CARNEGIE EUROPE

JULY 2022

How the EU Can Help Iran Tackle Water Scarcity

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CLIMATE CHANGE IS WATER CHANGE

Water is an existential resource, and Iran is squandering it.[1] The country has lost more than 200 cubic kilometers of its total water storage over the last two decades, and groundwater levels have dropped by around 28 centimeters per year on average. Ecologically exhausted, Iran is vulnerable to global warming and the manifestations of a broken hydrological cycle: droughts and desertification as well as flash floods. As water resources are depleted—a human-made and reversible process rather than a fait accompli—water scarcity is rapidly becoming a primary concern for Iranians, as numerous reports by the UN and the country's government confirm. The EU has directed some attention and money to this challenge in recent years, but to little avail so far.

Dealing with water scarcity does not only involve the technical aspects of changing consumption patterns and reducing inefficiencies or diverting rivers and investing in desalination plants. To have a long-term effect, any approach needs to include an understanding of how water and the society using it are interlinked: How does water *behave* in Iran? What is needed to build back up to levels of adequate integrity for landscape hydration and socioeconomic use? What are the current patterns of water use, and how could they change so as to satisfy human and ecological needs alike? Which political and economic interests latch onto the water systems? Who, therefore, needs to be engaged in a regeneration process? And what sequence of steps is required for it?

The EU's relations with Iran have been fraught for decades, whether over the country's nuclear program, its appalling human-rights record, or its belligerent regional posture. As much as the water issue could be an entry point to engage with Iran on its obvious needs, any eventual cooperation will remain contingent on the perception of overarching security threats. The stability of water systems is intimately related to the stability of the political and socioeconomic equilibriums that define modern-day Iran. As such, they are indirectly tied to security concerns.

Approaching Iran on water may therefore not prove to be the easiest route. Yet failing to cooperate on this issue will be detrimental to the future of the country, the broader region, and the rest of the world due to cascading risks emanating from severe climate disruptions and destabilization. It is also not just about the risks associated with declining to assist Iran on water. On the positive side, engaging with the country on rebuilding the hydrological cycle for the benefit of ecological security and climate adaptation is a new area of policy engagement of the utmost relevance in this age of climate change. It will also be a new opportunity for the EU to blaze a trail with a novel type of diplomacy with systemic benefits for climate action, the deescalation of security risks, cultural exchanges, and technical cooperation.

Engaging with Iran under the banner of ecological diplomacy and hydrological regeneration will yield benefits, including on confidence building. Framing the approach to constructively work with Iran will be the crucial first step in securing collective futures in a climate-disrupted world prone to instability. The EU will need to analyze how the water situation in Iran has been shaped by the combined forces of climate change and political mismanagement as well as how it has been aggravated by international sanctions. Therefore, engagement with Iran on the future of water and security will represent not only a technical challenge but even more so a political one—hence the need for a new narrative on cooperation.

This publication first establishes a water profile of Iran, outlining the link between water scarcity and climate change. It then discusses the political, socioeconomic, and regional aspects of the main water challenges in and around the country. It next analyzes the potential of ecological diplomacy and the EU's readiness to engage Iran before identifying possible entry points for cooperation. These policy recommendations can help turn potential conflict into an opportunity for collaboration.

A WATER PROFILE OF IRAN

The mostly arid or semi-arid climate on the Iranian plateau has posed critical water-management issues for millennia, with which the area's residents have learned to cope. In particular, the communal underground canal system of the *qanat* allowed for the watering of places often located far away from wells. It is an irrigation system based on an ecological design that was conceptualized as early as 550 BCE, one that perfected the art of water distribution on the basis of gravity.

In part thanks to the *qanat*, agricultural systems developed in Iran and provided the backbone of its various civilizational ages. Water-distribution infrastructure supported territorial integration, exchanges between urbanizing centers and rural hinterlands, and the economic strength of the country. Water management was and remains a pillar of stability or a cause of instability for Iran.

The *qanat* fell into disrepair as modern irrigation technologies and infrastructure were introduced, and with the shift toward intensive forms of agriculture. Such intensive farming now contributes to the exhaustive use of surface water and well pumping, further desiccating landscapes as a result. The combination of various human-related drivers (including the construction of dams and monocultures) has contributed to the depletion of water resources (a trend that has made Iran more vulnerable to climate disruptions), to the weakening of biodiversity, and to the worsening of water and food insecurity. Maps 1 and 2 below show the country's main waterways, lakes, and dams as well as marshes and dry salt flats, with map 2 also highlighting (in dark blue) areas that used to be bodies of water but have now gone dry.

