Strategic Sectors | **Economy & Territory**

Water Challenges in the Mediterranean

Dr. Aysegül Kibaroglu
Department of Political Science and International Relations
MEF University, Istanbul

One of the most pressing issues of the 21st century is the management and allocation of limited freshwater resources in the world, as they become increasingly scarce. OECD projections show that 40 percent of the world's population currently lives in water-stressed river basins, and that water demand will rise by 55 percent by 2050 (OECD, 2012). The degree of water scarcity and its political, economic and social implications are felt much more severely in regions like the Mediterranean. Almost every factor linked with water crises globally is present in the region, including: scarcity and variability of freshwater resources; rapidly growing population; changing levels of economic development; misuses as well as poor water management and allocation practices; and burgeoning uncertainties coupled with climate change. An important number of these water resources, particularly in the southern rim of the region, are transboundary in that they cross political boundaries of more than one nation. This increases the complexity of the problem, as it has now become an issue at an international level (Kibaroglu, 2016). Hence, in order to fully comprehend the water situation in the Mediterranean region, it is necessary to review water challenges at national and regional levels, and set a priority ranking for the problems of a physical, technical, institutional, social and economic nature, which affect the development, management and use of water resources.

Water Quantity and Quality Challenges

The Mediterranean region displays significant contrasts in its demographic and hydrological features, which have shaped the water management policies of its regional countries. The population of the Basin is 427 million; this accounts for seven percent of the world's total population. Water stress is a high concern, where a large portion of the world's "water-poor" population lives in the region (Benoit and Comeau, 2006).

Water resources are unevenly distributed in the Mediterranean region with 72 percent of resources in the north, 23 percent in the east, and five percent in the south.[1] Thus, the shortage of water is mainly focused in the southern and eastern Mediterranean countries. However, the severe droughts experienced between 1990 and 2005 have marked the vulnerability of the water supply even in the industrialized northern Mediterranean countries (Burak, 2008).

Water availability will decrease, particularly in the southern Mediterranean countries, since the regulating capacity of dam reservoirs has decreased under the effect of siltation. Moreover, permanent flow from upstream riparian countries may not be ensured due to drought conditions.

The shortfall in quantity has been compounded by a decrease in quality due to the contamination of surface and groundwater resources in the region (Hamdy, 2001). In the last 50 years, the total water demand has doubled as a result of demographic pressure and from the development of water-intensive activities, such as tourism and manufacturing. Indeed, most of the water is used in the agricultural

[1] Northern Mediterranean countries are Spain, France, Italy, Greece, Monaco, Slovenia, Croatia, Bosnia-Herzegovina, Serbia, Montenegro, Albania, Cyprus and Malta. Southern Mediterranean countries are Egypt, Libya, Tunisia, Algeria and Morocco. Eastern Mediterranean countries are Turkey, Syria, Lebanon, Israel and the Palestinian Territories.

sector, which presents high rates of inefficiency. In the near future, availability of water will be the "main constraint to agricultural development of arid" and semi-arid countries in the southern and eastern Mediterranean. Without efficient control and proper water management, self-sufficiency in food and energy will continue to be a challenge for most countries in the region.

Impacts of Climate Change

The shortage of water in the region has been affected by the impact of climate change through increasing temperatures and variations in precipitation. Once again, the impacts have different consequences in the region: the southern and eastern Mediterranean countries are exposed to desertification, increasing soil aridity and exhaustion of water sources. Meanwhile, due to the lack of an efficient soil management policy, the northern shores of the Mediterranean appear more vulnerable to the increase in floods and landslides, as well as the resulting damage to infrastructure.

In the last 50 years, the total water demand has doubled as a result of demographic pressure and from the development of water-intensive activities, such as tourism and manufacturing.

Under the impacts of climate change, there will be less water available for irrigation, energy production, and domestic and industrial use. Less water in the rivers will also increase the stress on riverside ecosystems. Recent severe droughts in the region convey important messages about what could happen in the region in the future. Such events, which could become more frequent and intense, could threaten water availability and food security, and may cause conflicts in the region.
Climatic change will also alter the marine environment, with an expected rise in sea levels modifying several shores of Mediterranean countries. The most striking effects will be the submersion of land in delta areas (the Nile, Po and Rhone rivers), in the coastal zones and in the densely populated cities and suburbs close to the Mediterranean Sea (Ferragina, 2009).

Challenges for Sustainable and Integrated Water Management

The questions of demand versus supply with regard to water management are important issues that require special attention in a water-scarce zone such as that of the southern countries of the Mediterranean. For a long time the supply management concept has dominated actions in the region. During the last century, the region witnessed major water supply projects including large impoundments, long distance transfer and the mining of fossil water. These projects are met with many social and environmental limitations that require a combination of supply and demand management actions, such as minimizing waste, improving efficiency and conservation works.

Under the impacts of climate change, there will be less water available for irrigation, energy production, and domestic and industrial use

In many parts of the region, agriculture will continue to be the main consumer of water resources. In terms of food security for the developing countries of the region, the water gap will be around 50 percent; the result of a growing population and deterioration of productivity due to poor water management. For sustainable agricultural development, large amounts could be made available to meet new agricultural demands by improving efficiency in this sector through better systems of on-farm water management, reducing irrigation water-distribution losses, changing cropping patterns, improving irrigation scheduling, and adopting irrigation-efficient technologies. These policies should be supported

by participative irrigation management and water use practices, whereby equitable irrigation water charges are introduced (Hamdy, 2001).

