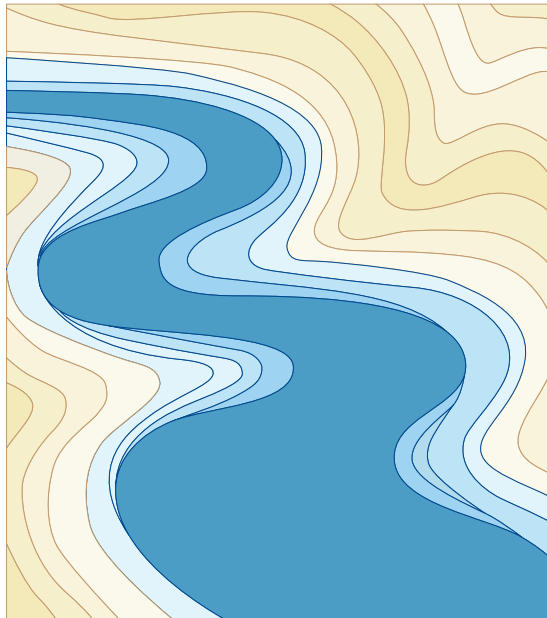


THE BLUE PEACE

Rethinking Middle East Water



With support from

Swedish International Development Cooperation Agency, Sweden

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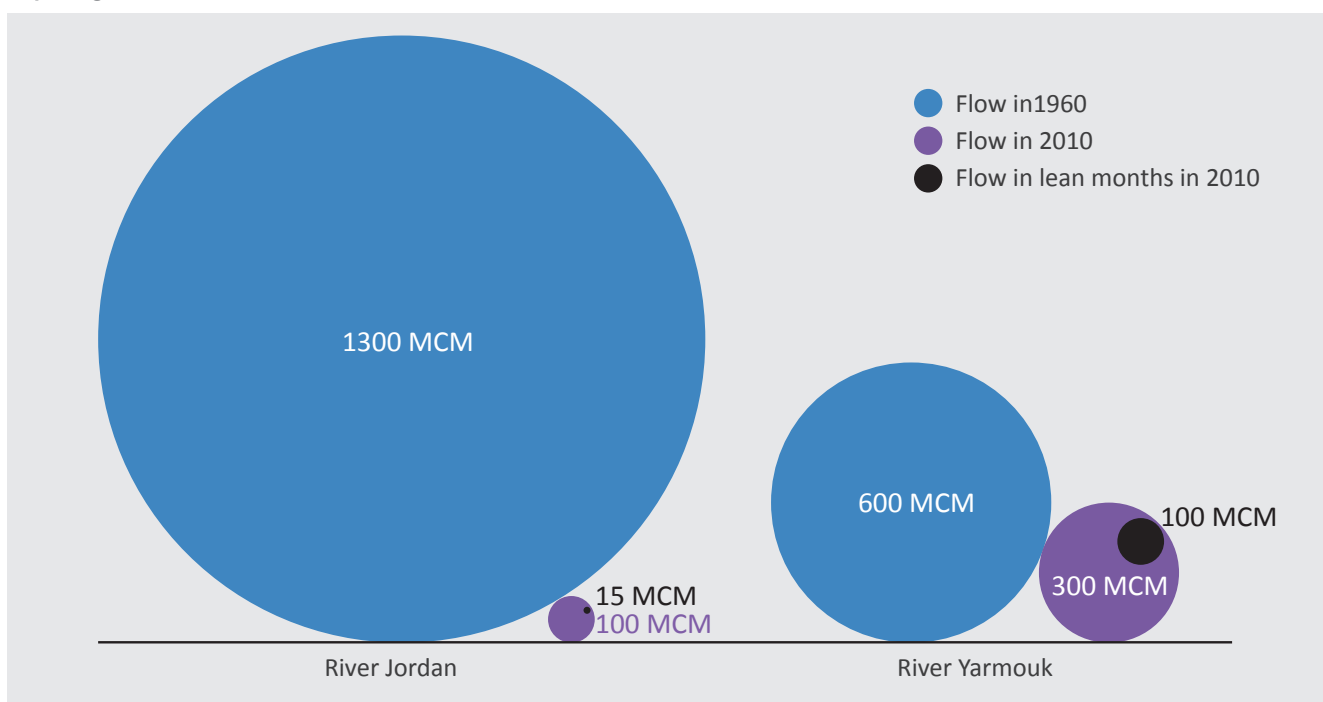
HIGHLIGHTS

