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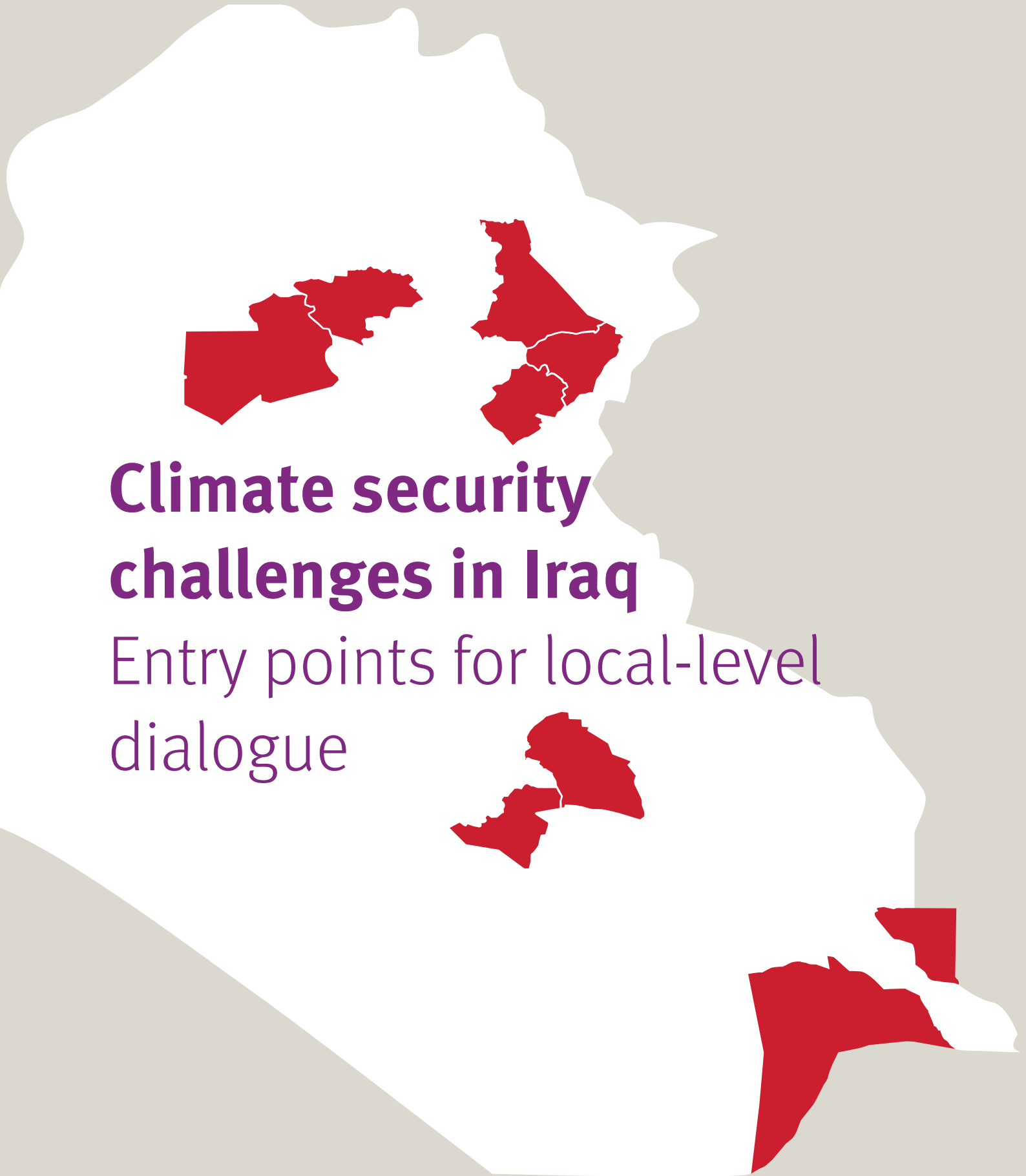

Climate security challenges in Iraq

Entry points for local-level dialogue

About this paper
This report has been produced within the framework of the project "Strengthening Iraqi Capacities to Respond to Climate Risks and their Impact on Existing Conflict Dynamics" which is implemented by the Berghof Foundation and Peace Paradigms Organisation (PPO) with support from the German Federal Foreign Office and is part of the Weathering Risk Peace Pillar led by adelphi.

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1 Executive summary

Iraq has begun to feel the brunt of climate change and an increase in climate-related security risks. The country's vulnerability to climate change is a product of a high degree of exposure to climate change factors, a susceptibility to be affected by climate change, and a lack of capacity to adapt and respond to the effects of climate change through weak governance, structures and mechanisms. The uptick in extreme weather events over the last decade – from sweltering temperatures, droughts and desertification, to flooding, and sand and dust storms – has had several pernicious consequences. Four in particular are noteworthy for their severity: water scarcity; the loss of economic livelihoods, especially for those dependent on the agricultural sector, which has been decimated by the effects of climate change; climate-induced displacement and migration; and rising food insecurity. The effects of climate change have only exacerbated the countless challenges facing the country, particularly those associated with the recent conflict with so-called Islamic State (aka ISIS), as well as the two main drivers of tension and conflict in the post-2003 period, political exclusion and poor governance.

This study seeks to delve deeper into the issue of climate change and its links to and effects on conflict dynamics throughout the country. Specifically, it examines nine districts spanning the provinces of Basra, Kirkuk, Al-Qadisiyah, Salahaldin, and Sulaymaniyah, exploring the ways in which climate change is contributing to conflict and insecurity in these districts through an analysis of climate security risk pathways. These pathways, described below and based on adelphi's approach and research,[1] will help to unpack the climate/security nexus and to understand how climate and conflict interlink in Iraq.

- *Natural resources.* Climate change impacts such as changes in temperature and precipitation can alter access to and availability of natural resources such as land and water. This can increase competition and tensions between different groups or communities. Increased competition over natural resources can possibly escalate into violence or conflict.

- *Livelihood insecurity.* Floods, storms or forest fires or slow onset hazards such as drought or precipitation decrease have adverse impacts on people's livelihoods, particularly in rural areas. This can result in displacement and migration. Combined with high unemployment rates, state fragility, and low capacities of cities to host newcomers, among other factors, people are often left with little choice but to turn to activities that further exacerbate environmental degradation, including maladaptation activities, or illicit economies. This can also create competitive tensions between residents and newly displaced migrants.

- *Food insecurity.* Climate change impacts on livelihoods, such as agriculture, contribute to volatile food prices and supply which can act as a catalyst for protest and political instability. When combined with the impact of high reliance on fluctuating international markets on political stability, this can lead to social unrest and result in state violence against citizens.

- *Weak governance.* Research has shown that climate-related security risks are particularly significant where governance mechanisms are weak or failing in terms of their presence, legitimacy and capacity. Actual climate-related changes and extreme weather events have

1 For more on adelphi and its approach, see https://adelphi.de/en and Rüttinger et al: A New Climate for Peace, 2015 and the Weather Risk methodology: Methodology | Weathering Risk.

an impact on society and human security, as well as systems which are dependent on many factors which also influence the vulnerability of affected people, economies and political systems. Low adaptive capacities to respond to climate change impacts and weak or absent conflict resolution mechanisms further exacerbate conflict dynamics.

- *Climate-induced disasters*. When combined with inadequate governmental response and perceived exclusion, extreme weather events and climate-induced disasters such as floods, wildfires or earthquakes can contribute to grievances and political instability. Climate hazards can undermine authorities, erode state capacities, or challenge state control which can lead to social unrest, governmental crackdowns, and state violence against citizens.

- *Unintended policy consequences*. When climate change policies fail or central authorities or the international community put policies in place that are not conflict-sensitive, climate factors can contribute to the onset of violence or social unrest. If these policies are poorly designed and/or combined with top-down decision-making, they can marginalise communities or aggravate existing grievances in vulnerable communities.

- *No direct causal link*. The specific causal mechanisms linking climate change to insecurity and (violent) conflict are still to be explored. While there is no simple causal link between climate change and conflict, it is widely evidenced that climate change acts as a threat or risk multiplier.

Overall, the study found that various pathways are present to some degree in the districts, with natural resources, livelihood insecurity, food insecurity, and weak governance the most prominent pathways.

District / Pathway	Afak	Baiji	Cham-chamal	Eastern-Hamza	Hawija	Kalar	Kifri	Shatt Al-Arab	Al-Zubair
Natural resources	x	x	x	x	x	x	x	x	x
Livelihood insecurity	x	x	x	x	x	x	x	x	x
Food insecurity	x	x	x		x	x	x	x	x
Weak governance	x		x		x	x	x	x	x
Climate-induced disasters		x							
Unintended policy consequences							x		
No direct causal link				x					

Though pathway dynamics and findings vary in each of the districts looked at, cross cutting findings do appear. They include:

Climate change has not only exacerbated existing conflict drivers but it has also provoked tensions around new issues. The study found that existing structural drivers of conflict – unequal access to services, including access to water and land ownership, political marginalisation, inadequate governance and underdeveloped state institutions – have been magnified in all the districts looked at to varying degrees. The effects caused by climate change, for example, have caused already below-par water service provision to deteriorate further in most of the districts. At the same time, a host of new proximate drivers of conflict and tension have appeared in the form of water and land conflicts (around natural resources and livelihoods). Quarrels over waterway diversions, wells, and underground aquifers and the general mismanagement of water resources have appeared in many of the districts. So too have disputes between pastoral landowners and herders: because of diminishing public foliage, herders have resorted to illegal grazing methods to feed their animals that often encroach on privately owned land. Lastly, climate change's impact is also intensifying tribal divisions in the majority of the districts looked at where tribal identity is salient.

Three major livelihood consequences have appeared in the districts covered by the report due to the effects of climate change. The first relates to the fact that the agricultural sector has been severely hit by climate change, causing a sharp reduction in crop yields and financial security. This in turn has pushed those reliant on the agricultural sector for economic livelihoods – farmers, livestock owners and herders, among others – to give up their jobs and migrate to more urban areas in search of alternative work opportunities. The influx of new migrants into urban areas with already struggling local governmental institutions and congested economic markets has only ratcheted up tensions. Secondly, and related to the previous issue, lower crop yields have meant supply is not meeting public demand, causing the prices of key food staples to increase in the districts. This has impacted the purchasing power and ability to save of all residents in the districts but especially those most vulnerable to the impact of climate change: those dependent on the agricultural sector for their survival, which tend to be rural communities. Thirdly, the health of residents is being put in jeopardy due to climate change and environmental degradation. Water sources have become increasingly polluted and the price of potable water has reportedly risen, leaving poorer residents unable to access clean, affordable water. As a result, many have resorted to using contaminated water, which has caused health problems to increase. These livelihood insecurities have widened the gap between residents and state institutions, as the former continue to lose trust in the government's ability to respond to their most pressing needs.

There are several key actor groups in the districts who have been identified as vital to combating the effects of climate change and its impact on security and stability. These include tribal leaders, governmental authorities – local, provincial, and national – security actors, international organisations, such as the United Nations Development Program (UNDP), and national non-governmental organisations. One key trend emerging in all the districts is that there is a perception among residents (as reported during interviews with key informants) that the response of governmental actors to the challenges and crises caused by climate change is insufficient and ineffectual. This is attributed to two key constraints: a lack of resources – district budgets are perceived to be at inadequate levels to stem the tide of climate challenges – and capacity limitations. As far as the latter is concerned, the people interviewed believe the governmental authorities active in the districts, particularly those on the front lines of issues, lack an integrated strategy to tackle the issues caused and exacerbated by climate change. These authorities include the qa'em makam (district commissioner), sub-district directors, the Ministry of Agriculture, which has sub-committees in some districts with the remit of allaying land and resource conflicts, and the Directorate of Deforestation and Directorate of Water (tied to the Ministry of Water Resources).

Key recommendations

- *Recommendation 1: Strengthen inclusive processes.*
  Facilitate inclusive dialogue processes that connect and engage local, provincial and national actors to solve problems and develop strategies to address climate security risks.

- *Recommendation 2: Strengthen synergies and cooperation at and between local, national and international levels.*
  Connect local, national and international processes aimed at combating climate change and its effects.

- *Recommendation 3: Factor climate responses into budget plans.*
  Advocate for an increased budget allocation for the districts from the federal government that reflects, as a minimum, the climate response plan's most pressing aspects.

- *Recommendation 4: Enhance key stakeholder's capacities and technical skills.*
  Governmental actors should be better equipped with know-how on natural resource management and climate-resilience policy response – in parallel with efforts to tackle administrative corruption.

- *Recommendation 5: Promote effective governance.*
  Support mediation efforts to resolve governance bottlenecks caused by the disputed territories issue which are also preventing solutions and actions that would help alleviate the effects of the climate crisis.

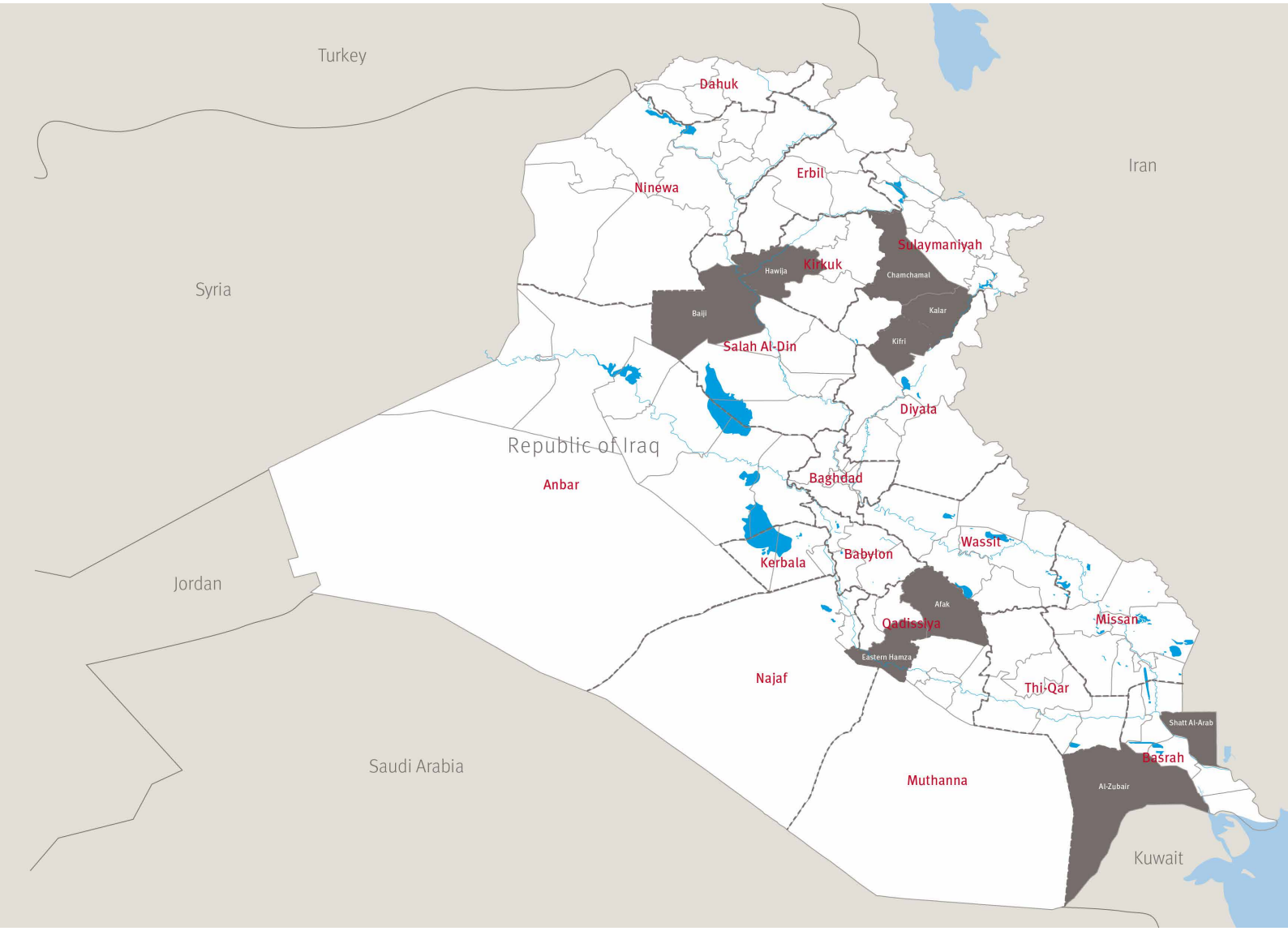
- *Recommendation 6: Strengthen mediation efforts on an international level.*
  Support and advocate for GoI mediation with Iran and Turkey given that Iraq is a downstream recipient of water.

