



Iraq's Water Crisis: Climate Adaptation in Conflict Settings

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ABOUT THE AUTHORS



Dr. Mac Skelton is Executive Director of the Institute of Regional and International Studies (IRIS) at the American University of Iraq, Sulaimani, and a Research Fellow at King's College London. His research, which explores intersections between conflict, health, and the environment in the MENA region, has been published in major journals such as *The Lancet*. He holds a Ph.D. in Anthropology from Johns Hopkins University and an M.A. in Anthropology from the American University of Beirut.



Dr. Zmkan Ali Saleem is a Senior Research Fellow at IRIS and previously served as the Director of Research at IRIS. During his tenure, Dr. Saleem has served as a lead researcher for projects funded by the FCDO, UNAMI, European Union and the Norwegian Research Council focusing on political economy in Iraq and Kurdistan. He holds a PhD in Politics and International Studies from the University of Leeds/UK and teaches in the College of Political Science at the University of Sulaimani.



Karam Robeil is a Research Associate at the Institute of Regional and International Studies (IRIS), specializing in environmental policy and governance. His work focuses on key areas such as strategic planning, ecosystem management, and participatory governance. Karam earned his bachelor's degree in Engineering from the American University of Iraq, Sulaimani (AUIS).



Maha Yassin is a research fellow at IRIS, specializing in environmental policy, climate security, and activism in Iraq. Previously, she worked as a Research Fellow and Outreach Officer at Clingendael – the Netherlands Institute for International Relations, managing the Basra Forum for Climate, Environment, and Security. Yassin holds an MA in Communication Studies and a B.Sc in Geology. With extensive experience in the humanitarian sector, she specializes in civil society engagement and addressing environmental threats, particularly in the southern region of Iraq.

CONTENTS

5	EXECUTIVE SUMMARY
7	INTRODUCTION
11	PART 1: THE WATER CRISIS IN FOUR PROVINCES
12	<i>Erbil Province</i>
16	<i>Sulaymaniyah Province</i>
20	<i>Basra Province</i>
25	<i>Dhi Qar Province</i>
29	PART 2: NATIONAL-LEVEL IMPLICATIONS
30	<i>Key Findings</i>
34	CONCLUSION
37	REFERENCES

EXECUTIVE SUMMARY

Iraq is grappling with an acute water crisis, driven by unprecedented droughts, transboundary water disputes with neighboring countries, and lasting environmental and infrastructural damage from decades of conflict. Prolonged water stress has sparked widespread social and political disruption, manifesting in protests and unrest across various provinces. This report provides an in-depth analysis of climate and water-related risks in four provinces—Erbil, Sulaymaniyah, Basra, and Dhi Qar—highlighting the social, political, and economic dynamics unique to each area. While diplomatic efforts to address transboundary water issues must continue in parallel, this report emphasizes a largely overlooked aspect of Iraq's water crisis: the domestic political and budgetary obstacles to investments in water infrastructures. Iraq's climate adaptation will depend heavily on overcoming entrenched subnational and national political challenges that prevent effective water governance and infrastructure development.

The report argues that, in conflict and post-conflict settings like Iraq, effective climate adaptation requires moving beyond narrow technical solutions to broader governance and infrastructural investments, which remain difficult to implement due to significant political barriers and competing economic incentives. Decades of disproportionate focus on security have left Iraq's environmental and water systems severely underfunded—a gap that implicates both the government and international donors. Given the longstanding neglect of core infrastructure,

targeted climate adaptation measures, such as sustainable farming technologies or resilient fisheries, are insufficient. While these technical approaches may benefit small groups, they are too limited to address Iraq's widespread and systemic water crisis. Substantial investments in essential infrastructure—such as water treatment plants, water grids, and covered irrigation canals—are required across the country's 19 provinces to preserve and protect Iraq's water resources as climate change accelerates. Achieving this objective will demand political dialogue and consensus-building at both subnational and national levels to mobilize resources for holistic reforms and major shifts in budgetary priorities.

Findings by province

- 1. Erbil:** Erbil faces severe water scarcity largely due to rapid urban growth in the aftermath of the US-led invasion of 2003 and inadequate water infrastructure. Protests over water scarcity have become increasingly common. The Kurdistan Regional Government (KRG) has relied on short-term measures, such as well digging, which depletes groundwater, instead of investing in sustainable infrastructural solutions. Budgetary deficits driven by political divisions pose a major obstacle to making these investments.
- 2. Sulaymaniyah:** Peripheral areas like Darbandikhan suffer from significant water pollution caused by untreated sewage and industrial waste, exacerbated by political

marginalization and sparking mass protests that disrupt key transportation links. The stalled completion of the town's water treatment facility reflects broader political and financial struggles within the KRG.

3. Basra: Polluted waterways and inadequate water infrastructure have led to health crises and mass demonstrations. Although local authorities have taken steps to improve water treatment following the 2018 water crisis, ongoing financial and regulatory challenges hinder progress. Improved coordination with Baghdad has provided some relief but remains unstable due to budgetary disputes and political divisions.

4. Dhi Qar: Severe water scarcity, rising salinity, and poor interagency coordination have fueled social tensions and conflicts between agricultural communities. Frequent changes in provincial leadership and inadequate infrastructure investments have further hampered efforts to address the crisis.

rebuilding infrastructure—such as water treatment facilities, water grids, and irrigation systems—political dialogue is crucial to mobilize resources and develop consensus among diverse stakeholders at the local and national levels.

2. Localized and Holistic Adaptation Strategies: Climate adaptation efforts must address the distinct political, social, and economic conditions in each province, recognizing that water-related challenges vary across Iraq. Coordinating localized solutions with broader national efforts ensures that improvements ameliorating water stress in one locality do not come at the expense of another.

3. Strengthening Social Cohesion: Alongside infrastructure and governance improvements, social cohesion initiatives should foster dialogue and cooperation in water-stressed regions. By linking infrastructure development with community engagement, these efforts can help build trust between local communities and government authorities, mitigate conflict, and ensure that governance reforms are sustainable over the long term.

Ideas for Policy Consideration

1. Infrastructure as the Pillar of Adaptation: Both the Iraqi government and international organizations must prioritize rebuilding water governance and investing in critical water infrastructure. These foundational investments are essential for any subsequent adaptation and resilience programming. Given the significant costs associated with

INTRODUCTION

Context

Iraq is facing an escalating water crisis, significantly exacerbated by a reduction of transboundary flows due to upstream damming in Turkey and Iran, record-breaking droughts, and poor water management practices.

The devastating environmental impact of successive wars, including the Iraq-Iran War in the 1980s, the Gulf War in 1991, the US-led invasion in 2003 and the subsequent military occupation, and the rise and fall of ISIS between 2014 and 2017, have also left an enduring legacy on the country's water supply¹. These conflicts have not only caused years of extensive environmental damage and pollution, they have also undermined the country's water infrastructure and compounded its vulnerability to climate change.

The basic infrastructures required to purify, distribute and deliver clean water to houses and farms remain severely compromised from the north to the south of the country. Poor enforcement mechanisms for industrial and oil-related waste have allowed both local and international actors to pollute the country's waterways with impunity. Water scarcity and water pollution are two sides of the same coin: reduced flows lead to higher concentrations of pollutants, which result in pervasive water-borne illnesses.