Map 1. Iran's Main Waterways, Lakes, Dams, Marshes, and Salt Flats

Map 2. Iran's Water Areas Turned Seasonally or Completely Dry

The situation in Iran has been going from bad to worse. Lake Urmia in the northwest nearly had disappeared by the mid-2010s, until its regeneration was supported and facilitated by the UN. The marshlands of the Helmand Basin in South Baluchestan in eastern Iran are drying without remediation. From there, winds carrying salt and dust not only increase the number of storms affecting the regional capital, Zabol, but also pollute the area's water supplies, thus further contributing to water degradation and salination, with negative consequences for the livelihoods of rural residents. The storage of water in dams—whether the Karkheh River feeding its namesake dam in Khuzestan Province, the Zayandeh River flowing through Isfahan on the Iranian plateau, or the Dorudzan Dam watershed in the south—has exacerbated the problem of water bankruptcy.

The disappearance of large bodies of water is driven by many factors. Rates of evaporation are accelerating because of devegetation and global warming. The human-related changes to landscapes and water basins also have a disruptive effect with regard to atmospheric and climatic patterns: the more ecologically disrupted landscapes are, the more rainfall patterns get disturbed. As deforestation occurs at alarming rates in Iran, the hydrological cycle in the country gets broken, resulting in accelerating levels of desertification and rainfall disruption not only in Iran but in the wider region. This means that rainfall patterns become more unreliable and tend toward the extremes—either resulting in prolonged droughts or intense water events. Iran is currently facing its lowest levels of rainfall for the fourth year in a row, leading to a permanent and worsening situation with drought and desertification (see figure 1).

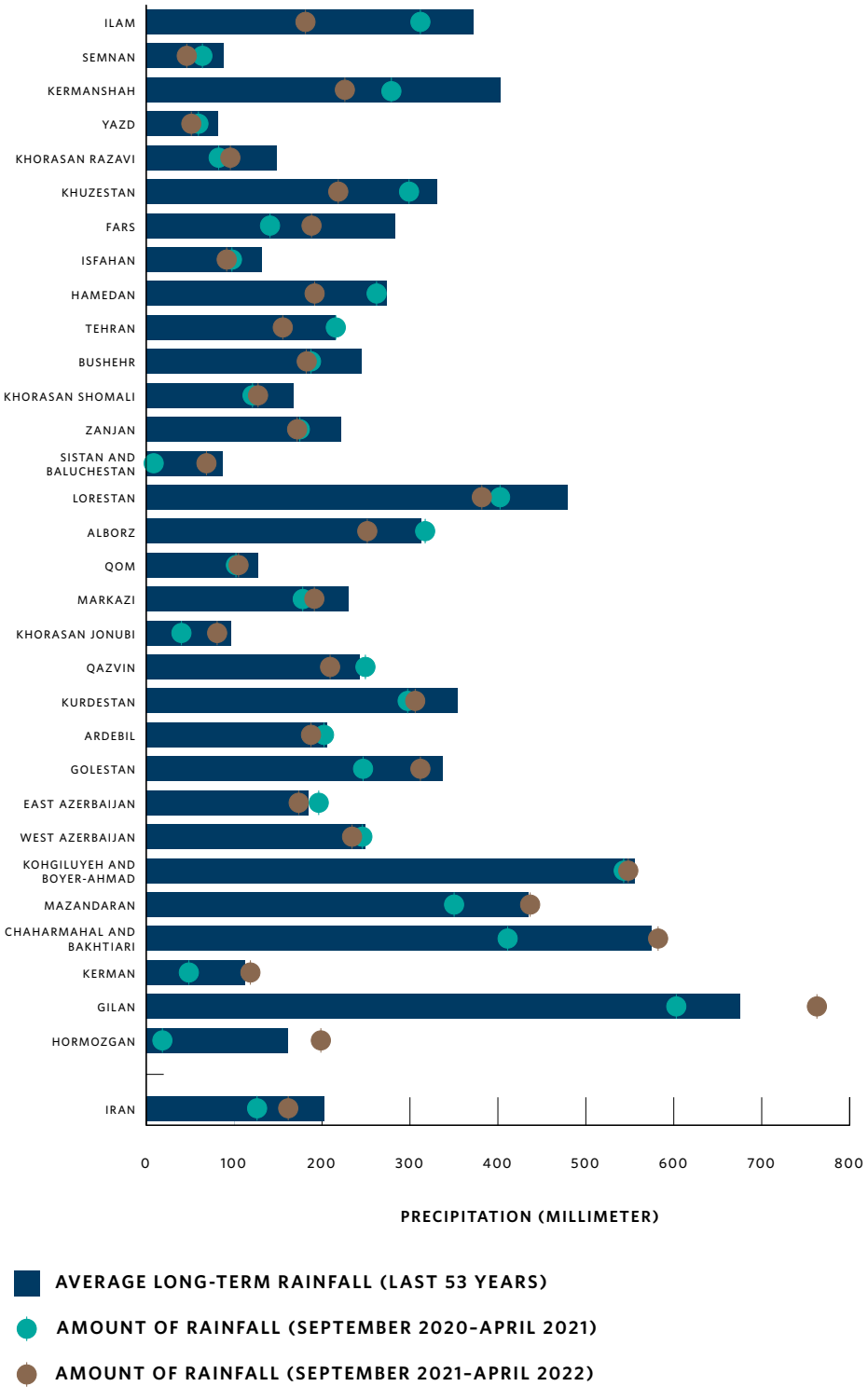
There are other drivers of degeneration over time, especially as bodies of water disappear. New research shows that around 77 percent of Iran's land (or twenty-three out of its thirty water basins) is under "extreme groundwater overdraft," meaning that water use is more than three times above the rate of natural recharge—thus causing an "anthropogenic drought." Other analyses conclude that this is not a temporary crisis—defined as, for example, a "protracted drought" or a time-bound drop in precipitation—but rather a "consistent, long-term decline in water resources." Critically, it is Iran's ancient water from beneath the ground that is being used up, without ever coming back (see figure 2).