- *Recommendation 7: Foster comprehensive research.*
  Support a stronger focus on understanding current and future security risks associated with climate-related changes, explore further interconnected areas such as the interplay between climate, conflict, and gender or wealth, and supplement the existing analytical approach with further methodologies to ensure a holistic understanding of the subject.

2 Purpose and research methodology

Within the framework of the *Strengthening Iraqi Capacities to Respond to Climate Risks and their Impact on Existing Conflict Dynamics* project, the Berghof Foundation and Peace Paradigms Organisation (PPO) have conducted a study that aims to provide a better understanding of the impact of climate change on existing conflict dynamics as well as to identify entry points to initiate consultations, exchange and dialogue around the topic with local stakeholders, local, regional and federal governments, and international organisations. The study was conducted in following nine districts:

- Shatt Al Arab and Al-Zubair districts in Basrah province
- Afak and Hamza districts in Al-Qadisiyah province
- Baiji district in Salahaldin province
- Kifri, Kalar and Chamchamal districts in Sulaymaniyah province
- Hawija district in Kirkuk province



The nine districts were pre-selected based on criteria which combine different climate/environmental risk factors (varying precipitation levels, climate-induced disaster occurrence, water scarcity) and peace/security challenges (intra- and inter-community tensions, post-ISIS recovery areas, contested governance/disputed territories, Internally Displaced People (IDP)/host community challenges, etc.) in order to analyse how different drivers at the intersection of climate risks and conflict dynamics interact. The districts were also selected in a way that they could be balanced geographically, demographically, and politically to reflect Iraq's internal diversity and composition.

The study was conducted through a qualitative approach using semi-structured, in-depth interviews and focus group discussions. Semi-structured, in-depth interviews were conducted with key informant people from the nine districts. In total, 46 interviews were completed: five each in eight of the districts, and six in Baiji. Forty-three males and three females were interviewed. Focus group discussions with residents complemented the interviews. Three were held in each district (27 total), attended by a total of 265 community members (220 males and 45 females). The participation of females in the focus group discussions was low (20%) due to two main reasons.

Firstly, it was hard to find females holding titles or positions in the targeted participant profiles, such as administrative and security actors, tribal leaders, farmers, Mukhtars and activists. Secondly, the local traditions and the dominating tribal norms of some of the targeted locations restrain participation of women. Topics explored in the interviews and focus group discussions include existing conflict dynamics and trends, and climate change effects witnessed in the district, their consequences, and the coping mechanisms and responses by communities and authorities.

The study proceeds in three sections. The first provides an overview of conflict dynamics and climate change trends in Iraq. The second delves into the cross-cutting and district findings that emerged. On the district findings, each of the nine districts are profiled and recommendations are provided for each. Note that the district findings presented are abridged versions taken from more in-depth district reports. The study concludes by offering several general recommendations aimed at the international community and governmental actors that can help mitigate some of the challenges and tensions associated with the effects of climate change.

3 Overview of conflict dynamics and climate change in Iraq

This section provides an overview of key factors shaping conflict dynamics in Iraq. It then highlights the impact of climate change on the country and the ways in which it directly and indirectly impacts conflict dynamics.

3.1 Conflict dynamics in Iraq

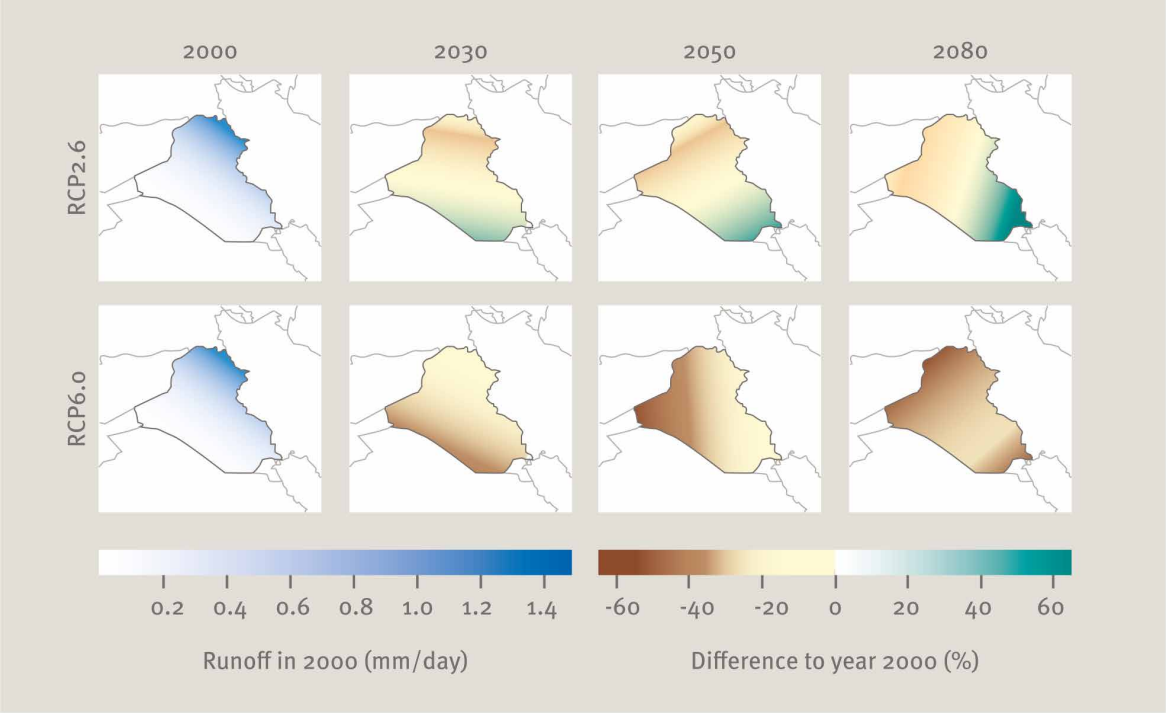
Since 2003, conflict dynamics in Iraq have been shaped by several factors, the most prevalent being marginalisation in politics and ineffective governance. The post-2003 political system institutionalised ethno-sectarian identity as the main marker of political representation. As a result, political contestation and access to resources became divided along ethno-religious fault lines, with the most prominent being between the Shia Arab, Sunni Arab, and Kurdish communities. The dynamics of political contestation within this system, which are coloured and shaped by ethno-sectarian considerations, have produced repeated feelings of political marginalisation and exclusion among all of Iraq's communities at various points throughout the post-2003 period. Areas disputed between the Federal Government of Iraq (GoI) and the Kurdistan Regional Government (KRG) are also a perpetual source of conflict. These areas are located in Ninewa, Kirkuk, Salah Al-Din, and Diyala provinces, with their final status to be resolved by a process outlined in Article 140 of the constitution. Despite setting December 2007 as the deadline, Article 140 has yet to be implemented. In the absence of its implementation, contested areas have been subjected to heightened competition between GoI and KRG aligned entities, with each side vying for the loyalty and support of these communities in order to shore up their claims to the territory in question. The practices used to reach this and the competition not only created tensions between the federal government and the KRG but also among and between communities residing in these areas, and between communities and the dominant party in control of the territory. Inadequate governance has also been a main driver of conflict and tension in Iraq since the war with ISIS. State institutions have consistently failed to effectively and efficiently provide basic services, with many areas suffering from interminable power cuts, lack of potable water, poorly maintained sewage networks, and dilapidated roads. Poor infrastructure and the lack of technical capacity are seen as the main contributing factors.[2] Iraq depends on the inflow of water from water sources that originate in Turkey and Iran. As both countries have constructed dams and electricity plants on these river sources, this has limited the amount of water flowing into Iraq. In 2022, water flowing from Turkey into the country decreased by 66%, while water from Iran fell precipitously by 90%. As tensions rise between Iraq and its neighbours, both Turkey and Iran are blaming climate change for the decreased inflow of water to Iraq.[3]

3.2 Climate change in Iraq

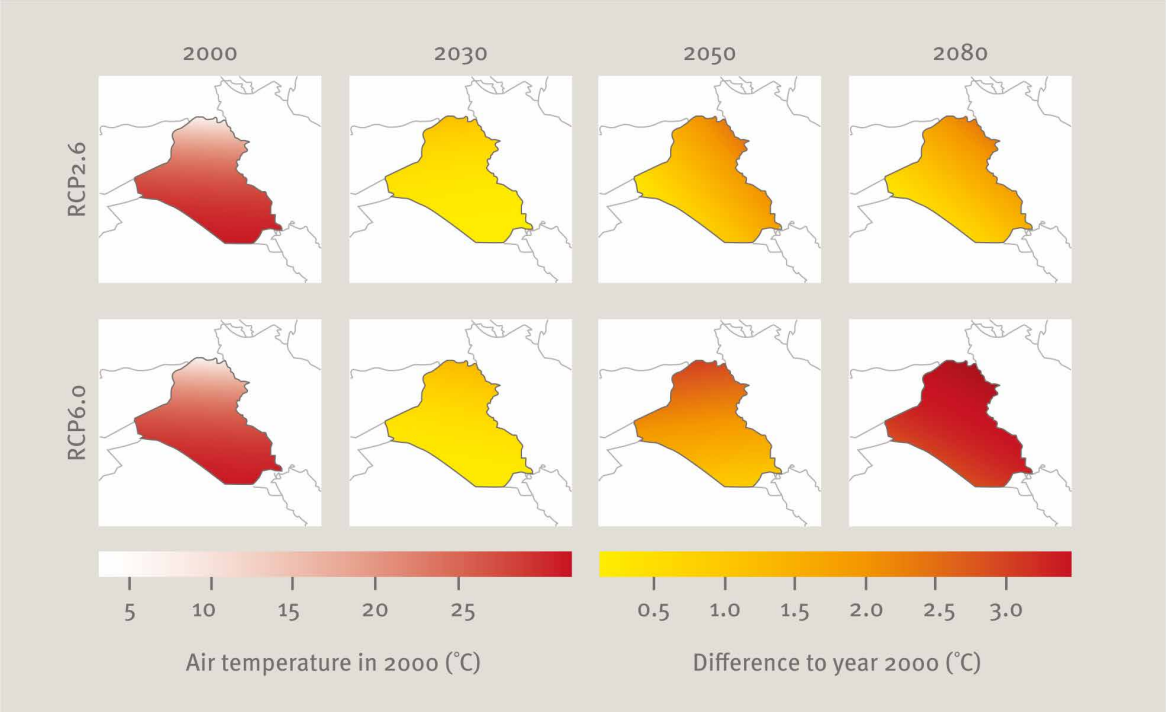
Climate change is already affecting Iraq, particularly in terms of rainfall patterns. Since the 1950s, an increase in rainfall of 2.4 mm/month per century

2 Dodge, Toby & Renad Mansour: Sectarianization and Desectarianization in the Struggle for Iraq's Political Field. The Review of Faith & International Affairs, 18:1, 2020; Al-Qarawee, Harith Hasan: Iraq's Sectarian Crisis: A Legacy of Exclusion. Carnegie Middle East Center, 2014; Majeed, Hawkar J. & Hossain, Ishtiaq: Conflict Dynamics in Post-2003 Iraq: A Security Dilemma Perspective, 2021.

3 Al-Monitor: Iran, Iraq exchange accusations over water flow. Link: https://www.al-monitor.com/originals/2022/01/iran-iraq-exchange-accusations-over-water-flow.



1 Annual mean precipitation projections for Iraq for different GHG emissions scenarios, relative to the year 2000 (regional variations).[4]



2 Air temperature projections for Iraq for different GHG emissions scenarios (regional variations).[5]

4 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi. The maps and plots included in this section provide an overview of projected climate change parameters and related sector-specific impacts in Iraq until 2080 under two different climate change scenarios (RCPs): RCP2.6 represents a low emissions scenario that aims to keep global warming below 2 °C above pre-industrial temperatures, and RCP6.0 represents a medium to high emissions scenario.

5 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi.

has been measured in the north-east, while rainfall in the arid west has decreased by 5.93 mm/month per century. These trends are predicted to continue, along with an increase in mean annual temperature of 2°C and a higher occurrence of heatwaves and intense rainfall events across the country by 2050.[6] Other research even assumes that in a high emissions scenario, annual mean temperatures might increase by more than 5°C by the end of the century.[7] With the rising temperatures, more heat related fatalities are expected across the country as well as an increase in sand and dust storms.[8] Additionally, per capita water availability is expected to severely decrease in the coming years, with rain runoff to southern provinces decreasing by 22%;[9] drought conditions are expected to continue and increase; and sea levels are projected to rise, threatening key areas of the Basra province by 2050.[10]

The United Nations recently announced that Iraq is the fifth-most vulnerable country in the world in terms of the impact of climate change.[11] Against the ND-GAIN matrix, Iraq is the 81st most vulnerable and the 154th most ready country in terms of its ability to leverage investments and convert them to adaptation actions worldwide.[12] Indeed, over the course of the last decade the country has seen many extreme weather events, ranging from sweltering temperatures, droughts, desertification, flooding, and sand and dust storms. These events have had lasting impacts on the country in several different ways.

For example, they have depleted the agricultural sector, which employs around 20% of the population, the largest employment sector after oil.[13] The agricultural sector is comprised of two main activities: Growing of crops (aka, farming) and raising of livestock, including herding and shepherding. Farming comprises some 75% of all agricultural activities and is largely carried out on small-scale, family-run farms. The overall amount of land suitable for agricultural activities, which is either directly owned by the farmers or is leased from the government, is just shy of 30% of the total land mass of the country.[14] This land, which includes nearly six million cultivated hectares, can be divided into one of two categories: land that relies on rain for irrigation, which characterises northern parts of the country and around 36% of all cultivated lands, and land that is dependent on irrigation from the country's two main rivers, the Euphrates and the Tigris, as well as the canal and tributary systems, which typifies 64% of all cultivated land.[15] In addition, it is relevant to make a distinction between long-term rising temperatures and the increasingly frequent sudden heatwaves events that are causing major disruptions. For example, the exposure of the Iraqi GDP to heatwaves is likely to increase drastically, which in turn will have consequences for the economy.[16]

The consequences of the searing temperatures and drought on the agricultural sector have been dire: lands have become more arid and less fertile,

6 United States Agency for International Development: Climate Change Risk Profile: Iraq. 2017.

7 World Health Organization, United Nations Framework Convention on Climate Change: Health and Climate Change Country Profile 2021: Iraq.

