

Turkey's Hydropolitical Hegemony and Iran's Environmental Security

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Abstract

The hydropolitical hegemony of Turkey in transboundary water management, particularly through policies and tools such as dam construction, water diversion projects, and large-scale agricultural irrigation development, has had significant consequences for the environmental stability and security of the Islamic Republic of Iran as a downstream country. This research examines the direct and indirect environmental impacts of Turkey's hydropolitical strategies on Iran's ecological systems, as well as the broader security implications arising from this hegemony. The main research question is to what extent Turkey's water management policies affect Iran's environmental security, and how these impacts can influence regional stability. The research hypothesis is based on the premise that Turkey's control over transboundary water resources limits Iran's access to water, leading to consequences such as the degradation of wetlands and ecosystems, reduction of biodiversity, decline in water quality, exacerbation of desertification, and decrease in agricultural productivity, thereby contributing to Iran's social, economic, and political instability. This qualitative study employs a descriptive-explanatory research method and utilizes internet resources, scientific articles, and relevant books to analyze the hidden dimensions of Turkey's hydropolitical hegemony and its effects. The analytical framework of the research is based on theoretical approaches of regional environmental security and hydrogeopolitics.

Keywords: Hydropolitical hegemony, Turkey, environment, Islamic Republic of Iran, regional security.

Introduction

This study aims to examine the intersection of Turkey's water strategies and their environmental and socio-political implications for the Islamic Republic of Iran. The geopolitical importance of water management in the Middle East is one of the most important issues shaping relations between countries in the region. Historically, water has served as a source of cooperation and conflict in a largely arid and semi-arid environment, where dependence on shared transboundary rivers is crucial for the livelihoods of millions. Turkey's expanding control over transboundary water resources, largely through large hydropolitical projects such as the Southeastern Anatolia Project (GAP), has positioned it as a dominant upstream actor with significant influence over waterways that directly affect downstream countries. In this hydropolitical context, Iran, currently experiencing severe drought conditions and intensifying environmental degradation, is particularly vulnerable to the downstream impacts of Turkish water management policies and practices. The importance of this issue lies in its direct implications for environmental security and regional stability, as the Middle East, and especially Iran, is located on the hot and dry belt of the world. As Turkey prioritizes energy production and economic development, downstream countries such as Iran increasingly face threats to agricultural productivity, rural livelihoods, and social cohesion. Consequently, understanding the mechanisms and consequences of Turkey's water strategies is essential for developing effective policies to address water scarcity and reduce potential conflicts over shared water resources.

The main research question guiding this study is: how do Turkey's water strategies work and what are their implications for Iran's environmental security? The research hypothesis is that Turkey's control over transboundary water resources has led to reduced access to water in Iran, adverse impacts on wetlands and ecosystems, loss of biodiversity, deterioration of water quality entering the country, increased desertification, and reduced agricultural productivity. Overall, it is argued that these consequences exacerbate Iran's social, economic, and political instability. The main objective of this study is to analyze and explain Turkey's hydropolitical hegemony in the management of transboundary water resources and to examine its consequences for the environmental security and stability of the Islamic Republic of Iran. The study seeks to investigate Turkey's water strategies—particularly dam construction and water resource development

projects within the framework of the Southeastern Anatolia Project (GAP)—and to analyze the geopolitical dimensions of these policies as well as their impacts on water availability, natural ecosystems, and environmental sustainability in Iran. More specifically, the research aims to conceptualize hydropolitics and examine its role in Turkey's foreign policy and development strategies; to analyze the political, economic, and geopolitical objectives underlying Turkey's dam-building projects and water management policies in shared river basins; to assess the role of the Southeastern Anatolia Project (GAP) in strengthening Turkey's hydropolitical position in the region; to evaluate the impact of Turkey's water policies on Iran's access to transboundary water resources; to analyze the environmental consequences resulting from reduced water inflows into Iran, including wetland degradation, loss of biodiversity, and the intensification of desertification processes; to examine the socio-economic impacts of declining water resources on sectors such as agriculture, local livelihoods, and environmental security in Iran; and to explain the relationship between regional hydropolitical dynamics and their implications for the environmental security and stability of the Islamic Republic of Iran.

This study adopts a qualitative research approach and is analytical—applied in terms of its objective. The research employs a descriptive—explanatory method in order to examine Turkey's hydropolitical hegemony in the management of transboundary water resources and to analyze its environmental and security implications for the Islamic Republic of Iran. Through this approach, the study seeks both to describe the structural dimensions of Turkey's water strategies and to explain their consequences for environmental sustainability and regional stability. Data collection in this research is based on documentary and library-based methods. Accordingly, the study draws upon a wide range of sources, including scholarly articles published in reputable national and international journals, academic books, policy documents, official reports issued by international and regional organizations, statistical data, and other credible electronic sources. These materials provide the empirical and theoretical foundation necessary for analyzing hydropolitical dynamics in the region. The analytical framework of the research is grounded in the theoretical perspectives of hydropolitics and environmental security. In addition, insights from theories of hegemony and resource-based conflict are employed to explain the power asymmetries that shape the management of shared water resources between upstream and downstream states. The collected