Highlighting the far-reaching consequences of the crisis, Iraq's protracted period of water stress has

already raised concerns about the potential for social and political disruption², including but not limited to mass protests³, local conflicts⁴, and forced displacement and migration⁵. While increased rainfall in 2024 provided temporary relief from the severe drought conditions of the past three years and eased water stress and related socio-political tensions, most experts doubt that this year's positive trend in overall water supply will produce lasting dividends, especially given the broader entrenched governance challenges facing Iraq's water resources. There are positive signs that the current government under Mohammed Shia Al-Sudani is taking water governance far more seriously than previous administrations. To capitalize on this momentum, this paper explores how local government bodies in four provinces as well as national authorities can address Iraq's water crisis – and the escalation of the social unrest that comes with it – by focusing on addressing political obstacles at the local level and holistic governance solutions at the national level, rather than resorting to reactive and securitized responses.

The report argues that, in conflict and post-conflict settings like Iraq, effective climate adaptation must start with a shift in priorities from security to infrastructure, and from targeted technical solutions to systems-wide governance efforts. Indeed, Iraq's core environmental and water systems have languished under decades of conflict and an excessive focus on investments in the security sector—a gap that implicates both the government and the international community. Given the longstanding neglect of infrastructure, targeted technical adaptation measures such as drought-



Figure 1: Municipal Sewage Running in a Canal in Sulaymaniyah

resistant crops, solar-powered agricultural equipment, or resilient fisheries, miss the scale of the problem. These approaches, while potentially useful in benefitting small groups of individuals, are too narrow to address the widespread and systemic nature of Iraq's water crisis. Substantial investment in essential infrastructures (e.g., water treatment plants, water grids, covered irrigation canals) is required to preserve and protect Iraq's water resources in an era of climate change, meaning that political dialogue at local and national levels will be crucial to build consensus among stakeholders and mobilize the necessary resources for holistic reforms.

Objectives & Scope

Iraq's water crisis impacts each province differently,

as they have unique social, political, and economic contexts. This report includes two overarching objectives: first, to provide a detailed analysis of climate and water-related risks at the subnational level in four Iraqi provinces (Erbil, Sulaymaniyah, Basra, and Dhi Qar) and, second, to examine the implications of these local dynamics in shaping broader governance challenges in water management at the national level. The scope of the paper is limited to the national and subnational levels, leaving geopolitics out of the analysis. The ongoing transboundary water disputes between Iraq and its neighbors, particularly Turkey and Iran, present a significant challenge to Iraq's water management efforts due to enormous impacts on overall water supply. However, the likelihood of resolving these disputes in the near term remains low.

While diplomatic efforts must continue, the immediate priority for Iraq should be to address long-standing water management challenges at the national and subnational levels. Fortunately, there are already indications that the current Iraqi government is moving away from the habit of blaming transboundary issues alone and ignoring internal water governance. This paper seeks to build on that shift in rhetoric and policy. By focusing on what can be achieved within its borders, Iraq can make progress in mitigating the impacts of water scarcity, even as it navigates the difficult terrain of transboundary water negotiations. Addressing these governance deficits will also strengthen Iraq's standing in negotiations.

Climate Adaptation, Conflict & the Way Forward

The commonly used language in UN circles of "climate-related displacement," "climate-related conflict," and the "climate, peace, and security nexus" foregrounds climate change as the primary driver of instability in water-scarce regions⁶. Indeed, climate change is already inflicting significant impacts through heatwaves and drought, thereby exacerbating water scarcity and related social unrest⁷. While recognizing the accelerating pace of climate change, the findings of this paper suggest that potential for local turmoil and conflicts over water scarcity is directly linked to long-standing deficiencies in water governance. The most effective way for Iraq to prepare for climate

change and related socio-political disruptions is to first address the fundamentals of governance – i.e., the long-term gaps in local and national water and environmental governance arising from four decades of conflict and political turmoil.

This argument has implications for the Iraqi government, as well as international organizations and diplomatic missions working in Iraq. International donors' focus on community resilience, sustainable farming, and small-scale environmental infrastructure projects to assist with climate adaptation is commendable and certainly an improvement upon two decades of highly disproportionate investments in security. Yet, this emphasis risks normalizing water scarcity as an inevitable consequence of prolonged droughts and heatwaves, rather than first taking steps to address the more foundational gaps in water governance in a country that benefits from the region's two largest rivers.

As the four case studies will demonstrate, Iraqis from north to south are increasingly taking to the streets with legitimate grievances about poor water quality and uneven water access. In the south, particularly in agricultural areas like Dhi Qar, these grievances have fomented tensions and even violence within communities and encouraged deep distrust of state authorities. To effectively address Iraq's water crisis and resulting socio-political unrest, a two-pronged approach is essential. First and foremost, both the

Iraqi government and international organizations must invest in critical water infrastructure and environmental regulation mechanisms, ensuring that water sources are preserved and maintained. Second, long-term social cohesion efforts are necessary to foster better communication and trust between local communities in water-stressed areas, as well as between citizens and government partners. In the absence of such outreach and dialogue, the Iraqi federal government and KRG will remain trapped in a reactive cycle, reaching out to water-distressed communities only in moments of crisis rather than establishing institutionalized lines of communication. In the absence of water infrastructure investments and enhanced environmental regulations, efforts to promote social cohesion will be limited as communities will continue to suffer from increasingly scarce and polluted water, leading to economic disruption and heightened social tensions.

Methods

To achieve these objectives, the research employed a mixed-methods approach, combining qualitative and quantitative data collection and analysis. At the subnational level, researchers conducted 140 interviews with key stakeholders, including government officials, community leaders, and civil society members across Erbil, Sulaymaniyah, Basra, and Dhi Qar. Additional interviews were conducted in Missan, but unstable political and security conditions prevented reliable results. These interviews, conducted between July and December 2023, aimed to gather insights into local water challenges, governance issues, and potential solutions. Researchers also conducted field visits to water infrastructure sites, including treatment plants, pipelines, and affected communities, to assess the physical state of water systems and gather first-hand observations. At the national level, researchers identified and mapped key national stakeholders involved in water governance and conducted 35 interviews. These interviews included officials at the Ministry of Water Resources (MoWR), Ministry of Environment (MoE), Prime Minister's Office (PMO), etc. Finally, 30 interviews were conducted with international organizations and diplomatic missions working in Iraq on water and climate change. The report also benefited from data found in local media (Arabic and Kurdish sources) as well as in policy reports produced by local and international organizations.



PART 1: THE WATER CRISIS IN FOUR PROVINCES

This section examines water management challenges in four Iraqi provinces —Erbil, Sulaymaniyah, Basra, and Dhi Qar— where water scarcity and poor quality have sparked protests and heightened local conflicts. Drawing on 140 interviews with local stakeholders, this section provides an analysis of how local political, economic, and environmental factors contribute to water-related challenges and social tensions. Taken together, the cases provide a foundation for policy interventions aimed at mitigating these challenges and improving water governance at the subnational level.

Erbil Province

Context & Challenges

Signs of water deficits & growing unrest in the capital city

During the hot summer months of 2023, government officials in Erbil city – the politically and economically important capital of the Kurdistan Region of Iraq (KRI) – confronted a groundswell of grievances from their constituents about water scarcity. In some cases, these grievances have fueled rifts between groups of citizens in the city and required urgent intervention by officials. But this is not a recent problem.

As Erbil rapidly expanded in the aftermath of the US-led invasion, tensions emerged over uneven access to water in the city. A former government official reflected: “In the decade after 2003, Erbil was growing so fast, water shortages caused disagreements, fighting, and deaths among citizens in the neighborhoods of Erbil. For instance, in a neighborhood called New Erbil, fighting broke out between the people and the water management authority that manages the well in the area. I had to rush to the place to contain the issue and, by the time I arrived, people had injured one of the staff members at the water facility.” More recently, especially since 2021, the problem of water-related tensions has become an increasing concern. Officials are starting to approach the issue as a growing threat to the city’s stability and social cohesion.

