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The Politics of Thirst: Water Security and Power Struggles in the Middle East

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Abstract
Water scarcity has emerged as one of the most critical geopolitical and environmental challenges in the Middle East. Despite representing only 1.4% of the world's renewable freshwater, the region houses over 6% of the global population, rendering it the most water-scarce region globally. "This paper explores the complex interplay between water scarcity, political tensions, and regional power struggles, focusing on the role of shared river systems, virtual water trade, and the shifting political economy of agriculture. It investigates how freshwater shortages—exacerbated by climate change, rising populations, urban expansion, and inefficient agricultural practices—have led to transboundary tensions, particularly in the cases of the Iran-Taliban conflict over the Helmand River, and the ongoing Nile dispute involving Egypt and Ethiopia. Furthermore, the paper assesses the socio-political consequences of water insecurity, including displacement, disease outbreaks, and the weakening of rural livelihoods. It also analyzes the diminishing role of agriculture in national GDPs and its impact on state interests in water management. The study emphasizes how virtual water imports through grain trade and desalination initiatives have temporarily mitigated crises, yet they highlight the region's structural dependency on external sources. By contrasting water with oil in terms of economic and political capital, the research reveals that while water remains essential for sustenance and domestic needs, its influence in shaping modern Middle Eastern economies is secondary to oil. However, the symbolic and strategic significance of water persists, particularly in nationalist narratives and state-building projects. Drawing upon case studies, regional statistics, and reports from UNESCO, the World Bank, and other organizations, the paper concludes that water insecurity in the Middle East will intensify unless holistic, cooperative, and climate-resilient governance frameworks are urgently adopted.

Keywords: Water Scarcity, Middle East, Geopolitics, Helmand River, Nile Dispute, Virtual Water, Agricultural Policy, Climate Change, Water Security, Transboundary Water Conflict, Desalination, Political Economy, Resource Management, MENA Region, Water Diplomacy

Introduction

Water scarcity has increasingly become one of the defining features of geopolitical dynamics in the Middle East, a region historically plagued by limited freshwater resources and complex transboundary water-sharing arrangements. Home to just over 6% of the world's population but endowed with only 1.4% of global renewable freshwater resources, the Middle East and North Africa (MENA) region stands at the frontline of a looming global water crisis. The region's hydrological realities—marked by arid and semi-arid climates, erratic rainfall, declining aquifers, and high evaporation rates—are further strained by rapidly growing populations, unregulated urban expansion, climate change-induced droughts, and excessive water use in agriculture.

As these pressures mount, water is no longer a mere environmental concern but has transformed into a strategic asset with immense political implications. Water scarcity in the region manifests both in physical and economic forms—while many countries simply do not have sufficient renewable water

resources (physical scarcity), others face acute shortages due to lack of infrastructure, poor governance, and transboundary disputes (economic scarcity). This introduction situates the Middle East within this broader hydropolitical context by exploring the evolving relationship between water insecurity and power struggles among regional actors. Countries such as Iraq, Syria, Iran, Turkey, Egypt, Ethiopia, and Jordan are embroiled in prolonged disputes over key river systems like the Tigris-Euphrates and the Nile, with upstream states often accused of unilateral development and flow control, exacerbating tensions downstream. For example, the Grand Ethiopian Renaissance Dam (GERD) has sparked fierce opposition from Egypt, which sees any threat to its historical share of the Nile waters as an existential crisis. Similarly, Iran's disputes with the Taliban over the Helmand River highlight how water sharing is becoming militarized in some contexts, intensifying border skirmishes and nationalistic rhetoric. Historically, water has played a vital role in state formation, irrigation-based economies, and the emergence of centralized power, as seen in early river basin civilizations like those in Mesopotamia and

Source : GIS Maps

Egypt. However, in the modern capitalist era, the economic centrality of water has diminished compared to oil, with petro-rents shaping state power, wealth distribution, and foreign policy more profoundly than water access. Nonetheless, water retains symbolic and strategic importance, often invoked in nationalist discourse and development agendas. In countries such as Israel and Turkey, massive water infrastructure projects like the National Water Carrier and the Southeast Anatolia Project (GAP) are emblematic of state-building and territorial integration efforts. Despite technological advances and policy reforms, the future water outlook for the Middle East remains precarious.