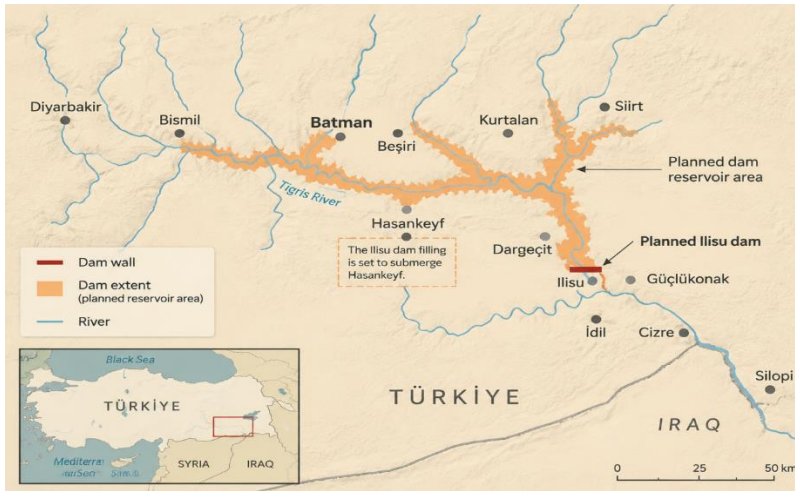
data are examined through qualitative content analysis in order to identify the key patterns, strategies, and implications associated with Turkey's water policies. Overall, by integrating theoretical insights with empirical evidence, this study seeks to provide a systematic analysis of how Turkey's hydropolitical strategies influence transboundary water governance and how these dynamics affect environmental security and stability in the Islamic Republic of Iran.

In recent decades, the management of transboundary water resources has emerged as one of the most critical geopolitical and environmental challenges in the Middle East. The region, characterized by arid and semi-arid climatic conditions, faces severe water scarcity alongside a growing demand for water resources driven by population growth, agricultural expansion, and economic development. Under such conditions, the policies and management practices adopted by upstream states in shared river basins can have profound environmental, economic, and political consequences for downstream countries. In this context, Turkey's water policies and large-scale hydraulic infrastructure projects—particularly those implemented under the Southeastern Anatolia Project (GAP)—have significantly altered the hydrological regimes of several transboundary rivers, thereby influencing water availability and environmental conditions in downstream regions. At the same time, the Islamic Republic of Iran, as a downstream state in several shared basins with Turkey, has been increasingly confronted with mounting environmental challenges, including declining surface water resources, intensified drought conditions, degradation of wetlands and aquatic ecosystems, the expansion of dust storms, and decreasing agricultural productivity. These developments not only pose serious environmental concerns but also have broader socio-economic and security implications. Consequently, examining the hydropolitical dimensions of Turkey's water strategies and assessing their impacts on Iran's environmental security is of considerable importance. The necessity of this research lies in its potential to provide a comprehensive understanding of the hydropolitical dynamics shaping transboundary water governance in the region. By systematically analyzing Turkey's water strategies and their downstream implications, the study contributes to identifying the environmental and security challenges faced by Iran and highlights the importance of developing effective water diplomacy and cooperative management mechanisms. Furthermore, this research contributes to the existing body of scholarship on hydropolitics and environmental

security in the Middle East and offers an analytical framework for understanding the complex interactions between natural resources, environmental sustainability, and regional stability.

1. Turkish Hydropolitics

Turkey is surrounded on three sides by the Black Sea in the north, the Mediterranean Sea in the south, and the Aegean Sea in the west. Many rivers flow through this land, the most important of which are the Gezil-Irmak, Mertiza, Menderes-Aras, Karasu, and Tigris and Euphrates rivers. The country claims absolute sovereignty over water rights when it comes to water issues. On the other hand, the Middle East is one of the fragile regions that has always had climatic tensions and has been pregnant with political and social changes. Due to the location of this region on the dry belt, the discussion of environmental crises and especially the water issue has been raised, which is considered water diplomacy in the current era. The Turkish government is one of these countries that is trying to use water as a strategic and security commodity (Damirchelo, 2024, p. 252). The Southeastern Anatolia Irrigation Project, or its Turkish abbreviation (GAP), is one of the largest projects ever carried out in Turkey. This water resources development program includes the construction of 22 dams and 19 hydroelectric power plants on the Euphrates and Tigris rivers in southeastern Turkey. Once completed, the project will also include an irrigation network for 1.7 million hectares of land covering eight provinces, equivalent to approximately 10% of Turkey's total population and area. In total, GAP includes investments in development projects related to agriculture, energy, transportation, telecommunications, healthcare, education, and urban and rural infrastructure. To ensure the success of the project, an agency (Southeast Anatolian Regional Development Agency under the Prime Minister of the Republic of Turkey) has been established to supervise and implement all these projects. In total, the GAP project includes 66 large dams, which include storage projects, power plants, and a large irrigation network. The hydroelectric power plants are about 67 billion cubic meters, producing 1,000 megawatts per hour of electricity for agriculture and strategic crops. The storage capacity of the project is estimated at 55 billion cubic meters, which is three times the storage capacity of the dams in Iraq and Syria.