"Drying rivers, vanishing lakes, shrinking wetlands, declining groundwater levels, land subsidence, sinkholes, desertification, soil erosion, dust storms, air, water and waste pollution, biodiversity loss, deforestation and wildfires" is the depressingly long list of visible signs of Iran's environmental devastation, according to Kaveh Madani, an environmental scientist and activist. He also coined the term "water-bankrupt nation" to describe his home country. Madani served as deputy vice president responsible for the environment from 2017 to 2018 before resigning due to threats from the country's security apparatus trying to discredit him and his work.

All these phenomena are related. Some human activities—such as intensive agriculture, urbanization, extractive industries, and hydropower infrastructure construction—lead to water depletion when they are not managed regeneratively. When water tables shrink, this affects all biological sequencing: soils tend to become less fertile, biodiversity starts suffering, and greenhouse gases are released. This starts a vicious cycle that culminates in landscapes that are unable to retain water, making them prone to disasters such as desertification, drought, floods, fires, landslides, and dust storms. It is no coincidence that Iran in 2017 recorded one of the highest temperatures ever measured in the world and that it is one of the most water-stressed countries on Earth.

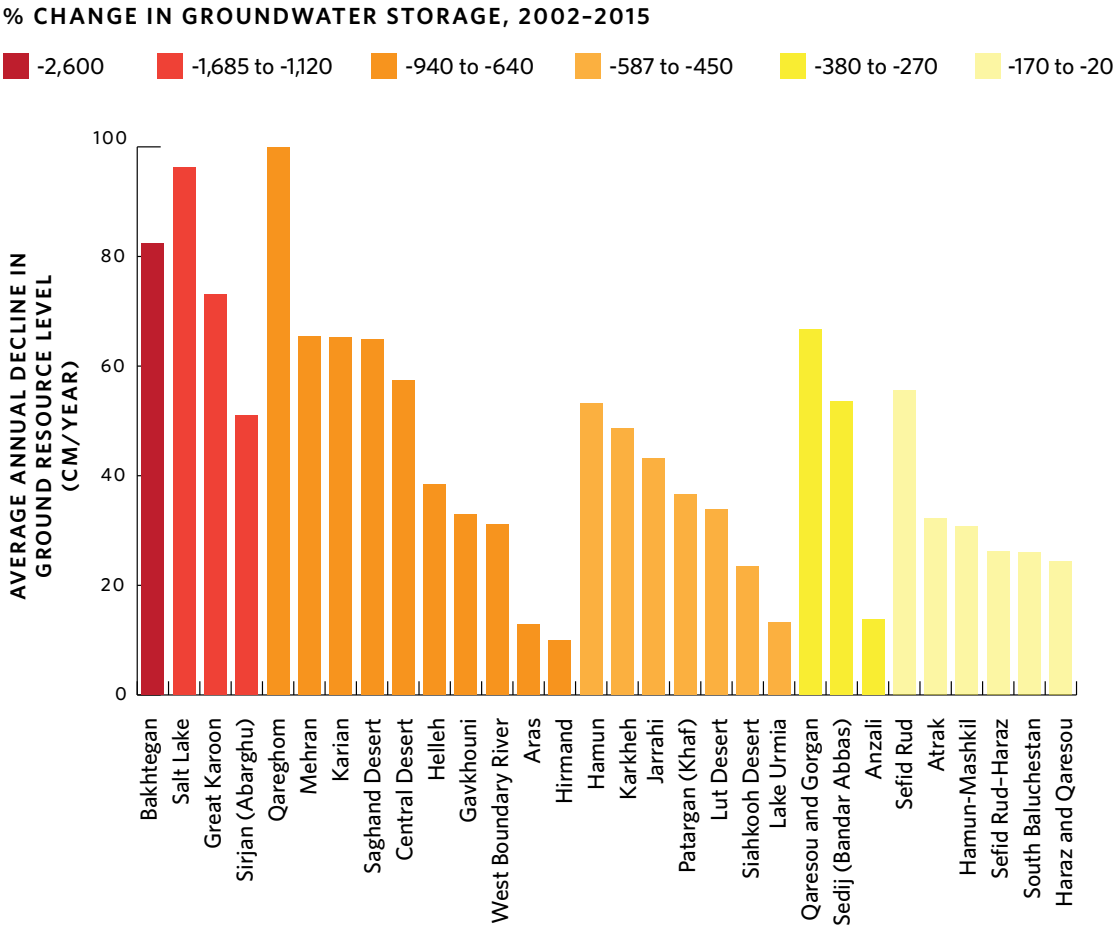
Water bankruptcy, or even just water insecurity, and vulnerability to climate change are intimately related. Being able to break the vicious cycle by intervening regeneratively into the water cycle is a key element of building resilience in an age of climate breakdown and ecological crises. But to do so, a prerequisite is understanding the human, political, and socioeconomic relationships to water in any given context.

