



# Iraq

## Climate-related security risk assessment

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# Executive Summary

**Objective:** To provide a climate-related security risk assessment and options for climate risk management strategies in Iraq.

Iraq is exposed to three major threats: terrorism, corruption and climate change. While the first two have received considerable attention, the climate-related security risks facing Iraq have only recently begun to move up the agenda. Terrorism has threatened the country's stability for a long time. At its peak (2014 and 2015), the Islamic State group (ISIS) controlled one-third of Iraq, waging genocidal campaigns against minorities and other Iraqis who rejected their regime. Yet ISIS is not the root cause of Iraq's conflict, rather a symptom of decades of dictatorship, corruption and the sectarian policies of post-Saddam elites, as well as the exclusion and marginalization of Arab Sunnis.

One year on from the military success against ISIS, Iraq has reached a crossroads where sustainable peace is far from inevitable. To tackle the security risks facing post-ISIS Iraq, terrorism, socio-political and economic challenges need to be addressed together with climate-related security risks. Iraq is one of the Middle East's most climate vulnerable countries. The combination of its hydrological limitations, increasing temperatures and extreme weather events puts pressure on basic resources and undermines livelihood security for Iraq's population. Failure to monitor and manage these climate-related risks will increase the risk of ISIS and post-ISIS terrorist groups gaining support and regaining strength within resource-constrained communities.

Amid this complex risk landscape, this report has identified five priority climate-related security risks in Iraq:

- 1. Diminished agricultural livelihoods increase local support for terrorist groups:** Efforts to diversify Iraq's dependency on oil revenues (85% of GDP in 2017) have not resulted in any significant investment in sustainable agricultural livelihoods. Despite the fact that this is the second largest employment sector after oil, the Ministry of Agriculture receives one of the smallest allocations from Iraq's national budget. Livelihood conditions are being undermined by increasing water scarcity, leaving people in ISIS-liberated areas vulnerable to becoming dependent on terrorist groups for access to basic resources. ISIS could capitalize on this situation, leading to a risk of increased local support for ISIS and other terrorist groups.
- 2. Insufficient governance capacity to address and respond to climate change and environmental degradation:** Corruption, poor governance, wars, UN sanctions and the heritage of the Saddam Hussein regime have weakened Iraq's economy and the state's capacity to mitigate the impacts of climate change and modernize the water infrastructure and the agriculture sector. The Ministry of Water Resources has an ambitious 20-year plan (2015–35) to modernize Iraqi infrastructure, but the ministry lacks the financial means and capacity to implement it. Consequences such as violent conflict and displacement are becoming increasingly likely but have not been integrated into post-ISIS recovery plans.
- 3. Increased dependence on water flows from riparian neighbours and regional stability:** Iraq is a downstream recipient of water, which makes it dependent on water flows from neighbouring countries. As climate change causes more erratic

rainfall in the region, Iraq is becoming more dependent on regional stability to maintain its access to water. Partly as a result of dam projects in Iran and Turkey, Iraq is currently suffering its worst water shortage crisis for 80 years. If neighbouring countries are destabilized—by reduced rainfall or conflict—Iraq will be further exposed. To date there are no official agreements or frameworks in place to support equitable sharing of vital water resources in the region.

- 4. Mass displacement and forced migration:** The combination of increased rainfall variability and dam projects in neighbouring countries could increase the risk of displacement and forced migration along Iraq's populous rivers. Seven million people live along the banks of the River Tigris. In combination with erratic rainfall, if water is diverted by Turkey, downstream in Iraq people will not have access to water for drinking or agriculture. This would increase the risk of displacement. The downstream Kurdistan region faces similar risks if water is diverted by Iran. The livelihoods of hundreds of thousands of people would be affected, potentially causing displacement and forced urban migration.
- 5. Heightened communal tensions over access to food and water:** Climate change is presenting Iraq with erratic precipitation and increased temperatures, including a heightened risk of more regular and prolonged periods of drought. This increases the risk of communal tensions over food and water. Diminishing incomes, and food and water insecurity, put pressure on remaining scarce resources, risking increased tensions within and between communities. This is particularly the case in rural and marginalized communities where sufficient adaptive and mitigation policies have not been put in place. For example, in southern Iraq diminishing water resources have already led to demonstrations and local clashes over water rights.

Within Iraq, the capacity to address climate-related risks is limited. The government's capacity to address environmental challenges is low, and the cascade risks associated with conflict and displacement are not systematically considered. Current UN support focuses on short-term crisis management linked to access to basic resources such as food, water and shelter. Some projects have begun to consider agricultural restoration, water diplomacy and sustainable water management, but the approach is fragmented and does not consider the interplay with Iraq's peace and security.

This report recommends the following actions for the UN Assistance Mission to Iraq (UNAMI) and other international bodies in order to better address climate-related security risks in Iraq:

- **Monitor climate-related security risks and provide regular briefings to the Security Council:** UNAMI briefings to the Security Council have provided some limited reporting on weather-related challenges but climate-related security risks are not systematically reported. Given the interactions between climate-related security risks, particularly those related to water, and the security landscape as described above, regular monitoring and reporting of risks should inform decision making and programming.
- **Conduct scenario-based workshops to build Iraqi capacity and understanding of the short- and medium-term climate-related security risks:** The Iraq Government has recently played a more proactive role in raising awareness of climate-related security risks, particularly relating to water, energy and other environmental challenges. Given the limited government capacity, UNAMI, at the request of the Iraq Government, would be well positioned to help develop the

government's capacity by conducting scenario-based workshops on short- and medium-term climate-related security risks.