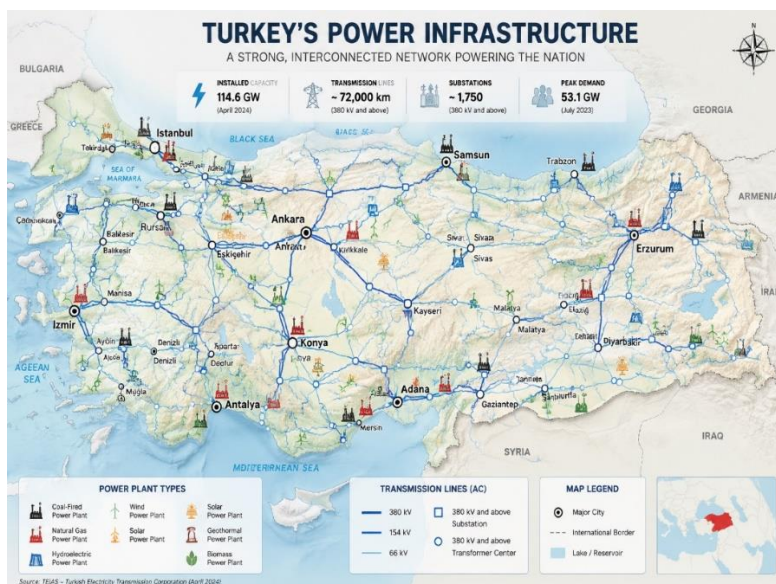


Source: (Middle East eye, 2019)

Map (1): Location of the Southeastern Anatolia Project (GAP) Dam in Türkiye

Turkey promotes this development project as a humanitarian and economic effort to reduce regional inequalities by improving agricultural and industrial productivity and regional economic standards. One of the GAP coordinators called the project an attempt to catch up with the Western world by "providing opportunities for all people to enjoy equal rights and equal economic and social benefits" (University of Pittsburgh, 2023, p. 5). The project area covers 9 provinces (Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Sirte, Şanlıurfa, and Şırnak) located in the Euphrates-Tigris Basin and the Upper Mesopotamian Plains. These GAP provinces constitute an average of 10.8 percent of Turkey in terms of geography and population. The Southeastern Anatolia Project (GAP) is an important project in terms of ensuring Turkey's energy and food security, regardless of the concerns of its neighbors. The GAP region includes vast plains as well as vital rivers such as the Tigris and Euphrates. This region accounts for approximately 20% of Turkey's total irrigable land and 33% of its energy potential. For this reason, one of the main goals of the GAP is to transform the region into a food basket for the Middle East. In the 1970s, the GAP was conceived as a program focused on developing the region's water and land resources, and it was planned to launch 22 dams, 19 hydroelectric power plants, and irrigation investments in the Euphrates-Tigris basin. The total installed capacity of the hydroelectric power plants will be 7,476 megawatts

with an annual energy production of 27 billion kWh. It also seeks to take control of waterways belonging to Iraq and Syria with this project. This long-term strategy will benefit Turkey and can help it overcome its energy shortage. With the completion of Turkey's dam projects, we have witnessed a significant increase in electricity production. This increase in electricity production has led to a decrease in the volume of imported energy and an excess of electricity. In the early 1990s, a project to connect the electricity grid between Turkey and Iraq, Syria, Jordan, and Egypt was launched. The cost of this project is more than 0.6 billion dollars, which is supported by the Arab Fund for Economic and Social Development and the Islamic Development Bank (Al-Shammari, 2020, p. 51).



Source: (Aenert, 2025)

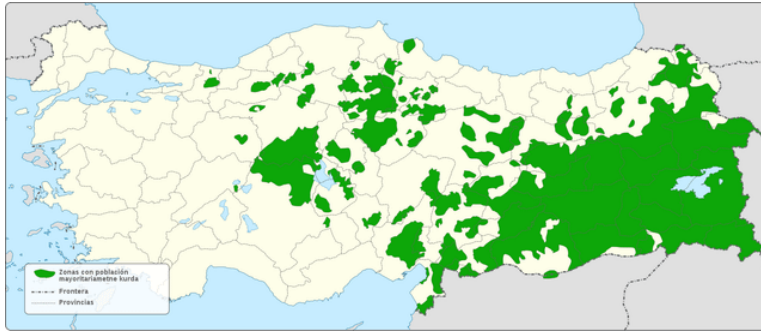
Map (2): Location of Turkish Hydropower on Dams in the Eastern Anatolia Region

