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# **The Water Crisis in Iran: Dimensions and Implications Between topographic realities and the regime's options**

**Mahmoud Hamdi Abulqasim**

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Political Researcher and Iranian Affairs Specialist  
in the Arabian Gulf Centre for Iranian Studies

**Fathi Abu Bakr Almaraghi (Ph.D.)**

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Political Researcher and Iranian Affairs Specialist  
in the Arabian Gulf Centre for Iranian Studies

**I**ranians are proud of native mathematician and engineer Abu Bakr Mohammed Ibn Hassan Karaji, who stood at the forefront of the study of water sciences and made considerable contributions to the engineering of Iran's hydraulic and groundwater extraction systems. In doing so, he addressed a significant challenge of nature and geography in semi-arid Iran: the challenge of redistributing limited rainfall and underground water resources. He uttered these immortal words about a millennium ago: "Fair distribution of water is a key matter which if ignored could lead a country to collapse."

However, it seems the current regime has learned nothing from these words, having failed to tackle this enormous challenge and its dimensions. Successive governments have dealt with the water issue in Iran with a selective, discriminatory, and Machiavellian policy that has transformed it from a problem all countries in the region face into a multidimensional social, economic, and political crisis. Domestic protests have turned into internal disputes in some regions, and Iran has also engaged in confrontations with neighbors over the distribution of shared water resources. Reality has unfolded as Karaji predicted a thousand years ago.<sup>(1)</sup>

Interestingly, the gravity of water distribution as a national challenge has differed over time. Governments across history have treated it as a sensitive issue closely related to Iran's power, affecting its national outlook. The ancient Persian civilization succeeded in dealing with this challenge with a great deal of awareness and efficiency, establishing a pioneering hydraulic infrastructure including canals, mud pipes, and gravity dams centuries before the Romans. The Persians established the most significant dams in history, along with water treatment facilities, breakwaters to control floods, and water storage tanks. They used these innovative techniques to develop one of the oldest water control systems in the world.<sup>(2)</sup>

However, post-revolution governments did not dedicate sufficient attention to this issue, which has evolved into a chronic crisis. The government has stated that a rising population, climate change, drought, and U.S. sanctions are main reasons behind the crisis, but reality tells us that inefficient programs and government policies motivated by a racial, religious, and chauvinist agenda have exacerbated the crisis. Some observers have described the situation as a political and social drought, not a matter of water poverty.

In this context, this study attempts to define the characteristics of the water crisis in Iran and its main dimensions and to shed light on circumstances that have exacerbated the crisis to this acute extent as well as to highlight its consequences and the challenges facing the Iranian government and society. I will also examine government policies in response to the crisis and determine whether these policies are appropriate. The study concludes with an outlook on the crisis.

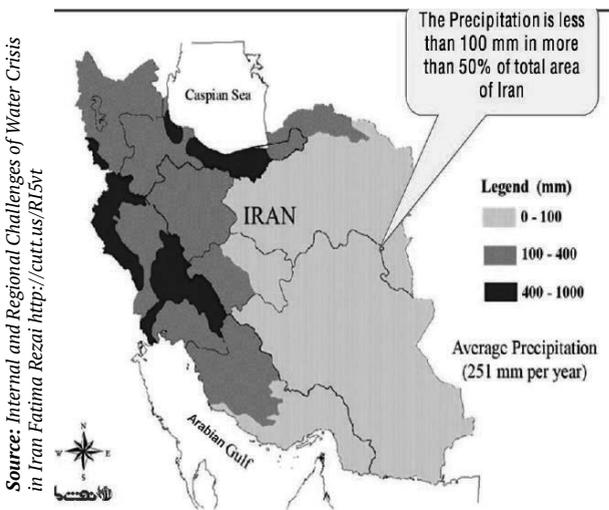
### **First: Reasons behind the exacerbation of the water crisis in Iran**

Over history, the water crisis in Iran has been linked to the inequitable distribution of water geographically and hence to disparities in the share of water among regions. However, over time, the water crisis has evolved from a distribution problem to a crisis of scarcity and shortage, a crisis caused by half-baked policies. Water is vital to stability, and in this context, the water crisis threatens the lives of the population and the future of the state.

### The topographic dimension of the crisis

Most of Iran is dry and semi-arid due to purely geographical and continental factors. As a result, rainfall varies from one region to another and from time to time. Iran is thus suffering a severe water shortage and disparity in its distribution. Rainfall ranges from less than one hundred cubic meters per year in the central and southeastern parts of the country to about one thousand cubic meters per year in the Caspian Sea region. In total, the average annual rainfall is about 228 cubic meters, which is low, less than a third of the global average.<sup>(3)</sup>

Figure 1. Rainfall across Iran.