- **Provide technical support for regional dialogues to find solutions to water and environmental challenges:** At the request of Iraqi ministers, the June 2018 UNAMI mandate extension included a request for support for regional dialogue on energy, water, the environment and refugees. UNAMI is well placed to provide technical inputs to these discussions, reflecting on evolving short- and medium-term climate impacts, in order to strengthen sustainable peace.
- **Support the Iraqi authorities in integrating climate-induced displacement, economic vulnerability and socio-economic instability into post-ISIS recovery plans:** Lack of awareness of the impacts of climate-related risks on post-ISIS recovery could create the conditions for further violence and extremism. UN agencies and other international organizations could help Iraqi stakeholders to develop integrated risk assessments that connect climate-related security risks to the root causes associated with terrorist group resurgence, which would inform post-ISIS recovery plans.

# Iraq: Climate-related security risk assessment

A post-conflict Iraq continues to face multifaceted domestic and regional environmental, security, political and economic challenges. While terrorism and corruption receive international attention, climate-related security risks have only just started to rise up the agenda. Iraq is challenged by several climate-related security risks that will affect approaches to sustaining peace and security.

This report outlines the major climate change dynamics affecting Iraq and sets out five climate-related security risks, each intersecting with other ongoing socio-economic, conflict and security dynamics. This is followed by an overview of international interventions and support, and a summary of UN involvement in Iraq. In conclusion, four entry points for managing and addressing these risks are identified to support the work of the UN Assistance Mission in Iraq (UNAMI).

## Climate context in Iraq

The climate in Iraq is influenced by its location between the subtropical aridity of the Arabian desert and the subtropical humidity of the Persian/Arabian Gulf. It has three major climate zones: an arid lowland desert in the centre and the south, a semi-arid steppe in the north and a sub-humid upland together with the northern mountainous area.

Due to its unique hydrological limitations—being located in an arid, downstream region—Iraq is considered one of the Middle East and North Africa’s (MENA) most climate-vulnerable countries. Increasing temperatures and reduced precipitation inside the country and beyond its borders have previously contributed to alarming water scarcity as well as severe droughts in 1998–2000, and again in 2007–2009. Climate change is currently manifesting itself in prolonged heat waves, erratic precipitation, higher than average temperatures and increased disaster intensity (von Lossow 2018).

## Iraq's water shortage

One of the major security threats facing Iraq is the country's water shortage (the lowest level since 1931). The flow of water in Iraqi rivers has decreased by 40 per cent in recent decades and continues to shrink, causing a water and agriculture crisis that threatens both the livelihoods and the water security of the Iraqi population. Around 2 million Iraqis are currently food insecure. The majority live in rural and/or marginalized areas with little access to social services and state support. Furthermore, female-headed households are prone to extreme poverty and are particularly susceptible to food insecurity.

The gradual demise of Iraq's water and the agriculture crisis are the result of the combined effects of climate change and increasingly erratic precipitation across the region, a decline in water flows from Iran and Turkey, weak irrigation systems due to damage to infrastructure during the war, and a lack of economic and political investment.

The absence of an adequate national water management policy exacerbates and compounds these critical threats. Iraq has a water withdrawal rate (from surface water and groundwater sources) that is almost double the world average. In addition, the water design, infrastructure and irrigation system are outdated as they were built in the 1950s and 1960s and cannot respond to today's challenges.

This level of water depletion in combination with reliance on water from upstream neighbouring countries creates security risks to Iraq that will be amplified by the impacts of climate change.

## Future climate impacts

The World Bank projects that by 2050 Iraq's climate will have undergone a transformative shift. Annual average rainfall is projected to decrease by 9 per cent, with the greatest reduction of 17 per cent occurring during December, January and February. Rainfall intensity is projected to increase. The maximum amount of rain that falls in any five-day period (a surrogate for extreme storm events) is projected to decrease, as is the maximum period between rainy days. Runoff is also expected to decrease 22 per cent (countrywide average). Mean annual temperatures have increased in Iraq by approximately 0.7 degrees Celsius since 1950, and it is projected that the mean annual temperature will further increase by 2 degrees Celsius by 2050. The frequency of heatwaves will increase and heat stress is expected to occur at least once in the next five years. The number of frost days will decrease (World Bank n.d.). Along with higher temperatures, the occurrence of both sand and dust storms is also likely to increase. Furthermore, according to the Iraqi Government, 92 per cent of the total area of the country is at risk of desertification (United Nations 2013).



# Climate-related security risks

This section sets out five climate-related security risks derived from the currently available evidence. It is important to note that these risks are derived from the limited research and analysis produced so far. Further research is required to gain a deeper understanding that can fully inform decision making, programming and policymaking.

## 1. Diminished agriculture livelihoods increase local support for terrorist groups

Climate change can constrain income opportunities for populations dependent on agricultural income. Erratic rainfall patterns in combination with higher temperatures will affect output and the ability of farmers to harvest their crops, inhibiting their ability to provide a secure livelihood for their families and, creating harsher living conditions. With one quarter of Iraq's population of 37 million dependent on agriculture for their livelihoods, climate-related security risks undermine livelihood security and threaten peace and stability in affected provinces. Livelihood destabilization could also provide more fertile ground for terrorist recruitment, especially in ISIS liberated areas.

Opportunities for a terrorist group such as ISIS to gain support could increase with climate change, especially among neglected and marginalized communities already affected by terrorist activity. Previously flawed water and agricultural policies have repeatedly marginalized certain sections of the population, creating tensions between groups. These communities were known to be hotspots for ISIS recruitment and support in exchange for access to basic resources, livelihood security or other services not provided by the state.