Interviews among KRG government officials and Erbil residents located the crux of the problem as the continued failure of the relevant authorities to build water infrastructures that could handle the city’s rapid urban expansion, leaving numerous neighborhoods without reliable access to drinking water. They expressed concerns that the widening gap between urban growth and water infrastructure would become entirely unsustainable in an era of climate change.

Causes of water scarcity

The roots of the problem trace back to the aftermath of the US-led invasion in 2003. People from rural areas flocked to Erbil, drawn by an economic boom fueled by foreign aid and investment. As both the urban stronghold of the Kurdistan Democratic Party (KDP) and the official capital of the Kurdistan Regional Government (KRG), the city became a focal point of rapid development. Taking advantage of the uptick in economic activity and increased population, the KRG, spearheaded by the KDP, heavily invested in lucrative construction projects in the heart of the city. Neither the Kurdish leaders nor international partners managed this break-neck growth with a long-term vision regarding water access. Instead of addressing the dire need to update and expand the city’s deteriorating water pipes, which requires tearing up streets and slowing down an economy fueled by expansion, the KRG opted for less disruptive solutions. In 2004, the KRG built Efrac 3, a water purification

facility along the Great Zab River to increase the water supply to Erbil, with the support of the Coalition Provisional Authority (CPA). While its construction increased overall water volume, it was not enough to overcome the inefficiency of the distribution system (i.e., piping networks and pumping stations) in the rapidly expanding city. In other words, supplying a greater volume of purified water to the city does not guarantee that it will reach the specific areas where it is needed most because the distribution system is systematically flawed. The lack of an adequate distribution system ultimately led to pervasive water shortages and, consequently, grassroots grievances.

Increasing public expressions of grievances

For years, the citizens of Erbil have petitioned government officials about water scarcity, but a more recent phenomenon is the public expression of grievances and dissent through media channels, protests, and altercations like the one described above. Perhaps as a byproduct of anger about ongoing salary delays, citizens have grown bolder in linking water scarcity to an overall sense of economic deprivation. Rudaw media recently covered a protest in the Badawa neighborhood of Erbil. An elderly woman declared:

“We have not had water for twenty days! We demand water. You give us our salaries once in two months and I need to use it immediately to buy water with that salary. I don't know what to do.”⁸



Figure 2: Multiple Water Trucks Supplying Houses in Erbil (Source: Raseef22)

A KRG official, who is a member of the KDP, acknowledged the failure of government authorities to modulate fees in accordance with water provision. “It is not very good that the government sends water bills to citizens that have no regular access to water. Citizens become angry and say they have not had water for four to five days and now the government asks for water fees. Some people have expressed anger by destroying the water meters in their house,” the official said⁹. In interviews with KDP members serving in government posts, a commonly shared worry was that both major rivals and smaller opposition groups were starting to use Erbil's water issues to their advantage to attract media attention and drive grassroots pressure¹⁰.

Policy Responses & Implications

Moving away from short-term solutions

With water-related grievances, protests and altercations on the rise, the local government has tended to respond through a mixture of ad hoc outreach (i.e., outreach to citizens and community leaders to assuage concerns) and reliance on groundwater to shore up gaps in the grid (i.e., through well digging)¹¹. Well digging is relatively low-cost and extremely fast, allowing the government to provide water to neglected areas outside the reach of the grid within days or weeks, but excessive reliance on drilling depletes groundwater resources more rapidly than it can be replenished¹².

Deputy Governor of Erbil Masud Mohammed Karrash emphasized the severity of the problem in Erbil:

“Previously, 35-meter-deep wells were operating and were giving us water, but now these have dried up and we need to dig between 100 and 700 meters or more to reach water.”¹³

The KRG keeps track of the number of wells that it builds according to official procedures, but as much as 52% of the wells in the Kurdistan Region are drilled without official permission¹⁴. KRG authorities have recently initiated a campaign to increase enforcement on groundwater violations, which most environmental activists view to be a step in the right direction.

But sources in civil society indicate that enforcement remains uneven due to entrenched vested interests. The KRG's top leadership needs to make it clear that this effort includes all levels of society, including party-backed businesses. The Directorate of Water Resources at the KRG Ministry of Agriculture and Water Resources, Erbil water directorates, and the governor's office must develop a long-term groundwater plan that places clear limits and parameters on digging wells.

Towards sustainable solutions

Most KRG government officials that were interviewed stressed that the only truly sustainable solution is to make urgent investments in the city's water grid over the next decade to make up for the imbalance between growth and infrastructure that has emerged since 2003. They must also simultaneously lay the foundations for a future in which climate change will further deplete water resources. One local official noted:

“We all know what needs to be done. The problem we are facing is unevenness in the distribution of the water and we need to reorganize the distribution in ways that all sections and neighborhoods have access to water on an equitable basis.”¹⁵

The same official stressed that a serious focus on enhancing water distribution might be enough to meet Erbil's water needs, especially given that recent

progress on the mega water purification plant Efrac 4 remains in its early phases:

“The water that comes from the existing water purification plants projects is nearly sufficient for Erbil, but there is wastage throughout the grid.”

This is not to suggest that progress on additional water purification plants such as Efrac 4 is unimportant, but the politically and financially sensitive task of improving piping networks and distribution systems cannot be left out of the equation.

Challenges & Opportunities

The difficulty with sustainable solutions to Erbil's water crisis is that they come with a hefty price tag. One official noted:

“Our main problem is lack of funds. If we had a lot of money, we could solve the water problems.”¹⁶

Sources across the KRG government apparatus indicated that convincing party leaders in Erbil to direct resources towards rebuilding and expanding the city's water distribution system will not be received favorably because it may slow the pace of investment in the construction sector, a vital source of income for political actors. Moreover, the party has always tended towards “visible” investments that garner

immediate popular support (i.e., building roads, bridges, and dams) rather than those that remain out of the public eye upon completion, like water pipes. However, the political calculus for the KDP may shift as water distribution problems deepen perceptions of inequality between different communities in the city. A water expert in Erbil noted:

“Neighborhoods such as Park, Rizgari, and Bakhtiari experience water shortage problems during summertime, while posh neighborhoods like Italian Village and English Village do not have water shortage problems, and this imbalance will continue to create tensions and political problems.”¹⁷

Going forward, the Erbil Water Directorate and the Erbil Municipalities Directorate must establish clearer channels of communication with water-scarce communities and engage in dialogue with community leaders to prevent confusion and miscommunication, especially during summer droughts. Simultaneously, government actors will have to develop a sustainable approach to enhancing water infrastructures. Top KRG leadership must clearly signal that water infrastructure is a priority and empower the Ministry of Municipalities and Tourism to make repairs to the water grid even when it goes against business interests.

Context & Challenges

Protests over water pollution

In February and March 2023, a series of protests broke out in the Darbandikhan district of Sulaymaniyah province. The district is located approximately 70 kilometers from the provincial capital of Sulaymaniyah city, the political headquarters of the Patriotic Union of Kurdistan (PUK). The demonstrations were fierce, well-organized¹⁸, and lasted for nearly two months¹⁹. Though a broader sense of marginalization undergirded the unrest consuming the town of 75,000 residents, the core issue was the town's polluted water supply. An activist explained:

“Water pollution was the main driver of the protests. The people of Darbandikhan have been suffering for many years from water pollution and we decided that it was about time to bring the crisis to the attention of the people of the [Kurdistan Region] and KRG officials, in addition to the leaders of the PUK. Most people are aware of the problem and large numbers of people have been affected by water contamination, as there are many cases of illnesses, especially skin conditions, caused by water contamination.”²⁰

Demonstrators blocked the district's main roadways, which are strategically important because they

link Sulaymaniyah city to the Iranian border. The demonstrations attracted attention both within the Kurdistan Region and at the national level. Local activists called on Baghdad and the KRG to intervene and solve the problem as urgently as possible. After two months, the demonstrations ultimately ended when the office of KRG Deputy Prime Minister Qubad Talabani, who is a senior PUK leader, met with local officials and community leaders from Darbandikhan. During the meeting, Talabani's office promised to finance the completion of a long-stalled water treatment plant. The facility, which is 90% complete but not yet functioning, is situated at the top of a hill overlooking the town, a continual reminder to inhabitants of the lack of progress.