Figure 1. Cumulative Precipitation Across Iran's Provinces



SOURCE: The chart is retrieved from a report published by Iran Water Resources Management Company: https://www.wrm.ir/cs/Download/44/3572

Figure 2. Groundwater Depletion Across Major Basins in Iran



SOURCES: Samaneh Ashraf, Ali Nazemi, and Amir AghaKouchak, "Anthropogenic Drought Dominates Groundwater Depletion in Iran," Scientific Reports 11, https://www.nature.com/articles/s41598-021-88522-y; Roohollah Noori, Mohsen Maghrebi, Ali Mirchi, and Kaveh Madani, "Anthropogenic Depletion of Iran's Aquifers," PNAS 118, no. 25 (June 2021): https://www.pnas.org/doi/10.1073/pnas.2024221118#supplementary-materials.

POLITICAL, SOCIOECONOMIC, AND REGIONAL CHALLENGES AROUND THE USE OF WATER

Iran's water challenges are not just the result of natural phenomena such as erosion or rising temperatures, as the regime's narrative would have it. They also directly result from an economic paradigm that considers natural resources like water merely goods to be exploited through engineering and technology. This has led to the long-term degeneration of natural cycles and to predatory political economies that contradict the methods of good water management. A single figure provides an insight into the ecological-economic imbalance of the country: according to one expert, "over 90 percent of [Iran's] population and economic production are located in areas of high or very high water stress."

This imbalance has not yet led to a collapse of socioeconomic and political governance, but tensions are running high. Iran is a relatively stable middle-income state with a functioning bureaucracy and a degree of relative popular legitimacy, as expressed in recurring elections (though these have been far from meeting Western standards). The government did position water as a prioritized sector in the sixth Five-Year Development Plan (2016–2021), but it is uncertain whether this will make any difference given the long-standing grievances of the population and the vested interests of groups like the Islamic Revolutionary Guard Corps, whose construction companies benefit from large-scale infrastructure projects like dams for electricity production. The international sanctions regime has reinforced the regime's mantra of self-sufficiency, which results in agro-economic choices that make no ecological sense, such as large-scale production of water-intensive crops like pistachios, wheat, and rice. Subsidy policies have failed to have their intended effects and have reinforced water overuse. Water is growing scarcer because of increasing evaporation rates due to global warming, but the starting point of water scarcification is entirely due to multidimensional mismanagement.

The use of water in the agricultural sector poses a particular problem in terms of water management and relevant political ramifications. Most water allocation (92 percent) is to agriculture, with 7 percent going to domestic use and 1 percent to industrial use. However, only 15 percent of Iran's land area is cultivated, and agriculture provides 23 percent of jobs while accounting for 13 percent of GDP. This highlights the built-in inefficiencies of a strategic economic policy choice, which cannot easily be corrected by another proclaimed policy priority (such as addressing water scarcity).