Source: Internal and Regional Challenges of Water Crisis in Iran Fatima Rezaei <http://cutt.us/RI5vt>

In view of the total share of fresh water, Iran is divided into six major water basins, which vary in terms of water resources, area, and population. The size of some of these basins is not commensurate with their overall share of renewable water resources, and this is problematic with regard to the water crisis in Iran. The distribution of water resources by the authorities among regions leaves political, social, and environmental

impacts. The order of these basins in terms of size and water resources is indicated in Table 1 as follows: the central region basin, the Arabian Gulf and Sea of Oman basin, the Caspian Sea basin, the Hamun basin, the Lake Urmia basin, and the Sarakhs basin.

Table 1. Disparities in water resources in the main basins of Iran.

Basin	Percentage of Iran's total area	Percentage of renewable water
Central region	52	29
Arabian Gulf and Sea of Oman	25	46
Caspian Sea	10	15
Hamun	7	2
Lake Urmia	3	5
Sarakhs	3	3

Source: Food and Agriculture Organization of the United Nations 2008, 189.

Additionally, Iran suffers from a severe scarcity of freshwater lakes, with only ten significant lakes across the country, most of which are saltwater. The watercourses passing through the semi-arid middle plateau are few, and their water dissipates in salt marshes. Though Iran has large rivers, they are very steep, with irregular flow. Additionally, because winter is the rainy season in Iran, the water flow is minimal, and most streams are nonpermanent, disappearing in the summer. In total, the overall renewable freshwater or total water recovered from consumption is estimated at 130 billion and 29 billion cubic meters annually, approximately 160 billion cubic meters annually.<sup>(4)</sup>

Drought and weather fluctuations are additional natural factors associated with the crisis. Of the forty types of natural damage occurring in developing countries, thirty-one occur in Iran. The long-term scarcity of rainfall impacts surface water availability and leads to a heavy dependence on underground water resources, to the extent of depletion. Drought and weather fluctuations also contribute to the melting of ice on mountain slopes, increasing evapotranspiration due to high temperatures and thus leading rivers to dry up. In this context, tallies relating to rainfall over the past forty years should be examined. The country witnessed high rainfall rates for fifteen years, normal rates for five years, and drought for twenty years. According to these tallies, Iran suffered drought throughout half the period, which has certainly exacerbated the water issue.<sup>(5)</sup> This impact is projected to increase. Additionally, increasing pollution of water has diminished available usable water quantities, impacted public health, and destroyed the environment.

In general, the dimensions of the water crisis in Iran can be determined under these topographical and natural conditions and in comparison to regional and international rates by determining the per capita renewable water share per year. This share is less than 1,700 cubic meters per capita per year, well below the global average of 7,000 cubic meters but slightly higher than the Middle East and North Africa (MENA) level of 1,300 cubic meters per year.<sup>(6)</sup> Table 2 shows the trend of per capita water in Iran since the 1960s and the expected share in 2021. The dimensions of the crisis have become apparent as the cities of Kerman, Rafsanjan, and Zerand have entered the phase of water scarcity. By 2018, twelve cities are expected to join them: These are Rayn, Mahan, Chitrud, Kazimabad, Lengiabad, Abad, Reagan, Block, Raur, Kahnog, Mardhak, and Husseinabad. Many villages are also expected to experience water scarcity.<sup>(7)</sup>

Table 2. Per capita share of renewable freshwater in Iran.

Year	Per capita share in cubic meters
1956	7,000
2001	2,000
2021	1,300

Source: Larijani 2005, 9–10.

### Social and political dimensions of the crisis

Socially, the cause of the water crisis in Iran has been an increase in demand as a result of the growing population and rising pattern of consumption, and indeed some believe that rapid population growth is one of the leading factors behind the exacerbation of the crisis. Iran's population doubled two decades after the revolution due to the choices of the regime, jumping from 36 million to 75 million, and then reaching 80 million in 2017. Table 3 shows the impact of population growth on the per capita share of available renewable water. According to the United Nations, the amount of water needed for drinking, sanitation, industry, agriculture, and environment in Iran will reach about 122 billion cubic meters in 2021. Worsening matters is a rising pattern of consumption, with per capita water consumption per day in Iran being twofold the global rate despite the disparity in per capita share among Iranians and water-rich countries.<sup>(8)</sup>

Table 3. Population growth in Iran between 1961 and 2021.

Year	Population (in millions)
2017	80
2001	66
1961	24.2

Source: Al-Ain 2016.