During the war, ISIS deliberately operated in water scarce regions. In Kirkuk, ISIS gained support during extreme weather events. For example, during droughts and floods ISIS was known to provide food and cash payments to the population in exchange for support. In 2014–2015, ISIS drew support to a higher degree from water-deprived communities in and around Tikrit, compared to farmers less affected by water deficiency and drought (Schwartzstein 2017). The terrorist group further weaponized water by controlling and destroying dams and water infrastructure (Vidal 2014; Mackenzie 2014). Today, there are examples of Iraqi farmers returning from serving in the military finding it difficult to provide for their families, with scarcely usable agricultural land and a water deficit. As water becomes scarce and livelihood conditions more insecure, people in ISIS-liberated areas could again look to terrorist groups for access to basic resources.

Food security is an inherent part of economic recovery, post-ISIS stability and prosperity. Local agricultural production and hence livelihood conditions in ISIS-liberated areas face compound challenges: price increases, rent-seeking by multiple security forces, corruption, lack of agricultural infrastructure, and aging irrigation systems and rural power grids (Mathieu-Comtois 2017). Any stabilization and peacebuilding efforts in Iraq must strengthen water management and investment in the agricultural sector in order to foster livelihood security and prevent future conflict.



## 2. Insufficient governance capacity to address and respond to climate change and environmental degradation

Iraq's capacity and efforts to mitigate the impacts of climate change and modernize water infrastructure and the agriculture sector have been weakened by systemic corruption, poor governance, war, UN sanctions and the legacy of the Saddam Hussein regime. The long war against ISIS deprioritized water security issues, ignoring the need for improved water infrastructure, dam modernization and functioning waste water management. As precipitation decreases and becomes more irregular across the Middle East, the lack of proper water infrastructure and regional dependence on water from neighbouring countries have created an urgent need for Iraq to improve its capacity to tackle these compound risks.

Mismanagement of oil revenues supporting political and economic corruption has plagued Iraq's post-2003 political landscape, severely restricting its ability to properly address security risks (Al-Khatteeb 2015). Iraq continues to feature among the worst countries in corruption and governance indices (Transparency International n.d.). These patterns of corruption, and the lack of financial resources and political will, cause major problems with regard to project implementation and gaining sufficient institutional capacity to address agriculture reform, water management and climate-related security risks.

For example, despite the Ministry of Water Resources ambitious 20-year plan (2015–35), known as the Strategy for Land and Water Resources in Iraq (SWLRI), to modernize Iraqi infrastructure. The ministry lacks the financial means and capacity to implement the USD 160 billion plan (or USD 8 billion/year). In part due to the challenges posed by political and economic corruption, the mismanagement of oil revenues and the immense cost of waging successive wars against terrorism. Furthermore, new instances of violent conflict and displacement are becoming more likely but are not currently integrated into post-ISIS recovery plans. Diversification efforts to reduce Iraq's dependency on oil revenues (currently 85 per cent of GDP) have not resulted in any significant investment in sustainable agricultural livelihoods. Even though the sector is billed as one of Iraq's most promising in the struggle for economic diversification, the Ministry of Agriculture receives one of the smallest allocations from Iraq's national budget—in 2017 just USD 558.1 million from a total budget of USD 85.2 billion. Currently, a large part of the agricultural budget is allocated to budget items such as salaries and pensions, as opposed to necessary infrastructure investment.

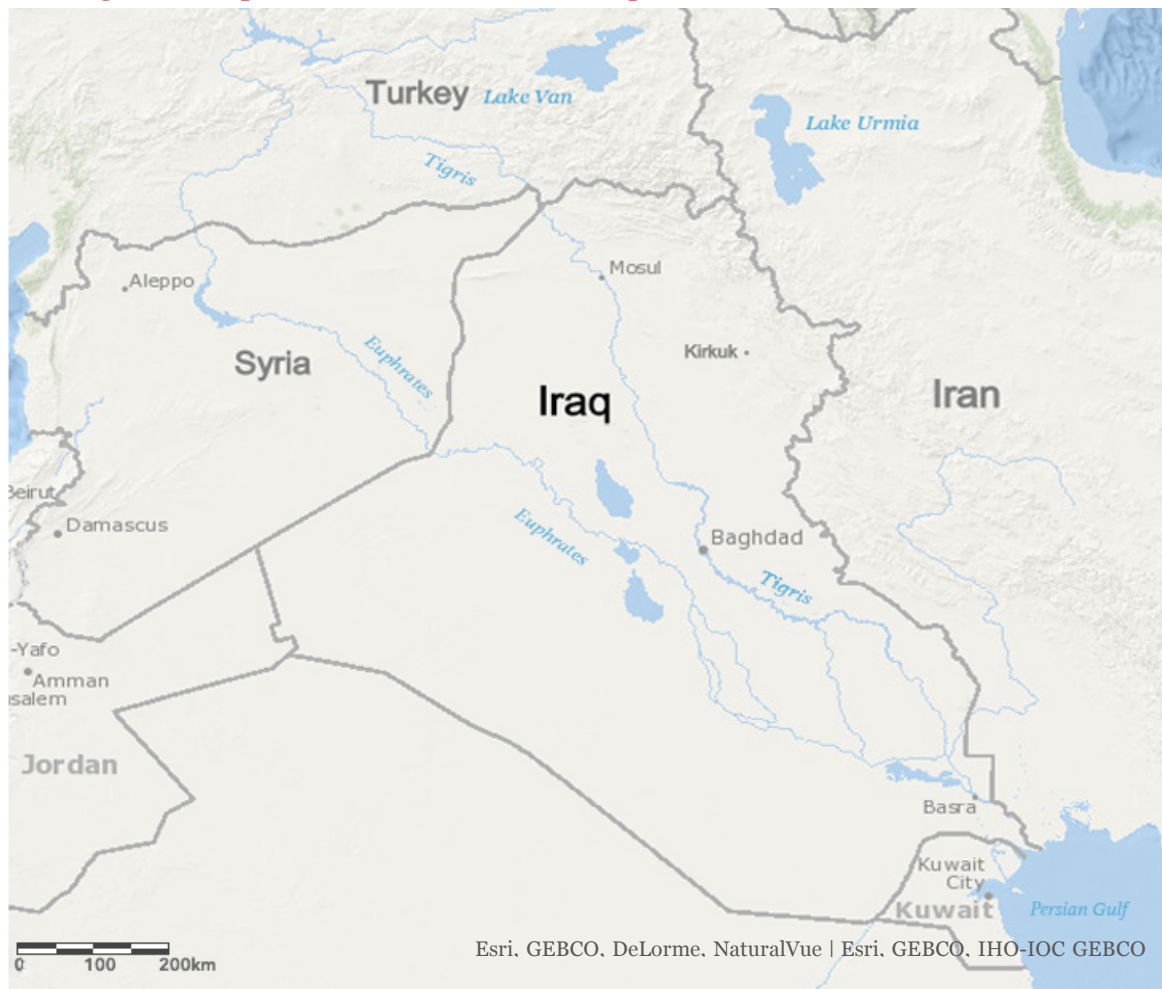
The security risks linked to water deficit in Iraq should be enough for the state to divert more attention and funding to infrastructure projects and mitigation plans to reduce the effects of climate change.