The uncontrolled use of groundwater lowers water levels, which leads to more erratic pumping of water tables, which in turn increases water salinity. This reduces wheat yields in agriculture, hitting already impoverished freehold farmers. Illegal wells are part of the problem, but they often are the only way for farmers to make a living. Shutting them down would cause unemployment and possible social unrest, and the government lacks the funds to upgrade their technologies. In addition, water quality outside of urban areas is decreasing significantly. When these problems are left unaddressed, poor people in rural regions migrate to cities, where more than 70 percent of the population lives. This growing issue is at times acknowledged from within the regime. In 2015, Issa Kalantari, a former minister for agriculture who became vice president for environmental protection in 2017 (and convinced Madani to become his deputy before the latter fled the country), warned that, should current trends continue, water scarcity would one day force 50 million people to leave the country entirely.

Signs are already pointing in this direction with growing levels of rural-urban migration, which puts people in situations of multidimensional vulnerability and at risk of structural poverty. Men are usually the ones who migrate first to cities and struggle to find decent levels of employment. The women who stay behind in rural areas often carry the burden of water collection and face protracting threats from water scarcity, ranging from food insecurity and personal safety concerns to the risks of disease and educational setbacks.

The reliance of small farmers on illegal wells highlights one of the structural challenges Iran faces: politicized water management. Given that the responsibility for the issue lies within provincial boundaries rather than those of watersheds, rivalries between different authorities encourage unsustainable short-term planning. That is one of the reasons why, in 2015, then vice president for the environment Masoumeh Ebtekar stated during the Paris climate negotiations that her country needed a "total U-turn in agricultural policy" to cope with its water crisis.

Beyond the strategic economic policy choice of self-sufficiency that has led Iran astray when it comes to stewarding its water resources, specific political-economic interests are part of the systemic complexity around water use. The drive to build dams for electricity generation is one particular factor causing environmental degradation, which has contributed to making parts of the land uninhabitable. Hydropower infrastructure is not only constructed with little regard for the long-term integrity of water resources but is also linked to corruption within the regime. Reports suggest that members of the Islamic Revolutionary Guard Corps with links to construction firms lobby the government for dam building to generate revenue—no matter the ecological or human consequences of these ventures. While dam planning predates the 1979 Islamic Revolution, the proliferation of hydropower infrastructure—despite its impact on landscapes and water resilience—demonstrates that political-economic interests latch onto this sectoral activity. This points to a larger difficulty in trying to plan for long-term public goods rather than short-term private interests. Still, the latter need to be understood and dealt with adequately in any process of rebuilding water integrity and resilience.

This is even more crucial since international sanctions hinder Iran's transition to a less resource-dependent economy. These limit economic diversification as well as hamper trade and access to goods and technologies that may support the country in rebuilding its natural resilience. This "sanctions wall" also reduces government funding available for sound environmental policies. In addition, this state of affairs has worsened preexisting—and now rising—levels of poverty, leading to recurring social unrest, especially in some of Iran's major cities. This increases the challenge of finding alternative jobs for agricultural workers amid an economic crisis and heightens the political risks of reduced food security given Iran's isolation on the world stage. Moreover, beyond purely economic dimensions, the sanctions also reduce interpersonal contacts such as academic exchanges and knowledge transfers, including on environmental issues.

The combination of unemployment, environmental degradation, and policy failures creates growing potential for social unrest. Even though "politically-motivated eco-activism is still in its infancy," the combination of environmental damage and health hazards with minority questions, rural marginalization, and student protests could lead to the formation of a broad-based political force. The past decade has seen recurring and increasing protests over declining access to clean water and electricity, from citizens highlighting the plight of the receding Lake Urmia in 2011 to farmers protesting water diversion in Khuzestan Province in 2018 and in 2021. These demonstrations have often been met with harsh repression by the security forces.

This securitization of environmental protection is compounded by an inherent conflict between the state and civil society. The government wants to control a sector that could potentially unite the views of the people. The widely publicized arrests of environmental scientists and the ousting of committed politicians show that the political elite views environmentalism as a threat. The regime also deliberately cuts access to data and reduces transparency, so that no one knows how water is used. Finally, the government uses existing tensions to pit ethnic or provincial groups (in places like Khuzestan and Isfahan, for instance) and different sectors (such as industry and agriculture, for example) against each other.

In addition, water issues often arise in peripheral regions whose minority populations have ethnic links to neighboring countries, just as waterways cross national boundaries. Examples of such situations abound from the ecological near-collapse of Lake Urmia between the provinces of East and West Azerbaijan to floods and droughts in South Baluchestan, from toxic air pollution

in Khuzestan to dust storms originating in neighboring countries in peripheral parts of the country, such as in Ahvaz near Iraq and Zabol near Afghanistan. Whether and how these issues are addressed is heavily influenced by perceptions of national and regional security. Nonetheless, tackling transboundary water issues is a necessity given how people on either side of these borders are equally affected by hydrological deterioration.