The unbalanced and uneven development trends adopted by the regime have also affected the geographic redistribution of the population and the identification of migratory trends in terms of water resources. This has led most regions of Iran to suffer from a disparity between water resource availability and demand. Additionally, the botched handling of droughts and their consequences has put a massive strain on such limited resources, triggering more pressures and tensions.<sup>(9)</sup> Especially

indicative are the remarks of Mohamed Aqeqi, the director of the Department of Watershed and Soil Conservation at the Forest Authority, who said that while 32 million hectares of Iranian land is currently desert, this could expand to 80 million hectares in the future, which indicates the enormity of the disaster.<sup>(10)</sup>

In the same context, excessive economic dependence on agriculture has exacerbated the crisis. Agriculture relies on primitive methods and an unsuitable crop structure that drains up to 90% of available water resources. Under constant conditions of war and siege, the regime is obliged to secure the basic food needs of the population without relying on outside help or adopting alternative policies that reduce pressure on available water resources and improve and rationalize consumption. This aspect has been the focus of an extensive national discussion, and 'Jahan Sanat' has said in an editorial referring to the irrational agricultural policy and its role in the aggravation of the water crisis, "We do not have water, but we export wheat and live meat."

The politicization of the water issue is an important factor in the current crisis. As the regime has a political and social bias against ethnic and religious minorities, its plans and water projects have been aimed at weakening non-Persian ethnic minorities by ignoring real development benefits in their regions. Plans pursued by post-revolution governments have thus aggravated the crisis and wreaked havoc on the environment in general.<sup>(11)</sup> For example, the diversion of rivers in the Arab Ahwaz region in Ahwaz was not based on scientific studies but rather was a political decision aimed at causing demographic and social change that would harm the Arab population and serve the central regions with a Persian majority. As the catastrophic environmental impacts started to surface, Iranian officials started to trade blame. Mohammed Bani Hashemi said five successive Iranian governments were responsible for the Jetund Dam disaster and for diverting the course of the Karun River.<sup>(12)</sup>

In the same context, it can be said that mismanagement has exacerbated the water crisis in Iran, as the government has displayed a lack of vision, planning, and coordination. Additionally, the government has misinterpreted trends in achieving development and has thus resorted to options that deplete the available water resources. For example, Hassan Rouhani issued orders to the Ministry of Agriculture to focus on achieving self-sufficiency in five strategic crops, these being wheat, rice, sugar, oilseeds, and cotton, all of which are detrimental to Iran's water situation.<sup>(15)</sup>

Finally, the Iranian regime's hostile attitude toward its neighbors has affected cooperation and rapprochement in the region, which has been reflected in common water issues, noncompliance with international law, and a lack of adherence to principles and rules regarding Border Rivers. Water policies pursued by these countries and disrespect for rights to the use of international watercourses are part

of the crisis. As such, the agricultural policies of each country affect other countries. For example, dams built by Turkey to reclaim lands in Kurdish areas have reduced the share of water in downstream countries and led to tension between them. Although dependence on border water resources is limited, as these amount to 7 percent of Iran's total water resources, a large proportion of the population depends on this amount, with some areas having a dependency ratio of 100 percent, such as the Hermand River in Sistan, 80 percent for the Aras River in Moukan, and 90 percent for the border river in Sarakhs.<sup>(14)</sup>

### **Second: Implications and challenges posed by the crisis**

In light of the water crisis, the Iranian government has found itself facing a number of challenges, the most important of which concerns consumption of renewable freshwater resources. Iran currently consumes 73.8 percent of its total renewable freshwater resources annually—and according to international standards, countries that consume more than 40 percent of their total renewable freshwater resources experience “water pressure” or “water stress.” With a diminishing annual amount of renewable water, it is expected that between 2025 and 2050, Iran will enter a stage of water scarcity, which means the per capita share will dip to less than one thousand cubic meters per year.

The water shortage has been linked to a number of problems, including increased pollution of major water resources, proliferation of unreliable water supply systems, inconsistent drinking water quality and safety, poor performance of water distribution networks, inadequate water collection and treatment systems, and soil and resource pollution. All of these factors increase public health risks, which are the main challenges associated with the crisis.

Iranian aquifers have been depleted as a result of increased dependence to fulfill basic water needs, 55 percent of which are currently met through groundwater consumption. If the annual renewable groundwater volume recoverable at the national level is 56.5 billion cubic meters, the drawdown rate is 61.3 billion cubic meters, which means that 4.8 billion cubic meters of groundwater reserves are being extracted annually. The problem stems from the practice of drilling deeper water wells to allow for the use of bigger water boosters. People used to do this illegally or through old licenses in some areas, which in turn led to a significant drop in water levels in these wells. This level has hit 1.5 meters per year in some areas.<sup>(15)</sup> Groundwater reserves are used during times of drought, but unregulated use exceeding natural standards has reduced groundwater reserves and even the quality of such reserves. According to available statistics, some twenty Iranian states have completely depleted their underground water reservoirs, dissipating 12 billion

square meters of groundwater, which has been reflected in a significant decline in groundwater levels in all regions.<sup>(16)</sup>