The most important dams of the Turkish government in the field of energy production and hydroelectric power plants include Ataturk Dam, Karkaya, Bircik, and Ilisu, which are located in the southeastern Anatolia region, and Turkey's focus in the field of hydropower is on this region. Turkey's attempt to obtain the maximum amount of water from the Tigris and Euphrates and exchange it for the oil of Arab countries is an action that has been announced many times by Turkish officials. Turkey's goal is

essentially to exchange water for oil and obtain it at a low price, which has been pursued since the 1950s and has demanded oil at a low price in exchange for a share of water (Razi Talfah et al., 2008, p. 19). This is a long-term strategy for this country. This issue becomes important when we know that the issue of fresh water itself is one of the problems of Arab countries. Considering the climate changes that the world is witnessing and the annual shortage of drinking water in the world, this issue becomes even more sensitive. In fact, controlling water means controlling the lifeblood of the vast population of the Middle East. Turkey's oil imports for 2019 were recorded at around one million barrels per day. Turkey's gas imports were also equivalent to 45 billion cubic meters in 2019, most of which is imported, and continue to grow. Oil accounts for 31.7 percent of Turkey's total energy sector imports. Given Turkey's heavy dependence on natural gas imports, along with the balance of payments and energy security vulnerabilities they create, Turkey's main priority with regard to natural gas is to reduce the share of imported gas and increase the share of domestically produced energy sources, including hydropower, coal, nuclear, and renewables (especially in electricity generation) (Energy International Agency, 2021, p. 154). Turkey has proposed the construction of two pipelines: a water pipeline to the Persian Gulf countries and an oil pipeline from these countries to Turkey. These two projects are fundamentally different in terms of their vital importance, as cutting off water would pose far greater risks than cutting off oil. This plan intended to transfer 2.2 billion cubic meters of water annually from two rivers in Turkey, namely Ceyhan and Seyhan, which flow into the Mediterranean, to the water-scarce countries of Syria, Saudi Arabia, Jordan, Kuwait, Bahrain, Qatar, Oman, and the UAE, and if implemented, would place Turkey at the center of water projects in the Middle East (Kermi et al., 2016, p. 40). Akgun Ilhan, a Turkish political expert and water activist, even criticized the government in an interview, saying that the Turkish government is more interested in controlling waterways and exporting bottled water than ensuring access to safe drinking water (Busch, 2020).

In general, the Republic of Turkey is defined as an indivisible and unified Turkish state in which Kurds are officially recognized only as Eastern Turks. By imposing restrictions on Kurdish identity, language, and culture, the government sought to culturally assimilate (Turkify) an imaginary Kurdistan. Another security threat to Turkey in the Kurdish issue related to the issue of Kurdish migration has also added to the cause and has doubled the concern

of the Turkish political elite. On the other hand, Turkey moved toward developing the Kurdish regions to curb the economic and social backwardness that the Kurdish regions suffer from, so it presented the Southeast Development Project, which is a multi-purpose development project. The GAP plan aims to transform the underdeveloped, vast, and unstable region of Kurdistan into a source in the Middle East in addition to the electrical energy it produces, and to turn the Kurdistan region into one of the largest factories producing this energy in the Middle East (Malaki, 1401, pp. 212–215). Another goal of Turkey with this project from a security perspective is to try to create demographic changes in a region where the majority of the population is Kurdish (approximately 12 million people). Türkiye is trying to import 6 million Turks into this region so that the Kurds will become a minority in this region.



Source: Unknown

Map (3): Kurdish Ethnicity in Southeastern Anatolia

Water can play a pivotal role in the region, like oil, especially since some countries have water resources on their territory and have the ability to control the amount of water compared to other countries (downstream countries). This creates political and economic pressure when necessary. This is true for several major rivers in the Arab world, including the Tigris and Euphrates, the Nile, and the Senegal. Given the geographical location of the Arab world, Arab countries are doubly affected by the actions of non-Arab countries, and various risks (economic, social, and environmental) threaten their populations. This issue is rejected in terms of all international laws and humanitarian principles, but the upstream countries always try to pursue certain policies by controlling water resources, which is considered an obstacle to achieving the water interests of the Arabs and threatens the food