The water crisis in the Middle East can be transformed into an opportunity for a new form of peace – the blue peace where any two countries with access to adequate, clean and sustainable water resources do not feel motivated to engage in a military conflict. This is possible with new policy instruments, some of which would be acceptable to the governments in the region in the near future, while others could be adapted in the long run. In the process, the River Jordan and Barada, Mountain Aquifer, and the Dead Sea, which are currently depleting at a fast rate, would be rejuvenated. The Euphrates, Tigris, Litani, Orontes, El Kabir Rivers and Lake Kinneret (Tiberias), which face threats from climate change and drought, would be made sustainable. These are the conclusions of an international report on long term assessment and policy options for water security in seven countries in the Middle East: Turkey, Syria, Iraq, Lebanon, Jordan, Israel and the Palestinian Territories.

The Strategic Foresight Group report, *The Blue Peace: Rethinking Middle East Water*, was prepared with input from almost 100 leaders, serving and former ministers, senior officials, and experts in the seven countries. The input was obtained through political consultations, research papers, an Internet forum, and three workshops held at Montreux, Switzerland (February 2010), Amman, Jordan (May 2010) and Sanliurfa, Turkey (September 2010). The project was supported by the Swedish International Development Cooperation Agency of the Government of Sweden and the Swiss Agency for Development and Cooperation and Political Affairs Division IV of the Federal Department of Foreign Affairs of the Government of Switzerland. Some of the workshops were supported by A K Party and the State Hydraulic Works (DSI) of Turkey and El Majlis El Hassan of Jordan.

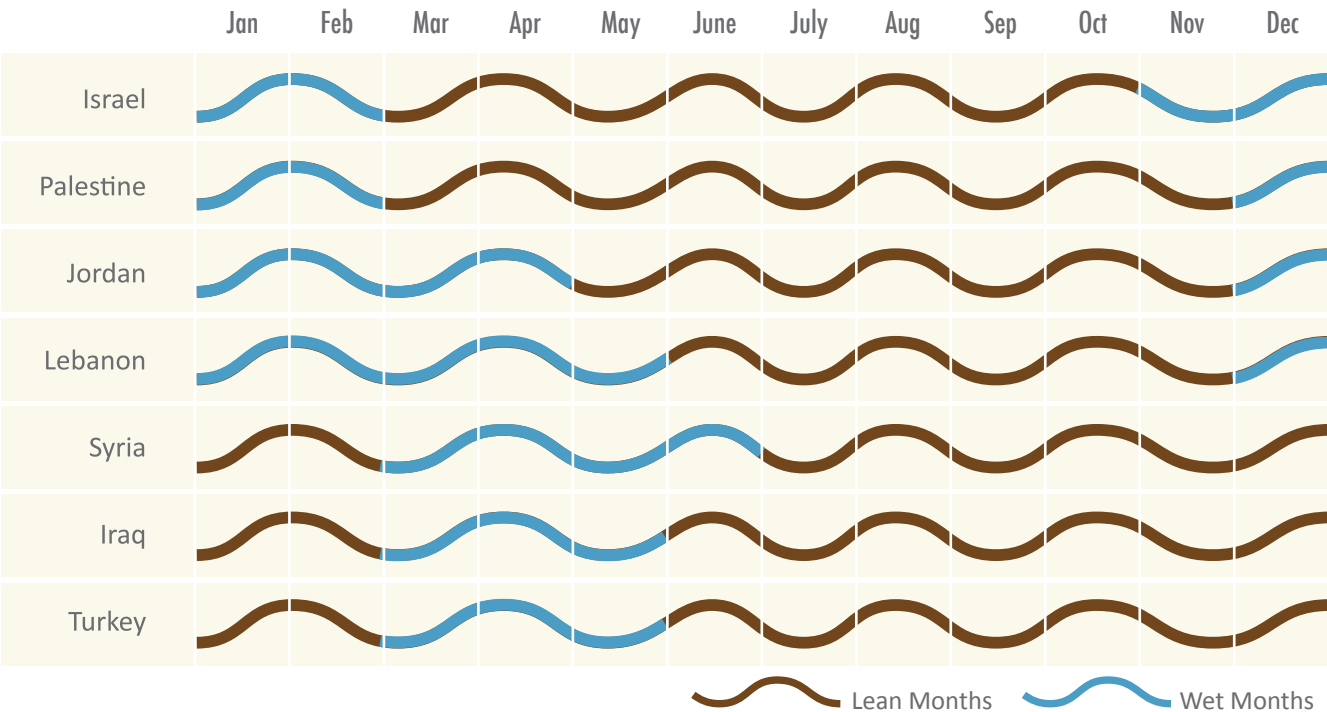
- The river flows in Turkey, Syria, Iraq, Lebanon and Jordan have depleted by 50 to 90 per cent from 1960 to 2010. For instance, the Yarmouk River declined from 600 MCM to about 250-300 MCM per year while the Jordan River from 1300 MCM to 100 MCM. The flow of Euphrates in Iraq declined from the long term average of 27 BCM to 9 BCM in 2009, a drought year.