In addition, the gap between supply and demand for water has increased with a rising population, but the government has not taken the necessary steps to provide citizens with new water resources. The current supply rate is hardly enough to meet national needs.<sup>(17)</sup> In future, the capacity to provide sufficient water supplies to meet the needs of the population will continue to be impacted, given the regime has adopted a strategy aimed at further increasing the population. In many respects, this problem of an increasing population is associated with environmental issues such as deforestation and desertification across many of Iran's already arid regions. Industrial and urban wastewater has polluted a number of rivers and coastal waters and has increasingly threatened drinking water supplies, wetlands, and reservoirs. This has continued under the pretext of establishing industrial and agricultural sectors.<sup>(18)</sup>

Limited water resources coupled with a rising population and political instability leave Iran vulnerable to a food shortage. Over sixteen years that witnessed an eight-year war with Iraq and post-revolution economic sanctions, food security stood as a major challenge to the Iranian government. The government realized the necessity of reaching self-sufficiency in strategic crops such as wheat after the revolution, which resulted in massive governmental support to boost the agricultural sector. This took place at the expense of the water sector, given the fact that wheat and other such crops use high volumes of water. Thus, it could be said that aspiring to achieve food security has led to water insecurity. Additionally, achieving food security or self-sufficiency remains a major issue despite limited water resources.<sup>(19)</sup>

More serious has been the impact of the crisis on people and water-dependent activities such as agriculture and grazing. Over the last decade, many villages have been evacuated in central Kerman because of water shortages. Millions of livestock have died from drought and strategic crop production, particularly wheat and barley. In Mashhad, Iran's second biggest city, the Zayandehrud River, a popular attraction, has dried up. Water rations have been depleted in thirty Iranian cities, including the capital, Tehran, which has a population of 12 million. In southeastern Iran, near the border with Pakistan and Afghanistan, Lake Hamun, once the country's largest freshwater lake, has dried up. This has had a major impact on fisheries, and as a result of the depletion of the lake, strong winds and sandstorms have increased soil erosion in many villages in the southeast. Zahedan, which has more than half a million poor Afghan refugees, has been affected by the pollution of the already drought-stricken groundwater. Recently, Lake Urmia has also dried up, and its tourist beaches have been severely affected.<sup>(20)</sup>

In the same context, the Iranian nomadic crisis has continued as the Qashqai and Bakhtiari tribes, the largest tribes in Iran, have moved in search of green pasture and water for their sheep and goat herds, which account for a quarter of national livestock needs. These tribes are suffering from climate change and a rain scarcity that has affected green areas and grazing in general.<sup>(21)</sup> These Bedouins have also been affected by water management efforts by the government, because policies have resulted in a permanent or temporary decline in water in the Bedouin areas. The crisis has become aggravated since the natural springs feeding the summer pastures have dried up in certain areas.<sup>(22)</sup>

The water conflict or the so-called water war at home and abroad is the most dangerous aspect of the crisis. Poor water distribution and shortages at home have been a real source of increased tension and competition in the region. The problem is that this competition for resources aligns closely with the broader contest among ethnic and sectarian groups, some of which are marginalized, which may turn the water issue into an identity conflict. In this context, the major Iranian cities have witnessed huge protests because of the water crisis that have erupted into conflict. The MP for Tehran in the Iranian parliament, Gholam Reza, expressed the enormity of the crisis as he spoke of an imminent war over water in Iran. Although the administration under President Ahmadinejad has undertaken many reforms, having intervened to distribute water among the provinces, to enable greater access to available water, and to address the crisis in some areas, these changes have increased tensions and escalated differences, especially among those affected by the redistribution process. Historical experience has proven that these factions will engage in conflict over narrow political interests.<sup>(23)</sup>

For Example, Ahwaz [Arab majority city] protested due to Iranian authorities' procedures to diverting of water to Persian cities, the same matter happened in Isfahan and Yazd. The former agriculture minister, Issa Clanter said that 50 million Iranian capita will immigrate in order to survive.<sup>(24)</sup> Water in charge of the Ministry of Energy, Rahim Maidani added that 295 cities including 6 major cities face the risk of drought.<sup>(25)</sup> Annex 1 clarifies the domestic conflicts on water.