8 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi; World Bank: Iraq dashboard: Climate Future. Link: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCo de=IRQ&ThisTab=ClimateFuture.

9 World Bank: Iraq dashboard: Climate Future. Link: http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCo de=IRQ&ThisTab=ClimateFuture.

10 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi.

11 IOM: Factsheet. The Impact of Climate Change on the Environment in IDP and Returnee Locations. August 2022. Link: https://iraq.un.org/en/202663-factsheet-impact-climate-change-environment-idp-and-returnee-locations-integrated-location.

12 University of Notre Dame: ND-GAIN Country Index. Link: https://gain.nd.edu/our-work/country-index/rankings/.

13 WFP: Agricultural value chain study in Iraq – Dates, grapes, tomatoes and wheat. March 2021. Link: https://reliefweb.int/report/iraq/agricultural-value-chain-study-iraq-dates-grapes-tomatoes-and-wheat-2021-enarku.

14 WFP: Agricultural value chain study in Iraq – Dates, grapes, tomatoes and wheat. March 2021. Link: https://reliefweb.int/report/iraq/agricultural-value-chain-study-iraq-dates-grapes-tomatoes-and-wheat-2021-enarku.

15 Von Lossow, Tobias: More than Infrastructures: Water Challenges in Iraq. Clingendael Policy Brief. Clingendael Institute, 2018.

16 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi.

leading to a decrease in crop yields and the loss of livelihoods for those dependent on the sector. For example, in 2021, wheat production – the main cash crop for many farmers – in the province of Ninewa, considered Iraq's breadbasket, was expected to decrease by nearly 70 percent due to the climate crisis.[17] Another study focusing on drought-affected areas reports that nearly 40% of wheat farmers and "30% of barley farmers have suffered crop failure of at least 90% of expected harvest" and that close to 40% of households in these areas have lost livestock due to the lack of water, insufficient feed, or disease.[18]

There is no shortage of challenges to managing water resources sustainably in Iraq. Some of Iraq's water hardships, such as seasonal floods and droughts, occur naturally. However, many of the most disruptive and destructive problems are man-made: water infrastructure debilitated by decades of war and neglect; inefficient and outdated agricultural practices; rapid population growth and urbanisation; competing water management approaches within transboundary river systems; and the looming crisis of climate change. The Iraqi government has plans to address the situation, but it remains to be seen whether major reform will occur. In particular, rural-urban migration patterns are increasing: over 70% of the population lives in urban areas and the urbanisation rate is 2.6%.[19] The pressure on urban services and cities will therefore grow and increase the risks and challenges that need to be addressed by governance efforts.

The climate crisis has also impacted water access, food security, and financial stability for millions of people. Without adequate rainfall, communities are increasingly turning to rivers for their water needs. However, these rivers are shrinking due to droughts, the construction of dams in Turkey and Iran, where Iraq's river system originates, and poor water management practices among Iraqi authorities.[20] The fact that the water flow in Iraq's river network has decreased by 30% since 1980 illustrates the gravity of the situation and this figure is expected to increase to 50% by 2030.[21] As a consequence, Iraq is experiencing its worst water crisis in nearly a century, with little respite on the horizon.[22] Without access to water, food security has been impacted as crop yields have been significantly reduced, leading to an increase in the cost of living for thousands of families. Water scarcity and livelihood insecurity, including health problems caused by the lack of potable water, have in turn led to the forced displacement and migration of thousands of families from their homes.

Moreover, tensions and conflicts over water access have increased and existing sources of tension – issues tied to political exclusion and inadequate governance – have been exacerbated by climate change's knock-on effects. Tensions and conflict over water increasingly occur among farmers as well as between farmers and governmental authorities over water access and rationing. Tensions are also rising between provincial authorities and communities over water management, with downstream authorities and communities accusing upstream authorities of either turning a blind eye to water use restrictions or tacitly accepting illegal water access and riverway diversion due to political pressures and considerations.[23] Other conflicts are breaking out between landowners and livestock owners over illegal grazing practices as well as between farmers, herders, and livestock owners who migrate into urban areas in search of

17 NRC: Water crisis and drought threaten more than 12 million in Syria and Iraq. August 2021. Link: https://www.nrc.no/news/2021/august/water-crisis-iraq-syria.

18 NRC: One in two families in drought-affected Iraq need food assistance. December 2021. Link: https://www.nrc.no/news/2021/december/one-in-two-families-in-drought-affected-iraq-need-food-assistance.

19 World Bank: World Bank Open Data, 2021. Link: https://data.worldbank.org/.

20 Skelton, Mac: Competing Over the Tigris: The Politics of Water Governance in Iraq. IRIS, 2018.

21 Binder, L., et al. 2022. Climate Risk Profile: Iraq. Potsdam Institute for Climate Impact Research, adelphi.

22 Kawa Hassan and Camilla Born: Iraq Climate-related security risk assessment. Expert Working Group on Climate-related Security Risks. August 2018.

23 Skelton, Mac: Competing Over the Tigris: The Politics of Water Governance in Iraq. IRIS, 2018; Adelphi: Climate Risk Profile Iraq, 2022.

new employment opportunities and residents of those urban areas over competition for jobs, public services and scarce resources.[24]

Response by governmental authorities to the climate change crisis

While acknowledging the effects of climate change on Iraq, the response by the Iraqi government to the climate crisis and its knock-on effects has been mixed. Climate change efforts and policies are about to be integrated into the security sector planning thereby also acknowledging the links between climate change and conflict.

On the one hand, the government has produced or is in the process of producing key strategies that aim to stymie the impact of climate change on various sectors. These include a national decarbonisation plan to decarbonise the country's economy, which is heavily reliant on the oil and gas sector. The government also developed a strategy on water resources and land management, aptly called the Strategy for Land and Water Resources of Iraq, which attempts, among other things, to restore and reconstitute the country's irrigation infrastructure and incentivise better management and use of water and land. Furthermore, governmental responses include the yet-to-be released National Adaptation Plan (NAP), which is being developed in cooperation with the United Nations Environmental Program, and focuses on enhancing the capacity of governmental actors to respond to climate change risks, identifying areas to prioritise in terms of resource mobilisation and raising awareness of the strategy for all relevant stakeholders.[25]

Through the NAP two key institutions were also created to help tackle the climate crisis, the Permanent National Committee on Climate Change and the National Climate Change Center. The NAP is being complemented by the development of a more operationally focused strategy, called the Green Paper. This strategy is currently being worked on by a special committee established by the government and aims to identify, assess, and implement actions and projects that can alleviate the impact of climate change and help transition the country to zero-net emissions.[26] Though not finalised, parts of this strategy have been highlighted in recent public speeches by governmental actors, such as a massive reforestation initiative that seeks to plant 5 million trees across the country.[27]

Key ministries have also tried to allay the negative effect climate change is having on water and agriculture. The Ministry of Water Resources, which is responsible for water management in the country, has also moved forward with a series of actions meant to help mitigate water scarcity caused by climate change. First, it supported the digging of over 500 wells across the country, to be to irrigate farmlands and provide access to potable water for families.[28] At the same time, the Ministry has tried to combat the illegal drilling of wells, something that has depleted ground water levels, created tensions among and between communities, and led to general environmental degradation.[29] In an attempt to halt over-usage, the Ministry has also put in place new limits and restrictions on river water flow. Lastly, the Ministry has, among other things,

24 IOM: Migration, Environment and Climate Change in Iraq, 2022. Link: https://environmentalmigration.iom.int/sites/g/files/tmzbdl1411/files/documents/Migration%2C%20Environment%20and%20Climate%20Change%20in%20Iraq.pdf.

25 For more on the NAP, see Green Climate and UNEP. Link: https://www.greenclimate.fund/document/adaptation-planning-support-iraq-through-unep; and https://www.unep.org/news-and-stories/press-release/iraq-launches-national-adaptation-plan-process-climate-change.

26 The National News: Iraq lays out plans to tackle climate change and address water supply problems. March 2022. Link: https://www.thenationalnews.com/mena/iraq/2022/03/07/iraq-lays-out-plans-to-tackle-climate-change-and-address-water-supply-problems/.

27 AP News: Iraqi PM promises action to tackle crippling climate change. March 2023. Link: https://apnews.com/article/iraq-basra-climate-change-a110e41a9f1c70b61ab5fa363992a624.

28 Kurdistan 24: Iraq digs 500 wells to combat water scarcity. July 2022. Link: https://www.kurdistan24.net/en/story/28967-Iraq-digs-500-wells-to-combat-water-scarcity.

29 France 24: For water-stressed Iraq, wells threaten race to the bottom. October 2022. Link: https://www.france24.com/en/live-news/20221030-for-water-stressed-iraq-wells-threaten-race-to-the-bottom.

moved forward with a project supported by the Food and Agricultural Organization of the UN (FAO) that aims to increase the capacity of ministerial and sub-national authorities to monitor and improve water and land productivity in agriculture.[30]

The Ministry of Agriculture has also tried to enforce restrictions on water usage among farmers, which falls within its remit, and had also reduced the annual areas for cultivation in 2022 by half due to water scarcity.[31] It has also attempted to encourage farmers to adopt modern irrigation practices to limit water wastage, an effort that has had varying degrees of success due to the fact that many areas do not have access to non-rain-fed irrigation infrastructure in addition to the high costs associated with implementing new irrigation techniques.

On the other hand, however, these efforts have been undermined by financial constraints, weak institutions, and ineffective governance caused by years of conflict, corruption within administrative systems, poor planning and budgeting processes, and deficiencies in governance expertise.[32] They have also been weakened by disputes and tensions between federal and provincial authorities. The water usage directives issued by the Ministry of Water Resources, for example, have been ignored by some governors and other sub-national authorities who are not keen on respecting the new ceilings imposed by the ministry.

Despite these challenges, the government of Prime Minister Mohammed Al-Sudani has made tackling the effects of climate change a key policy priority, as evidenced by a two-day conference in 2023 on the issue and plans to hold a regional conference aimed at engendering regional cooperation on the issue. In early 2023, Iraq was also the first country in the region to join the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (known as the UN Water Convention). Due to the enormous stress on its decreasing water sources, Iraq increasingly depends on sustainable management and cooperation with its neighbours around transboundary rivers and water supplies.[33] "The Tigris and Euphrates Rivers Basins are the most important sources of surface water for some 237 million people across Iraq (43.5 million), Iran (88 million), Syria (21 million), and Turkey (85 million)." The UN statement clarifies, "competing needs of water for irrigation, drinking water supply, industry, hydropower production and the environment, combined with diminishing water quantity and deteriorating water quality, pose difficult management challenges."[34]

30 FAO, Govt. Iraq, Govt. Netherlands: New agreement between Ministry of Water Resources and FAO introduces innovative tools to monitor water productivity in Iraq. August 2022. Link: https://reliefweb.int/report/iraq/new-agreement-between-ministry-water-resources-and-fao-introduces-innovative-tools-monitor-water-productivity-iraq-enar.

31 Skelton, Mac: Competing Over the Tigris: The Politics of Water Governance in Iraq. IRIS, 2018.

32 For more on these constraints, see World Bank: Country, Climate, Development Report: Iraq, 2022.

33 UN Iraq: Press Release, March 2023. Link: https://iraq.un.org/en/224896-iraq%E2%80%99s-accession-un-water-convention-opens-new-opportunities-strengthen-transboundary-water.

34 UN Iraq: Press Release, March 2023. Link: https://iraq.un.org/en/224896-iraq%E2%80%99s-accession-un-water-convention-opens-new-opportunities-strengthen-transboundary-water.

4 Cross-cutting and district findings on climate and conflict

This section proceeds by first looking at the cross-cutting findings emerging from the district findings. It then takes a closer look at each of the districts covered in this report and discusses their background, including existing conflict drivers, climate security risk pathways findings, and the key actors and programmatic and policy responses identified.[35]

4.1 Cross-cutting findings

Climate change has magnified existing conflict drivers and created tensions around new issues. In the districts under review, there is already a prevailing sense among some communities that services and institutions favour certain groups over others, a grievance only amplified by climate change's impact. In some cases, such as the Afak district, the inequity is de facto in nature. According to the interviewees there, urban areas are better resourced than rural areas with access to water mains and pipes provided by the government. In some instances, like in Chamchamal, the sense of marginalisation is attributed to political motivations. The district aligns with an opposing political party compared to the dominant party believed to have control over the budgetary process of the KRG. Consequently, the district faces a shortage of financial resources to address governance difficulties which does not allow for any response to climate security risks. Indeed, agitation over insufficient budget allocation is a cross-cutting theme as many district authorities feel the federal government – or in the instance of Chamchamal, the Kurdistan Regional Government, – is failing to allocate the essential resources required to address the underlying problems that contribute to inadequate governance and service delivery. Overall, the lack of effective response by government and authorities to governance challenges made worse by climate change has only fostered further misgivings among the public towards state institutions and actors.

The effects of climate change have also spurred and aggravated proximate drivers of tensions. New immediate drivers have appeared in the form of water and land conflicts. The former includes disagreements over the diversion of waterways, the digging of wells to access underground aquifers, and general mismanagement of water resources. Such conflicts were found by this study to occur to varying degrees in six of the nine districts, with lower-intensity water-access conflicts reported in Hawija, Kifri and Afak, and higher-intensity water-access conflicts in Chamchamal, Eastern Hamza and Kalar. In the districts where no major conflicts over water access were reported (Baiji, Shatt Al-Arab, and Al-Zubair), water scarcity was still seen as a source of tension and distrust between communities and governmental actors, a sentiment, in fact, shared in all of the districts covered in the report.

35 Please note that the district findings presented are abridged versions taken from more in-depth district reports which can be made available on request.

"There are disputes over irrigation for orchards, where water from the spring is used. Similarly, there are areas where some excessively use water from the spring, which prevents it from reaching other areas."

(Participant in focus group discussion, September 2022, Northern Iraq.)

Land conflicts have also emerged with the effects of climate change being a key conflict factor. These are most prominent in Chamchamal, Kalar, Kifri and Al-Zubair. The most common entail disputes between pastoral landowners and herders in which the latter illegally encroach on the former's land in order to feed their flocks. This situation has become all too frequent due to diminishing public foliage as drought and desertification have caused lands to become arid and barren, leaving herders very few alternatives to sustain the well-being of their animals. The fact that many farmers, livestock owners and herders have had to sell their possessions and abandon their profession due to the impact of climate change has also increased tensions in the districts covered. The reason for this is that these groups have migrated into more urban areas to seek new employment opportunities, which has not only created competition for jobs with local residents but also put pressure on already strained public services in these areas.

Climate change's impact is also intensifying tribal divisions. Tribal identity and dynamics are prominent features of social life in the majority of districts covered and tensions between tribes have become exacerbated as the climate crisis causes a scramble for vital finite resources. Put differently, tribal identity becomes activated and pronounced in times of crisis, as members of the tribe seek collective support from their cohorts. As individual land and water disputes have become a common feature due to the climate crisis, these conflicts risk moving from the individual to the tribal level, threatening to undermine the stability of some districts.

Livelihoods in each of the districts have been profoundly impacted in various ways. Climate change has caused three major livelihood consequences in the districts covered by this report. Firstly, agricultural communities, which constitute a major economic group in most of districts focused on, have seen a sharp reduction in crop yields and, consequently, income. This has pushed farmers, livestock owners, and herders to abandon their long-standing professions and migrate in search of work opportunities in more urban areas. As a result, additional pressure is being applied to already faltering local governmental institutions and economic markets in urban areas.

"The lower levels of the river, which is the main water source in the district, has caused the migration of many farmers, fishers and animal herders, who are not able to keep their crops and animals alive."