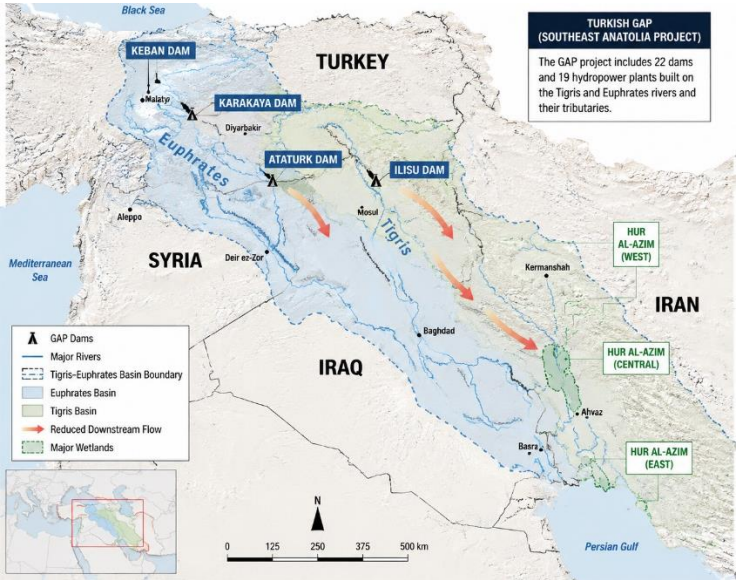
security of the Arab countries, especially since they are in dire need of water for comprehensive development purposes (Jawad Salman, 2017, p. 32). Turkey was able to exercise power as an upstream country by depriving Iraq and Syria of the river water. Excessive power has caused Turkey to sometimes play politics on the balance of power in Arab countries and interfere in the internal affairs of some Arab countries, which is actually due to the economic situation of this country and also the source of the Tigris and Euphrates rivers (Abdulkarim Muhammad, 2014, p. 123). Since the founding of the Turkish Republic, the slogan of "reaching the level of Western civilization" has been a central discursive element shaping state policies. In this regard, there is a national consensus that development, defined primarily in terms of economic growth, is a public good that should be promoted by the state. Successive Turkish governments, despite their ideological differences, have sought legitimacy through the pursuit of large-scale developmental projects. In line with this political worldview, the construction of hydroelectric dams, which has played a central role in successive government programs in Turkey since the 1960s, has been a central theme in the development agendas of successive governments. This goal reached an unprecedented level of ambition in the Justice and Development Party, whose government was characterized by neoliberal expansionist policies, including rapid and extensive privatization of the energy and production sectors and increasing the level of industrial and economic power (Ozkaynak et al., 2021, p. 1354). In addition, Turkey's mindset has been shaped by Turkey's neo-Ottoman thinking of increasing regional power and becoming a pivotal player (Ahmadi, 2013, p. 16). It also has superior political, economic, and military assets at the beginning of the 21st century. The country sought to be recognized by the West and the European Union and to be considered as a regional power in political and security equations (Tezcur et al., 2021, p. 1360).

2. Regional Implications

Dam construction is a major issue in transboundary river systems, especially between Turkey and Iran. The two countries share several waterways, particularly the Tigris and Euphrates rivers, on which Turkey has undertaken numerous dam construction projects as part of the Southeastern Anatolia Project (GAP). These developments have raised concerns about their environmental, social, and geopolitical impacts on downstream countries, especially Iran. Turkey's dam construction threatens Iran's environmental security in multiple

interconnected ways. The main environmental impact of dam construction in Turkey is the reduced access to running water to Iran. The dams built on the Tigris and Euphrates rivers are part of Turkey's large-scale GAP project, which officially aims to provide irrigation, hydroelectric power, and development to the southeastern regions of the country (Altinbilek, 2004, p. 9). However, the project has resulted in reduced water flow downstream to Syria, Iraq, and Iran. For Iran, this reduction is particularly significant, as it relies on these rivers for agricultural and domestic purposes. In particular, the provinces of Khuzestan and Ilam, which are agriculturally dependent on these waters, are facing severe water shortages that could potentially lead to desertification and crop failure (Erdogdu, 2020, p. 34). Reduced water availability has posed challenges to Iran's water management systems. As surface water levels decline, groundwater resources have been overexploited, leading to depletion of aquifers and further environmental degradation. In addition, water quality has deteriorated, and pollutants have become more concentrated in lower water levels, affecting human health and the viability of aquatic ecosystems (Al-Ansari, 2016, p. 4). The river flows south and enters Syria in the Jarablus region. The river joins the three Sajur, Balikh, and Khabur rivers along Syrian territory, before entering Iraq in the Al-Qaim region. Finally, in southern Iraq, it joins the Tigris River to form the Arvand River (Shatt al-Arab), which forms part of the border between Iran and Iraq in southwestern Iran and flows into the Persian Gulf (Jasem Khalil, 2023, p. 153). The Aras River originates in the Caucasus in eastern Turkey and flows eastward for over 1,000 km. The river flows along the border between Turkey and Armenia, along the border between Iran and Armenia, along the border between Azerbaijan and Armenia, and finally empties into the Caspian Sea. Turkey has built six hydroelectric dams upstream of the Aras River and is currently planning to build eight more (The Water Diplomat, 2022). Dam construction in Turkey has significantly affected wetlands and ecosystems along the Turkey-Iran border. The Great Hor and Great Hor Marshes, located along the Iran-Iraq border, are heavily dependent on water flow from the Euphrates and Tigris river systems. Upstream dams and water diversions in Turkey are reducing the flow of water to these wetlands, which serve as vital ecosystems for biodiversity, migratory birds, and local fisheries. The reduced water supply has led to parts of these wetlands drying up, threatening wildlife, fisheries, and the livelihoods of people who rely on these resources. In addition, the water shortage has disrupted the ecological balance of the wetlands (Al-Ansari, 2016, p. 5). Given that