Additionally, drought, well depletion, and government negligence in terms of extending water networks to many villages, carrying out projects in a biased manner, and favoring certain regions have led locals to abandon regions hit by the water crisis. For example, in the Sistan province, 25 percent of the population has fled in the recent period, and in Khorasan, a region east of Iran, about 17,000 villages have been abandoned due to lack of water. Of these, 475 villages have become completely depopulated.<sup>(26)</sup>

It is clear that government remedies for the water scarcity crisis in some areas have stirred up social and political disturbances that have amounted to protests and confrontation with security services. The policy of transferring water from basin to basin in an effort to solve the crisis has occasionally been selective and politicized. For example, at the beginning of 2013, the transfer of water from a river near the town of Isfahan to Yazd sparked a week-long protest and clashes with the police, as this diversion diminished the quota of the principal basin. Despite the commotion, the government insisted on going ahead with the project. Yazd, located 300 km from the water, was affected by a regular shortage of water, with no alternative supplies provided. In 2010 and 2011, demonstrations calling for the protection of the shrinking Lake Urmia turned violent, and security forces were deployed to the region. Disputes over water are projected to drag on as long as the crisis continues, especially since cities are given priority over remote rural communities in terms of water redistribution.<sup>(27)</sup> Additionally, Annex 2 highlights the most important water projects on the Karun River and the environmental and social damages to the Arab Ahwaz region as a result of these projects.

At the external level, Iran is involved in more than one conflict over transboundary water networks. Examples include the conflict over the Hermand River with Afghanistan in the east, the conflict over the Tigris and Euphrates rivers with Turkey, Iraq, and Syria, and the conflict over the Aras Basin system with Armenia, Azerbaijan, and Turkey. Iran is also engaged in conflicts over common border groundwater sources, including the Iran–Turkmenistan joint aquifer of Sarakhs; the Lenkoran–Astara joint water basin with Azerbaijan; the Nakhshivan/Larijan and Djebrazil joint aquifer with Armenia, Azerbaijan, Georgia, Russia, and Turkey; and the Aras River with Armenia, Azerbaijan, and Turkey.<sup>(28)</sup> For example, the Iranian authorities diverted water from the Kurdish Sardasht region of Iraq, which impacted thousands of locals. Up to 284 areas and agricultural villages were affected. This was considered a political ploy to pressure the region, whose aspirations for secession represent an enormous challenge to Iran.<sup>(29)</sup> The tension between Iran and Afghanistan has also increased because of the recent construction of water dams on Afghani rivers destined for Iran, especially as Afghanistan has explicitly accused Tehran of forming special militias targeting some of the dams.<sup>(30)</sup> In sum, the crisis has caused many repercussions, which in turn pose major challenges to the Iranian regime.

### **Third: An assessment of current government policies in response to the crisis**

Since the turn of the century, the Iranian government has adopted a number of long-term strategies to regulate and address the issue of water scarcity. The main strategy, launched in 2002, was based on two proposed approaches entitled the Integrated Climate Change Program and the Integrated Water Schema, which

promised “a guide to synthesizing the medium- and short-term plans of the National Water Administration for the optimal utilization of national water resources by unifying all areas of water management.” This was in accordance with the decision at the Johannesburg Summit on Sustainable Development in September 2002, which obliged all countries to design an integrated water management plan by 2005. Iran was the only country in the region to do so by 2004, but the plan remained mere ink on paper and did not find much resonance in reality.<sup>(31)</sup>

President Rouhani presented a national plan for water conservation by the end of 2013, aimed at reorganizing water resources and reassessing government projects. The plan was based on reducing the use of domestic water, making the agricultural sector more efficient in water use, protecting groundwater, and regulating the drilling of wells.<sup>(32)</sup> At the legislative level, the government passed a law imposing fines on citizens who consume high rates of water. In addition, the parliament established the Water Security Committee to monitor the repercussions of the crisis. In the media, the government intensified its awareness programs to urge citizens to ration their use of water and deal with the crisis realistically. Most Iranian newspapers and media were busy talking about the water crisis on a daily basis. Hamid Reza, an official at the National Water Management Company, told Iranian television that global national average for water consumption was up to 150 million liters per day, but Iranians consumed 250 million liters per day.<sup>(33)</sup>

Despite the apparent government interest evident in these plans and in the remarks of officials, which signify that they realize the dimensions of the crisis and know how to tackle it, reality has shown that implementation of these strategies is still far off. This gap between perception and reality stems from several factors. First, Iranian officials continue to deal with the symptoms of the crisis without a real and effective confrontation of its main causes and components. Indeed, the development policies of the government itself are overshadowed by the crisis. Unbalanced and unparalleled development plans cause migration and unequal distribution of facilities, income, and employment. Additionally, the continued call for population growth affects the widening gap between supply and demand for water in some areas.

The environment does not appear to be a major concern for Iranian decision makers, as Iran has not yet felt the negative effects of environmental crises. While Iran has accused Turkey of building a number of dams on a common river, which could cause environmental damage, the Revolutionary Guards continues to build more dams to store water while ignoring the environmental damage expected to be blamed on Turkey.<sup>(34)</sup> Some water projects likewise do not take into account the critical water situation in certain areas. For example, the decisions of the Supreme Council of Iranian Water have taken advantage of groundwater resources in the

foothills of the Zagros Mountains in western Iran in the area adjacent to the Iran–Iraq border to establish agricultural communities in this area and change the pastoral lifestyle prevalent there. This will lead to depletion of this reserve and will change the geographic and demographic nature of this region.