## 3. Increased dependence on water flow from riparian neighbours and regional stability

Due to its downstream position, Iraq is highly dependent on precipitation in and water flows from its neighbouring countries. It receives the majority of its water from Turkey (80 per cent), Iran (7 per cent) and Syria (4 per cent) (FAO 2012). As rainfall becomes more erratic, Iraq will become more dependent on regional stability to maintain its access to water.

If neighbouring countries are destabilized Iraq will be further exposed. This makes the country extremely vulnerable to changes in economic, environmental and political conditions in these upstream states, not least Turkey. Turkey had planned to begin filling the Ilisu Dam in March and June 2018 but after official discussions with Iraq, it decided to postpone the process. However, if relations between the two countries turn sour due to disagreements on economic, socio-political or other security issues, this could harm prospects for water sharing too. For example, Turkey's war with Kurdistan Worker's Party (PKK), military operations in Iraqi Kurdistan and military presence in Bashiqa, each pose risks to the countries already fragile relationship.

Figure 1: Map over the main rivers in Iraq



(Source: Esri, GEBECO, DeLorme, Ocean Base Map  
<https://www.arcgis.com/home/webmap/viewer.html?webmap=4b11d887b6af46ddaac1076998e527ef>).

Similarly, Iran's Daryan Dam is expected to be completed this year. Once Iran begins diverting water from the Sirwan River, the Halabja Governorate in the Kurdistan Region, in particular, could face a serious water crisis. Given that the Kurdistan Regional Government (KRG) is planning to build its own dams, the Daryan Dam might put pressure on the KRG to reduce the amount of water flowing to the rest of Iraq (ICSSI Secretariat 2016; Chomani and Bijnenes 2016). Furthermore, the highly complex Syrian conflict continues to complicate regional geopolitics, exacerbating the regional rivalry between Iran and Saudi Arabia, while also magnifying Turkey's war with the Kurdistan Worker's Party

(PKK), and its military operations within Iraq. Taken as a whole, these very real issues serve to compound Iraq's environmental challenges, promote political fragmentation and hinder post-ISIS recovery.

To date, there have been no official, sustainable agreements on a fair, equitable and reasonable distribution of vital water resources in the region.

#### 4. Mass displacement and forced migration

A combination of the adverse effects of climate change, neglected infrastructure and the risk of decreased water flow from Iraq's neighbouring countries will affect livelihood and water security for many, and those living along Iraq's populous rivers and in rural communities most of all.

As noted above, Turkey has for now decided to postpone the process of filling the Ilisu Dam. Iraqi experts and activists have warned of the potentially catastrophic impact on agricultural production and drinking water in Iraq as a result of this dam becoming operational.<sup>1</sup> The Dam is expected to reduce the water supply to Iraq by 60 per cent, affecting up to 7 million people in five provinces, and 36 cities and towns across the country—most notably Mosul, central and southern Iraq (Taha 2018). If water is diverted by Turkey, people downstream will no longer have access to water for drinking or agriculture. The downstream Kurdistan region faces similar risks if water is diverted by Iran—the livelihoods of hundreds of thousands of people will be affected, potentially causing displacement and forced migration, most likely to urban areas. Any increases in such rural-urban migration could heighten the pressure on already resource-strained areas.

Increased temperatures, prolonged periods of drought and intensified dust and sand storms are likely to reduce agricultural production and have significant impacts on livestock production and communities' livelihoods. This would be likely to increase the risk of displacement and migration in search of better livelihood and resource conditions. For example, during the drought of 2007–2009, almost 40 per cent of cropland throughout Iraq experienced reduced crop coverage, and livestock production was drastically reduced. This caused approximately 20 000 rural inhabitants to move in search for more sustainable and renewable resources and livelihoods (United Nations, n.d.). Furthermore, a recent drought in Diyala province caused around 35 000 people to leave their homes as living conditions deteriorated through the combined effects of a lack of drinking water and of electric power. Such events are likely to become more frequent if communities are unable to mitigate these stressors.