(Participant in key informant interview, September 2022, Northern Iraq.)

Secondly, and related to the first issue, lower crop yields have meant supply is short of public demand, causing the prices of key food staples to increase in the districts.[36] This has impacted the purchasing power and ability to save of all residents in the districts but especially those most vulnerable to the impact of climate change, i.e. those dependent on the agricultural sector for their survival, which tend to be rural communities. Thirdly, the health of residents is being put in jeopardy due to climate change and environmental degradation. This is particularly acute in the Baiji district which has an active oil sector. In general, water sources have become increasingly polluted in the districts and the price of potable water has reportedly increased,

36 World Food Programme: Iraq Market Monitor Report, No. 32, April 2022. Link: o https://iraq.un.org/sites/default/files/2022-06/Iraq%20Market%20Monitor%20Report%20Issue32-%20Apr2022-Final.pdf.

leaving poorer residents unable to access clean affordable water. As a result, many have resorted to using contaminated water, which has caused health problems to rise. These livelihood insecurities have widened the gap between residents and state institutions, as the former continue to lose trust in the government's ability to respond to their most pressing needs.

While this trend has been reported in other studies and in some interviews,[37] the research findings from the districts covered did not show livelihood insecurity causing a major increase in recruitment into the security forces in the majority of the districts covered. Of the nine districts, this was apparent as an issue in only three districts, Baiji, Hawija and Kifri. Yet even in these locations, the dynamic varied, with Kifri the only district identified where climate change was causing former farmers to seek and gain employment with official security forces, contributing to the securitisation of the district, something that is already high due to its disputed nature. In Baiji and Hawija, direct recruitment into formal security forces was not reported though some interviewees and focus groups mentioned that the risk of this occurring is high should the effects of climate change not be addressed. In Hawija, this risk and concern also pertains to recruitment into violent extremist groups. Essentially, the fear is that the longer the inimical effects of climate change and environmental degradation are left unattended, the more communities become vulnerable to both the allure of employment within formal security groups and narratives of support from extremist groups, and criminal organisations.

Several key actors in the districts are identified as being vital to allaying tensions caused and exacerbated by climate change. These include tribal leaders, governmental authorities – local, provincial and national – security actors, international organisations, such as the United Nations Development Program, and national non-governmental organisations. Though the exact roles played by these actors vary in each of the districts, one key trend has emerged: governmental actor responses to challenges and crises caused by climate change are perceived to be woefully lacking and insufficient. This is due to both a lack of resources – as mentioned, district budgets are perceived to be inadequate halt the impact of climate challenges— and capacity limitations. As far as the latter is concerned, governmental authorities active in the districts, particularly those on the front lines of issues, including the qa'em makam (district commissioner), sub-district directors, the Ministry of Agriculture, which has sub-committees in some districts with the remit of allaying land and resource conflicts, and the Directorate of Deforestation and Directorate of Water (tied to the Ministry of Water Resources), are perceived to be lacking an integrated strategy to tackle the issues caused and exacerbated by climate change.

That is to say, the response by district authorities is driven by a haphazard approach that has already been undermined by capacity and resource limitations, and which today is no longer applicable to the climate crises facing the country. This has meant that there is no long-term strategic and sustainable response to alleviating the challenges and conflicts caused by climate change. Though some strategies are taking shape at the national level, it is unclear how and whether these efforts will be translated into concrete action at the sub-national level; the field work conducted during this study indicates that national efforts were not on the radar of district officials, though water flow and use restrictions set by the Ministry of Water Resources were being felt in the districts looked at. Further to this, residents in various districts noted that existing regulations are being violated without government officials taking any punitive or enforcement measures. Farmers often ignore the directives unless told to abide by them by their tribal leader and governmental enforcement capacities are often weak in more rural areas, where violations are most likely to occur.

37 SIPRI, NUPI: Climate, Peace and Security Fact Sheet. Iraq. April 2022. Link: https://www.sipri.org/sites/default/files/2023-10/22_fs_iraq.pdf.

When conflict arises, the key actors identified respond in three different ways. In some districts, tribal leaders take the lead in resolving the dispute through customary tribal practices, without including other stakeholders. In other districts, tribal leaders are joined by district governmental authorities, specifically the district commissioner and the sub-district directors, to mitigate tensions. In others, justice and security actors play a more prominent role and are at the forefront of conflict mediation, especially when other attempts by tribal or district governmental authorities fail.

Climate risk factors exacerbate existing power asymmetries and affect women in particular. In general, the effects of climate change are not gender-neutral, as they often affect women and men differently due to existing gender inequalities and power imbalances. Women are particularly vulnerable to the impacts of climate change in various contexts, as gender roles and inequalities can influence resource access and the mobility required to adapt to its effects. At the same time, violent conflict can exacerbate gender inequalities and affects women and men differently. The overlap between climate change and conflict produces many different vulnerabilities that need to be analysed gender-specifically in order to identify adequate policy strategies and responses.[38]

Among various challenges, women in the Basra governorate have been reporting that, following climate-induced displacements, they faced security risks due to an upsurge in harassment and the absence of adequate security provisions and protective measures in IDP neighbourhoods. There is further evidence of the impact of climate change as women in Kalar have reported a correlation between drought and the subsequent surge in prices for essential commodities such as food and craft materials. This situation has particularly affected women who rely on selling their crafts as a means of livelihood. Due to the escalated costs of materials, they are unable to sell their products on the market.

"Me and other women used to craft accessories and sold them on the market. Now, we are unable to sell them because of the high prices of the imported materials we use."

(Participant in focus group discussion, September 2022, Northern Iraq.)

Consequently, the compounding effects of climate change, including extreme fluctuations in food prices and overall food insecurity, further exacerbate the challenges and security concerns faced by women. The loss of livelihoods and food insecurity in Afak exacerbated by climate change are intensifying the financial strain on women. Their ability to provide a stable and secure environment for their families, including ensuring access to education for their children, is often severely hampered. Thus, the interconnected impacts of climate change on livelihoods reverberate through multiple dimensions, deepening food and livelihood insecurity among vulnerable populations such as women.

In Iraq, women are significantly less represented in influential political or decision-making positions and, especially in rural areas, women's perspectives and voices are frequently absent. Moreover, in areas formerly occupied by ISIS, such as in Baiji and Hawija, women have indicated that despite their support in the fight against ISIS, women's spaces have shrunk, their active participation in the society has been set back, and their marginalisation increased. Acknowledging the difficulties of achieving the substantive and sustainable inclusion of women, it is important to include women when peaceful solutions for conflicts and climate security risks are being sought. Not only, because women are disproportionately affected by the impacts of climate change, but also because it is extremely important to take the perspectives of marginalised groups into consideration in order to ensure sustainable, balanced and fair agreements and

38 Zeinab Shuker: The Gender Dimensions of the Climate Crisis in Iraq. Link: https://1001iraqithoughts.com/2023/05/21/the-gender-dimensions-of-the-climate-crisis-in-iraq/.

solutions. In Al-Zubair, Kifri and Hawija and other areas, women have demonstrated that they have an active role in preventing violence and contribute to peaceful coexistence and more social cohesion. This is realised through female-led projects which cross conflict lines between e.g. host communities and IDP communities or between different tribes or by organising art workshops against violent extremism. While women sometimes focused on their role as mothers and housewives, they also emphasised their role and duty to teach morals and principles thereby promoting dialogue-based conflict solutions and non-violence. Women's empowerment and their inclusion and participation in decision-making processes also contribute to conflict-sensitive climate resilience and climate adaptation.

4.2 District findings

4.2.1 Afak district (Al-Qadisiyah governorate)

District profile and background

Located in Iraq's southern province of Al-Qadisiyah, Afak district is home to over 100,000 residents. Tribal affiliation is strong in the district, with some of the leading tribes being Al-Sheebah, Al-Hamza, Al-Makhadhrah, Al-Hizamat, Al-Hasan, Al-Jbour and Al-Abeed. The district intersects with the Afak river, which is linked to the Euphrates. Its economy is largely agrarian, with most of the district's population depending on the agricultural sector for their livelihood needs. Farming, especially the raising of water buffalos, and fishing, which is dominated by members of the Al-Makhadhrah tribe as a profession, are also key economic contributors. The district saw an influx of IDPs from Baghdad, Mosul, Ramadi, Tal Afar, and Hilla between 2014 and 2019 due to the conflict with ISIS. Today, the majority of these IDPs have left, though a small number remain as they have found jobs in the agricultural sector.

Given its reliance on agriculture, livestock, and fisheries, climate change has significantly impacted the district as drought and desertification have become the norm. This has increased competition over water access, which is reported to be a prime driver of conflict. Due to the tribal structure of society in the district, tensions between individuals have, at times, affected relations between broader tribal collectives. Tensions have also been magnified by weak governmental institutions and perceived governmental ineffectiveness with basic services such as water, sewage, roads and electricity being provided on an intermittent basis at best or completely lacking in certain areas. According to the interviews, the rural areas of the district, which are considered the poorest, are also regarded as the most vulnerable to the climate crisis.

Climate security pathways

Natural resources. The impact of climate change in the form of drought and desertification has affected the availability of and access to water and led to the degradation of the fertile lands used for both farming and livestock herding. Most farming lands are owned by the government and are leased to farmers for a specific duration of time. The lease comes with certain rights and obligations with regards to water aquifers and water provided through government pipelines; yet the drought has essentially negated these provisions. Residents reported that the impact of climate change started to be most acutely felt two years ago. Prior to this, the district is said to have had an abundance of water resources – riverbeds were filled and underground aquifers were available as well. The last two years, however, have seen a significant decrease in the amount of rainfall, leading to depleted resources and heightened competition and disputes over water access, especially among farmers and herders and among tribal members. For example, disputes have occurred among the Al-Makhadrah tribe and between Al-Shiba, Al-Hizamat and Al-Jbour tribes due to lack of water.

While a general problem, challenges with access to and availability of water are more pronounced in areas far from the urban, administrative centre of the district. For example, those in the Bdair sub-district, which is far from administrative centre of the district, receive little water during the summer

season, while the sub-district of Somar, which is close to the administrative centre, receives a great deal of water. The reason for this is that there are very few arrangements in place to manage the regulation of the water accessed through the main government pipelines that supply the district as well as the disruption to this supply. As a result, those closer to the origins of the pipelines in the administrative centre receive more by default, leaving those further away with little to use. Similarly, some areas in the district have been more affected by drought than others. For example, the area where the Al-Hamza tribe resides has been more impacted by drier weather than the area where tribal members from Al-Sheebah are located as the latter has more wells which have helped compensate for the rainfall shortage. Unequal access to water has in turn increased feelings of neglect among those receiving less water.

While water-related tensions have increased and occasional disputes have arisen, they are mostly regarded as minor for now and not something that translates into violence. The reason for this is that most of the disputes occur within a tribe or between relatives living in the same area. Some also occur between tribes, such as over water extraction from aquifers between Al-Shiba, Al-Hizamat and Al-Jbour tribes. Though minor, these disputes still require the intervention of tribal leaders and governmental authorities (see Conclusion section below for more information on actors). In addition, concerns were expressed that the rise in frequency of such disputes might indicate more intensified conflict in the future if the main drivers are not addressed.

Livelihood insecurity. Lands for grazing, herding, and farming have been rendered barren and unusable due to the ongoing drought. This has been most severe for animal herders. In addition, those who make their livelihoods through fishing have also been hit hard due to river waters receding considerably. As a result, many have sold or abandoned their lands and migrated to urban areas seeking employment in other sectors. The tribes most impacted by this are Al-Sheebah, Al-Hizamat, Al-Hamza, Al-Obaid and Al-Makhadhrah. Additional problems related to the lack of access to potable water have pushed families to seek water from polluted sources, leading to an increase in health problems. Most people left the district because they could not get water for their lands or animals. They sought refuge in neighbouring areas close to the water or city after selling all their lands and animals. Most of the people from the Al-Makhadhrah tribes and Al-Sheebah tribes left due to drought and lack of water. Those who stayed were trying to adapt to the drought and lack of rain, but their lives were affected, and they lost all their means of maintaining a livelihood.

Food insecurity. An additional consequence of climate change is related to food security, which was already seen as a key issue prior to the onset of drought conditions. This was mainly due to the lack of milk collection centres and creameries in the district, which reportedly caused food prices to increase, something that has disproportionately impacted low-income families and individuals. This issue has only been further exacerbated by the decline in water releases, water levels, and rainfall in recent years. This has had a clear impact on farmers, shepherds, and fishers, many of whom are from the Al-Makhadhrah tribe. The community and tribes living along the river and dependent on agriculture have been particularly affected as well.

More specifically, the drought made it more difficult to produce crop yields: on average one acre of farmland produced 1,000 kilograms of crops this year, which is a decrease from the 2,000 kilograms of crops last year. The decrease in crop production has led to an increase in the price of crops. For example, one ton of wheat was reportedly priced around USD $170 prior to the onset of climate change's negative impact. Today, the same amount is reportedly worth north of USD $850. Lower crop yields have coincided with a fluctuating Iraqi dinar exchange rate that has increased the general cost of living for all in the district.[39]

39 World Economic Forum: Climate change-related losses are driving the migration of farmers in Iraq, April 2022. Link: https://www.weforum.org/agenda/2022/04/iraq-farmers-drought-and-heat-food-security-climate-change/.

Weak governance. Residents noted that local-level corruption and nepotism has significantly hindered the quality of services offered in response to, among other needs, the impacts of climate change and their accessibility in the district. Public sector jobs are also seen as distributed unfairly and decisions are made based on government officials' personal preferences. For the most part, interviewees saw the government's role is constrained, primarily limited to offering suggestions to the federal government, which frequently go unheeded. For example, the local government has failed to provide adequate compensation for farmers affected by drought or to find alternatives to the lack of water releases, such as supplying farmers with encouraging drip irrigation techniques, despite their promises. As a result, Afak residents have turned to tribal-led donation drives to help address immediate service gaps. Yet these efforts are not enough to cover the needs of the subdistrict and are far from sustainable. The worsening shortage of water in the district as a result of governmental neglect, which has been exacerbated by the Covid-19 pandemic, is particularly worrisome to local residents.

Key actors and programmatic and policy response

Tribal and sub-national governmental leaders, namely local authorities such as the district commissioner (qa'em makam), sub-district directors and security and justice actors, are the main actors to whom members from the community turn to in order to address governance and climate change challenges. The agricultural sub-committee, which is tied to the Ministry of Agriculture and tasked with addressing agriculture-related conflicts, is also active in the district and plays a key role in conflict mitigation. For example, a recent conflict within the Al-Hizamat tribe over access to a stream was brought to the committee to resolve, which it did successfully. The district commissioner has also played a key role in resolving water-related conflicts, such as those involving the Al-Hizamat, Al-Obaid and Al-Sheebah tribes. In general, however, tribal leaders are the ones who take immediate responsibility for resolving any dispute. In most cases, these disputes are resolved quickly. In more serious cases, local authorities – the district commissioner and agricultural sub-committee – play the leading role. Should efforts to resolve these disputes fail, security and justice actors then take the lead in finding a final resolution.

Despite these efforts, there is a general sense of frustration among residents towards governmental actors. This is because many feel that governmental actors do not take into account the true needs of the broader community but instead are either indifferent to the challenges or make decisions based on favouritism and/or external influence. This is particularly true when it comes to the district's famers, where the local farmer cooperative president has advocated solutions to help offset the impact of climate change on farmer livelihoods – such as compensation for damages brought upon by the drought and training and equipment for more modern irrigation techniques – only to be met with lack of government action and apathy.