Causes of the pollution crisis

Much like Erbil, Darbandikhan's woes are the result of poorly managed urban expansion over the last several decades. In this case, the locus of urban expansion lies 70 kilometers to the west of Darbandikhan in the provincial capital of Sulaymaniyah, a city of over 2 million residents and growing annually. The Tanjero River carries untreated sewage and chemicals from Sulaymaniyah city and the surrounding suburbs and converges with the similarly polluted Sirwan River at Darbandikhan. Both rivers dump their contents into Darbandikhan Reservoir, which is Darbandikhan's main source for drinking water and irrigation. For many years, the KRG has advised residents that they



Figure 3: The Darbandikhan Dam

should not drink from local water sources due to the accumulation of pollution, but the town's water treatment facility remains incomplete and inoperable. Citizens and community leaders are exasperated about the lack of progress. The town's mayor expressed his frustration, saying:

“I myself do not drink tap water – water provided through the public water grid – which is not clean and contains heavy chemicals due to a lack of treatment. This town deserves better.”²¹

To make matters worse, climate change and upstream damming practices in Iran have resulted in a reduction in water levels around Darbandikhan over the past decade. With declining flows, the concentration of pollutants in its local water sources has gone up.

Roots of inaction

Residents and community members allege that the delayed response of the relevant authorities speaks to the political marginality of Darbandikhan within Sulaymaniyah and the KRG as a whole. A former official in the local government noted:

“Why is the water treatment plant still stalled? I think the key authorities and powerful parties do not consider Darbandikhan as part of their zone of political influence. This area is too far from the KDP's area of interest and even for the PUK as well.”

he said²². Deputy Prime Minister Talabani's recent outreach efforts and promises of progress on water infrastructure have been met with deep skepticism. From the perspective of community leaders, Darbandikhan

suffers from the fact that not all peripheries are created equal in political terms. The Garmian and Halabja areas are also located far away from Sulaymaniyah city but are considered to be core PUK voting blocs. Moreover, they have retained outsized symbolic weight due to the long-standing revolutionary credentials of residents who fought the Ba'athists and served in the Peshmerga. Darbandikhan residents assert that these areas typically receive relatively quick responses from the PUK when they complain about a lack of services.

Policy Implications

Local confidence building measures

Heavier rains in 2024 have somewhat reduced contaminants in Darbandikhan, but demonstrations and unrest will persist as long as the current inaction continues. The PUK's efforts to handle the water treatment facility project independently stem largely from its political rivalry with the KDP. Often, the PUK has attempted to manage key infrastructure projects within its zone of control without involving KDP-aligned officials in the KRG, reflecting the broader tensions between the two parties.

However, this approach has stalled progress. While the protests in early 2023 pushed the PUK leadership to reopen negotiations with a Turkish company to complete the facility, they continue to struggle to finalize the deal. This lack of progress underscores the limitations of the PUK's strategy and makes clear

that bypassing the KRG is unlikely to result in a sustainable financing mechanism. Ultimately, the PUK will have to accept that closer coordination with key stakeholders—including the KRG Ministry of Finance, the KRG Ministry of Municipalities and Tourism, and the KDP political leadership—is the only viable path forward.

As it stands, this kind of collaboration remains elusive, with commitments to major water projects entangled in the broader political disputes between the two parties. This is where the international community could play a limited but constructive role by emphasizing that water-related projects, essential to public health, should be insulated from the wider KDP-PUK political rifts.

Developing an integrated province-wide water strategy

The second step is to work towards an integrated water pollution strategy for Sulaymaniyah province as a whole. This would mean addressing pollution monitoring and enforcement and building water treatment infrastructure in major upstream population centers, including Sulaymaniyah city and Halabja.

The levels of investment required to build Sulaymaniyah's wastewater infrastructure from scratch will be immense and may not be possible until a broader PUK-KDP agreement over sharing finances is reached. A focus on monitoring waste-dumping

and punishing violations may be the only feasible measure in the short term. In both cities, health facilities and factories dump chemicals and toxins into the waterways, which then flow towards Darbandikhan. Better monitoring and enforcement of violations are the first and, perhaps, most important measure, as this could be accomplished without major financial investment.

It requires empowering relevant local authorities (e.g., the Sulaymaniyah Directorate of Municipalities) and line ministry officials charged with tracking whether public and private institutions are compliant with pollution standards. With better enforcement, hospitals and industrial facilities would no longer be able to release sewage and toxins into waterways with impunity.

Community Outreach

Distrust runs deep in Darbandikhan. The local community feels that the ruling parties holding the purse strings related to infrastructure projects are ultimately never going to invest in Darbandikhan. Delayed parliamentary elections have further reduced lines of communication. Given that progress on the water treatment plant will take time even in the best-case scenario, active outreach to the community on the part of KRG authorities should be a central and immediate priority.

Once the Kurdistan Parliament and provincial councils are reactivated (pending upcoming elections in October 2024), the parliamentary committee for agriculture and water resources should set up regular channels of communication with Darbandikhan. But they will only prove meaningful if coupled with progress on water infrastructure in the near future. With years of failed water governance and the effects of climate change intensifying every year, the time for inaction on addressing the underlying infrastructural issues is running out.

Context & Challenges

Mass demonstrations over water-borne illnesses

Basra has become synonymous with the country's broader water scarcity and water quality crisis. Located at the mouth of the Tigris-Euphrates basin, Basra absorbs the accumulated impact of poor water management and unregulated dumping of toxins in upstream areas. Industrial waste from oil extraction fills local waterways, with little to no accountability for polluters, including both local and international companies²³. In 2018, more than 100,000 residents of the city became ill with gastrointestinal ailments linked to contaminants in the local water supply. The protests were a turning point politically for Basra and for all of Iraq. In addition to paving the way for the downfall of Prime Minister Haider al-Abadi, the protests dramatically shifted the balance of power within Basra. Governor Asa'ad al-Edani had only been in office for less than a year at the time but capitalized on the public's anger to demand greater local control over reconstruction projects and service provision, including water treatment and desalination infrastructure. During a heated argument between Abadi and al-Edani during a parliamentary session about the protests, MPs applauded the governor after he said to the prime minister:

“You claim that any official who doesn't perform their job properly must step down. The government [in Baghdad] is guilty in this respect and not Basra.”²⁴

Al-Edani emerged from the crisis emboldened, and the national government weakened.

Sources of the problem

The outbreak of water-borne illnesses was blamed on several converging factors²⁵. For years, the federal government had promised to build water treatment facilities and distribution systems but failed to deliver. This neglect stemmed partly from a lack of awareness about the urgency of the problem and partly from corruption, as national and local political parties prioritized expanding their share of the province's vast oil wealth over governance improvements. Reports by Human Rights Watch and UN-Habitat found systemic failures within Basra's local water directorate, which is responsible for water treatment and distribution infrastructure^{26 27}. One local official noted:

“People have overtaken Basra's waterways by turning agricultural lands into housing projects without any regulation, turning the waterways into sewage drainage. Poor management of water and lack of sewage treatment in Basra adds to the problem.”