In sum, Iran's water supply is poised to reach ever-lower levels, leading the country toward water bankruptcy. This is happening due to unsustainable water use and compounding factors such as climate change. The lack of sound and sustainable ecological planning in Iran as well as beyond its borders is leading to a crumbling political, social, and economic equilibrium threatening the stability of the regime, and even more importantly the future of the region's ecological security (understood as the healthy and resilient relationship between the human and ecological dimensions of security). These risks are heightened by a sanctions regime that increases the pressure on the Iranian population and gives incentives to the regime to hide its true predicament and rely on short-term policies that benefit the few at the expense of the many.

Therefore, addressing water issues in Iran demands a systemic approach based on the following set of questions. How does the water system react to its ongoing depletion? How can water supplies be restored to a healthy state of regeneration? What are the multidimensional drivers of depletion, and what is required to address them? In short, tackling water resilience is a matter of transforming a society's relationship to water and therefore relates to questions of governance, economics, social fabrics, and (of course) diplomacy. Water does not just demand technological responses but also whole-of-ecology approaches that include an understanding of how to navigate political-economic hurdles in terms of intra-regime dynamics and cooperation with other outside actors. *What* to do about water matters as much as *how* to do it.

This is the basis of ecological diplomacy in the age of climate disruptions: restoring the hydrological cycle is one of the best chances to aim for integrated objectives in terms of climate adaptation, multidimensional security, and collective resilience. Deploying creative and astute techniques coupled with context-specific processes geared toward ecological regeneration is crucial for the future of international stability and of planetary, ecological, and human security. The key to success, especially in the context of tense relationships with the Iranian regime, lies in understanding how to create trust based on a common understanding of security threats that undermine collective stability.

THE POTENTIAL OF ECOLOGICAL DIPLOMACY AND THE EU'S READINESS TO ENGAGE

Ecological diplomacy involves pursuing simultaneous objectives of geopolitical stabilization as well as ecological and human security given the fragile global climate. Shocks emanating from climate change and natural resource depletion will call into question the foundations of the international order and cascade into systemic risks—from socioeconomic upheavals to geoeconomic competition. While there are many unknowns regarding the ways in which security and planetary change will play out in the coming decades, the EU needs to be proactive in rebuilding ecological integrity, supporting climate adaptation and mitigation, and enhancing human and political-economic resilience in Europe and in other regions too.

Ecological diplomacy is meant to integrate climate stabilization and ecosystem regeneration at the heart of the EU's foreign policy, in part to preemptively address the profound incoming disruptions to international security. This is not about pursuing ecological objectives as an add-on to security strategies or as a marginal set of actions. This is about rebuilding security based on stabilizing human systems multidimensionally, starting

with ecological stabilization. Otherwise, the more that natural resources are rendered scarce and the more that ecological integrity is depleted, the more violent climate disruptions will be and the more destabilized political and economic systems will become. In some cases, this destabilization will strengthen "hard security" threats and disable the international community in its collective and global response to the exponential shocks that climate change will unleash.

Engaging Iran through ecological diplomacy offers the possibility of striking a different tone vis-à-vis the pursuit of security. Understanding how to approach the country with complex and multidimensional ecological regeneration in mind will provide an avenue for confidence- building and direct stabilization results. This is about pursuing constructive engagement while practicing active and preemptive ecological stabilization. It is on this basis that other aspects of security can be tackled, including possibly renewed dialogue on nuclear deescalation. The key message at the heart of ecological diplomatic engagement with Iran should be that the country's resilience in the face of climate change and ecological depletion is linked to European and international resilience, and vice versa.

Working on rebuilding the integrity of the hydrological cycle is central to rehydrating landscapes, thus rebooting ecological services that are the foundations of any dignified human life and socioeconomic fabrics. Deploying environmental regeneration tools and processes can help to address some core Iranian concerns: population pressure, depleted ecosystems, tensions over resources, rural-urban migration, and transboundary water management. And, as importantly, this is a crucial area for the reconceptualization of security in these climate-driven times for which mutual learning and constructive engagement is needed. These efforts would therefore align with the need to deliver on the Sustainable Development Goals and on the Glasgow Climate Pact.

In Iran, like in many arid and semi-arid places, ecological diplomacy must start with regenerating water as a basis for climate adaptation, international security, and ecological rebooting. The reason for this is simple: ecological services (such as food productivity, availability of potable water, disaster buffering, health regulation, and pollination, for example) all depend on the ability of landscapes to retain water. When water goes missing, landscapes unravel, and with them so do economic systems, social fabrics, security, and eventually, political stability. As witnessed in Iran, this can lead to aggressive behavior at the national, regional, and international levels.