4.2.2 Baiji district (Salah Al-Din governorate)

District profile and background

Baiji district is one of eight districts that comprise Salah Al-Din province. The district is located 200 km north of Baghdad and its population prior to the conflict with ISIS was estimated to be just over 170,000. The population of Baiji is comprised mainly of residents from the Sunni Arab community and tribal affiliation and dynamics are a paramount feature of society. The main neighbourhoods in the district include Al-Ta'meem, Al-Risalah, Al-Asri, Al-Nift, Al-Askari, Al-Sikka, and Al-Sina'aeiah. The main tribal groupings in the district are Al-Qaisi, Al-Azza, Al-Jbour, Al-Janabieen, Al-Okaidat and Al-Ta'eineen. The district's economy relies mainly on agriculture, which also includes growing plants for vegetable oil, oil production (a refinery is located in the district), a fertiliser factory, and electricity plants.

The district was occupied by ISIS between 2014 and 2017. The conflict with ISIS not only decimated the district's economy and infrastructure, but also displaced the majority of the district's population. Though most of these IDPs have returned, some

30 – 40% of residents remain displaced. The reasons for their displacement range from the lack of governmental compensation to rebuild their lives, to security concerns – it is reported that close to 25,000 people are wanted by the security services as a result of the conflict with ISIS – and poor essential service infrastructure. The return and reintegration of those families with perceived ISIS affiliation is generally supported by tribal leaders and district authorities and the process has already culminated in many of these families returning. In terms of security actors, the security apparatus in the district is dominated by the Popular Mobilisation Forces and the local police force.

The main conflict drivers in the district are related to feelings of marginalisation and exclusion, and competition over resources and power. Conflict often manifests in the form of tribal rivalries given the saliency of tribal dynamics in the district. In terms of marginalisation and exclusion, the Al-Qaisi tribe is seen by many to be the most powerful tribe in the district and, because of this, has been allowed to take up prominent positions in the district's security architecture, to the irritation of other tribes. Feelings of tribal marginalisation also stem from the fact that, though many tribes helped fight against ISIS, the victory over ISIS is mainly credited to the Al-Qaisi tribe. Many residents also feel neglected by the government due to the poor state of the district's public services and the lack of reconstruction and development following the conflict with ISIS.

Climate change is worsening all these conflict triggers as rising temperatures, drought, desertification, and dust storms have taken hold in the district. This will be explored in the next section in more detail.

Climate security pathways

Natural resources. Climate change has impacted the availability and quality of water in the district and has ruined once-fertile lands used for farming and animal herding. It is reported that the district is experiencing a shortage of water, both from decreased rainfall and the drying out of aquifers due to illegal extraction and destruction during the war with ISIS. As a result, farmers and those tied to the agricultural sector have struggled to rely on agriculture for their livelihood (see next section). These issues are most felt in the centre and west of the district, including in Al-Sineyah, Jazeeret Baiji and Al-Asreiiah areas. As a result, there is a feeling that access to water is not equitable across the district, increasing an already existing grievance tied to marginalisation and neglect.

Tensions around the issue are particularly noted in Al-Sineyah between residents and governmental authorities. The area is far from the river that provides the majority of water for the district. Because of this, water pumps are needed to push water from the river to the area. However, residents complain that the government used poorly maintained water pumps to do this, resulting in erratic availability of water. This in turn has added to the tensions and lack of confidence among residents toward governmental actors, something that is already high due to other unfulfilled promises made by governmental actors.

Livelihood and food insecurity. Climate change and environmental degradation has caused livelihood insecurity on several fronts. Firstly, water scarcity has meant the depletion of fertile lands used by farmers and herders. This has led to the farmers and animal herders selling their lands and seeking employment in the public sector or taking up new business ventures in trade which has increased competition over employment and trade opportunities. Secondly, commodity prices have increased as a result of lower crop production and the scarcity of water. For example, the price of wheat has nearly tripled in the last two years due to the lower crop yields. Increased prices have hit livestock owners especially hard as they are unable to afford key products, such as proper feed, and have had to turn to cheap, unhealthy options to keep their animals fed.[40] Thirdly, climate change, combined with increasing levels of pollution, is impacting the health of those living in the district.

40 One interview mentioned that expired instant noodles had been used as a cheap alternative for feeding animals.

This manifests in the form of waste being burned and dumped in the river, and fumes emitted by the oil refinery, thereby having a negative impact on the quality of air and water in the district. This has reportedly led to an increase in health problems, such as cancer, among residents, especially in areas near the refinery, like Al-Boua Jawri and Al-Hinshi, raising concerns about the lack of accountability and responsibility on the part of the government and those running the refinery. In addition, pollution from burning waste is reported to be a general problem in the neighbourhoods of Al-Asmeda, Al-Kahraba, and Al-Hraijeiah.

Given these circumstances, the community has raised various grievances against local authorities due to unaddressed climate change impacting the decline of service provisions, worsening environmental conditions, and increased incidence of disease in the district. Nevertheless, individuals interviewed from the district perceived a deliberate neglect by the government regarding the adverse consequences of climate change on the local population's means of subsistence. The government has been deemed inadequate in furnishing the required assistance, resources, and viable alternatives to ensure the continuity of their livelihoods.

Recruitment by armed groups. While there was no direct link found by the study tying climate change effects to an increase in armed group recruitment, the current situation is characterised by a lack of educational and health services, livelihood and employment opportunities – something compounded by the loss of jobs in the agricultural sector. Accordingly, some interviewees expressed concern that those losing their jobs might increasingly seek employment with security actors.

Climate-induced disasters. The study has highlighted that Baiji is reported to be experiencing extreme desertification. This is attributed to climate change and the recent conflict with ISIS: during the conflict, governmental actors, particularly the Ministry of Agriculture and other organisations were reluctant to work in some parts of the district experiencing desertification. Had they done so, these efforts would have helped stem the desertification tide. Yet in their absence, the process has been allowed to continue unabated with reported sand dune encroachment into farmland, urban areas, and roads. The sand dunes are reported to be moving quickly toward areas where industrial facilities are located. The areas most affected by the sand dunes are the Baiji area and its extensions into the Tharthar Valley, the southwest of Baiji to Sukaria, and the Albaajj area in the northwest. These areas witnessed desertified land of 677,540 acres which represents 55% of desertified land in the province. Many villagers from these areas migrated to the city as a result of drought and lack of drinking water sources in the southwestern region (Haditha-Baiji road) and northwestern region (Seniya-Sukaria way), with an estimated 8,000 displaced persons because of the desertification and lack of water.

Key actors and programmatic and policy response

The key actors identified to help allay the challenges associated with climate change and its impact on the district's conflict dynamics are tribal leaders, the qa'em makam (district commissioner), and other governmental authorities, including the Ministry of Agriculture's sub-committee on agricultural affairs and Directorate on Deforestation, security actors, and the Popular Mobilisation Forces. There is also a tribal committee at the provincial level chaired by the governor that works on mitigating conflict throughout the province. In general, the response of these actors is not based on a climate change response strategy or one that integrates climate change into actions to resolve conflicts.

Efforts to respond to the effects of climate change are hampered by weak institutions and inadequate governance infrastructure. Case in point: the water network in the district is in desperate need of an upgrade as it was built to provide water to a smaller population than exists in the district today. As such, water scarcity issues are aggravated by faulty infrastructure. There is a general view that governmental actors and institutions are incapable of solving governance challenges, which in turn has created a trust and legitimacy gap between citizens and state institutions in the district.

4.2.3 Chamchamal district (Sulaymaniyah governorate)

District profile and background

Chamchamal district is located in the Sulaymaniyah province and is comprised of nine sub-districts in which 414 villages are located. Its population is estimated to be around 200,000, with its residents mainly from the Kurdish community. Tribal identity is a key marker of social relations. The district is also home to IDPs from Anbar, which migrated prior to the conflict with ISIS, and IDPs from Kirkuk who settled in the district in 2014 in order to escape the extremist group. Parts of the district were formally under the purview of Kirkuk province but were transferred from Kirkuk to Sulaymaniyah as part of the Baathist regime's attempt to change the demographic composition of Kirkuk province. Today, the district is considered a disputed territory. Because of this, Chamchamal, along with Kifri and Kalar districts, which are also disputed, is governed by an administration under the purview of the KRG called the Garmian administration.

The district is flush with fertile agricultural land, with around one million dunams (each dunam is 1,000 square meters) deemed suitable for farming and other agricultural activities. Contestation over control of the land – and natural resources such as water – is a prominent and long-standing driver of conflict in the district. This takes the form of inheritance conflict and tensions related to farmland and water accessibility and usage. Climate change has enflamed these tensions and created new ones, particularly with regard to water access. This is because the district, like other parts of the country, has faced increased temperatures, drought, and desertification over the course of the last few years. These issues are explored more in the following Climate Pathways section.

Climate security pathways

Natural resources. Water resources, farmland and pastures have all been impacted by climate change. The ongoing drought has meant water resources are less available and accessible. It is reported that water runs into the district once every two weeks for residents to use and that the quality of water has decreased. At the same time, water scarcity has meant the farming and herding sectors are at risk of becoming impractical. Farmers and residents have attempted to respond to the shortage of water by investing in new irrigation practices, such as drip irrigation, and digging new wells to tap underground water. Yet these methods have proven to be expensive and unsustainable. Indeed, it was reported that around 1,600 farms are at risk of abandonment due to the inability to access reliable, cost efficient irrigation sources. Herders have also seen pastoral land shrink in the district (these lands have shrunk by 10%), causing them to either encroach on private lands, thus sparking tensions with the landowners, migrate to other towns, or sell their herds and seek new employment opportunities elsewhere.

In addition to the aforementioned disputes and tensions between herders and landowners, conflicts have erupted over water access. For example, there have been two incidents recently involving newly dug water wells being attacked and destroyed because they risked destabilising existing ground water reserves for the neighbouring farmland. Moreover, water-related tensions have only compounded the intensity of historic disputes related to property ownership in the district.

While the district suffers from a lack of water, there is also a problem of flooding in valleys. This has led to a large displacement of the affected people. They had to leave the area permanently as it was not possible to live there anymore, and the government did not put disaster risk management measures in place that would allow people to return to the site safely.

Livelihood and food insecurity. Livelihood issues have been impacted by climate change's effect on the district. Many farmers and herders have resorted to selling or abandoning their lands and animals in order to meet basic needs. They have also been made to seek employment in government, local police forces (and occasionally armed groups or security forces), and at small commercial establishments. Young people previously employed

in the agricultural sector have had a harder time gaining stable employment, however, and rely mainly on unstable daily jobs. Commodity prices have also increased: from forage, to fertilisers, to water from private vendors, prices have all soared in the last two years due to the effects of climate change combined with other economic variables linked to inflation. These livelihood changes are reported by residents to have generally contributed to an increase in tensions and the frequency of violent disputes in the district.

Weak governance. Weak governance in the district has only magnified and worsened the effects of climate change due to limited response and adaptation capacities. The primary challenge in the service sector is the lack of budget allocation, resulting in the governing authorities not having enough resources to provide essential services or even fuel their vehicles. This unequal distribution of resources has led to frustration among residents in Chamchamal, who feel marginalised. This has weakened trust in the government, as promises to upgrade or enhance existing infrastructure are rarely met, adding to the residents' feelings of neglect.

Key actors and programmatic and policy response

The main actors identified to help allay tensions and governance issues are local governmental authorities and tribal leaders. While the local government officials are aware of the water scarcity issue and how it is inimically impacting the district, residents report that little is being done by these actors to address the problem. The district's budget from the KRG is regarded as drastically insufficient to address the governance and climate change challenges facing the district. They note that the district's current budget is only four million Iraqi dinars, while the district of Zakhu, which is of comparable size and a stronghold of KDP, received twenty million Iraqi dinars. As a result, district officials are unable to help offset the challenges posed by the impact of climate change on the district.

Disputes are usually resolved through negotiations and often end with one party giving in for material compensation. When such agreements occur, they are signed by both parties and witnessed by officers and relevant dignitaries. It is not clear whether and to what extent this unit is active and engaged in addressing matters covered in this report.

4.2.4 Eastern Hamza district (Al-Qadisiyah governorate)

District profile and background

The Eastern Hamza district is located in the province of Al-Qadisiyah, which is situated nearly 200 km south of Baghdad. The district is one of fourteen making up the province and has a population of over 260,000. The district is bisected by the Al-Hilla river, splitting the district into a northern half, the urban and administrative centre of the district and a southern half which is dominated by several rural villages and towns. The river is also the district's main source of water and a vital lifeline to its main economic sector, agriculture. It is estimated that nearly 65% of the district's population relies on agriculture, particularly farming, for their livelihood needs. Tribal dynamics and relations are a key factor shaping societal relations and levels of social cohesion.

Existing conflict drivers in the district include land disputes, competition over access to resources, especially water and grazing land, tribal feuds stemming from familial conflict and disputes, violence caused by a rise in drug use and trade, and tensions between residents and IDPs who are considered to have put a strain on existing resources and to have increased competition for employment opportunities. Grievances also exist around ineffective service provision from the government, something that is aggravated by the feeling that the district has been, and continues to be, purposely marginalised economically and politically. The state of water, sewage, and electricity infrastructure is particularly noted to be extremely poor and a prime source of frustration among the district's residents. As the Climate Pathways section below will detail, climate change

and environmental degradation has further fuelled these conflict drivers and grievances, particularly in relation to water access and management, land use, and livelihood issues, such as food insecurity, migration and displacement.

Climate security pathways

Natural resources. Climate change has impacted the availability of and access to water and led to the degradation of fertile lands. On the former, drought conditions have combined with water resource mismanagement to deplete water levels emanating from the river – the district's main water resource –thereby effectively making water access more restrictive throughout the district. Water inaccessibility can also be traced to the upstream dams built by the government, especially in the Hindiyah district, which is specifically blamed by some for decreasing the flow of water to the larger marsh area that includes the Eastern Al-Hamza district. This has also been exacerbated by rising temperatures and the lack of rainfall. Overall, the water shortage has caused a decrease in wheat farming as the crop needs to be watered every two weeks.

In response to the unavailability of river water, citizens have resorted to digging wells – with little governmental regulation – to seek out underground water resources. Before the drought, a well 1.5 meter deep was sufficient to reach underground water sources. A 2.5 meters deep is now required to achieve this according to residents interviewed for this study. Despite this, water salination levels are still high, rendering underground water unusable for the majority of crop production. Moreover, the digging of deeper wells has negatively impacted the district's overall environment, adding to environmental degradation and increasing pollution in the district. In addition, the decrease in rain has not only impacted access to water but it has also catalysed salinisation and desertification processes across the district. Pre-drought, water salinity measured an average of 10mg/l, a level which is still suitable for the irrigation of crops. With the ongoing drought, the level is now around 12mg/l, a level that is toxic to healthy yields. In addition, the desertification process has minimised the amount of land suitable for grazing.[41]

These challenges have sparked tensions among farmers competing for water access to irrigate their crops and among herders seeking grazing lands for their animals. The illegal diversion of canal and river water and competition over water resources is a key source of tension among farmers. Given the saliency of tribal dynamics and relations, these tensions often transform from the individual level to the tribal, raising the spectre of broader conflict. For example, a dispute over animal grazing, where private property border areas were being violated by herders, quickly became one between the Al-Shibil and Al-Khaza'il tribes. Villages in the southern half of the district areas are believed to be more prone to disputes arising from competition over water accessibility and land trespassing; the northern half of the district is seen as more urban and affluent and, therefore, to have the resources to find solutions to these climate-induced challenges.