Technical solutions alone cannot provide the increasing population with a safe water supply and proper environmental protection

Technical solutions alone cannot provide the increasing population with a safe water supply and proper environmental protection. Integrated water-resources management including technical, managerial, institutional, social and economic aspects constitute the first priority among the range of actions included in the adopted strategy. New dams, river diversions and overexploitation of groundwater resources rarely offer sustainable solutions. The key challenges are to establish priorities and policies for allocating water among competing uses and users, to encourage more efficient and productive use of water, and to reshape institutions to better suit the water constraints. Increasing efficiency by reducing losses and wasteful use is expected to help stabilize water demand in the southern and eastern Mediterranean countries (Burak and Margat, 2016).

Challenges of Transboundary Water Management in the Southern and Eastern Mediterranean

The transboundary water resources shared among the countries of the region or with countries outside the region constitute the majority of the water resources, including both surface and groundwater bodies. Moreover, major transboundary river basins in the Mediterranean, namely the Jordan, Nile and the Euphrates-Tigris are in sub-regions that have experienced severe political tensions. These political circumstances have aggravated past water disputes, which otherwise might have been solved had the political climate been more favourable. In other words, water disputes were overlaid, or at least influenced, by multifaceted interstate conflicts involving other disputes over security, borders, and other issues.

In this context, the water dispute in the Jordan basin is a distribution conflict embedded in a protracted political (Arab-Israeli) conflict, displaying all the characteristics of a zero-sum game, whereas the water dispute in the Nile basin is intimately related to unfair clauses in historical, bilateral sharing agreements. Additionally, the increasing ability and desire of the upstream states, namely Ethiopia, to challenge Egypt's status as hydro-hegemon and the overall status quo constitute contemporary reasons for tensions over water. In the Euphrates-Tigris basin, the water dispute arose from the competitive, uncoordinated and unilateral water development projects of the riparians, however the political linkages established between transboundary water issues and non-riparian security issues also exacerbated the disagreements over water sharing and allocation.

Despite the numerous water sources disputed between different countries, no conflict in the area has been exclusively caused by water, although this natural resource has played a crucial role in the Arab-Israeli conflict and the disputes around the Tigris-Euphrates and Nile basins.

Major transboundary river basins in the Mediterranean are in sub-regions that have experienced severe political tensions

The competing demands for water in the absence of a conflict resolution mechanism may lead to severe consequences in the water-scarce zone. There is an obvious and urgent need for regional water cooperation in the region. Concerned countries should realize that without cooperation they cannot address the issues of each country and the only way out is through cooperation. This can only be achieved through recognition of the interests and the concerns of all riparians through the comprehensive, integrated and environmentally-sound water management of the entire water basin.

In this respect, one productive approach to the cooperative development of transboundary waters in the region should be to take a regional view of the benefits to be derived from the river basins. When negotiations focus solely on water sharing, upstream and downstream differences will be exacerbated, thereby giving greater prominence to water gains and losses. This has regularly required the riparian states to see water as more than just a commodity to be divided—a zero-sum, rights-based view. Instead, they need to develop a positive-sum, integrative approach that ensures the equitable allocation not of the water but of the benefits derived from it. Adding development opportunities in other sectors may enlarge the area of possible agreement and make implementation more manageable. In addition, inter-sectoral linkages may offer more opportunities for the generation of creative solutions, allowing for greater economic efficiency through a basket of benefits.

Bibliography

Benoit, Guillaume and Comeau, Aline. *A Sustainable Future for the Mediterranean, The Blue Plan's Environment and Development Outlook,* Plan Bleu, 2006.

Burak, Selmin. "Comparative analysis of water management practices in Mediterranean Countries" in: Gonenc, I.E.; Vadineanu, A.; Wolflin, J.P. and Russo, R.C. (eds.) *Sustainable use and development of watersheds*. NATO Science for Peace and Security Series (Series-C: Environmental Security). The Netherlands: Springer, 2008.

Burak, Selmin and Margat, Jean. "Water Management in the Mediterranean Region: Concepts and Policies" in *Water Resources Management* 30: 5779–5797, 2016.

Ferragina, Eugenia. "The Water Issue in the Mediterranean" in Michael Scoullos and Eugenia Ferragina (eds.), *10 Papers for Barcelona 2010: Environmental and Sustainable Development in the Mediterranean*, European Institute of the Mediterranean & EU Institute for Security Studies. Barcelona, 2009.

Hamdy, Atef. "Water Resources Management in the Mediterranean Countries: Priority Actions" in *MEDIT* 2: 24-29, 2001.

Kibaroglu, Aysegul. *Facing Water Challenges in the Middle East*, In *Regional Cooperation Series*. MEI Policy Paper 2016-8. Washington D.C.: Middle East Institute, 2016.

OECD. *OECD Environmental Outlook to 2050*. OECD Publishing, 2012.