the West Asian region is located in the arid belt and has experienced successive droughts and reduced rainfall in recent years, the eventual exploitation of dams has meant that Syria, Iraq, and Iran, as downstream countries in the Tigris-Euphrates and Aras river basins, have not been spared the environmental consequences (Lashgari et al., 2025, p. 10). However, despite shared security interests, the environmental impact of the Turkish wall is a growing concern for Iran. In May 2019, a joint environmental committee was established between Iran and Turkey. Iran is also concerned about Turkey's construction of a dam on the Aras River. In a letter to the Minister of Energy on April 28, 2022, Mohammad Jafar Montazeri, the then Attorney General of Iran, issued an order to pursue the rights acquired by Iran from the border river Aras. He stated that "the construction of several dams on the border river Aras and the construction of walls at the zero point of the border by Turkey have led to the spread of sand and dust storms to the western and southern regions of Iran. The Boralan wetland and the Qarasu (Karasu) river, which are shared between the two countries, the Yarim Qiya wetland and the Sarisu river that flow into this shared wetland between the two countries, the Aqqol wetland, and finally the Ararat National Park within the borders of Turkey" (Kaleji, 2024).



Source:(Hajjioseini et al., 2023:12)

Map (4): Number of Turkish Dams on the Aras River Border and Reduction of Water Inflow to Iran

Considering the large and small dams that Turkey has built in the Aras Basin so far, it can be said that the country will implement more hydroelectric projects in the Aras Basin, similar to those implemented in the Tigris and Euphrates basins. A consequence of the decrease in the Aras water for Iran is the conversion of part of the current irrigated lands in Iran's share of the Aras Basin to dryland. By examining satellite maps of the surrounding areas of the Aras Basin in Iran, we see that in some places there is more extensive agricultural land. One of these areas is located downstream of the Khoda Afarin Dam in the northeast, which first begins as a narrow strip around the Aras. It gradually widens until it is several dozen kilometers wide in the Parsabad region, in the north of Ardabil province. The Moghan Agriculture, Industry and Livestock Company is active in this area. The reduction of the Aras water will face many challenges for agriculture in the Moghan plain, including extensive national investments in creating irrigation networks and modern constructions. Given that the absence or shortage of water will have a negative impact on the quantity and quality of agricultural products produced in the region, at the local level, the development of the region and the lives of its residents will face difficulties. At the national level, in addition to reducing national wealth, the country's food security will suffer (Shafai & Amini, 1403, p. 459). Full exploitation of the Ilisu Dam will lead to the submergence of 52 villages and 15 small towns, including the ancient city of Hassan Kayf and its 12,000-year-old historical monuments from the Assyrian and Ottoman periods. In addition, the flow of the Tigris River toward Iraq will decrease from 21 billion cubic meters to 10 billion cubic meters. This decrease will lead to the drying up of 700,000 hectares of agricultural land and further destruction of natural habitats (Nadri et al., 2022, p. 184). Dams significantly affect aquatic ecosystems by altering habitats and disrupting migration patterns of fish and other aquatic species. The construction of dams in Turkey may prevent the movement of migratory fish species entering Iranian waters, threatening biodiversity and fisheries that are vital to local economies (Khan, 2021, p. 78). In addition, changes in water temperature and oxygen levels in dam-controlled rivers can reduce water quality and negatively affect aquatic life (Lee, 2022, p. 56). Reservoirs created by dams, especially in tropical and subtropical regions, are sources

of greenhouse gases such as methane. The decomposition of submerged vegetation and organic matter in these reservoirs releases methane—a potent greenhouse gas that contributes to climate change (Brown, 2018, p. 134). Increased greenhouse gas emissions may exacerbate climate change and affect weather patterns and water availability in Iran (Garcia, 2020, p. 89). The environmental sustainability of the region is at risk due to Turkish dam projects. These dams alter the natural flow of rivers, leading to the loss of fertile land, deforestation, and disruption of traditional water management practices (Yazdanpanah et al., 2020, p. 18).

Dust storms have destroyed trees in western and southwestern Iran and caused damage to agricultural crops. This is despite the fact that Turkey joined the Ramsar Convention in 1975 and accepted its provisions, but has not adhered to it in practice (Heidarzadeh et al., 2017, p. 50). Stating that sand and dust storms are universally accepted as natural phenomena, Bilgich said that the main cause of the storms affecting Turkey and Iran is desert dust that enters these countries from Africa and the Middle East (Istanbul Agency, 2022). Sand and dust storms cause damage to agricultural crops, human and animal health, buildings and infrastructure, and forced closures for several weeks. There are natural sources of these storms, but human factors have also contributed to this problem in the past decades (Lo, 2023). Considering that the center of dust formation in the western and southwestern regions of Iran is in northern Iraq bordering Syria and western Iraq bordering Jordan, with the reduction in water inflow to these areas, we are witnessing an increase in dust and an increase in its amount entering Iran (Nasahi & Guderzi, 2020, p. 12).