There are demands at various levels in Iran for reversing and managing water scarcity. It is increasingly clear that Iranians in various parts of the country suffer from water stress (trending toward scarcity and bankruptcy) and the hazards this creates: livelihood disruptions, health issues, food insecurity, territorial and political fragmentation between urban and rural centers, and increasing corruption amid rising systemic vulnerability. The problem therefore is not about solving water issues from a technical perspective only. It is about navigating complex political and economic obstacles on the way to designing regenerative practices to address water scarcity and support socioeconomic and security resilience.

OPPORTUNITIES FOR THE EU'S ECOLOGICAL DIPLOMACY

To engage constructively with Iran on ecological stabilization, starting with rebuilding water resilience, the EU will need to deploy a multidimensional and multilevel approach. An initial step should be approaching the regime based on reflections about the future of water trajectories in the age of climate change and a willingness to pilot regenerative processes that will benefit Iran's society and economy in concrete ways. A dialogue on tangible measures would be more fruitful

than merely lecturing the government about how it must fulfill its Paris Agreement obligations, an approach that in any case may lead to protracted tensions since the country's leaders resist the energy transition for domestic political reasons.

On this constructive basis, a new approach could then consist of the following short-term and long-term elements, applicable to collaboration with Iran, to the EU's own approach, and—if possible—to the wider region.

Collaboration with Iran

In the short term, there are at least three tasks that the EU should encourage Iran to undertake.

- **Water-retention landscape regeneration:** Identify how to strengthen national and regional hydrological cycling through complex regeneration that targets various sites of activities in sequence to rebuild water tables and soil biodiversity. This requires harnessing various types of data to better understand which drivers lead to systematic water degeneration. Multidisciplinary teams composed of ecological designers, conservationists, hydrologists, foresters, and agro-ecologists need to be deployed. Their efforts could be complemented by hydrological infrastructure and technology experts to strengthen the regeneration efforts with water-efficiency management techniques. The latter should not prevail over the former.

- **Data collection:** Complex regeneration depends on an understanding of water behavior, landscape quality, ecological interdependencies, and water use (factors that can differ in Iran by subregion). Complex regeneration and ecological diplomacy therefore require integrated data analysis, including remote sensing, landscape diagnosis, satellite analysis (covering carbon storage, water cycling, biodiversity concentration, and other things) along with qualitative data covering how water is used in communities and economic sectors, and what governance systems watch over water use.

- **Broad engagement:** Data analysis should lead to an understanding of who to engage in complex regeneration in a way that creates trust and enables active cooperation in the coming years. This implies a mix of increased engagement with government actors (national and local) as well as international organizations in the country, such as the UN Development Program, the UN Environmental Program, and the Food and Agriculture Organization. In addition, data collection can be promoted through civil society organizations and through academic exchanges. It is crucial to understand that complex regeneration needs to work for people relying on water. Their buy-in will determine the success or failure of regeneration processes.

In the medium term to long term, there are two additional policy ideas that the EU and Iran should consider.

- **Water landscaping for disaster risk reduction:** Water from Iran's snow-capped mountains will need to be collected for two reasons: to avoid water runoff disasters and to sink water into soil before it runs off and evaporates, thus helping with soil regeneration and biodiversity sequencing. In other words, complex regeneration should not just apply to landscapes used for economic activities (like agriculture) but also to disaster buffering, resilience building, and climate adaptation. Ecological design methods will need to direct multistrategy efforts to enhance the underground and surface interdependencies of watersheds in Iran and, if possible, in neighboring countries.

- **Alternative livelihood support:** Livelihoods, especially those that are nature-dependent, will need to be adapted and diversified to ensure that regeneration efforts are strengthened with an economic transformation. For example, current water-intensive crops will need to be sequenced and diversified in a way that maintains a solid economic basis for agriculture-dependent actors without undermining long-term resilience.

The EU's Approach

Meanwhile, European officials should consider the following options to refocus the EU's broader approach.

- **Water diplomacy:** Revisit the EU's water diplomacy approach to integrate new types of competencies including ecological design and hydrological approaches oriented toward rebuilding water-retention landscapes. Rather than adapting a landscape to the needs of human economies, ecological designers understand how to strengthen the health and productivity of a landscape or ecosystem so that it becomes resilient enough to support human needs. The EU's water diplomacy is currently a desirable flagship initiative of its engagement on ecological issues, yet it lacks an operationalizable approach that goes beyond supporting cooperation. In the age of climate disruptions, it is imperative for the EU to anchor the impetus for cooperation within regenerative paradigms.