The government has been criticized for not having taken into account the element of time, aiming to achieve rapid growth in a short period, paying no heed to the future of water resources in Iran. For example, Ahwaz has seen the destruction of its water resources, which has led to drought, and the government has not provided the necessary environmental support in this province, which is the main economic artery of Iran.<sup>(35)</sup> This province has 33 percent of the water resources in the country, but the destructive policies of the government have depleted the water in its most important rivers, such as the Karun, Karkheh, and Maron, which has greatly reduced its agricultural production.<sup>(36)</sup>

On the other hand, many parties have attempted to deal with the crisis. The nature of the regime and its composition along with the dispersion of responsibility for decision-making has made these strategies isolated islands with no single link. In fact, there has been no proactive management of water resources.<sup>(37)</sup> The current approach tends to address problems only when they become difficult to resolve. In light of the fact that Iran faces many overlapping water challenges with complex root causes, realities show that no single solution can address the water problems in Iran. It is necessary to adopt a package of multiple and simultaneous actions, strategies, and plans. As some of the root causes of water management problems in Iran stem from outside the water sector, multisector coordination and stakeholder involvement are essential for the development of sustainable solutions, which remain unrealized by Iran's decision makers.

In addition, the material costs of water crisis strategies and projects in Iran represent a number of government failures in dealing with the crisis in all its aspects. Water management projects are economically and politically expensive. Economically, the Iranian budget suffers from major problems due to sanctions and weak resources. Politically, decision-makers need to assert their legitimacy, and this hinders the implementation of solutions with potentially negative consequences for popularity, even if such solutions are urgent and necessary. It is clear that adjustments of the economic and political costs of the crisis by Iran's decision makers have been politically motivated, demonstrating an insufficient awareness of the reality of the future political costs of the water crisis, especially considering that the issue of water in any society that suffers from a continuing shortage is a matter of life and death.<sup>(38)</sup>

## **Conclusion**

The dimensions of the water crisis in Iran must be clarified, as international organizations have announced that Iran will be among the countries facing a chronic water shortage in 2025, years after the start of the water stress stage. This comes in light of an announcement by the executive director of the Iranian Water Resources Management Company, Mohammad Haj Rasouli, that the average water level of Iranian dams has decreased by 34 percent this year from 2016 levels. Yet five of these dams are in critical condition, and water supplies are under the red line. Cities such as Kerman, Yazd, and Berjand also face drinking water supply problems from groundwater sources.<sup>(59)</sup>

Iranian governments have failed to deal with the water issue. The future of the water crisis in Iran is uncertain, and the consequences will be severe. First, the water crisis in Iran has reached an unprecedented degree of complexity, especially during the past decade. The scarcity of water has had severe impacts politically, socially, and economically. At the social level, Iran has seen tensions and protests. For the economy and national development, water scarcity has impacted agricultural and economic production in general and has placed added burdens on other industries such as the environmental sector and the infrastructure of water and drainage networks. Politically, the crisis represents a major internal challenge, as indicators of instability have escalated. The Iranian political system is facing a difficult test in addition to the problems resulting from relations with neighboring countries due to this thorny and complex issue.

In a highly authoritarian regime that monopolizes political and economic power and implicates the country in external conflicts without a horizon, social, economic, and political reform issues seem not to be priorities. Solutions to the complex water crisis are indeed subject to political and economic considerations, but current strategies have been random and oversimplified. There is no doubt that the current poor political performance will lead to more indiscriminate shifts of the population toward urban areas and will contribute to the medium- and long-term damage to rural areas, as the state has not developed practical plans to deal with future water shortages in those areas. In light of these deteriorating internal conditions, it is difficult to control the basic needs of the population, including water.

In fact, the Iranian public is not fully aware of the magnitude of the crisis and has not changed its disastrous pattern of consumption, which is one of the aspects of the crisis and an aggravating factor. Due to this lack of awareness, certain factions have hijacked the state, hindering its ability to lay out plans to resolve the water crisis and its environmental impacts. The depletion of Lake Urmia has revealed the magnitude of the water management crisis in Iran. The drought was not a surprise

but an extended process caused by accumulated government projects, but escalating calls for solutions occurred only after the crisis became a difficult reality. The future poses many problems similar to that of Lake Urmia, as many smaller brooks and other lakes are expected to dry up. For example, Iran's groundwater problem is a foreseeable disaster that could have a massive impact if not sufficiently addressed.