In addition to the above, increased displacement linked to dams and the adverse effects of climate change can heighten pressure on communities already displaced by conflict. A lack of or delayed reconstruction in ISIS-liberated areas will result in poor or absent public services. This in turn will delay the return of internally displaced persons (IDPs)—and to some extent refugees—while also leading to frustration among the returnee, displaced and host communities. This is the case for example in Mosul, one year after the defeat of ISIS (Mustafa 2018). Together with climate-related security risks, these dynamics could lead to

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<sup>1</sup> Skype and email interviews with Azzam Alwash, CEO & Founder, Nature Iraq, 24, 26 and 28 Apr. 2018.

new displacement. As a result, the potential for conflict between host and displaced communities over renewable resources, scarce job opportunities and public services might increase. This is particularly true in areas that lack sufficient institutional capacity to mitigate such risks.

## 5. Heightened communal tensions over access to food and water

Climate variability and change have strong implications for livelihoods and access to basic resources, such as food and water. This is especially the case for rural communities that are dependent on agriculture for their livelihoods. Iraq's water resources minister - Hassan Janabi, - has called this Iraq's social conflict (Goering 2017). Frustration erupts over the lack of access to drinking water, weakened water infrastructure and national policies on agriculture and water that for a long time have marginalized already vulnerable segments of the population. All this increases frustrations and the risk of communal tensions.

Tensions and demonstrations have already arisen in the country's southern parts due to failing agricultural production and lack of drinking water (Goering 2017). The impacts of decreasing levels of water are already visible in the southern provinces, where tribal clashes erupted recently over water rights (Sumeri 2018). Further, in 2017 farmers in swathes of southern Iraq had too little water to plant the winter wheat crop, leading to demonstrations and increasing anger among communities (Goering 2017).

The arid nature of the southern deserts landscape in Iraq makes water security even more important and increases the risk of future tribal clashes. Climate change increases the likelihood of harsher living conditions. If no effective mitigation and adaptation programmes are put in place, demonstrations and increasing tensions should be expected to become more common.

### Future climate and related risks

Conflict, corruption and climate fragility are eroding coping capacities, creating a vicious cycle of vulnerability and insecurity in Iraq. This negative feedback loop is likely to expose Iraq to further crises and make it even more challenging to sustain peace.

Any future planning, as well as stabilization and sustainable development interventions should be informed by adequate climate-related security risk assessment.

- **Low carbon transition will have a dramatic effect on the global oil price and risks destabilizing Iraq further in future.** The International Energy Agency has developed two price scenario projections for 2040. The highest price scenario puts Brent crude at USD 226 per barrel, while the lowest price scenario sees oil reaching USD 40 per barrel. Currently, most indicators point to a low oil price scenario, after a period of high prices that perhaps lasts through the early 2020s (International Energy Agency 2016).
- **Insufficient access to electricity could limit Iraq's ability to diversify its economy, its growth and its long-term stability.** The demand for electricity is projected to exceed 50 GW by 2040, well above the current capacity of 15 GW (Tollast 2018). To manage the implications of a low carbon transition and changes to the oil price,

Iraq will need to diversify its energy supply and economy to maintain growth and access to energy.

- **Agricultural livelihoods and food availability could be severely disrupted by intense climate variability by 2050.** In the coming decades, Changes to Iraq's climate will cause transformative shifts in Iraq's socio-economic make-up (World Bank). The increased number and duration of droughts and more prevalent sand and dust storms, are projected to lead to significant declines in agricultural capacity and livestock production. Food security challenges could rise rapidly. Left unaddressed, climatic change and adverse environmental effects together with major salinization in Iraq's main rivers will likely reduce water availability for household use and agriculture. It would also pose significant risks to general livelihood conditions and livelihood security for farmers.

## Country Overview

This section provides a contextual analysis of Iraq, outlining the key economic, political, conflict and security dynamics. This overview aims to put the risks identified above into context and provide a framework for considering the interconnected nature of climate-related security risks. The section ends with a brief assessment of Iraq's capacity to respond to these challenges.

### Security context

A major security risk in Iraq is the longstanding conflict with terrorist groups, most notably ISIS. Even though the Iraqi Government declared victory over ISIS in 2017, terrorism is still a major threat to Iraqi security as many of the root causes of the conflict remain. In 2017, ISIS was successfully driven out of the main urban areas it had occupied since 2014. The Iraqi security forces—including the army, counterterrorism units and the police—as well as the Kurdish Peshmerga and Popular Mobilization Forces (Al Hashd AlShabi or PMF) and the Global Coalition against Daesh were all involved in these efforts. It is estimated that reconstruction costs could reach USD 88 billion (Otten 2018).

However, ISIS remains a persistent threat in Iraq. ISIS is an adaptive and ruthless terrorist organization that, although territorially weakened, still has the capacity to wage and inspire terrorist attacks inside and outside Iraq. Its presence continues to derail reconstruction efforts and complicate the fragile political process.

The social, human and physical costs of achieving liberation from ISIS have also diminished Iraq's coping capacity. It is difficult to derive exact or definitive figures on the number of casualties but according to the Iraqi authorities, since 2014 the number of dead or injured civilians in all the areas liberated from ISIS is between 15,000 and 20,000. Half of these casualties were in Mosul and it is believed that thousands remain missing in Mosul alone. According to the International Organization for Migration (IOM), as of 30 June 2018 the number of IDPs stood at around 2.03 million and the number of returnees at around 3.9 million (IOM 2018). The KRG's official data puts the number of IDPs and refugees at 1.9 million, in addition to the 183 000, mostly Kurds, who fled Tuz Khormatu and Kirkuk after



the takeover of these cities by the Iraqi security forces and the PMF. The number of IDPs who had returned to their places of origin was around 2.68 million in November 2017 (European Parliament 2017).

In sum, despite the successes in reclaiming ISIS-held territory, many of the root causes of instability remain. Among the biggest challenges facing achieving stability in post-ISIS Iraq are: (a) rebuilding a new political order that meets the demands of Iraqi citizens for genuine reform, the rule of law, good governance and redistribution of revenues and power; (b) economic recovery in ISIS-liberated areas; and (c) tackling the impacts of climate change and climate-related security risks.