Depleting River Flows



The impact is most strongly felt in the lean months. Most rivers in Turkey experience 50 per cent of their discharge in three or four wet months and the remaining 50 per cent in eight or nine lean months. Thus, average monthly flow of a river in some of the leanest months can be 3-5 per cent of the annual flow. In Syria, Lebanon and Iraq, the ratio is often 30:70 for lean and wet months. In other words, six or seven lean months have only 30 per cent of the annual flow and the leanest months can have only 3-5 per cent per month of the annual flow. The lean period flow of Lower Jordan River is less than 10 per cent of the annual flow or monthly 1-3 per cent of the annual average in some of the leanest months. The river almost does not exist for almost six out of 12 months of a year. The average flow in the leanest month can be only 1 MCM per month.

Seasonal Variations – Lean Months and Wet Months



With regards to Yarmouk, Euphrates and Tigris, upper and lower riparian countries continue to disagree about the actual amount of flow of the rivers across boundaries. The report proposes a Cooperation Council for Water Resources for Turkey, Syria, Iraq, Lebanon and Jordan as a political mechanism to establish common standards for measuring water flow and quality, set goals for sustainable management of water resources, and adapt regional strategies to combat climate change and drought. The establishment of a Cooperation Council can also facilitate basin level cooperation in each river basin.



Cooperation Council for Water Resources for Turkey, Syria, Iraq, Lebanon and Jordan



- Several national climate change reports and international experts predict that the summer temperatures will rise by 2.5-3.7° Celsius and the winter temperatures will rise by 2.0-3.1° Celsius, over the next 50-70 years, resulting in faster evaporation of surface water in the Middle East. As a result, patterns of rainfall will change, though there is a debate and lack of consensus about impact on overall amount of annual rainfall. Desertification is expected to affect Syria, Turkey, Iraq and Jordan - approximately 60 per cent of the land in Syria faces the threat of desertification. In the Koyna basin in Turkey, about 80 per cent of the depletion has occurred over the last decade, and the basin faces complete desertification by 2030. Iraq faces the threat of desertification at an average rate of 0.5 per cent per year. Dust storms have worsened over the last few years due to the drought and decrease in vegetation. The report calls for a regional climate change model and joint strategies to combat climate change, desertification and drought and underlines the urgency of installing regionally developed climate change models for 2010-2100, that take into account the specific requirements, nature and nuances of the countries in the region.
- The renewable freshwater resources in the Mountain Aquifer, shared by Israel and the Palestinian Territories, have been reduced by seven per cent from 1993 to 2010 and in the Western Galilee Aquifer by 15-20 per cent. This is assuming full recharge in a normal rainy year. The availability of water is substantially reduced in drought years. As a result, the calculations made at the time of Oslo Accords and hitherto used by most international organisations need to be revised downwards to provide a realistic formula for water sharing between Israel and the Palestinian Territories (or a future Palestinian State).

