace. Allocations for Yarmouk and Jordan rivers and efforts to prevent water pollution. |
| **1995** | Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip (Oslo II) | Israel, WB and GS | Israel recognized the Palestinian water rights (during the interim period a quantity of 70-80 million $m^3$ should be made available to the Palestinians). A Joint Water Committee was established to cooperatively manage West Bank water and to develop new supplies. |
| **1996** | Israel try to begin talks on water resources with the Syrians | Israel and Syrian Arab Republic | Syrian Arab Republic refuses because of the conflict of the Golan Heights |
| **1999** | Israel reduces the quantity of water piped to Jordan by 60 percent | Israel and Jordan | Due to drought. This reduction caused a sharp response from Jordan. |
| **2002** | The Wazzani Conflict | Israel, Lebanon | Lebanon announced the construction of a new pumping station at the Wazzani springs causing tension between Israel and Lebanon. |

TABLE 4 *(continued)*
**Chronology of major events in the Jordan River Basin**

| Year | Plans/Projects /Treaties/Conflicts | Countries, territories or organizations involved | Main aspects |
|---|---|---|---|
| **2003** | Roadmap for Peace | Israel, Occ. Palestinian Territory, The Quarter | Purpose: final of the Israel-Palestinian conflict |
| **2007** | Jordan and Syrian Arab Republic agreements | Jordan and Syrian Arab Republic | Implementation of agreements signed between the two countries, especially with regard to shared water in the Yarmouk River basin. |
| **2008** | Negotiations between Israel and the Syrian Arab Republic | Israel and Syrian Arab Republic | Negotiations are taking place in order to solve the conflict of the Golan Heights |

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