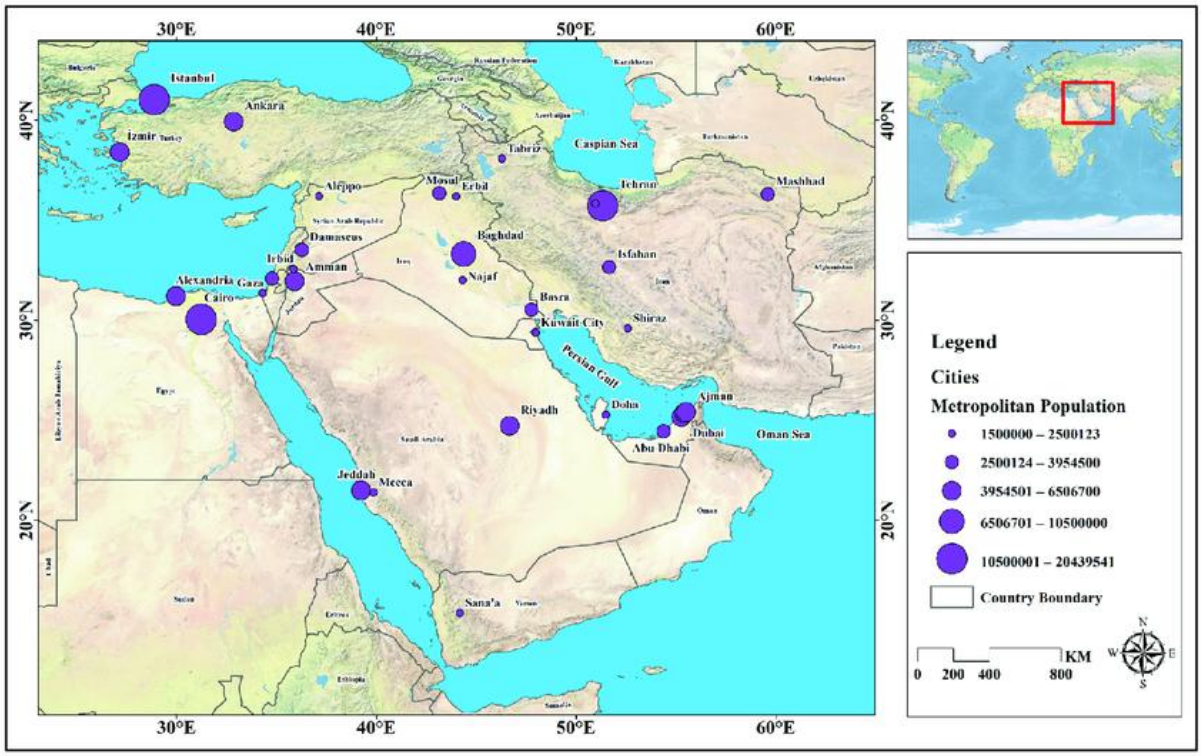
Some basic water resource statistics: General and region-specific

Water is available for use by communities and economies as fresh water and soil water. Fresh water occurs on the surface in the form of river flows and in natural and constructed surface reservoirs. Fresh

water also occurs in groundwater aquifers. In nonarid economies, water is additionally available in soil profiles supporting natural vegetation and crops. The majority of the water used by the human population worldwide is used for food production, and comes from soil water and fresh water". "In the Middle East, soil water is even scarcer than fresh water.

The withdrawal of fresh water and soil water from the natural environment for agriculture can have serious impacts on the environmental services provided by water. The peoples of the Middle East have similar annual per capita water requirements to those in other regions. They need water for drinking, for domestic use, and for the production of the food they consume. Water is also needed as an input to industry and services and for municipal needs. The Middle East is special only in that it endures high temperatures, which means that water stored at the surface will be subject to high levels of evaporation. Where communities in the Middle East choose to have high levels of green space, then the municipal use of water will compete seriously with all the other uses. Water for drinking, for domestic use, for industry and services is small water. Big wate is water used to produce food and for maintaining green spaces, such as parks. Small water accounts for about ten per cent of per capita consumption, while big water constitutes about 90 per cent. An individual needs only one cubic meter per year of high quality water for drinking. In industrialized and Middle Eastern economies, an individual uses about 100 cubic meters per year of fresh water for domestic needs.

The region also has a very poorly understood variable seasonal source of water in the region's winter soil profiles. The deficit of about 150 billion cubic meters per year of fresh water is partly made up by 50 billion cubic meters of imported virtual water embedded in water intensive commodities such as grain. The remaining 100 billion cubic meters is available in the tracts with rainfall above 250 mm per



Physiographical map of the study area (Middle East).