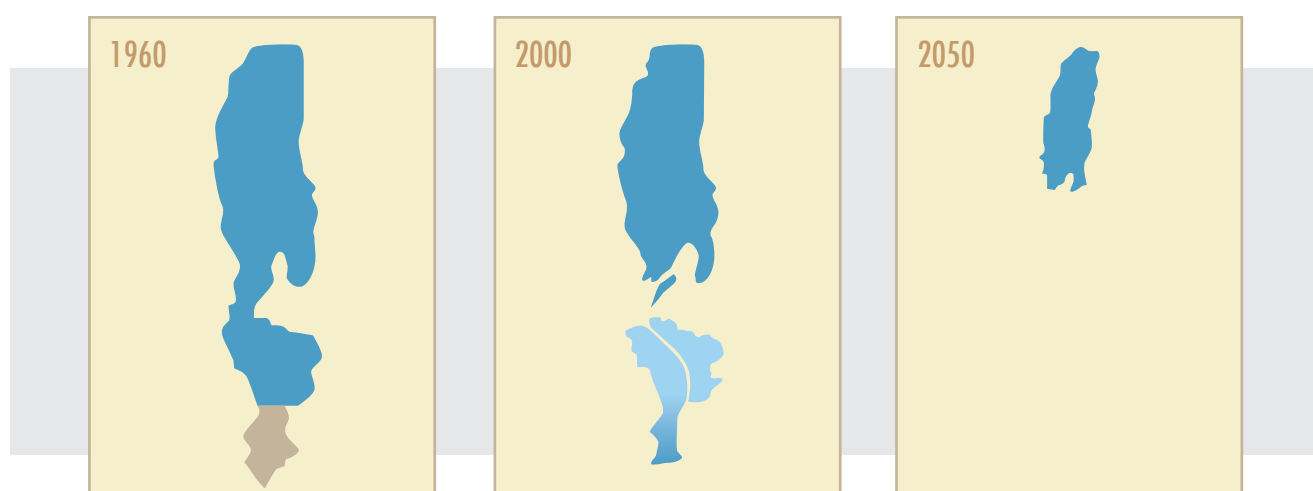
Comparison with Oslo II (MCM per median year)

	1993 Availability (Oslo II)	New Median Availability	
		Israel	Palestine
Yarkon-Taninim (Western Aquifer)	362 (340+22)	317	20
Nablus-Gilboa (North-Eastern Aquifer)	145 (103+42)	92	38
Eastern Aquifer	172 (40+54+78)	67	100
Total	679	476	158

The report calls for a confidence-building initiative between the heads of water authorities of Israel and PA, with support of political leaders and under observation of representatives of Quartet or major donor countries, to assess the real situation with regards to the state of freshwater resources in the aquifers along with coordinated water management. Such a process should be carried out at high political level, authorised by the respective Prime Ministers, and should complement technical level interaction through the Joint Water Committee, as well as the trilateral Israel-PA-US forum. The report also calls for strengthening of the waste water management capacity of the Palestinian Territories, possibly using small sized decentralised plants, which can benefit the poor population, provided a monitoring system is put in place to control the sewage discharge from such facilities.

- ≡ The water level in the Dead Sea dropped from 390 metres below sea level in the 1960s down to 420 metres below sea level at present and will be 450 metres below sea level by 2040. The water surface area has shrunk by a third, from 950 square kilometres to 637 square kilometres. If the surface water level in the Dead Sea continues to erode, it will be reduced to a lake in 50 years, and will eventually disappear altogether.