Source: (Rashki et al., 2021:8)

Map (5): Route of Entry of Micro-Organisms and Their Origin into Iran

Therefore, according to map number 4, it should be said that one of the main factors of fine dust entering Iran from the west and southwest of the country was due to two main routes, namely route 2 of the Iraqi and Syrian deserts and route number 3 of the Iraqi Mesopotamian region, both of which were affected by the Turkish dam construction project as downstream areas, which were drying up and moving toward the desert, which provided the source of the dust particles. Dam construction leads to habitat fragmentation and threatens biodiversity in transboundary areas. Habitat fragmentation can isolate wildlife populations, reduce genetic diversity, and increase the risk of extinction of certain species (Yilmaz, 2019, p. 142). In Iran, this loss of biodiversity may have cascading effects on ecosystem services such as pollination, water purification, and soil fertility (Farahani, 2021, p. 77). Reservoirs can also lead to water quality problems, including increased nutrient loading and eutrophication. Stagnant water in reservoirs can cause algal blooms that reduce oxygen levels and produce toxins harmful to aquatic life and human health (Nouri, 2020, p. 88).

Although Iran has 1,000 km of coastline with ports, due to the location of the oil-rich province of Khuzestan on the riverbank, the strategic importance of the Arvand River cannot be ignored,

because Khuzestan is considered the vital, political, and strategic artery of the country, and the Arvand River is its natural border and forms the southwestern defensive line of the Iranian plateau. It is considered one of the most vulnerable points to the effects of Turkish dam construction (Sadeghi, 2016, p. 138).



Source: Unknown

Map (6): The Location of the Arvand River and Its Vital Role for Iran

Climate change and environmental hazards are causing people's incomes to decline, inward investment to decrease, production costs to increase, and profitability to decrease. Evidence suggests that water shortages in the Middle East region will cause tensions and conflicts in countries such as Iran in the near future. Iran is also suffering from a situation of "water bankruptcy," where the available water supply is much lower than the demand and is going through a water crisis. Important rivers and wetlands such as Lake Urmia in the west, the Zayandeh Rud River in the center, and Lake Hamun in the east are disappearing due to this situation. This issue will fuel various political and social crises. The Turkish dam project is one of these important issues regarding the impact on stability and security in Iran. It will undermine stability in various dimensions (Madani, 2021). The water crisis has also fueled several major protests, including some in Isfahan and Khuzestan in 2018, 2021, and 2025, specifically over water shortages. Domestic discontent was particularly prevalent in marginalized and

underdeveloped provinces like Khuzestan, which lie along Iran's borders and are home to ethnic minorities. They were disproportionately affected, in part because the government diverted water from the region to more prosperous and wealthy provinces in central Iran, with a majority of Fars, to compensate for the shortages. Water shortages are a serious security risk in Iran. In the summer of 2021, protests erupted in Khuzestan province in the southwest of the country due to severe water shortages. A few months later, Isfahan farmers rallied to protest the drying up of the Zayandeh Rood River (Mahoozi, 2025).

Over the past two decades, if not earlier, the crisis has negatively affected agricultural production and accelerated migration from rural areas to cities. In Tehran and other urban centers, these trends have strained infrastructure and services, expanded slums, and exacerbated environmental problems and health hazards such as traffic congestion and air pollution—all of which have increased socio-economic instability. Five years of drought have meant that the city's water supply dams have not been refilled, and the water crisis is set to become even more acute, with rainfall in 2025 expected to be even lower than in the previous five years (World Weather Attribution, 2025). For some Iranians, environmental challenges may be reason enough to migrate, often to destinations in Europe via neighboring Turkey or elsewhere. This migration may occur in direct response to climate pressures, such as displacement from floods. But it may also happen indirectly, through economic forces, as farmers are forced to abandon wasteland and herders are forced to abandon their pastoral livelihoods. Land subsidence around Tehran—which is home to at least 25% of Iran's population—could reach one meter within a few years. With more people migrating from rural areas to cities within the country, residents of Iran's cities are likely to see the influx of new people as a competitor for jobs, housing, and other resources (Specialeurasia, 2025). The flow of water from the Euphrates River into Iraq has decreased by about 90 percent. The construction of the Ilisu Dam, the second largest dam in Turkey, will reduce the amount of water entering the Tigris River to 56 percent if it is fully utilized. This affects the environment and cultural, political, social, and economic life of this country. Since the 1960s, Turkey has used water as a tool to put pressure on Iraq. Being located in the lower reaches of the Tigris and Euphrates rivers is considered a serious threat to this country. Given that Iraq is prone to ethnic and identity-based differences and tensions, the climatic and environmental effects of

Turkey's dam construction will cause tension and insecurity in Iraq, which is located in Iran's neighborhood (Haqqarsat et al., 2023, pp. 32–35).