Livelihood insecurity. Climate change – rising temperatures, drought, desertification, salinisation – is having an adverse effect on citizens' livelihoods in various ways. Firstly, crop production has decreased, which, combined with a devalued currency, has reportedly contributed to the rising cost of crops in the district. The increase in prices is worsened by the broader issue of the national currency being devalued, which has caused general inflation to occur. Secondly, many farmers, livestock herders and fishermen have lost their economic means of survival, which in turn has pushed families reliant on these sectors to migrate to more urban areas in search of employment opportunities. This is especially true for villagers located to the south of the river – especially those in Al-Shanafya, Al-Sideer, Al-Taboo and Al-Marsool – as these areas are considered to be poorer and more economically reliant on small-scale farming and fisheries.

41 Participant in key informant interview, August 2022, Southern Iraq.

No direct causal link. There has also been a rise in pollution and as a result health problem, such as asthma and skin diseases. While there is not a direct link between these health problems and climate change, the effects of a changing environment exacerbate these issues.[42] Health crises, including cholera outbreaks, are also being reported as a consequence of increased pressure on and less availability of clean, potable water sources.

Key actors and programmatic and policy response

Tribal and sub-national governmental leaders are viewed as critical actors in tackling climate change and its consequences in the district. Thus far, there does not seem to be any effort among these actors to directly address the roots of the issue. Instead, the response of these actors has been more peripheral, centred instead on resolving land and water disputes, as opposed to helping enhance water management issues or the lack of grazing areas. Some of these efforts are certainly recognised by the public and seen as a boon to overall governance in the district. For example, the Ministry of Justice has worked to enhance the judicial system in the province, with specific attention paid to underserved areas, such as the Eastern Hamza district, outside the provincial capital Diwaniya. This has meant that complaints filed by farmers are processed in a timely manner. In addition, the government has established a program that will subsidise the construction of irrigation systems to help farmers overcome some of the challenges brought about by water scarcity. It was noted that this scheme has helped some farmers in the district optimise water usage and minimise water waste.

Despite these efforts, there is no long-term strategy in place to address the issues and tensions being brought about and exacerbated by climate change. Some of this is inhibited by the federal budget amounts to the province: though the federal allotment for the province as a whole was doubled in 2021 from the previous year, district leaders believe the amount is still below the required levels to combat water scarcity and land issues and their knock-on effects.

4.2.5 Hawija district (Kirkuk governorate)

District profile and background

Hawija is one of four districts that comprise the province of Kirkuk, which is a territory disputed by the Federal Government of Iraq (GoI) and the Kurdistan Regional Government (KRG). The district includes several sub-district urban centres, including Al-Zab, Al-Abbasi, Al-Rashad, and Al-Riyadh. The administrative capital of the district is Hawija Center and the overall population of the district is estimated to be around 250,000, the vast majority of which identify as members of the Sunni Arab community. Tribal dynamics are salient in the district and structure both inter-community and state-society relations. Some of the leading tribes include Al-Jbour, Al-Obeid, Shammar, Al-Dulami, and Al-Hadidi.

The district's economy is dominated by the agricultural sector. Its flat lands and fertile soil, fed in some parts by the Zab river, have made the district the second leading producer of crops in the country, especially those of corn, cotton, wheat, and barley.

The district was taken over and ruled by the so-called Islamic State (ISIS) from 2015 – 2017. The conflict with ISIS left the district with thousands of internally displaced persons (IDPs) and public service infrastructure (water, roads, electricity, sewage) that was either partially or fully destroyed. These basic services have not been fully reestablished by the government. In fact, basic service delivery, already floundering, has been under considerably more strain due to the return of IDPs to their homes. In addition, the conflict with ISIS fractured social relations, leading to a spate of tribal and political conflicts over alleged support for the extremist group, and exacerbating the

42 WHO: Climate Change. Link: https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health.

competition over natural resources, and political and economic power that already existed in the district.

Another source of tension relates to the return of families with perceived ISIS affiliation. Many in the district are wary of their return, fearful that they may still have ties to extremist members despite the fact that these families, mainly comprised of women and children, have been cleared to return by the security services. Most of these families reside in Al-Riyadh sub-district, which is subject to heightened security measures, including restricting the movement of people and goods into and out of the sub-district. This in turn has increased feelings of neglect and marginalisation among these families.

The district, like other large swathes of the country, has been hit by a severe drought. On average, annual rainfall has reportedly fallen from 1500 mm to 225 mm. Consequently, the district's two main sources of water, rainfall captured in wells and the river Zab, have been negatively affected. As the Pathways section below will show, this in turn has had a broader impact on all facets of life in the district, from resource management, to livelihoods, and extreme weather events.

Add to this budget allocations from the federal government that are deemed to be insufficient by district administrators and community leaders, the local economy, which is largely dominated by the agricultural sector, has effectively come to a standstill. Recently, provincial governmental authorities, supported by the Ministry of Planning, approved a reconstruction and rehabilitation plan for the district which was meant to help the area recover from the conflict with ISIS.

Climate security pathways

Natural resources. Climate change has impacted availability of and access to water. Specifically, the drought has led to a shortfall of water access for communities in general and farmers and livestock herders in particular. The areas hit hardest by this include those rural areas already regarded as being detached and underserved in terms of water access, such the villages of Al-Mahmoudiah, Al-Khan, Al-Marzouq and Al-Btoush.

Farmers have attempted to respond to the water crisis in two ways. The first has been to dig more wells. This resulted in some initial success, but over time water table levels dropped, meaning deeper wells had to be dug. This proved costly and eventually futile as the water being captured had increasingly high levels of salination, making it unsuitable for drinking and unusable for watering crops. Secondly, farmers have tried to incorporate new irrigation methods into their practices, such as drip irrigation and sprinklers, in order to limit water waste. Yet these techniques have proven to be expensive to maintain, which in turn has increased the prices of locally grown crops. In addition, the drought has led to the desertification of once fertile land. Not only has this impacted private land used for farming but it has also had a pernicious impact on public lands, with greenery, shrubbery and hedging dying off or being consumed by herders at a depleting rate.

As a result of all these issues, many famers and livestock herders have sold their lands and moved to more urban areas looking for new livelihoods, putting pressure on these urban areas in terms of service delivery and increasing tensions between new arrivals and residents over employment opportunities. Adding to this pressure and tension is the presence of IDPs from other areas within Hawija who have also settled in more urban areas due to the conflict with ISIS.

Weak governance. The lack of fair access to water resources is further aggravated by the inadequate capacity of existing governmental institutions to manage these resources effectively. Many residents hold a general perception that the governmental actors responsible for water management are influenced by individuals with power and financial resources, leading to the favouritism of specific communities. This perception arises from the significant influence exerted by political groups over key state institutions, resulting in an unequal distribution of services that prioritises the well-being of political or tribal loyalists. Consequently, the prevailing sense of marginalisation and neglect among citizens has intensified, widening the gap between the state and its people. Some residents fear that continued government neglect or inaction – or the mere belief that this is happening – will make the larger community susceptible to extremist group recruitment and their narratives. This fear is especially prominent in Al-Riyadh sub-district, which still has remnants of ISIS active in its surrounding areas. There is also a view that governmental inaction to stop desertification processes will only make this area more of a recruiting ground for extremist activity.

Livelihood insecurity. As mentioned, drought and desertification have forced farmers and groups dependent on agriculture to sell or abandon their lands in search of economic opportunities in more urban areas within the district. This issue has two major consequences. Firstly, migration to the city has increased competition over access to jobs and public services between the migrants and the city population, which is another driver of tension between the two groups. Secondly, the Hawija district is already a place where IDPs from other districts or provinces had settled, and also a place where tensions between families with perceived ISIS affiliation and families victimised by ISIS still exist. The majority of those with perceived affiliation live in more rural and suburban areas; their migration to the urban centres is therefore undesirable, if not rejected in the first place. This dynamic is increasing the feeling of marginalisation and rejection by those with perceived affiliation and puts them in a difficult position: either stay in dire a situation in the village or migrate to the city where they are unwelcome. For those families who are victims and reside in rural areas, taking the decision to migrate to the city means they feel they are leaving their lands to those with perceived affiliation, and that this will increase the potential for ISIS fighters to re-engage their families in extremist activities. The effects of climate change are therefore exacerbating existing tensions between the groups.

Food insecurity. In addition, the fact that farmers are no longer producing goods at the same level as prior to the onset of drought conditions is increasing the price of crops in the district as supply has fallen short of consumer demand. This, combined with currency fluctuations, has raised frustration and disillusionment among the public with the rising cost of living that they are unable to meet.

Key actors and programmatic and policy response

There is a glaring absence of governmental initiatives aimed at directly tackling the lack of water access and availability. The rehabilitation and recovery plan of the provincial government backed by the Ministry of Planning ostensibly addresses the knock-on effects of climate insecurity, though the details of the plan are not available. Despite this, key actors in the district – tribal and civic leaders and sub-national governmental authorities – informally collaborate (that is, they do so not through a formal mechanism but via informal meetings and dialogue sessions) to provide solutions to governance and issues which create conflict, which include those related to climate change. However, as stated previously, these efforts are seen by many residents to be undermined by corruption within the government and the influence and favouritism of some leaders towards certain political groups and communities, meaning solutions are inherently partisan and not intended for the larger community.

The international community and NGOs have helped fill in some of the governance gaps left by governmental capacity constraints and inaction. For example, the UNDP supports the district by providing electricity generators and health centres, while the NGO Al-Amal Association has started a

campaign focused on forestry and tree-planting in various locations within the district. While these initiatives are deemed worthwhile, they do not necessarily target the direct and indirect consequences of climate change being felt in the district.

4.2.6 Kalar district (Sulaymaniyah governorate)

District profile and background

Formerly in the Kirkuk province, the Kalar district was added to the Sulaymaniyah governorate in 1975. The district, located on the west bank of the Sirwan river, is part of the Kurdistan Region of Iraq and falls under the direct governance of the Kurdistan Regional Government. The district is comprised of four sub-districts: Kalar Center, Karmak, Khalakan and Khidran. Its population is mainly comprised of members of the Kurdish community and is estimated to be around 171,000, the majority of whom reside in Kalar Center. Society in the district is structured around tribal affiliations, with the leading tribes being Gali, Jaff, Jamhour, Zangana, Baglan, Balani, Daoudi, Kiz, Zand, and Lak. Agriculture is a key economic activity of the district, with residents involved in farming and the raising of livestock. Drought and water scarcity are key challenges in the district. In addition to the Sirwan, two other rivers flow through the district, the Al-Wand and the Qourto, with all three rivers originating in Iran. Water scarcity in the district is exacerbated by the fact that Iran has dammed the Sirwan river, controlling how much water flows downstream to the district. Kalar is a disputed territory and is part of the Garmian region, which is an unofficial region comprised of the disputed districts of Kalar, Kifri and Chamchamal run by an administration under the purview of the KRG.

Causes of tension and conflict in the district involve ineffective governance characterised by improper practices and inadequate administration, as well as political marginalisation. District authorities are perceived by some to provide resources and services to some families, especially relatives and political partisans, over others – land disputes stemming from the Baathist regime's Arabisation campaign, which forcibly displaced hundreds of families, and, increasingly, water scarcity caused by drought and the effects of climate change.

Climate security pathways

Natural resources. Climate change has impacted the access and availability of water. Scarce rainfall has both depleted the water levels of the three rivers in the district and decreased underground water tables. As a result of water scarcity, farmers have clashed over access to water access rights on rivers and shares of water taken from wells. Grazing land has also been reduced as drought has made these lands much less fertile. This has also led to increased tensions between shepherds competing for grazing lands for their herds. Given the water access challenges and the impact on fertile land, many farmers and herders have migrated to urban areas in search of other work opportunities, putting more pressure on services in these areas and raising tensions between migrants and residents.

Livelihood insecurity. Climate change has impacted the livelihoods of residents in several ways. The most acute impact is on economic livelihoods as farmers and herders have had to abandon their professions and migrate into urban areas to seek new job opportunities. The lack of job opportunities in the agriculture sector has also reportedly led to some, particularly young people, turning to drugs as a means of coping, exacerbating their already difficult situation and potentially impacting their well-being. The rise in extreme temperatures has also led to an increased demand for electricity to power air conditioning during the sweltering summer months. This has increased air pollution in the district as many villages, such as Tankeh Wara, Qabri Mulla, Kani Zard, Bukeh, Ramzan Mamka and Ramzan Shesha, have had to rely solely on generators to power their homes due to the absence of state provided electricity. All this has led to a general increase in frustration levels among the community, increasing the disconnect between citizens and government, which is not seen as adequately providing services in the district.

Food insecurity. Drought conditions have also impacted crop yields and the availability of meat, with shortfalls in production leading to higher prices for key crops, such as wheat, barley, flour, and forage, as well as for meat. On the latter, this has given rise to a black market for meat production and selling, with smugglers credited with keeping the price of meat relatively affordable in the district despite its impact on the livestock sector. Livestock owners were also reportedly forced to buy fodder at high prices and have seen watering areas used in the past dry up.

Weak governance. The effects of climate change are putting severe strain on already stretched governmental capacities to provide services and respond to climate security risks. Take water provision as an example. There are issues with the distribution of drinking water as certain areas, particularly slums and new developments on the outskirts of Kalar, do not have access to a regular water supply, often because these areas are not regulated by the government, something made worse by drought conditions which have caused wells and river water levels to fall. In recent years, the government's budget crisis has also impacted supply of water, with water being cut off or not sufficiently chlorinated. Moreover, despite the commissioning of several new dams seven years ago, none of them have been built, something which, if completed, could have greatly improved water services in the district. In addition, the federal government is seen as eschewing its role of finding solutions to water management issues with Iran where many rivers for Kalar originate. In general, the government at district, regional and federal levels is not seen as effectively responding to governance constraints and the effects of climate change.

Key actors and programmatic and policy response

Governmental actors – the district commissioner, water and agricultural directorates, and those at the regional and provincial level – as well as political and tribal leaders are seen as the main actors with the ability to combat the tensions associated with the impact of climate change. The government appointed a committee comprised of actors from the district – as well those from Balouju, Khanaqein, and Kifri – to guard against and prevent water violations from occurring along the river, and have asked farmers to refrain from farming water-intensive crops such as sesame and rice. In addition, new dams have been commissioned to help regulate the flow of water into the district, though their construction has been slow to materialise due to budget constraints. Moreover, there are frequent interactions between community leaders and the district commissioner (qa'em makam) to discuss the issues causing tensions as well as possible solutions. Yet despite these efforts, frustration is high among residents and community leaders as these discussions have reportedly led to very few tangible results in the district.

4.2.7 Kifri district (Sulaymaniyah governorate)

District profile and background

Kifri district is located in Sulaymaniyah province and, along with Kalar and Chamchamal, comprises the Garmian region of Kurdistan. The district is just north of the Hamrin Mountain range and contains fertile agricultural land which stands in contrast to the desert conditions south of the mountain range. The district is composed of members of the Arab, Kurdish and Turkmen communities: Kifri centre is predominately Kurdish, with a small Turkmen population, and the southern sub-districts are mainly inhabited by Sunni Arab and, to a lesser extent, Shia Turkmen communities. The total population of the district is estimated to be 43,000. Agricultural activities, namely farming and the raising of livestock, along with public sector employment, especially in the security services, are key employment sectors. The district has a high security presence consisting of security forces such as the Peshmerga, Asayish, and federal anti-terrorism forces and the Popular Mobilisation Forces. While these forces have helped stabilise the region, they have also raised tensions between different communities in the district given the disputed status of the district (see below). In addition, while generally kept in check,

the movements of ISIS remnants in the area, who still control areas in Toz Khormato and Suleiman Bek, have sometimes made it difficult for farmers in the area to transport their crops and secure the necessary materials, such as gasoline.