Poor water quality was also a consequence of historically low downstream water flow. In 2018, significant reductions from Turkey and Iran meant that Basra's Shatt al-Arab received less than 30 cubic meters per second from the Qalat Salih regulator dam, whereas the normal flow ranges between 70 and 100 cubic meters per second²⁸. Labor

migration from surrounding agricultural provinces into Basra worsened the water pollution crisis due to increased stress on the water grid and sewage system. Compounding these issues is the chronic lack of enforcement against illegal dumping and pollution, as well as weak regulatory oversight, which allows both local and international actors (e.g., Ministry of Oil, international oil companies, public hospitals, factories, local businesses, etc.) to continue harmful disposal of toxic waste with little consequence.

Durable progress or temporary relief?

Governor al-Edani's nimble political response to the 2018 crisis – in which he successfully shifted blame onto the central authorities – placed the onus on Baghdad to ensure that the situation in Basra did not escalate further. After all, Basra is the country's most important province from a revenue generation standpoint, and the government could not afford to allow the demonstrations to fester. In relatively short order, Baghdad agreed to take major water infrastructure projects out of the hands of the federal line ministries and place them under the governor's direct control. An official from the Basra Water Department clarified that

“we are no longer subordinate to the General Directorate of Water in the Ministry of Construction, Housing, Municipalities, and Public Works. Ever since the water crisis of 2018, our direct connection has been with the local Basra authority.”

The provincial government now has responsibility for long-delayed projects such as the Great Basra Water

Project. Signs are pointing in the right direction in so far as devolution has led to more rapid progress on water infrastructures and, therefore, better water quality. Several projects have been completed or have seen significant progress since 2018, including the Great Basra Water Treatment Project, al-Abbas Water Project, al-Bradh'eia Water Project, and water desalination facilities at Abu al-Khaseeb and Um Qasr. One local citizen said:

“We've noticed significant change over the past couple of years. In Basra, we're used to not being able to use the water at all, it's gotten a lot better. The government is doing more, but we'll see if it remains that way.”



Figure 4: The Great Basra Water Treatment Project

Locals are concerned that the progress in water governance may prove temporary for several reasons. First, lingering disagreements between Basra and the central government over finances have resulted in ongoing deficits in water infrastructure funding. Second, the Basra provincial government has consistently glossed over shortcomings by shifting blame to the influx of internally displaced persons (IDPs) from neighboring provinces, accusing upstream local governments in Dhi Qar and Misan of mismanaging water resources and exacerbating displacement. This deflection of blame onto IDPs—widely accepted by the Basra public—has already undermined grassroots efforts to hold authorities accountable for policy failures in the water sector. Third, extremely unpredictable upstream dynamics impact water flows into Basra. Iran's unilateral decision to release water from the Karoon River in 2023 resulted in increased water volume in Basra's Shatt al-Arab and diluted pollution concentrations. Some Basrans speculate that the improved water quality in the province has less to do with Governor al-Edani's infrastructure plans and more to do with a stroke of luck from a powerful upstream neighbor. Fourth, neither the local nor national government have made meaningful progress to enforce limits on industrial polluters and agricultural waste, leaving the province's waterways vulnerable to toxins and chemicals.

Policy implications

Towards a long-term infrastructure agreement

The progress of the last several years is a step in the right direction. Because Iraq's ruling elite is sensitive to the importance of Basra to the country's economic viability and the potentially destabilizing impact of popular unrest, they have been willing to concede to certain demands. The transfer of the water directorate from central to local control has enabled the provincial government to take the lead on long-stalled projects.

By most accounts, this played at least a partial role in clearing up the water quality problems that caused the 2018 crisis. But the existing arrangement between Basra's provincial government and Baghdad is fragile and does not take into account a long-term approach towards water infrastructure development. Basra has announced an ambitious water infrastructure strategy for the next 20 years, targeting completion in 2045.

Funding levels from the central government do not align with the project goals stated in the strategy, which reflects the broader gap in financing between water infrastructure needs and funds available at the level of the country as a whole. As long as this gap in financing persists, the provincial government will likely blame the central government for failures. Baghdad-Basra negotiation is needed between relevant stakeholders to arrive at sustainable funding allocations for water infrastructures and maintenance, especially water treatment facilities but also the water grid.

At the federal level, stakeholders should include the Ministry of Construction, Housing, Municipalities, and Public Works (MoCH) (overseeing water treatment and the water grid), MoWR (overseeing water supply), Ministry of Finance (MoF) and Ministry of Planning (MoP) (overseeing budgets for infrastructure), and political party leaders (influential over budgets). At the provincial level, stakeholders include the Basra Water Department, the governor's office, and the provincial council. This negotiation process should include participation from the province's robust civil society actors. In addition to funding deficits, it is essential to recognize the bureaucratic hurdles that local government bodies still face when proposing projects. Despite the central government's openness to transferring responsibilities, officials from these bodies have raised concerns that they still need to obtain approvals for nearly every aspect of their plans—whether financial or technical. This process, which can be time-consuming, often involves inspections by committees sent from Baghdad, further delaying project implementation.

Enhancing Regulatory Mechanisms for Water Pollution

In Basra, the persistent water quality crisis highlights the devastating impact of industrial and oil-related pollution, compounded by the province's inadequate water treatment infrastructure. The 2018 outbreak of water-borne illnesses affected over 100,000 residents. Basra's waterways are heavily polluted by unregulated agricultural and industrial discharges, including those from the oil sector. Oil companies

overuse already scarce water resources and pollute groundwater reservoirs by injecting water mixed with chemicals into the ground. Despite some progress in local water treatment projects, effective water governance requires both infrastructure and regulation to work hand in hand. Basra suffers from a lack of robust enforcement and scientific capacity to monitor pollution levels and crack down on violators. The MoE, constrained by limited resources and authority, struggles to enforce regulations against powerful industrial actors, particularly in the oil sector²⁹. This situation demands urgent reforms, including the enhancement of regulatory mechanisms, the empowerment of environmental agencies, and the establishment of accountability measures for both national and international companies operating in the region.

From Securitization to Social Cohesion Measures

While Basra's ongoing struggles with water scarcity and water pollution are partially linked to urban growth and internal migration dynamics, population movement from poor rural areas to wealthier urban areas is a long-standing and inevitable economic reality. Securitized approaches (e.g., heavy-handed policing and destruction of informal settlements) that further isolate and stigmatize migrants may provide political dividends for Governor al-Edani but will not solve the problem.

The authorities in Basra must accept the fact that internal migration will always be a feature of the city's

immense oil wealth and the only solution is to build key infrastructure (e.g., an expanded water grid) that can absorb this migration within the city limits. Because of the strength of the 'insider/outsider' rhetoric, dialogue and social cohesion efforts are needed to reduce tensions and ensure some measure of cooperation. One place to begin would be for international organizations with a social cohesion profile to work with local civil society organizations in Basra to develop awareness and outreach programming related to vulnerable migrant communities.

The road ahead will be difficult, as the provincial government has consolidated popularity by cracking down on informal settlements hosting migrants. One resident applauded this approach, saying that

“previous governors were too scared or unable to stand up to the residents of the informal settlements, but al-Edani has been the first to take serious steps to remove this lawless population from areas where they should not be.”³⁰

With this rhetoric normalized and supported by the authorities, much work is required to build bridges between pre-existing and newly arrived populations.