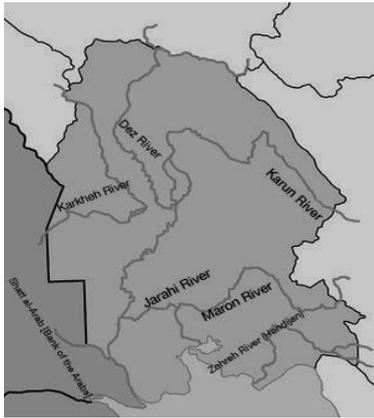
It is ironic that Iran has sought to maintain its national security through military interventions in the region and has expanded its influence at the international level by intervening in areas beyond its security sphere, spending billions of dollars in this effort, while ignoring a national security issue that threatens its very unity and stability and could spark prolonged conflicts with neighbors. In light of the arguments herein, it can be said that the future is not promising for Iranians in this regard. The country is just around the corner from water scarcity. Iranians have been hit severely by government policies of discrimination and unfair distribution in relation to the development process, and on top of this comes issues regarding the redistribution of water. The regime has used this crisis politically and ethnically, adding an additional complexity to issues related to minorities, insistent on turning a blind eye to the advice of Karaji to maintain justice in water distribution as a mainstay for survival.

**Annex 1.**  
*Water-related conflicts in Iran.*

Region	Demographics	Incidents	Reasons
Chabahar Mahal	Bakhiari majority	1. Clashes between residents and security services in which 1 was killed, 108 were injured, and 70 others were arrested. <sup>(40)</sup> A previous clash left two dead. 2. A conflict between the Shehr-Kurd villages of Argenk and Kutk. <sup>(41)</sup>	1. Water distribution 2. A dispute over grazing due to a lack of water
Northern Khorasan	The region is made up of 50 percent Kurds, 30 percent Persians, and 20 percent Turks.	Fifty-five villages lack drinking water and purchase water from private vehicles. This has led to successive disputes over the distribution of water. Many have filed cases in court over beatings for this reason.	A dispute over grazing and government negligence in establishing infrastructure for drinking water
Sistan and Baluchistan	Baluch majority	Four thousand villages without drinking water. For example, in the Nikshahr district of Sistan and Baluchistan, tribal conflicts have erupted because of water and well droughts, and four thousand families have sought to migrate from the region because of a lack of water for drinking and agriculture. <sup>(42)</sup>	Storing water for water transport projects to the central region and reclaiming lands for the benefit of sovereign and government entities
Western Azerbaijan	Turkish majority in addition to Kurdish and Armenian minorities	Families clashed over water shares in the border area of Sardasht in August 2017. The clashes led to the death of one person and the injury of three. <sup>(45)</sup> There are about 450 water disputes in the city of Khoy alone, one of the centers of the province of western Azerbaijan.	Transfer of water and drilling wells

Ahwaz	Arabs	At the beginning of June 2016, one person was killed and two injured in a dispute over irrigation water in Shush, a city 100 km north of Ahwaz. The bloodiest conflict took place in June 2017 between the Bakhtarian clans in both Bagmelk and Romhormoz, in Ahwaz province. In this, 23 people from both sides were killed in the village of Battek Jalali.	The conflict broke out following a disagreement over pastures and water wells.
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**Annex 2.**  
*Environmental and social problems associated with water projects on the Karun River.*

<p style="text-align: center;"><b>Location and importance of the Karun River</b></p>	<p>The Karun River is the largest river in the Ahwaz region and Iran, at 950 km long, and is suitable for navigation in some parts. It originates in the Zagros mountains in the Zardkoh region of western Iran and is located in the Shatt al-Arab, known in Iran as Arvandrud. The Karun River, along with the Karkheh, Dez, Zohreh, and Jarahi Rivers, represents the principal source of drinking water for Ahwaz, the capital city of Ahwaz province, with a population of 1.1 million. Additionally, 4.7 million people live in the province of Ahwaz, according to the latest official census of 2011. Arabs represent the majority of the Ahwaz population, as this region is their historical homeland.</p>
<p style="text-align: center;"><b>A map of the Karun River basin</b></p>	 <p>Source: Wikipedia: Khuzestan Province. <a href="http://cutt.us/16dcm">http://cutt.us/16dcm</a></p>

### Important government projects on the river

The Iranian government has carried out a project to transfer water from the Karun River, one of the rivers of the Arabian Gulf basin, and the Sea of Oman to the city of Isfahan within the basin of the central region. According to the decisions of the Supreme Council of Iranian Water, the transfer of river water outside its original basins is prohibited except for the purpose of drinking. Despite the fact that the central region's drinking water needs do not exceed 300 million cubic meters annually, the Iranian government annually diverts 1 billion cubic meters of water from the Ahwaz rivers, especially the Karun River, for agriculture and industry and even the establishment of open gardens. If remaining projects are completed, this amount will increase to 2.8 billion cubic meters per year.<sup>(44)</sup> In the first phase of the Karun River water transfer project, the Iranian government carried out a project in Behashtabad to transfer Karun River water to three governorates in the central regions of Isfahan, Yazd, and Kerman with the aim of transporting 580 million cubic meters annually. This came after the Zayandehrud River, passing through the city of Isfahan, dried up due to low groundwater levels, an increase in population, and the steady industrial expansion of iron and steel factories in the semi-desert region.<sup>(45)</sup> The first design of the Behashtabad project under Khatami II was to transport one billion cubic meters per year by constructing an underground tunnel 65 km long and 6 m in diameter accompanied by a dam to store 1.8 billion cubic meters of water. During the second government of Ahmadinejad, the project was re-evaluated by French and Austrian consultants, and the design was revised to carry only 580 million cubic meters per year. It was then said that the transfer of just over half a billion cubic meters per year of the 30 billion cubic meters would not have adverse effects.<sup>(46)</sup>