Parts of the district, mainly in the south, are part of the disputed territories file, which has led to feelings of political marginalisation and neglect among the district's communities. For instance, in KRG and Kurdish majority areas, Sunni Arabs and Shia Turkmen residents feel politically marginalised and neglected; in the southern sub-districts, which are controlled by federally aligned forces, including Popular Mobilisation Forces' units, Kurds and Sunni Arabs feel excluded by these actors as they perceive them to favour the Shia Turkmen community and Sunni Arab supporters with regards to employment and economic opportunities.

Moreover, the disputed status of the district has caused governance administration to splinter: the qa'em makam (district commissioner) is tied and reports to the KRG while the sub-district mayors in the south report directly to the governor of Diyala province. Consequently, challenges related to the provision of public services and the creation of job opportunities have been negatively impacted, creating frustration and grievances among residents. Moreover, land disputes linked to the disputed nature of the district are a key source of tension between communities. As the following section will show, climate change's effects, higher temperatures, drought, desertification, water scarcity, and loss of livelihoods, is deepening and magnifying these issues in the district.

Climate security pathways

Natural resources. Decreased rainfall, rising temperatures, and the onset of drought conditions have created water scarcity issues and led to semi-arid conditions that have made lands barren and uncultivable. The lack of water is seen by residents as the most pressing challenge, one that could lead to an escalation of tensions if left unresolved. Some minor conflicts have already emerged over the digging of wells that violated regulations and over water access issues in general. Beyond household use and consumption, water scarcity has shocked the agricultural sector. Crop yields are lower than expected and require more investment to maintain without readily available water sources. As in other districts covered in this report, climate change has also impacted the availability of grazing lands for livestock herders, leading to increased competition among herders and tensions with landowners.

Livelihood insecurity. The impact of climate change on the district extends to livelihood issues. Decreased crop production and arid lands have caused many of those dependent on the agricultural sector to abandon their professions and migrate to other areas in search of employment opportunities. For example, it was noted by residents that, in Banket Shanthar, one of the largest towns in the district and populated by around 35 families dependent on the agricultural sector for their needs, the population of the town was reduced by half due to the ongoing drought conditions. Many residents of the village of Omarbalila, who are livestock herders, have also left their homes with their livestock and moved to Binjwien, Halabja or areas near the Iranian border, where grazing land is more readily available. The impact on the agricultural sector is reportedly leading to many formerly employed by the sector to join security forces in the district, which are alleged to pay good salaries.

The health and well-being of residents in the district is also being impacted due to climate change and environmental degradation. The behaviour, attitudes, and mental health of residents have changed due to sweltering summer temperatures, which cause people to stay home in order to stay cool. Young people are reported to be particularly impacted by this and it is seen as a cause of familial tensions and problems in general. In addition, what water is available in the district is polluted, leading to kidney and bladder problems as those without enough resources to buy water filters or clean water have no other option but to use contaminated water. These consequences have led to increased anger towards governmental authorities and leaders.

Food insecurity. Climate change has also impacted food prices in Kifri. The effects of climate change have caused a shortage of locally produced items, such as honey, fruits, vegetables and meat. The district has therefore become increasingly reliant on these goods being imported into the district, which, combined with fluctuations in currency value, have led to increased prices of food and essential goods. This has led to illegal smuggling of some livestock and some families traveling to nearby towns to purchase necessities at a lower cost. The price increases have exacerbated citizen frustration with the government.

Weak governance. The contested nature of the district has hindered attempts to move forward on the necessary solutions that would help resolve climate-induced tensions. This is because there is no central decision-making authority as parts of the district fall under the jurisdiction of the KRG while others are under the federal government via the governor of Diyala, with little sustained, coherent coordination between the two sides. There are two direct negative consequences of this. A dam that was commissioned to help address the water issue remains incomplete due to the dispute and budgetary matters; and a water reserve located in Sinkawa and Qaradagh areas that could potentially be used to bring more water into the district is being prevented from doing so as the reserve falls under the jurisdiction of the KRG. Essentially, the dual administration and lack of coordination has undermined efforts to improve overall governance in the district. As a result, residents of Kifri feel neglected and marginalised by both the Garmian administration, which is associated with the KRG and is perceived by many residents to favour the district of Kalar over Kifri, and by federally aligned actors which dominate the southern areas of the district.

Unintended policy consequences. There is a general feeling that if left unaddressed, the drought will ultimately lead to the complete abandonment of the district's villages. It was further reported that some people believe governmental actors are deliberately avoiding tackling the effects of climate change because Kifri contains oil deposits that the government wants to seize and explore.

Key actors and programmatic and policy response

The main actors in the district needed to tackle climate change and its impact on the communities in general and social cohesion in particular include the federal government, the Kurdistan Regional Government, tribal leaders, landowners, mukhtars (village mayors), the qa'em makam (district commissioner), sub-district directors, and security forces tied to the federal government. Some of these actors have responded to the issues linked to climate change. For example, a new dam was commissioned by both governments that would help provide more stable access to water resources and there are frequent meetings between community leaders and local government officials about their challenges and possible solutions. In addition, the Kifri municipality, in cooperation with the relevant forest authority, is reportedly planning to create a green belt around the district to mitigate the effects of dust and desertification. However, these efforts are seen as inadequate, as the government's inability to secure individual water shares for the district still presents a major challenge for many households.

4.2.8 Shatt Al-Arab district (Basra governorate)

District profile and background

Shatt Al-Arab is one of seven districts that comprise the Basra province. It is located at a point where the Euphrates and Tigris rivers converge, making it a main water artery for southern Iraq. In addition to the district centre, it comprises the following sub-districts: Al-Tannuma, Al-Fayha, Al-Neshwa and Al-Kebassi. The population is estimated to be around 289,000, with tribal identity a key marker of social and political relations. The leading tribes in the district include the Bani Tameem, Al-'Atab, Al-'Eidan, Bani Mancour, Obada , Al-Haffa, Shammar, and Bani Malek. Agricultural activities are prominent in the district, with farming, fishing, and herding practised in more rural areas. The district has seen an influx of internally displaced persons from other areas within and outside of province;

some of the main drivers of their displacement are tribal conflicts and overcrowding of their areas.

The district suffers from ineffective service delivery and governance practices, which are sources of tension and frustration among residents. Tribal rivalries and competition for access to power and resources are also factors spurring conflict in the district as are tensions between the historical residents of the district and those residents who have migrated into the district from other parts. These tensions are being exacerbated by the effects of climate change.

Climate security pathways

Natural resources. Drinkable, usable water is unavailable in rivers and canals due to decreased freshwater levels and the high salination of the water due to the Salt Tide phenomenon. As freshwater levels decrease in the river, salt water from the Arabian Gulf is seeping into the river courses, increasing the salinity of the river (beyond permissible limits for irrigation or too salty for animals to drink), and causing further damage to the ecological system of the district. The quantity of water for irrigation decreased significantly due to lower water levels in the canals, lower volumes of water in the Shatt Al-Arab river[43] and because of a decision by the Ministry of Agriculture in 2021 which reduced the amount of water available for irrigation purposes. As a result, many have sought new water sources by drilling wells to access water for irrigation. Many in the district, including governmental authorities, have also resorted to purchasing water from private vendors. The severe impact on availability of land for animal herding and decreasing crop yields has led to some farmers having to sell their land to property developers, which, in turn, has fuelled land conflicts over ownership as residents compete to claim potential profits from these developments. Increasing salt levels and additional climatic and hydrological properties have led to poor soil productivity, resulting in unfavourable planting conditions for various vegetable crops in the province of Basra.[44] The deterioration of the social and economic situation of farmers and herders has led many to migrate to the provincial centre of Basra.

Livelihood and food insecurity. Problems with accessing sufficient and safe water have been exacerbated by the broader effects of climate change, deteriorating infrastructure, and diminishing river flows. Climate change has impacted the livelihoods of many in the district in various different ways. For example, it has led to the loss of economic opportunities for farmers and others reliant on the agricultural sector. Crop yields have also decreased which has had two knock-on effects: crops previously grown and sold in the district are now being imported, and the price of key crops has increased, with some items now too expensive for residents to buy. Even with governmental subsidies for key items, higher prices have threatened the food security of many families. As families and business owners find themselves worse off financially, some have resorted to the chopping down trees in order to use the wood for heating and other purposes, adding to environmental degradation within the district. This is largely attributable to newcomers to the district from Maysan and Dhi Qar provinces and not to Shatt Al-Arab's original residents who are said to have greater empathy with the land. As a result, tensions between these two groups have increased.

The spread of diseases caused by polluted water has also become a health hazard for residents. Many families are unable to afford fresh water for drinking and household tasks and are forced to boil river water in order to make it drinkable. The economic impact of this loss of livelihood has been

43 The Shatt Al-Arab depends on the water rate provided to the province of Basra from the river Tigris. The water volume fell in 2014 to 60 m3/s compared to the 1970s when it was 207 m3/s. The amount of drainage water in the Shatt Al-Arab rates also dropped when compared with the 1960s and 1970s according to The Central Bureau of Statistics, Ministry of Planning, the Republic of Iraq, Environmental Statistics for Iraq for the year 2013, October 2014.

44 Lafta, A. A.: Experimental and computer modeling to calculate the length of the incursion of salt in the estuaries, the mouth of the Shatt Al-Arab as an example, Al-Basra Research Journal (Science), 40 (4), 2014, 27-36.

severe, with many residents struggling to acquire fresh water for their basic needs.

Weak governance. The district has experienced a rapid population growth, but public infrastructure and services have not kept pace with this. Roads, schools, hospitals, sewer systems, and electricity supply lines are outdated and in need of significant upgrades. The sewer system in Shatt Al-Arab district is in poor condition with residents reporting sewage mixed with their drinking water. Climate change effects have further weakened service provision in the district and Shatt Al-Arab's residents feel the government's response has been inadequate. As a result, they have lost trust in the government's ability to effectively address these issues. Efforts to tackle these concerns are often discussed with local authorities but they do not appear to be reaching higher levels of government, leaving the people of Shatt Al-Arab feeling ignored and unsupported.

Key actors and programmatic and policy response

Tribal leaders and governmental authorities are seen as the key stakeholders for resolving climate-related conflict and tensions. The former tend to intervene and allay conflicts that arise through customary tribal practices. If these conflicts cannot be resolved, then they are referred to the judiciary. However, both tribal leaders and governmental actors are not seen as constructive entities working to effectively resolve the issues that occur. Instead, they are seen as instigators of conflict. Some residents and key informant actors view the behaviour of tribal leaders as driven by self-interest and not acting for the benefit of the collective good, while governmental leaders are regarded as lacking any sustainable plan to address conflicts and challenges that have arisen. Governmental actors are also viewed by some residents and key informant actors as corrupt and deliberately wanting to maintain the status quo as it serves their economic interests. Residents also feel the government has underperformed and mismanaged attempts to reduce the impact of climate change and that they needed to work with oil companies, a key stakeholder in the district, to take action to protect the community. Initiatives such as increasing greenery through tree planting, controlling factory emissions into the river, and providing more employment opportunities for residents should be considered.

4.2.9 Al-Zubair district (Basra governorate)

District profile and background

Al-Zubair is one of seven districts that make up the Basra province. It comprises three sub-districts, Al-Zubair Center, Umm Qasr, and Safwan. The population of the district is 450,000, with tribal identity a prevalent feature among the district's population. The main tribes in the district can be divided into three categories. The first are those that originated in the Maysan governorate, and these include Albou Mohammed, Al-Sudan and Bani Malik. The second are those tribes from other governorates, such as Dhi Qar, and these include Al-Muntafiq, Al-Saa'doun, Al-Sarafyen, Al-Shuraifat, and Albou Salih. The third category are those that are indigenous to Basra and these are the Bani Asad, Bani Tamim, Shammar, and Al-Eidan. Al-Zubair, like other parts of the province, is dependent on the oil and gas sector. It is estimated that the district produces around 2 million barrels of oil per day and around 900 thousand cubic feet of gas. It also provides some 55% of Iraq's overall oil reserve. The district's oil and gas sector has acted as a magnet for residents of other areas seeking economic opportunities, with many of these economic migrants hailing from Dhi Qar and Maysan provinces as well as from other districts within Basra. Agriculture is also a key economic sector in the district. The district also acts a key point of entry for goods and services as it includes several key ports in the Khor Al-Zubair areas and shares a land border crossing with Kuwait

Sources of conflict in the district include the influx of economic migrants into the district, which causes grievances related to overcrowding, pressure on existing services, which are already poor, and economic opportunities. Conflict related to land is also an issue as are political rivalries.

Given the tribal nature of the district, individual conflicts often translate into larger tribal ones. Despite being rich in natural resources, residents feel neglected and marginalised by the government due to the lack of adequate services and economic opportunities. Oil companies are also seen as a problem in the district. Not only are they polluters but the perception is that the favour hiring employees from outside the district, much to the frustration of residents. Furthermore, when these companies tender for contracts, it reportedly leads to conflict between businesses and political parties who are seeking the contracts and the financial benefits they provide. The effects of climate change – rising temperatures, drought, desertification – are directly and indirectly impacting these issues.

Climate security pathways

Natural resources. Climate change has led to rising temperatures, drought and desertification. This has impacted the availability and quality of water in the district. In terms of water quality, the salinity level of the district's groundwater reserve has increased, making it unusable and causing residents to rely on the fresh water sources originating in the Al-Badaa area of neighbouring Dhi Qar province. Moreover, green spaces and pastures have shrunk due to water scarcity, which in turn has impacted livestock herders. Crop yields have also been impacted due to the lack of irrigation caused by water scarcity. With agricultural land no longer able to serve its intended purposes, many farmers and livestock owners have converted their land over to residential usage which has caused some tensions in the district due to the zoning violations. While scarce, some in the district view water access to be inequitable, as evidenced by the fact that key wells and aquifers are scattered throughout the district. They attribute this inequality to poor water management among the district's authorities as well as to political considerations that favour some over others.

Livelihood insecurity. Livelihoods in the district have been impacted by the effects of climate change. Not only has it caused the loss of economic means for those dependent on the agricultural sector – adding to the already high unemployment rate, especially for young people – but it has also led to higher prices of goods due to them now being imported into the district instead of being produced locally. Moreover, those who remain in the farming profession have had to dig deeper into their budgets in order to procure costly desalination equipment and special fertilisers so that they are able to weather the impact of the drought. There is a clear reluctance by the farm owners to stay and continue the cultivation process due to the high salinity of the wells and the lack of water treatment supported by the government. Livestock herders, particularly those with camels and sheep, have also been forced to sell their animals due to the shortage of fresh water and grazing areas. In the winter months, residents have reverted to chopping down trees to their houses; wood is also being used for cooking as few residents can afford gas-powered stoves. All of this has led to further financial hardship in the district. The deteriorating economic situation has led to a higher crime rate. People are committing crimes to obtain money to purchase cooling equipment to keep them safe during the blistering summer months.

Food insecurity. Climate change effects have combined with other factors such as currency instability and merchant monopolisation of key goods to increase prices of key necessities such as food in the district. This has created additional financial difficulties for residents who struggle to afford their basic needs. Overall, the residents of Al-Zubair district are struggling to cope with the consequences of climate change due to their limited financial resources.