- **Urban design:** Harness the diplomatic potential of the EU's New European Bauhaus initiative, the "soul" of the European Green Deal aimed at creating a modern and sustainable economy. This initiative engages the research, architectural design, and urban design communities to think through what urban settlements should be like in a climate-disrupted world, what their water-cycling policy and profiles should evolve toward, and how they can recreate healthier and more productive interdependencies with rural hinterlands. The concept at the heart of the New European Bauhaus also recognizes and celebrates cultural diversity. EU-Iran engagement would strike a fundamentally different tone if cultural and design dialogue were integrated into it, as it would build upon mutual recognition and learning on the basis of civilizational respect and exchange.

- **Mutual learning:** Dialogue based on mutual learning about climate-sensitive, context-appropriate, and culturally strong techniques to redesign landscapes and territorial integration for climate adaptation and mitigation between Iran and EU actors would go a long way toward changing the nature of engagement. This dialogue could include a focus on how to strengthen the design of the *qanat* system for Iran's contemporary landscapes and rural-urban relationships.

- **Regenerative economics:** If cooperation can be deepened across Iran, the EU and the Iranian government may be able to discuss ways to support economic sectors that work in favor of regenerative natural cycles, such as more complex forms of agriculture. If this is the case, then a longer-term approach could aim at supporting economic exchanges between Iran and the EU based on regenerative economics and trade.

Regional Cooperation

If and when the occasion arises, it would be prudent to explore opportunities for regional collaboration.

- **Cooperation for water regeneration and integrated watershed management:** The EU should be ready to support regional water diplomacy in a way that facilitates negotiations on the basis of cooperation for complex regeneration. This is about more than supporting transboundary negotiations based on international treaties that are no longer adapted to the realities of a climate-

disrupted world. It is about ensuring that water-depleted regions can approach water-sharing agreements through resilience building rather than scarcity frameworks. Through the same logic proposed for ecological design at the national level in Iran, transboundary water management could first be supported via cooperation on regenerative techniques and watershed replenishment.

Ecological diplomacy with Iran must start with water regeneration, but it should go further, if cooperation allows. Water security is a first step toward addressing some fundamental drivers of systemic instability in the country. In addition, supporting water resilience in an age of climate disruption should eventually lead to redesigning systemic resilience, including in economic terms. For this reason, ecological diplomacy is a two-way street, and the EU stands to learn a lot from exchanges with other parts of the world, including Iran, if dialogue can be anchored in partnerships that start with genuine inquiry. Research on how to design adaptive resilience is a necessity that concerns all countries and regional blocs alike and can therefore be mutually beneficial to all actors involved.

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ACKNOWLEDGMENTS

The authors would like to thank Gary Lewis and Kaveh Madani for sharing their invaluable insights; Tara Sepehri Far and Barbara Mittelhammer for helping to structure these thoughts; Pierre Vimont for his useful feedback on an earlier version of the text; Jocelyn Soly and Amy Mellon for their formidable work on the maps, graphs, and layout; and Natalie Brase and Ryan DeVries for their diligent editing.

NOTES

1 In 2018, internal renewable water resources per capita in Iran were estimated to be at about 1,571 cubic meters, less than half the 1977 level when they were estimated at about 3,692 cubic meters. By technical definitions such as the Falkenmark indicator, this means that Iran is now experiencing protracted water stress (when the figure falls under 1,700), and it is rapidly on its way to reaching water scarcity (when the figure falls under 1,000 cubic meters) due to a combination of factors, including climate change. Given this trend, this piece uses the term "water scarcity" to describe the situation in Iran. This term is also increasingly adopted by UN agencies, including the Food and Agriculture Organization. "Water scarcity" here therefore refers to the regular understanding of a scarce resource, not to the technical term. It is related to the main concern that water is being made scarce by unsustainable practices, which contribute to ecological insecurity and climate disruptions. See World Bank, "Renewable Internal Freshwater Resources per Capita (Cubic Meters) - Iran, Islamic Rep.," World Bank, 2018, https://data.worldbank.org/indicator/ER.H2O.INTR.PC?locations=IR; Chris White, "Understanding Water Scarcity: Definitions and Measurements," Global Water Forum, May 7, 2012, https://globalwaterforum.org/2012/05/07/understanding-water-scarcity-definitions-and-measurements/; and United Nations Food and Agriculture Organization, "FAO Offers Water-Scarce Countries a New Satellite Tool to Boost Agricultural Productivity," United Nations Food and Agriculture Organization, April 23, 2017, https://www.fao.org/iran/news/detail-events/en/c/882499/.

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