However, the plundering of central water sources did not stop at this point. The government has established dozens of dams and other projects to transfer water from the Karun River and other rivers in Ahwaz, especially with the emergence of the Rouhani government, which toes the lines of Rafsanjani and Khatami, who bear anti-Arab sentiments. Other phases of the project were added until the amount of water transferred to the central region reached 6 billion cubic meters per year. The Iranian government planned to transfer Karun water to the Tabas oasis in Khorasan, extending to the city of Yazd, and established forty upstream dams on the Karun River.

The dams have a capacity of 21.6 billion cubic meters, of which 8 billion cubic meters are used.<sup>(47)</sup> These dams, which were established without taking into account their environmental impact, reduced water discharge in the city of Ahwaz from 300 cubic meters per second to 100 cubic meters per second.<sup>(48)</sup> The most famous of these upstream dams are Karun Dams 3, 1, and 4, and the most recent is the Jetund Dam, 380 km from the source. This is the second largest industrial lake in Iran, with a capacity of 4.5 billion cubic meters. In 1997, under the government of Mohammad Khatami, the Iranian government also established sixteen dams on the Karkheh River and thirteen dams on the Jarahi River, some of which were completed and others of which remain under construction.

**Environmental impacts  
of transferring water  
from the Karun River**

1. Some phenomena have occurred because of the lack of water in the Karun River and the drying up of large tracts of land, most notably the accumulation of salt caps around the industrial lake formed by the Jetund Dam. The Iranian government did not thoroughly study the environment of the dam and the lake and thus did not discover the rock salt mines near the dam, which contain hundreds of millions of tons of rock salt, prior to construction. As the lake of the dam took shape, the rock salt mines grew inside the lake, leading to an increase in salinity within the Karun River and an inability to use the surrounding land. Iranian environmental activists have declared that the water behind the Jetund Dam has become five times as salty as the waters of the Arabian Gulf, and Ahwaz agricultural lands will be completely destroyed within eight years.<sup>(49)</sup> Although the dam stores 4.5 billion cubic meters of water and generates 2,000 megawatts of electricity, it is a crime against Ahwaz, its people, and the land and serves as an open museum of environmental crimes committed by governments as a result of ignorance.
2. Dozens of villages have been submerged by the waters of industrial lakes formed by dams.
3. A shortage of water in the Karun River and the depletion of its estuary have led the waters of the Arabian Gulf to prevail, destroying palm tree farms in Abadan and Muhammarah.
4. As a result of the decreasing water level of the Karun River, the wetlands of Howeyzeh, an area of 500 thousand hectares, dried up, causing dust storms.
5. The province of Ahwaz has seen its largest dust storms over the past two years, to the point where there is no road visibility and multiple dust-related bottlenecks. Ahwaz experiences the highest pollution rates in the world.<sup>(50)</sup>

<p><b>Social impacts</b></p>	<p>1. Changing the map of water resources in Ahwaz is a key part of Iran's plan to change the demographics of the region and implement an ethnic cleansing process by steering the migration of non-Arab minorities to the region and causing local Arabs to emigrate, destroying the resources of the local economy.</p> <p>2. The province of Ahwaz has witnessed during the past ten years a massive exodus from villages to cities both inside and outside the province. Around 400 thousand marginalized people have migrated from villages in Ahwaz to the outskirts of the city of Ahwaz because of a sharp decline in the water level of the Karun River and its high rates of salinity. As well, the government has prohibited the cultivation of crops which consume huge quantities of water under the pretense that Ahwaz suffers from a water scarcity. It has also confiscated 250 thousand hectares of the most fertile lands of Arab farmers to benefit the sugarcane plants in the northern regions around the Karun, which consume between 3.4 to 4 billion cubic meters of water per year. Thus, the dam which depleted the Karun River has been used to cultivate land seized by the Iranian government and for crops that need water abundance. At the same time, these crops produce large amounts of agricultural waste contaminated with pesticides, which flows into the southern parts of the Karun River and destroys the remaining agricultural areas owned by the farmers of Ahwaz.<sup>(51)</sup></p>
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