Weak governance. Services in the Al-Zubair district and other districts in Basra are severely lacking. Corruption often interferes with attempts to fix structural problems, with contractors starting infrastructure projects and then disappearing without completing them. The locals have protested against the poor quality of health centres with limited medical supplies, the illegal use of the national water network, and interference in infrastructure projects from corrupt elites. Despite these protests, there is a perception among residents that projects which benefit the oil companies are still given priority over other areas in need.

Key actors and programmatic and policy response

Security and judicial actors, tribal leaders, and administrative authorities are seen as the main stakeholders who are able to resolve the tensions caused by the effects of climate change. Yet there is a general perception that actors are incapable of effectively doing so due to capacity constraints, political affiliations and influence, and corruption, all of which have undermined service delivery, public sector management practices, and the enforcement of laws and regulations. NGOs are seen to be filling some of the gaps but this is more in terms of providing health and education services to those most in need and not to directly addressing the grievances that are arising due to the effects of climate change. In short, none of the actors identified seem to be playing a constructive role in helping to allay climate-induced conflict issues.

5 Key recommendations

This study has highlighted several similar challenges and gaps related to responding to conflict and tensions induced by climate change. For example, there is a lack of awareness of national strategies aimed at helping to mitigate the effects of climate change. Other than a few regulations concerning water usage issues originating from either the Ministry of Agriculture or Ministry of Water Resources, these strategies and efforts were not to be found in the districts. At the same time, government and other key stakeholders identified in all the districts investigated do not seem to be responding to climate change challenges in unison or through a concerted strategy informed by the citizenship. The result is that response efforts are disjointed at best. And where efforts do exist, they often do not meet the expectations of many citizens. Farmers, for example, complain that they need more direct help from the Ministry of Agriculture, while other residents cite the lack of proper policing and enforcement of existing water regulations as a key problem in dealing with tensions around water access. For their part, district governmental actors and residents alike complain about the lack of adequate budgets and funding for district administrators to be able to tackle the challenges and conflicts caused by climate change as well as the need for national governmental institutions and actors to address key issues that are outside the mandate and purview of district authorities. With these issues in mind and based on the findings of the report and individual consultations with different stakeholders, the study proposes the following recommendations.

Recommendation 1:
Strengthen inclusive processes

Facilitate inclusive dialogue processes that connect and engage local, provincial and national actors to solve problems and develop strategies to address climate security risks. There is a need to facilitate problem-solving dialogue processes in all the districts investigated, which will bring together tribal leaders and sub-national governance authorities, including the governor's office, to address the challenge of water scarcity and other issues either caused by or exacerbated by climate change. These processes should also engage the general public and those most impacted by climate change, such as farmers. A climate change response plan should be developed that can be used by authorities to help guide efforts to combat the consequences of the climate crisis. For example, districts suffering from desertification – Afak, Baiji, Chamchamal, Eastern Hamza, Hawija, Kifri and Al-Zubair – may identify the need to engage in a greening project in which plants and trees are planted in large numbers to combat this issue, as has reportedly been done with some success in districts outside the scope of this report.

These dialogue processes need to be as inclusive as possible and engage a wide range of actors, all of whom are needed to effectively address issues being triggered and worsened by climate change as well as potential solutions. These include:

- District and provincial leaders, including the qa'em makam, sub-district directors, mukhtars, line-ministry directorates, especially those linked to the Ministry of Agriculture and Ministry of Water Resources, representatives from the governor's office, and existing local peace

mechanisms, such as local peace committees and district working groups.[45]

- National governmental authorities from both the executive and legislative branches, including the Ministry of Agriculture, Ministry of Water Resources, Ministry of Environment, district parliamentarians, and National Security Advisory, among others; and

- In KRI areas and those that fall within the disputed territories, engagement with the KRG's comparable institutions within both branches of government.

In addition, there is an increased need for advice on the development of climate policies, for responses to be more conflict-sensitive, and to consider Do-No-Harm as an integrated approach. Key entry points to the establishment of dialogue processes include governors' offices, district commissioners, existing local peace mechanisms, such as local peace committees and district working groups, and tribal and community leaders. International and national organisations that have experience in establishing and facilitating local peace and dialogue processes include the Peace Paradigms Organisation (PPO), United Nations Development Program (UNDP), International Organization for Migration (IOM), United States Institute of Peace (USIP), GiZ, and Al-Tahrir Association for Development.[46]

Recommendation 2:
Strengthen synergies and cooperation at and between local, national and international levels

Connect local, national and international processes aimed at combating climate change and its effects. The two national policy and operational response processes which are in progress – the National Adaptation Plan and the Green Paper – include elements of community engagement. However, as mentioned previously, the district leaders or communities covered in this report are not aware of these processes. While these national processes are needed, they must be complemented and informed by community-level climate change response processes that culminate in plans for district leaders to use and abide by in order to allay conflict caused and exacerbated by climate change (Recommendation 1). It is imperative that processes and response plans originating in the community inform national processes and efforts aimed at formulating a coherent governmental response to climate-induced conflict – anything short of this would create a situation in which national and community plans are misaligned, rendering the community-level plans obsolete without the resources required for them to be implemented. At the same time, these processes should also help minimise existing competition between governmental actors, especially between the Ministry of Agriculture and Ministry of Water Resources, and between these and other federal actors and provincial governments, particularly over water usage regulations. To achieve this, international and national organisations should attempt to partner key ministries, especially the Ministry of Water Resources, Ministry of Agriculture, and Ministry of Environment, on the issue of helping connect national level processes with those at a sub-national level. In particular, the following concrete steps could support and strengthen synergies and cooperation:

45 For more on local peace mechanisms in Iraq, see Mac Skelton and Osama Gharizi: Relationship Between Local Peace Mechanisms in Iraq and Other Governance Structures. Chemonics International, April 2020.

46 For more on local peace and dialogue processes in Iraq and how to design and implement them, see IOM and PPO: Local Peace Processes Toolkit, October 2022. Link: https://iraq.iom.int/sites/g/files/tmzbdl1316/files/documents/Local%20Peace%20Processes%20Toolkit%20%28final%20version%29.pdf.

- Establish regular forums for communication and coordination between local, provincial, and national officials working on climate change. This could include monthly meetings, an online platform, and annual summits to coordinate efforts.

- Create climate change advisory committees with representation from all levels of government, local communities, and civil society. These groups can advise on aligning policies and priorities.

- Develop clear guidelines and channels for feeding local data and insights up to inform national climate change assessments, action plans, and policy reforms.

- Provide training and resource support for local government staff and communities to effectively monitor, document, and report on local climate impacts and adaptation needs.

- Include provincial and local leadership in national climate change task forces, strategy sessions, and conferences to gain their input.

- Fund collaborative pilot projects between national agencies and local areas to test climate adaptation approaches that can be scaled up, and develop incentives for collaboration on climate change initiatives, such as funding for joint adaptation projects.

- Leverage existing structures, such as provincial climate-induced disaster response committees, and integrate climate risks while connecting with national climate-induced disaster response agencies.

- Support participatory climate vulnerability assessments and adaptation planning at local levels that align with national frameworks and priorities.

- Encourage national policies that provide flexibility for localised climate solutions while coordinating broader strategies.

- Strengthen policies and institutions for transparency, communication and equitable resource allocation to build trust between parties.

- Support cooperative local initiatives as replicable models. Provide platforms for provinces/governorates to share best practices.

- Enhance coordination and exchange of information between the different actors that are aiming to address climate security issues in Iraq to avoid duplication and overlapping at the programming level through a coordination and exchange platform that brings together key donors and international organisations as well as UN agencies and governmental counterparts so that they can discuss strategic priorities and directions at both policy and programming levels.

- Ensure the efforts of different actors are aligned to maximise the impact of these efforts, and ensure the approaches adopted by these actors are context-informed, conflict- and climate-sensitive, participatory, and inclusive.

- Facilitate greater coordination and exchange of information to enhance efficient utilisation of information.

- Support the cascading down of coordination and exchange frameworks to the local and sub-national levels to ensure coordination is achieved all the way from the national to the local level, and to ensure the local response aligns with the national level policies and strategic directions and complements them.

- Promote communication and dissemination strategies to support greater awareness and (local) ownership through policies and responses developed by a framework based on cooperation and coordination.

Recommendation 3:
Factor climate responses into budget plans

Advocate for an increased budget allocation for the districts from the federal government that reflects, as a minimum, the climate response plan's most pressing aspects. District budgets are a key tool to help combat the effects of climate change. Yet, as this report has highlighted, many district stakeholders note that their budgets are insufficient, thereby preventing key solutions and efforts coming to fruition. Though it is unlikely for district authorities to have response mechanisms fully financed, it is possible to support and engage district, provincial, and national actors in the budgetary development process to ensure that at least some key climate change related issues are funded.

- Support district commissioners (qa'em makam) as they engage with local officials and communities to identify the district's most pressing needs and to ensure that the items most relevant to combating the effects of climate change in the districts are identified and advocated for during the budget development process.

- Promote mechanisms that support district leaders as they follow up on key items with governors, the Ministry of Planning, the Ministry of Finance, and district parliamentarians.

- Support the provincial governor, who has the mandate to compile a draft budget for the province which is then sent to the Ministry of Planning and Ministry of Finance for review, in advocacy for local needs and to inform the development of the final provincial budgets.

- Advocate for an inclusive process that takes into consideration the information provided by the district commissioners and provincial governor while strengthening existing advocacy mechanisms which support the use of the inputs provided in draft budget proposals generated by the Ministry of Planning and Ministry of Finance.

- Strengthening the governor's role in the national budgeting process which is led by two key national ministries, the Ministry of Planning and the Ministry of Finance. These two ministries draft budget proposals based on input from other ministries and provincial authorities. Regarding the latter, district commissioners (qa'em makam) are tasked with engaging with local officials and communities to identify the district's most pressing needs. These items are then sent to the provincial governor, who has the mandate to compile a draft budget for the province which is then sent to the Ministry of Planning and Ministry of Finance for review and is used to inform the development of the final provincial budgets. Ultimately these two ministries decide the final budget allocations based on available resources. Governors have some discretionary authority on allocations once they receive the final budget and district commissioners have key oversight and a monitoring role to ensure that district budgets are implemented according to the approved budgetary plans.

It is critical that the most pressing items related to combating the effects of climate change in the districts are identified and advocated for during the budget development process. In addition, the allocation of an adequate budget to address climate security risks should be based on political will and ownership. This study proposes to help district stakeholders develop community-focused climate change response plans (Recommendation 1). Without allocations for the most pressing issues identified in the district climate change response plans, little progress will be made toward transforming the plans into actual gains at the district level.

Recommendation 4:
Enhance key stakeholder's capacities and technical skills

Governmental actors should be better equipped with know-how on natural resource management and climate-resilience policy response – in parallel with efforts to tackle administrative corruption. Capacity and technical support should be provided to relevant governmental actors, especially the Ministry of Agriculture, Ministry of Water Resources, and governors' offices, in order increase their ability to effectively fulfil their mandates. Support is needed for these actors to:

- Improve and maintain water infrastructure, which is in desperate need of repair across the country.[47] Help with the improvement of infrastructure and management practices would contribute to reducing the impact of water scarcity on communities.

- Reform and enhance the oversight and implementation of water access regulations by providing and considering climate projections for water availability in the future, establishing water monitoring systems (including building knowledge and implementation capacity), and supporting existing or establishing new mediation and cooperation bodies to deal with water-related issues, tensions and conflicts.

- Provide assistance to farmers, including on modern irrigation practices and seeds for crops that are less water intensive. Barriers to moving away from water intensive practice and towards more modern techniques that are less wasteful of water include costs and capacity to implement new practices. Overcoming these barriers should be supported.

- Support land tenure reforms and regulation of grazing practices, both of which can make the agricultural sector more productive and minimise tension between landowners and herders in search of ever-shrinking pastures to feed their animals.

- Support urban areas to be better equipped to handle the influx of climate migrants in terms of dealing with job opportunities, integration, conflict resolution mechanisms and depleted resources and services by improving governance and strengthening institutions.

In parallel to these efforts, the international community and national organisations need to support tackling administrative corruption within the public sector, especially among those institutions working directly on climate security risks. Without this, it will be difficult to achieve the proposals outlined in this report.

Recommendation 5:
Promote effective governance

Support mediation efforts to resolve governance bottlenecks caused by the disputed territories issue which are also preventing solutions and actions that would help alleviate the effects of the climate crisis. Though ineffective governance – driven by state capture, capacity constraints, and rampant administrative corruption – is characteristic of most governmental institutions in the country, the phenomenon is magnified in areas that are contested by the GoI and KRG, such as Chamchamal, Kifri and Kalar. Here, local level decision-making can vary significantly, making it extremely difficult for governing authorities to produce sustainable solutions that can resolve or allay climate-induced tensions. For such areas, the international community should support mediation efforts that help coordinate and consolidate decision-making processes related to

47 For more on this, see Shwan, Mohammed: The Importance of Fixing Iraq's Irrigation. Link: https://1001iraqithoughts.com/2018/07/06/ the-importance-of-fixing-iraqs-irrigation; and FAO: Restoration of agriculture and water systems sub-program 2018 – 2020. Link: https://www.fao.org/3/ca1511en/CA1511EN.pdf.

local governance issues, including those issues related to the impact of climate change. This mediation should not address the final status of these territories, i.e. the sensitive issue of Article 140, but rather focus on increasing cooperation and coordination between the two sides over specific issues afflicting communities in the disputed areas.

Recommendation 6:
Strengthen mediation efforts on an international level

Support and advocate for GoI mediation with Iran and Turkey given that Iraq is a downstream recipient of water. While drought is a key factor impacting water scarcity tensions, so too is the fact that Iraq depends on the inflow of water from water sources that originate in Turkey and Iran. As tensions rise between Iraq and its neighbours, both Turkey and Iran are blaming climate change for the decreased inflow of water to Iraq. This tense situation necessitates agreements on the fair use of transborder water resources between Iraq, Turkey, and Iran, something the Iraqi government should prioritise in its current term.

While enhancing the capacities of the Iraqi mediation team in negotiating at an international level to address the long-term impacts of water scarcity in Iraq, it is essential to take a comprehensive and sustained approach to water management. This includes investing in water conservation practices, such as rainwater harvesting and efficient irrigation systems, as well as water treatment and sanitation infrastructure. It also requires improvements in water governance and management, including effective regulation and allocation of water resources (Recommendation 4).

Recommendation 7:
Foster comprehensive research

Support a stronger focus on understanding current and future security risks associated with climate-related changes, explore further interconnected areas such as the interplay between climate, conflict, and gender or wealth, and supplement the existing analytical approach with further methodologies to ensure a holistic understanding of the subject. An intersectional perspective in general and gender considerations in particular have thus far played a peripheral role within climate-conflict nexus research. Yet, adopting a gender perspective and an intersectional approach is essential to achieve a comprehensive understanding of climate-related conflict dynamics and (in)security. Moreover, a discerning recognition of gender, class/wealth, race or religious power dynamics provides knowledge on how to facilitate, mitigate, or prevent climate-related conflicts and fosters resilience regarding both conflict and climate change. An intersectional approach and gender considerations should therefore assume a prominent position in future locally-led research and policy formulation around the intersection of climate change and conflicts. Furthermore, the applied methodology has been exhaustive in its endeavour to encompass the diverse spectrum of climate security pathways and associated risks. However, it is crucial to acknowledge that the analytical framework is not without inherent limitations. To effectively address the multifaceted nature of the subject, a strategic diversification of analytical approaches should be considered. Such a methodological expansion would allow an even more comprehensive and finely nuanced perspective to be delivered.

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