Source : GIS Maps,

year and through other trade. The population of the region is rising rapidly, although the rate of increase is falling. It is estimated that the region's population will level off at about 600 million sometime after the year 2050. These 600 million people will require about 600 billion cubic meters of water per year. The finite renewable freshwater resources of the region will remain at 200 billion cubic meters per year.

Additional water will become available with the re-use of municipal, including industrial, water. Such new water is restricted in use to irrigation of non-food crops. Unfortunately, municipal water is part of small water, which accounts for only about ten per cent of the total water budget. If half of all municipal and industrial water were to be re-used, it would only increase the volume of water available annually by about five per cent, or 10 billion cubic meters. In addition, new water can be manufactured for municipal use in desalination plants. Costs have fallen in the past five years, and such water can now be produced for about 50 U.S. cents per cubic meter. This means that populations that live close to the sea will easily be able to obtain their municipal and drinking water. Between 60 and 70 per cent of the population of the Middle East and North Africa live within a few kilometers of the sea or a major river. The region presently manufactures about 2.5 billion cubic meters per year of desalinated water. By 2050 it is likely that the figure will be ten billion cubic meters per year, but it could be much more. These numbers are important in that ten billion cubic meters of re-used water plus ten billion cubic meters of desalinated water constitute a significant proportion of the 60 billion cubic meters of municipal water that will be needed in the mid-21st century. This water is, however, the small water. This new water is a negligible proportion of the water needed to produce the future annual food needs of the region, only about ten per cent of the total of about 600 billion cubic meters. The future supply/demand equation for water in the Middle East is one of serious non-self-sufficiency

A combination of technological progress, the production and export subsidies in the Northern economies referred to above, and the exclusion of the externalities of environmental degradation from grain prices all drove prices down. In 1898, it was possible to import wheat into Jordan from North America at prices lower than the costs of local production (Lancaster, et al 1999).

Water within contemporary political economy

One retort to the above might be that water has itself been a key factor in processes of economic growth and state formation, and water shortages a major constraint on development. This may, indeed, have been the case in the past, for, as Karl Wittfogel famously argued, river basins like the Nile and the Euphrates – Tigris tended historically to give rise to powerful economic centres and highly bureaucratised political systems (what he called ‘oriental despotisms’) wrought out of the need to control large irrigation systems Water has, of course, been a vital input into Middle Eastern agricultural development, and indeed this has been water’s major contribution to regional economic growth. In most countries agriculture accounts for over two-thirdsof total water use, the only exceptions being Israel (54%) and Kuwait (60%), where overall scarcity dictates that a higher proportion of water be allocated for domestic and industrial uses. Across most of the region the water – agriculture nexus remains tight, with even water-stretched states such as Jordan allocating 75% of their water to agriculture.3Yet, notwithstanding this, the structural significance of agriculture to the region’s economies and societies is in steep decline, and with it the political-economic significance of water is also on the wane. Agriculture’s contribution to GDP is everdecreasing, such that it now stands at only 16.8% in Egypt (down from 20.1% in 1981), 2.1% in Jordan (previously 6.1%), and only 2.8% in Israel. Agriculture’s contribution to exports is declining, in Israel’s case down from 12.5% in 1981 to a mere 2.5% in 2000, in Jordan’s down from 23.9% in 1981 to 15.9% in 2001. The proportion of the labour force employed in agriculture is also waning, now down to 31.5% in Egypt (compared with 55% in 1965), below 6% in Jordan (37%), and only 2% in Israel.. As cities continue to expand (58% of the Middle Eastern and North African population now lives in urban areas), so the mass social basis of regimes, parties and opposition movements tends to shift away from the peasantry towards urban slums. (Contrast, for instance, the peasant social bases that brought Nasser and the Syrian and Iraqi Ba’ath parties to power with the largely urban roots of contemporary Islamist movements.) And as economies become less

dependent on agriculture, so economic growth and sociopolitical stability become less dependent on a steady supply of water, and less affected by drought.

Define the concept of water scarcity and why it matters geopolitically.

Water scarcity refers to a situation where demand for freshwater exceeds supply, limiting access for drinking, sanitation, agriculture, and industry. Geopolitically, water scarcity matters because it can exacerbate existing tensions, drive competition for resources, and even lead to conflict, particularly in regions where water sources are shared among multiple nations.