## Economic and political context<sup>2</sup>

Iraq's economy is extremely dependent on oil revenues, which provide more than 90 per cent of government revenues and 80 per cent of foreign exchange earnings (Index Mundi 2018). As a result, Iraq is highly sensitive to fluctuations in the global oil price and these have significant ripple effects on economic planning and sustainable development. The agriculture sector represents a small but vital component of Iraq's economy, responsible for only 5 per cent GDP in 2016 but 25 per cent of livelihood dependency (FAO 2016). Both sectors are affected by climate change, but from different directions: the transition to a low carbon global economy will alter the conditions for the oil industry, while Iraq's agriculture is being undermined by climate impacts (US CIA 2018).

Since 2014 the Iraq Government has been absorbed by the war with ISIS and prioritized resources to address this and related challenges. Institutional cooperation on related civic priorities was deemed a lesser priority than the fight against ISIS. For example, the National Committee for Civil Defence did not convene for almost seven years.<sup>3</sup> The political landscape remains fractious, and 75 per cent of the public believe that government corruption is widespread (Gallup n.d.).

According to the Special Inspector General for Iraq Reconstruction, funding for the reconstruction of Iraq totalled USD 112.52 billion between April 2003 and March 2008. Of this, USD 46 billion came from the USA, USD 50.33 billion was from Iraq and USD 15.89 billion came in other international support. However, many projects were started but never completed while others were sabotaged. Corruption, particularly in Baghdad, is commonplace and has worsened since the late 2000s, resulting in misallocations and large-scale theft (Looney 2008, 2017).

The government budget for addressing climate and environmental challenges is marginal compared to the scale of the challenge of modernizing and rehabilitate water and agricultural infrastructure. The intransigent and worsening status of government corruption compounds this challenge, making successful reform and effective delivery an outstanding challenge.

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<sup>2</sup> In addition to the sources cited, this section is based on Skype interviews with Dr Samir Raouf, independent Consultant, 30 Apr, 2018; and Hamza Hasan Shareef, International Affairs Adviser, National Security Council, Iraq Government and former director of Al-Nahrain Center for Strategic Studies, 7 May 2018.

<sup>3</sup> Skype interview with Hamza Hasan Shareef (note 2).

## National capacity and resilience

Iraq has some of the weakest governance indicators in the world, most notably those relating to the rule of law and corruption. For example, transparency international rated Iraq as the 169th most corrupt country (of 180) in 2016. This factor severely reduces the Iraqi Government's capacity to address security risks and support stabilization strategies, including those relating to climate change. As a result, improving governance is a top priority for international and bilateral partners.

Iraq has taken steps to establish policy frameworks and institutions, but lack of government coordination, insufficient public awareness and the limited involvement of private sector and independent actors have hampered implementation. For example, a Joint Coordination and Monitoring Centre (JCMC) was set up as the lead Iraqi authority on crisis management focused on humanitarian operations. However, it is yet to achieve its mandate to become a full-scale national crisis management service working on disaster risk reduction, preparedness, emergency response and early recovery.<sup>4</sup>

As noted above, the Ministry of Water Resources' 20-year SWLRI has a total budget of USD 160 billion. The initiative has three components: (a) preparation of a national strategy for water resources management based on the concept of Integrated Water Resources Management; (b) to formulate a negotiation strategy that successfully achieves water sharing agreements with neighbouring riparian countries; and (c) the design of institutions, training and capacity building in order to implement the strategy (T-Zero 2015). However, the government has again been unable to budget to implement this strategy due to the economic crisis, the costs of the war with ISIS, and corruption.

Despite the ongoing response and the establishment of institutions, there is a significant lack of awareness of—or action on the part of government bodies to identify and address—the interconnections between climate change, peace and security. Nor has there been any action to mitigate the effects of climate change-related security risks on tribal, social, sectarian and communal conflicts, for example, by integrating climate induced displacement into post-ISIS recovery and national development plans.

# International Interventions and Support

This section provides an overview of regional and international processes to address peace and security in Iraq and the wider region.

## Regional processes, policies and projects

Given the regional ramifications and dimensions of Iraq's security challenges, regional states are involved to varying degrees in both the military battle against ISIS and post-ISIS recovery efforts. For example, Iran has been supporting the Shiite militias known as the

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<sup>4</sup> Terms of Reference of the Joint Coordination and Monitoring Center, undated.



PMF, as well as other armed groups in the battle against ISIS. In addition, Iraq has coordinated aerial attacks on ISIS positions inside Syria with the Syrian Government.

To aid recovery, various forms of regional cooperation are ongoing. For example, in mid-February 2018 Kuwait co-hosted the Kuwait International Conference for the Reconstruction of Iraq, where Iraq reportedly received pledges of USD 30 billion in loans and investment guarantees, just over one-third of the required total of USD 88 billion. Saudi Arabia, the United Arab Emirates and Kuwait are also supporting reconstruction efforts in ISIS-liberated areas (European Commission 2018).

However, despite Iraq's dependence on water flows from Turkey and Iran, there are at present no formal regional cooperation agreements on water and the environment. Water sharing issues are addressed on an ad hoc basis. For example, the filling of the Ilisu dam was suspended twice, in March and June 2018, following discussions between Iraq and Turkey (The Star Online 2018). However, no long-term sustainable solution has been agreed.