3. Strategies of the Islamic Republic of Iran

One key platform for Iran's diplomatic engagement is the Joint Technical Committee on Regional Waters, which includes Iraq, Syria, and Turkey. Iran has advocated a participatory approach to transboundary water management and emphasized the importance of equitable water-sharing agreements that take into account the needs of all riparian countries. Through these multilateral efforts, Iran intends to maintain dialogue with Turkey while pressuring it to consider downstream impacts (Al-Ansari et al., 2019, p. 65). The relationship between Iran and Turkey has long been shaped by shared water resources, particularly those originating in Turkish territory and flowing into Iran. Turkey's dam-building efforts in recent decades have increasingly impacted the geopolitics of the region, forcing Iran to adapt its strategies to these evolving dynamics. Turkey's extensive dam-building, particularly on the Tigris and Euphrates rivers, is part of a broader hydropolitical strategy. These activities have implications for water access in downstream countries, including Syria, Iraq, and Iran. As a result, Iran has developed policy and practical responses to manage the consequences of reduced water flows. For Iran, Turkey's control of these transboundary rivers poses a potential threat to the country's water security, especially in provinces such as Ilam and Khuzestan that rely on these river systems.

Iran has also placed great emphasis on water conservation and efficiency in its agricultural sector, which is the largest water user. Initiatives to modernize irrigation systems, reduce water loss, and promote drought-resistant crops play an important role in Iran's adaptation strategy. The government has promoted the use of drip irrigation and other technologies to optimize water use and has provided subsidies to farmers to adopt these systems. These measures have helped mitigate some of the impacts of reduced water availability resulting from upstream Turkish activities (Motagh et al., 2017, p. 112). The country's water resources are heavily dependent on rainfall, and the limited water reserves are rapidly decreasing due to evaporation, climate change, and human activities such as overuse and mismanagement of resources and pollution. To save itself from the water crisis, Iran must prioritize halting groundwater depletion in the short term through careful

monitoring, smart meters on wells, and integrating satellite data with ground measurements. It must implement a combination of water management strategies, including improving agricultural water productivity, investing in infrastructure, and diversifying water resources. Tackling this crisis also requires enforcing stricter consumption regulations, increasing public awareness, promoting water-efficient technologies, and considering implementing tiered water pricing structures to encourage efficient water use and prevent overconsumption, especially in water-intensive industries. Iran must also invest in and promote the adoption of low-energy irrigation technologies such as drip irrigation and sprinkler systems to reduce agricultural water use (Khani, 2023). Research identifies three main causes of the current water crisis: rapid population growth and poor spatial distribution of the population, an inefficient agricultural sector, and mismanagement and thirst for development. These issues need to be managed and regulated, as Iran's excessive groundwater extraction could lead to serious problems in the coming years. In the case of transboundary aquifers—including the Sarakhs aquifer shared with Turkmenistan, the Lankaran/Astara aquifer shared with Azerbaijan, the Nakhchivan/Larijan and Jabrayil aquifers shared with Armenia, Azerbaijan, Georgia, Russia, and Turkey, and the Leninak-Shirax aquifer shared with Armenia, Azerbaijan, and Turkey—this may lead to disputes. Iran's current water problems cannot be blamed entirely on the Iranians (Madani, 2014, p. 8).

Conclusion

The strategic management of transboundary water resources has emerged as a defining geopolitical issue in the twenty-first century, particularly in water-scarce regions such as the Middle East. In this context, Turkey's hydropolitical strategy—centered on large-scale dam construction and upstream water control—has generated significant environmental and security implications for downstream states, including the Islamic Republic of Iran. The restructuring of regional river systems, especially within the Tigris–Euphrates basin, represents one of the most consequential outcomes of Turkey's upstream policies. Reduced downstream water flows have intensified water stress in western and southwestern Iran, exerting pressure on agricultural productivity, accelerating land degradation and desertification, and exacerbating existing structural weaknesses in national water governance. These developments have direct implications for food security and rural livelihoods, particularly in

provinces that are already environmentally vulnerable. Beyond economic and agricultural consequences, the environmental dimension of the crisis is equally critical. The decline in cross-border water inflows has contributed to the degradation of ecologically sensitive wetlands such as Hur al-Azim, undermining biodiversity, disrupting ecosystem services, and increasing the frequency of dust storms. These environmental disruptions demonstrate that hydropolitical dynamics are not confined to resource allocation disputes; rather, they intersect with broader questions of environmental security and human security. From a theoretical perspective, Turkey's hydropolitical behavior can be interpreted through the lens of hydropolitical hegemony, whereby upstream control over water resources functions as both a development instrument and a strategic lever of regional influence. For Iran, the cumulative effects of these policies highlight the growing interdependence between environmental sustainability and national security. If left unaddressed, environmental degradation may translate into socioeconomic instability, internal displacement, and governance challenges. Therefore, ensuring environmental stability in Iran requires not only domestic water management reforms but also proactive transboundary water diplomacy, regional cooperation mechanisms, and confidence-building measures within shared river basins. Sustainable solutions will depend on moving from unilateral resource control toward cooperative basin governance grounded in international water law and principles of equitable and reasonable utilization.

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