Elaboration:

- **Definition:**
  Water scarcity is a state where the available freshwater resources are insufficient to meet the needs of a population or ecosystem. This can occur due to insufficient supply (physical scarcity) or inadequate infrastructure or management (economic scarcity).
- **Geopolitical Implications:**
  - **Increased Competition:** Water scarcity can intensify competition between nations over shared water resources, potentially leading to diplomatic disputes or even armed conflict.
  - **Resource Conflicts:** Regions facing water scarcity may experience conflicts as different groups compete for limited resources, such as irrigation water or access to aquifers.
  - **Economic and Social Impacts:** Water scarcity can negatively impact agriculture, industry, and overall economic development, leading to food insecurity, poverty, and social instability.
  - **Migration and Displacement:** Water scarcity can force populations to migrate in search of alternative water sources, potentially leading to displacement and increasing tensions between communities.
  - **Diplomatic and International Relations:** Water scarcity can become a significant point of contention in international relations, requiring cooperation and negotiation between countries sharing water resources.

Introduce the Middle East as a water-scarce region with a history of resource-based tension.

The Middle East and North Africa (MENA)* is the most water-scarce region of the world. Home to 6.3 percent of the world's population, the region contains only 1.4 percent of the world's renewable fresh water. As population pressures in the region increase, the demand for water resources rises". This brief examines the challenges of meeting this demand given scarce water resources. "Country strategies to deal with water shortages depend on local conditions, including topography, the extent of water scarcity, available financial resources, and technical and institutional capacity. Overall, developing a mix of strategies that increase supply, manage demand, and reduce long-term pressures on water is urgent more than ever before, as population pressures in the region continue to increase.

Fresh Water: A Scarce and Critical Resource

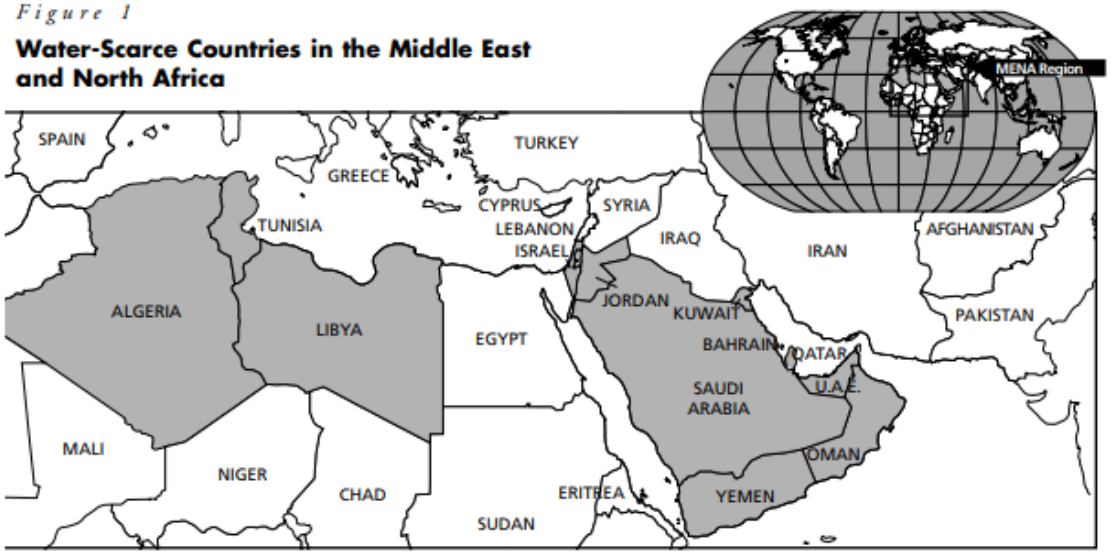
Water sustains humans' health, food production, and economic development. But only 3 percent of Earth's water is salt-free, or fresh water. Moreover, nearly 70 percent of fresh water is locked in glaciers and icebergs, and is not available for human use. The fresh water that is available comes from rain or from rivers, lakes, springs, and some groundwater reserves, such as aquifers.[1] (Water below the water table, contained in solid or fractured rock, is known as groundwater; aquifers are geologic formations that store, transport, and yield groundwater to wells.) Today's wells can reach water buried deep within Earth, so these freshwater supplies can be depleted on a massive scale. Most aquifers can be recharged by the annual water cycle, but water trapped in ancient underground formations cannot be renewed.