## International processes, policies and projects

The international community is highly active in Iraq, supporting numerous projects to stabilize the country and support sustainable development. Since 2014 Iraq has been at the centre of the international fight against terrorism. The Global Coalition, which comprises 77 countries, played a paramount role in assisting Iraqi forces to defeat ISIS (Global Coalition n.d.). Furthermore, the international community has been helping Iraq to provide humanitarian assistance to affected communities and provided pledges for post-ISIS reconstruction.

The World Bank and the IMF are supporting Iraq to strengthen its private sector and reduce its dependence on oil revenues. However, corruption and political fragmentation remain a barrier to comprehensive implementation. In some cases, progress has been made in expanding the agricultural sector but climate variability has made this sector more precarious.

In addition to providing peacekeeping and humanitarian responses, UN agencies are also engaged to a lesser extent in addressing and mitigating the impacts of climate change. The UNDP has a dedicated environmental team led by its Environment, Energy and Climate Change Programme, which works closely with government entities on water resources, agriculture, health and the environment.<sup>5</sup> In this role, the UNDP also provides support with enhancing national capacities and international cooperation on the sustainable management of the Tigris and Euphrates rivers (UNDP 2016).

In 2011 the UN identified drought as a *slow-onset disaster* that requires immediate strategic intervention. To tackle the multifaceted consequences of drought on the environmental, economic and social fabric of society, the Iraq Government asked for UN support in formulating a framework for national disaster risk management (UNDP 2011). In parallel, UNESCO has been supporting Iraq with validating and updating essential data and information on groundwater resources, improving the government's capacity, and

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<sup>5</sup> Skype interview with Tarik-ul-Islam, UNDP Assistant Country Director and Environment, Energy and Climate Change Programme Manager, 5 May 2018.

delivering the knowledge management tools required for sound and efficient groundwater management.

The UN also plays a role in addressing lack of food security. Reduced levels of precipitation increase desertification on a huge scale. As mentioned above, the Iraq Government states that 92 per cent of the country is at risk of desertification (United Nations 2013). The increase in food insecurity, especially in ISIS-liberated areas, has been further exacerbated by frequent sand and dust storms. According to the Food and Agriculture Organization (FAO) of the United Nations, 2 million Iraqis are currently food insecure (77 per cent of this number are children, women and the elderly), ranging from displaced persons to host communities, returnees, residents and refugees (FAO 2018).

However, despite some activities to address climate change, there has been no coordination between security, stabilization and humanitarian efforts. As a result, although climate-related security risks might be contained in some instances, there is a significant risk of oversight. In future, the UN's security, stabilization, development and climate-related interventions should be stress tested against future climate scenarios.

## Status of discussions in the UN Security Council

On 14 June 2018, the UN Security Council extended the current mandate of UNAMI to 31 May 2019. The Security Council reaffirmed the mandate of the mission to support, advise and assist the Iraq Government's efforts on inclusive national dialogue, reconciliation, humanitarian issues and the protection of human rights and the rule of law.

For the first time, water and the environment were added to the areas in which UNAMI will support the government to engage in regional dialogue. Although recent briefings to the Council mainly focused on key political and security developments, elections and UN stabilization efforts in ISIS-liberated areas, climate-related security risks, particularly those relating to water, began to emerge during the discussions.

In his briefing to the Council on 21 February 2018, the Special Representative and head of the UNAMI referred to the issue of transboundary water management between Iraq and its neighbouring countries (United Nations 2018). In his briefing to the Council on 30 May 2018, he talked about the stabilization efforts of the UNDP in relation to the refurbishment of water and sewage systems and water treatment plants in ISIS-liberated areas.

Hassan al-Janabi spoke in the 11 July 2018 debate on climate-related security risks (UN Web TV 2018). He discussed the significant negative impact of climate change in compounding Iraq's security challenges linked to terrorism, displacement, and food and water insecurity. He particularly highlighted the climate-intensified risks associated with the absence of regional and international frameworks for water sharing, which are currently exacerbating Iraq's security challenges. He called for strengthened UN intervention to enhance resilience and manage climate security hot spots across the region and the world.

Although there has been some progress under the UNAMI mandate, there has yet to be any explicit language recognizing the role of climate-related security risks in a Security Council decision.

# Recommendations

Climate-related security risks severely threaten the chances of sustainable peace and prosperity in post-ISIS Iraq. UNAMI is located at the intersection between the Iraq Government and the international community. From there it can effectively leverage and strengthen shared and nationally owned approaches to Iraq's peace and security by integrating efforts to assess and manage Iraq's climate-related security risks. The recommendations set out below seek to support climate-informed foreign policymaking, decision making and programming on security-related risks in Iraq.

- 1. Monitor climate-related security risks and provide regular briefings to the UN Security Council:** UNAMI briefings to the Security Council have provided some limited reporting on weather-related challenges but climate-related security risks are not systematically reported. Given the interactions between climate-related security risks, particularly those related to water, and the security landscape as described above, regular monitoring and reporting of risks should inform decision making and programming.
- 2. Conduct scenario-based workshops to build Iraqi capacity and understanding of short- and medium-term climate-related security risks:** The Iraq Government has recently played a more proactive role in raising awareness of climate-related security risks, particularly relating to water, energy and other environmental challenges. Given the limited government capacity, UNAMI, at the request of the Iraq Government, would be well positioned to help develop the government's capacity by conducting scenario-based workshops on short- and medium-term climate-related security risks.
- 3. Provide technical support for regional dialogues to find solutions to water and environmental challenges:** At the request of Iraqi ministers, the June 2018 UNAMI mandate extension included a request for support for regional dialogue on energy, water, the environment and refugees. UNAMI is well placed to provide technical inputs to these discussions, reflecting on evolving short- and medium-term climate impacts, in order to strengthen sustainable peace.
- 4. Support the Iraqi authorities in integrating climate-induced displacement, economic vulnerability and socio-economic instability into post-ISIS recovery plans:** Lack of awareness of the impacts of climate-related security risks on post-ISIS recovery could create the conditions for further violence and extremism. UN agencies and other international organizations could help Iraqi stakeholders to develop integrated risks assessments that connect climate-related security risks to the root causes associated with terrorist group resurgence, which would inform post-ISIS recovery plans.