Changing Dead Sea



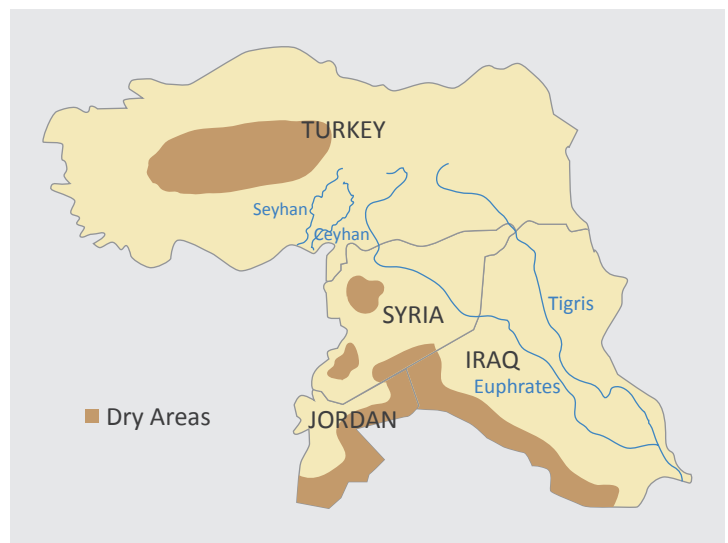
The marshlands in Iraq have shrunk by 90 per cent. Lake Kinneret (Tiberias) reaches the lower red line of 212 metres below sea level in drought years. The deterioration of these water resources not only results in



economic crisis but also undermines people's culture. The report recommends that critical water bodies should be declared as regional commons and all riparian countries should work together to set common goals for their rejuvenation and sustenance.

- Most of the countries in the region experience unequal distribution of water internally due to their topography and geography. In Iraq, consecutive years of drought, war and the lack of adequate governance has hindered overall development in the water sector, and the country is simply unable to provide the required water to its population. Amman-Al Zarqa, located in north central Jordan with the highest population density, is at the edge of the Badia Desert. Important Syrian cities – particularly Damascus, Homs, Hama – are in the western part of the country, while the Euphrates flows in the eastern part. In Turkey, the most fertile region is around the Euphrates-Tigris Basin in the east and the Seyhan-Ceyhan rivers in the south. The central parts of the country have few rivers and receive less than 250 mm of rainfall annually. Turkey's capital city, Ankara is located there and has no natural water body or groundwater source located close to it. Izmir and Adana also face water shortages as the potential of nearby basins is not fully harnessed. The report recommends that it is most essential to address internal disequilibrium on an urgent basis. Any plans for cooperation between countries would not be politically attractive unless and until internal needs of all countries, including relatively water surplus countries, are satisfied.

Internal Disparities



- In the past 20 years, Turkey has examined the possibilities of exporting water from its national rivers. In future, Turkey will only consider exporting water from its national rivers such as Manavgat, Ceyhan, Seyhan, and others. It will not export water from trans-boundary rivers such as the Tigris and Euphrates. Turkey will have an exportable surplus of 2-4 BCM from national rivers during 2010-2030, though it would be uneven throughout the year. In the lean season of 8-9 months, it can be as low as 100 MCM per month. During such a period, Turkey will require water for its domestic use. It will still be able to export at least 1-1.5 BCM water in the wet and average months to Jordan Valley countries if the latter work out a mutually acceptable formula for water to be utilised by all of them and if Turkey finds it politically feasible to undertake this endeavour.

Turkish National Water Exports



The report recommends an expert study to examine the long term prospects of the supply capacity of the Turkish national rivers, taking into account the potential impact of climate change, snow melt, domestic demand, economic needs and seasonal variations.

The Blue Peace essentially requires a comprehensive approach. It is necessary to act on several fronts at the same time, and yet it is possible to choose different entry points of intervention as per social and political dynamics. The report presents a roadmap for action beginning with efficient internal management, storage and distribution; the establishment of Cooperation Council for Water Resources for Iraq, Jordan, Lebanon, Syria and Turkey; and separately launching of a high level Confidence Building Initiative between Israel and the Palestinian Authority.

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