Rapid population growth has exacerbated the water scarcity MENA faces. While natural factors such as intermittent droughts and limited freshwater reserves can cause scarcity, high population growth

imposes additional pressures.[2] Experts measure water availability in terms of the amount of annual renewable fresh water per person. A country is considered water stressed when its total renewable freshwater resources lie between 1,000 cubic meters and 1,700 cubic meters per person per year. Water-scarce countries have an average of less than 1,000 cubic meters of renewable fresh water per person per year. Twelve of the world's 15 water-scarce countries are in MENA (see Figure 1).

Figure 1

Water-Scarce Countries in the Middle East and North Africa



NOTE: Water-scarce countries (shown in green above) are those with less than 1,000 cubic meters of renewable fresh water per person per year.
SOURCES: Peter Gleick, *The World's Water 2000-2001, The Biennial Report on Freshwater Resources:* Table 1; and Carl Haub and Diana Cornelius, *2001 World Population Data Sheet.*

These thresholds for water scarcity and water stress do not reflect the freshwater resources that may eventually become accessible for human use. Accessibility is determined by a nation's ability to collect and transport water to users and by the quality of the water. Human activities often pollute existing sources of fresh water, making it unusable or expensive to treat and reuse. Once water is available for human use, however, many factors affect how that water is used.

Review of literature

Author(s) & Year	**Title/Topic**	**Main Focus**
Von Hein, S. (2023)	Iran-Taliban Water Conflict	Examines geopolitical tensions over Helmand River; reflects broader water disputes in arid regions.
Gambrell, J. (2023)	Iran-Taliban Border Gunfire	Highlights water as a trigger in border clashes, escalating regional instability.
Sabbagh & Borger (2023)	Dam Collapse in Ukraine	Shows the strategic use of water infrastructure in conflict and forced migration.
Morenets, S. (2023)	Water Crisis in Occupied Ukraine	Describes civilian suffering due to disrupted water access under military occupation.
Lovgren, S. (2017)	Angkor Wat Climate Collapse	Presents historical evidence linking water mismanagement to societal collapse, drawing modern parallels.
UNESCO (2023)	World Water Development Report	Advocates international cooperation and partnerships to address water-related challenges.

Feingold, S. (2023)	Managing MENA Water Crisis	Offers industrial and policy-level solutions for MENAâ€™s water scarcity issues.
The National (2023)	Water Scarcity in MENA	Surveys national-level responses and adaptation strategies in Middle Eastern states.
World Bank (2023)	Bold Action for Water Security	Calls for large-scale policy and infrastructure reforms to secure MENAâ€™s water future.
El Deen, S. M. (2022)	Egyptâ€™s Post-GERD Policy	Analyzes Egyptâ€™s water diplomacy and strategies after Ethiopiaâ€™s dam construction.
Ayferam, G. (2023)	Beyond Water Security â€ Nile	Explores political, strategic, and economic angles of the Nile water dispute.
Mohamed, G. (2023)	Ethiopia-Egypt Tensions	Highlights accusations and political maneuvering regarding the Nileâ€™s water use.
Shah, R. (2009)	Water & Oil Politics in Turkey	Connects resource politics with Turkeyâ€™s geopolitical influence in the region.
HRW (2022)	Cholera & Water in Syria	Links water infrastructure sabotage to worsening humanitarian crises in conflict zones.
UN (2023)	Water Management in Yemen	Focuses on water governance and sustainability to address food and conflict-related issues.
Prentis, J. (2023)	Lebanonâ€™s Water-Energy Crisis	Analyzes how energy infrastructure failures exacerbate water scarcity.
Strategic Foresight Group (2014)	Water and Violence in MENA	Comprehensive report on water scarcity as a major conflict driver across the Middle East.

Conclusion

In conclusion, water scarcity in the Middle East is a multidimensional crisis that transcends environmental concerns and deeply influences regional geopolitics, economic stability, and social cohesion. As freshwater resources dwindle and population pressures intensify, transboundary water disputes and reliance on virtual water imports are reshaping national security and diplomatic priorities". While technological solutions like desalination and wastewater recycling offer partial relief, sustainable water security can only be achieved through cooperative governance, equitable sharing agreements, and integrated policy reforms. Addressing water scarcity is no longer optional—it is imperative for peace, stability, and resilience in one of the world's most water-stressed regions.

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