Context & Challenges

Severe water scarcity and salinity

Acute water scarcity and poor water quality is a major problem across all areas of Dhi Qar province, particularly during the summer months. The statistics are simply alarming. Water salinity in the Euphrates River in Dhi Qar often reaches between 7,000 total dissolved solids (TDS) and 13,000 TDS in the summer, which is more than 4,000% above the maximum salinity reading for safe human consumption³¹. The ecological consequences of this poor water quality are enormous: 35% of buffalo and 97% of fish have been lost³², which directly impacts rural livelihoods and drives rural-to-urban displacement. Nasriyah city has also suffered. It needs at least 400 cubic meters per second of water, but currently most readings indicate that it only receives between 25 and 40 cubic meters per second. Just 30 years ago, 1,400 cubic meters per second used to flow through the city³³. Problems get worse as the water travels from north to south through the province. The northern districts (including Fajer and Qalat Sukar) have water shortages during irrigation season but tend to enjoy comparably good access to reliable flow levels during the rest of the year. The central districts (including Islah and Sayed Dakheel) and southeast districts (including the marsh areas of Chebayish and Souk al-Sheyoukh) face chronic water shortages throughout the year³⁴. One university professor in Dhi Qar noted: “The more you go south,

the narrower the river becomes. The river that covers these areas gets narrower and has less water flow as it moves downstream and approaches the marshes.” They added that these are agricultural and tribal areas, which raises the risk of social grievances and tensions over water.



Figure 5: A Buffalo Herder in Dhi Qar (Source: s: Hayder Salah Mahdi)

Collective Protest and Internal Divisions

In Basra, water pollution and scarcity led to a collective and relatively unified social movement demanding change, but in Dhi Qar the grassroots response has been mixed. In short, grievances over water-related

deficiencies have simultaneously promoted collective solidarities and intense internal divisions among communities. Complaints over the lack of infrastructure and services, including water, were part of what made Nasriyah a central hub of the 2019 protest movement. The provincial capital gained a reputation for witnessing some of the most violent clashes between state authorities and armed groups, on the one hand, and the local population demanding their rights on the other³⁵. Across Iraq, protestors lauded the bravery and courage of Nasriyah's protestors, most of whom were young and marginalized. At the same time, fierce divisions between tribes and districts in the province have been exacerbated by the same infrastructural and water-related deficits. Unlike Basra, where the provincial capital dominates political and social life, Dhi Qar is a province of powerful tribes controlling agricultural large districts, each containing its own political constituency and sense of grievance. Consequently, citizens tend to emphasize their town of origin (e.g., Qalat Sukar, Islah, Souk al-Sheyoukh, or Chebayish), rather than being from the province more generally or Nasriyah city. And thus, one cannot understand the stakes of water shortages in Dhi Qar without holding both the potential for collective protest and divisions between communities simultaneously.

In March 2023, hundreds of residents and tribal members in Islah district protested against the unavailability of drinking and irrigation water³⁶, which later fed into a violent conflict between the two major tribes that control the district³⁷. The fighting was only resolved after a significant force from the Federal Police was deployed into the area. Leaders of Islah

district and Sayed Dakheel district believe that the other district is attempting to impede on its water rights. One tribal leader in Sayed Dakheel alleges that the MoWR "prioritizes Islah over Sayed Dakheel," and that "if there is no solution, there will be chaos and we will stage protests."³⁸

Sayed Dakheel's community leaders have reached out to the governor's office repeatedly, proposing rationing whereby water will flow to Sayed Dakheel for two days and Islah for two days.

Roots of the Problem

These social tensions cannot be separated from a history of poor government performance and a lack of interagency cooperation around service provision in Dhi Qar province. In many areas, the water grid is limited, and water treatment facilities are few and far between. This forces farming communities to pay for drinking water at a time when agricultural livelihoods are struggling³⁹. An official explained that 50% of the population of Sayed Dakheel lives off the water grid⁴⁰. A Ministry of Health employee in Nasriyah elaborated:

“Many people live in informal settlements, which are off the service grid for the most part and people tap into pipes and electricity lines to steal water and electricity for the area. There is no sewage system and there is no proper trash disposal. Human and animal waste pile up. Trash is often burned.”⁴¹

In addition to water distribution within districts, the irrigation canals and waterways linking upstream and downstream communities are poorly maintained, and in some cases constructed so inadequately that water cannot flow from one to the other. And thus, infrastructural deficits are directly related to inter-community conflicts over water.

Policy Implications

The Need for Stability & Equitable Investments

To mitigate against conflict and tensions between different rural districts over perceived inequities in water distribution, the provincial government should develop a long-term framework for water allocations and infrastructures (e.g., irrigation canals and drainage systems), which should be tailored to the needs of the province's agricultural communities. As for the feasibility of such measures, there are reasons for optimism and pessimism. On the one hand, Dhi Qar gained access to significant budgetary assistance to shore up gaps in infrastructure following the 2019 protests. Parliament declared Dhi Qar a disaster area in 2021, resulting in the creation of the Dhi Qar Construction Fund⁴². As a result, the protestor-aligned governor had greater support from Baghdad and the authority to make more than 800 billion Iraqi dinars (IQD) available each year for infrastructure investments — including critical water facilities — without waiting for the consent of the federal line ministries. However, the governor's ability to capitalize on this investment opportunity was soon undermined by political infighting. The pro-protestor governor was eventually ousted due to political pressure, which was followed by a replacement from

the Sadrist camp⁴³. The new governor remained in power until February 2024, when he was replaced by Hikma's Murtaza al-Ebrahimi. An activist blamed this political instability for the government's failure to address the water crisis:

“After the 2019 protests that demanded the resignation of the governor, the changing of governors became rapid and there were five governors within a couple of years. So, this constant change at the position did not allow for a proper mindset for dealing with the water crisis and so many other issues.”⁴⁴

Given that the reconstruction fund is still in place, activists hope that the new governor will be able to stabilize the province and take advantage of these funds, rebuilding the infrastructures (e.g., irrigation networks, pumping stations, and water canals) that enable fair and equal water distribution between and among communities.

Enhancing Coordination

Chaotic interagency coordination in Dhi Qar is a major obstacle to improving service outcomes. With each new water-related crisis, provincial directorates with overlapping jurisdictions either refuse to cooperate or release conflicting statements⁴⁵. The Directorate of Public Health and the Directorate of Water Resources have publicly contradicted each other on data related to water pollution levels⁴⁶. Similarly, the Directorate of Agriculture has openly complained about decisions by the Directorate of Water Resources to constrain agricultural plans⁴⁷. While this lack of interagency

cooperation is a feature of many southern governorates, the severity of water scarcity and water quality problems in Dhi Qar create an environment where the status quo is no longer tenable. The new governor must work with the relevant line directorates (Water Resources, Health, Agriculture, and Municipalities) to ensure that coordination mechanisms are in place, especially during the water-scarce summer months.

Social Cohesion & Community Dialogue

Community-level dialogues between districts with moderate to high levels of tension over water resources (e.g., Sayyed Dakheel and Islah) are essential to preventing further breakdowns in social cohesion. The question is who will lead these dialogues. Historically, the provincial government and national political party leaders have intervened during times of intense disagreement over water, but no follow-up efforts are made during periods of relative calm. International organizations have expressed interest in working on water through a peacebuilding lens in Dhi Qar. Interviews with local activists and NGO employees indicate that there is an increasing level of openness to collaborating with international organizations and donors. One activist noted:

“Previously, the political parties used to say that working with these INGOs inevitably has a political dimension to it, but since 2019 there is more engagement on service provision projects, even with USAID. When there are projects benefiting service provision in the water sector, there is a kind of sense of reassurance.”⁴⁸

While it appears there is potential a role for the international community to play in facilitating social cohesion, the contextual complexities and tensions between different towns and districts described above mean that the Iraqi government and local authorities will have to take the lead in convening stakeholders. International efforts with a peacebuilding focus would be well-advised to coordinate and perhaps directly partner with donor-funded infrastructure projects to ensure that residents perceive social cohesion programming as part of a tangible project with a direct impact on their lives.



PART 2: NATIONAL-LEVEL IMPLICATIONS

The complex sociopolitical dynamics at the subnational level in Iraq's water governance present significant challenges to national-level planning and coordination. As provinces like Erbil, Sulaymaniyah, Basra, and Dhi Qar navigate their unique water-related infrastructural challenges and social unrest, local government and civil society actors often expect the Baghdad-based federal line ministries or the Erbil-based KRG ministries to take the lead. The federal government's water strategy, developed by the MoWR has struggled to accommodate the diverse needs of Iraq's provinces. The varying degrees of infrastructure development, local governance capacity, and financial resources across provinces further complicate the implementation of a unified national strategy. Given the interconnected nature of Iraq's water resources, with major rivers flowing from the north to the south, a fragmented approach to water governance is unsustainable. National-level planning must integrate local dynamics into a broader framework that addresses the shared challenges of water scarcity, climate change, and infrastructure degradation. This requires a shift from the current reactive style of crisis management to a proactive, systems-wide approach that aligns local needs with national priorities.

Overview

In order to explore national level governance dynamics, the research team identified key governmental entities involved in Iraq's domestic water and environmental governance, categorizing them into Tier 1 and Tier 2 bodies. Tier 1 includes ministries and offices directly responsible for water and environmental management, such as the federal MoWR and the KRG Ministry of Agriculture and Water Resources. Tier 2 consists of entities like the federal MoF and the federal MoP, which play influential roles in water-related functions, but have broader mandates. The team conducted 35 interviews, primarily with Tier 1 officials, to map the interrelationships between these entities, emphasizing that effective water governance requires a coordinated, multi-agency approach rather than isolated efforts. The interviews particularly focused on the connections between subnational dynamics, discussed in Part 1, and national-level governance.

Key Findings

Discrepancy between local needs & national financing

Many federal government stakeholders acknowledge the necessity of a long-term water strategy that accounts for local needs and socio-political dynamics. Government officials interviewed for this study generally understand that water infrastructures in Erbil, Sulaymaniyah, Basra, and Dhi Qar remain severely compromised. However, insufficient budgetary

allocations and inadequate coordination have been significant barriers to progress. The MoWR is currently working on updating Iraq's water infrastructure strategy for the next 10 years. Despite the lack of success with the previous water strategy, which was derailed in 2014 due to costs far exceeding what the MoF could support, the MoWR has recently commissioned a new comprehensive plan. This updated strategy aims to address the challenges of climate change and reduced water supply from Turkey and Iran by outlining necessary investments in infrastructure such as dams, barrages, water treatment plants, pipelines, irrigation canals, and monitoring meters across the country's 19 provinces. While there are signs of closer collaboration between the MoWR and the MoF this time, the financial gap will likely persist unless there is a significant shift in budgetary priorities. Especially within the MoWR, there are concerns the strategy will not receive the financing it requires. A technical specialist in water management within the MoWR noted: "We don't want to have a strategy that cannot be financed or implemented."

Historically, the MoWR has been relatively small in terms of financial allocation, yet the investments needed to address Iraq's water infrastructure, especially in the face of climate change and drought, are substantial. Officials claim that there has been some positive progress regarding funding in 2023, but a closer look at the budgetary data reveals that the MoWR's 2023 budget of 420 billion IQD surpasses only a few of the smallest ministries, and it is significantly smaller than the budgets of most other ministries. Even when combining the budgets of the three key ministries related to water

infrastructure—Water Resources, Agriculture, and Municipalities—since 2015, the total of around \$19 billion amounts to only about 12% of the \$157 billion required to fulfill the needs of the 2014 water strategy. Although the new updated strategy is expected to lower annual investment targets to align with financial constraints, a far more ambitious budget allocation will still be necessary to address the infrastructural problems from Basra in the south to Erbil in the north.

Accountability for the Polluters

In developing a national approach to the crises of water pollution in places like Basra and Sulaymaniyah, both infrastructure development and regulatory enforcement must go hand in hand. Indeed, the country requires substantial investments in water treatment facilities, sewage systems, and distribution networks. However, even the most advanced infrastructure will falter if not complemented by stringent regulatory mechanisms to curb industrial pollution, agricultural runoff, and other environmental hazards. The reality on the ground is that both infrastructure and regulatory frameworks are inadequate, leading to severe water quality issues and social unrest. A systems-wide approach that integrates both aspects of water governance is essential to mitigate these challenges, as infrastructure alone cannot resolve the issues without parallel efforts to control pollution at the source. Moreover, the federal MoE, which should play a key role in enforcing these regulations, is severely under-resourced and lacks the capacity to effectively monitor and address environmental impacts. This lack of capacity, combined with its limited authority compared to more powerful entities like the MoO, further undermines efforts to hold

accountable the local and international oil companies that contribute to environmental degradation. Without strengthening accountability, any progress in infrastructure development will be undermined by continued pollution and environmental harm.

Complex Baghdad and KRG Relations

Two of the cases in Part 1—Erbil and Sulaymaniyah—are situated within the Kurdistan Region, where water and environmental management are subject to both separate and joint jurisdictions of the KRG and the federal government. Water consumption and distribution at the municipal level are legally and effectively devolved to the KRG, meaning the Baghdad-based MoWR does not interfere in the KRG's decisions regarding water grid maintenance, well drilling by farmers, or enforcement of water consumption regulations. These responsibilities fall under the authority of the KRG, specifically its Ministry of Agriculture and Water Resources. However, the federal government retains significant, and arguably superior, authority over dam and reservoir management. The KRG is legally obligated to adhere to agreements and procedures established by the federal MoWR concerning water releases and reservoir levels, with approximately 85% of the water from the KRG's major dams, Darbandikhan and Dukan, flowing southward into federal Iraq. While some reports have suggested that the KRG's upstream position and control over these dams could give it leverage over federal Iraq, our interviews with KRG and federal officials indicate that the real source of tension lies not in water management decisions but

in disagreements over the financing of critical water infrastructure, including for dams. Despite occasional provocative rhetoric, there is little desire on either side to escalate water allocations into a major political conflict between the upstream KRG and the downstream provinces of federal Iraq.

The tension between Baghdad and the KRG comes down to financing. KRG officials frequently highlight the perceived injustice of the KRG bearing the financial burden for dam maintenance when the primary beneficiaries are in federal areas. This grievance extends beyond dams, as KRG officials argue that Iraq should share the responsibility—either partially or fully—for financing any water infrastructure that benefits the federal provinces. This includes major dams, reservoirs, and water purification facilities along the KRI's rivers. As a former top official in the Erbil Governorate stated: “Toxins and sewage in the Great Zab impact the Kurdistan Region but equally impact federal areas too as it makes its way into the Tigris, so why should we be uniquely responsible for cleaning a joint resource?” If the current situation persists, the primary point of contention between Erbil and Baghdad will likely remain financial rather than centered on water release or withholding. Until broader budgetary issues related to oil sales and KRG revenues are resolved, it is unlikely that sector-specific budgetary concerns regarding water financing will receive the necessary attention. The international community should engage with both sides to elevate these politically marginal budgetary issues to higher priority levels.

Reactive Approaches to Summer Droughts Exacerbate Local Conflicts

In recent years, Iraq has faced severe droughts nearly every summer, placing the MoWR in a challenging position to manage limited water resources. The MoWR oversees the allocation and enforcement of water shares, coordinating with various bodies at the national level, including provincial directorates of water resources and key water consumers like the Ministry of Agriculture. As part of its crisis response, the MoWR has mandated targeted reductions in water supply, primarily impacting the agricultural sector, including the marshes, to preserve drinking water for urban areas and maintain oil production. In extreme cases, the MoWR is prepared to cut water for agriculture by up to 75%. The MoWR justifies its focus on agriculture by noting that the sector consumes 80 to 85% of Iraq's water supply. However, these cuts have devastated agricultural communities. More sustainable, long-term solutions are urgently needed. The enforcement of water limits, particularly in rural areas, has become a high-stakes issue. Farmers, facing severe cuts, have resorted to unauthorized methods to access more water, such as extending pipes into rivers or opening regulator gates.

The MoWR, under Prime Minister Al-Sudani's direction, formed a crisis committee in November 2022 to crack down on these violations, with enforcement carried out by local police. While the MoWR has publicly celebrated the success of these enforcement efforts, sources suggest that powerful agricultural interests

often evade these limits, and the measures taken have done little to address the underlying issues. The crisis committee's responses, such as allocating water trucks or loosening restrictions on well digging, have been reactive and short-term. It has failed to establish the necessary infrastructure to prevent future crises.



Figure 6: Dried crops in Al-Chibayish a district of the Dhi Qar Governorate, Iraq. (Source: Caroline Zullo/NRC, June 2022)

Disputes over water allocation are common during droughts, particularly in water-stressed agricultural provinces like Dhi Qar. The government's water allocation policies have often exacerbated conflicts between farmers or tribes, particularly when these groups span multiple districts or provinces. The MoWR and provincial governors play crucial roles in mediating these disputes, sometimes with intervention from the prime minister. The mediation process typically involves face-to-face negotiations and top-level pressure, but these efforts are largely reactive and limited to periods of crisis. There is little evidence of a proactive, long-term community engagement strategy by the MoWR or other national bodies. Members of the parliamentary Committee on Water and Agriculture echoed this reactive approach, noting that they are often overwhelmed with requests to increase water allocations, leaving little room for developing a more strategic, long-term engagement with communities. This highlights the need for civil society organizations to facilitate the development of durable frameworks and channels of communication with authorities. Without sustained national-level engagement, these communities are left to navigate the long-term consequences of water disputes on their own.

CONCLUSIONS

Contribution of the Research

This paper has provided an in-depth analysis of Iraq's worsening water crisis, focusing on the linkages between local challenges in Erbil, Sulaymaniyah, Basra, and Dhi Qar and the broader governance issues that hinder effective environmental management. The findings emphasize the urgent need for a climate adaptation strategy that prioritizes rebuilding infrastructure and governance systems.

A systems-wide approach is essential, integrating the diverse sociopolitical dynamics at the subnational level into a cohesive national strategy to address the fundamental drivers of water scarcity and unrest. While record droughts and rising heatwaves have contributed to the crisis, Iraq's water challenges are primarily rooted in decades of governance failures and neglect of essential infrastructure. When people protest, they blame the government and political factions for the systemic problems that have left them without reliable access to clean water.

For example, in Sulaymaniyah, grievances over Darbandikhan district's polluted water are linked to long-standing neglect, political marginalization, and insufficient financing for critical projects, while in Erbil, frustration centers on poor urban planning decisions that favored rapid economic growth over sustainable water infrastructure. In Basra, the 2018 mass protests were a direct response to years of inadequate investment in water treatment, sparked by widespread

water-borne illnesses, while in Dhi Qar, tribal disputes over water access are fueled by perceptions of unfair resource distribution and chronic government mismanagement.

These four cases highlight that the path to effective climate adaptation must begin with addressing foundational gaps in governance and infrastructure, which have been overshadowed by decades of security-focused policies in the aftermath of the US-led invasion. Given the significant investments needed for infrastructure rebuilding, fostering political dialogue at local and national levels is crucial to align diverse interests and mobilize resources effectively, ensuring that water management reforms are not merely reactive but drive sustainable, long-term resilience.

Overarching Policy Implications

To effectively address Iraq's water crisis and the ensuing socio-political challenges, a comprehensive, twofold approach is required. First, the Iraqi government, in partnership with international organizations, must prioritize the development of critical water infrastructure and the implementation of robust environmental regulations to safeguard and manage water resources. International organizations can support these efforts through targeted infrastructure funding and facilitating coordination among agencies (MoWR, MoE, MoO, etc.). Second, sustained efforts to promote social cohesion are essential. This involves building trust and improving communication between local communities in water-stressed regions

and between these communities and governmental institutions. Without these efforts, the Iraqi government risks remaining in a reactive posture, addressing water-related issues only during periods of acute crisis rather than through continuous, structured dialogue. However, without significant infrastructure investments, social cohesion initiatives will continue to face challenges, as communities will continue to suffer from diminishing and contaminated water supplies, leading to further economic disruption and heightened social tensions.

Provincial level

At the provincial level, urgent action is required to upgrade local infrastructure, particularly in fast-growing urban areas like Erbil and Basra, where current water delivery and treatment systems are inadequate and increasingly strained by rapid urbanization. The challenges in such cities are not just technical but deeply political, as infrastructure projects often intersect with the interests of powerful political factions and party-affiliated elites. To make meaningful progress, it is essential to navigate these political dynamics and foster negotiations among key stakeholders—including government officials, political leaders, and business interests—to build consensus on the necessity of investing in critical water infrastructure. In regions like Dhi Qar, where water scarcity has fueled social tensions and conflicts, strengthening community engagement is crucial. Effective water resource management in these areas requires not only technical solutions but also a deep understanding of the local political landscape. Community

representatives and local government officials must be brought into the decision-making process to ensure that water management plans are both equitable and context-specific. This involves mediating between competing interests and facilitating dialogue that can lead to mutually acceptable agreements on water distribution and infrastructure development. Provincial governments must take the lead in developing long-term, context-specific water management plans that align with broader national strategies while being sensitive to local dynamics. This process will require continuous negotiation and collaboration among diverse stakeholders to ensure that infrastructure projects are not only technically sound but also politically viable.

National Level

At the national level, Iraq faces a critical need to significantly increase budget allocations for water infrastructure to bridge the substantial gap between what is currently available and the estimated financial resources required to address the country's escalating water crisis. The existing budgetary shortfalls have left many water projects underfunded or stalled, exacerbating issues of water scarcity and quality across the country. Compounding this issue is the MoE's limited capacity, both in terms of budget and infrastructure, which hampers its ability to enforce environmental regulations and hold accountable powerful local and international entities that release industrial waste into Iraq's waterways. To address this, a comprehensive reassessment of national financial priorities is essential. This means not only increasing

the overall budget for water infrastructure, but also ensuring that funds are allocated efficiently and equitably across provinces in a way that reflects both the severity of local water challenges and the strategic importance of certain regions. Enhanced coordination between federal ministries, particularly the MoWR, the MoF, and the MoP, and the KRG is also crucial. The relationship between Baghdad and the KRG has historically been marked by tensions, particularly over issues of resource control and budgetary allocations. In the context of water infrastructure, these tensions have often led to delays and inefficiencies, particularly in the financing and maintenance of critical water projects in the Kurdistan Region. It is imperative that both sides work towards a more collaborative approach, recognizing that effective water management in the Kurdistan Region is not only beneficial for the KRG, but is also vital for the downstream areas of federal Iraq that rely heavily on water flows from the north. This could involve establishing joint committees or task forces specifically dedicated to water infrastructure projects, ensuring that both federal and regional interests are represented and that decisions are made transparently.

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IRIS

American University of Iraq, Sulaimani
**Institute of Regional &
International Studies**

CONTACT US

iris@uis.edu.krd
+964 773 152 6206

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