# Bibliography

- Al-Khatteeb, L., 'Abadi's momentous gambit against political corruption in Iraq', Brookings, 9 Aug. 2015, <<https://www.brookings.edu/opinions/abadis-momentous-gambit-against-political-corruption-in-iraq/>>.
- Chomani, K. and Bijnenes, T., *The Impact of the Daryan Dam on the Kurdistan Region of Iraq* (Save the Tigris and Iraqi Marshes Campaign, Oct. 2016).
- European Commission, Directorate-General for European Civil Protection and Humanitarian Aid Operations, 'Iraq: Kuwait International Conference for Reconstruction of Iraq (DG ECHO, UN, NGOs) (ECHO Daily Flash of 15 February 2018)', 15 Feb. 2018, <<https://reliefweb.int/report/iraq/iraq-kuwait-international-conference-reconstruction-iraq-dg-echo-un-ngos-echo-daily>>.
- European Parliament, 'Hassan addresses European Parliament on Iraq', Transcript, 23 Nov. 2017, <<https://www.eastwest.ngo/idea/hassan-addresses-european-parliament-iraq>>.
- Food and Agriculture Organization of the United Nations, Iraq, *Iraq: Agriculture and Livelihood Needs Assessment in the newly liberated areas of Kirkuk, Ninema and Salahadin* (FAO Iraq: Kirkuk, 2016), <[http://www.fao.org/fileadmin/user\\_upload/FAO-countries/Iraq/ToR/FAO\\_Assessment1.pdf](http://www.fao.org/fileadmin/user_upload/FAO-countries/Iraq/ToR/FAO_Assessment1.pdf)>.
- Food and Agriculture Organization of the United Nations, Iraq: Humanitarian Response Plan, 2018, <<https://reliefweb.int/sites/reliefweb.int/files/resources/i8659en.pdf>>.
- Food and Agriculture Organization of the United Nations, Inter-Agency Information and Analysis Unit, 'Iraq: Climate change in Iraq', June 2012, <<https://reliefweb.int/map/iraq/iraq-climate-change-iraq-june-2012>>.
- Gallup, 'Economic negativity abounds in Iraq: Amid an ongoing war and violence, the people of this nation must also battle a broken economy', Undated, <<https://news.gallup.com/poll/157070/economic-negativity-abounds-iraq.aspx>>.
- Global Coalition, 'Our mission', Undated, <<http://theglobalcoalition.org/en/mission-en>>.
- Goering, L., 'As climate threats grow, Iraq battles a new enemy: Water shortages', Reuters, 12 Dec. 2017, <<https://www.reuters.com/article/us-iraq-water-security/as-climate-threats-grow-iraq-battles-a-new-enemy-water-shortages-idUSKBN1E627O>>.
- ICSSI Secretariat, 'New report highlights the disastrous impact of Daryan Dam on Iraq', Press release, 28 Oct. 2016, <<http://www.iraqicivilsociety.org/archives/5994>>.
- Index Mundi, 'Iraq economy profile, 2017', Updated 20 Jan. 2018, <[https://www.indexmundi.com/iraq/economy\\_profile.html](https://www.indexmundi.com/iraq/economy_profile.html)>.
- International Energy Agency, *World Energy Outlook, 2016* (OECD/IEA: Paris, 2016).
- IOM Iraq, Displacement Tracking Matrix, 'DTM round 98: Highlights', June 2018, <[https://reliefweb.int/sites/reliefweb.int/files/resources/Round98\\_Report\\_English\\_2018\\_June\\_30\\_IOM\\_DTM.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/Round98_Report_English_2018_June_30_IOM_DTM.pdf)>.
- Looney, R. E., 'Reconstruction and peacebuilding under extreme adversity: The problem of pervasive corruption in Iraq', *International Peacekeeping*, vol. 15, no. 2 (Online May 2008), <<https://www.tandfonline.com/doi/abs/10.1080/13533310802059032?journalCode=finp20>>.
- Looney, R., 'After ISIS, can Iraq get reconstruction right this time?', *World Politics Review*, 18 July 2017, <<https://www.worldpoliticsreview.com/articles/22730/after-isis-can-iraq-get-reconstruction-right-this-time>>.
- Mackenzie, D., 'Extremists in Iraq now control the country's rivers', *New Scientist*, 12 June 2014, <<https://www.newscientist.com/article/dn25722-extremists-in-iraq-now-control-the-countrys-rivers/>>.
- Mathieu-Comtois, S., *Toward Economic Recovery and Food Security in Post-DAESH*

- Iraq: A Framework for Governance Moving Forward* (American University of Iraq, IRIS: Kirkuk, December 2017).
- Menmy, D. T., 'Bilal Wahab in an exclusive interview with MIRS: Corruption remains the second insurgency of Iraq', Mediterranean Institute for Regional Studies, 2 Dec. 2018, <<http://www.mirs.co/details.aspx?jimare=86>>.
- Mostafa, M., 'Iraq says reliance on oil revenues down 85%', Iraq News, 6 Aug. 2017, <<https://www.iraqnews.com/business-iraqi-dinar/iraq-says-reliance-oil-revenues-85/>>.
- Mustafa, H. 'A Year after Mosul Liberation, Misery Still Looms over Iraq's Second Largest City', Asharq Al-Awsat, 11 Jul. 2018, <<https://aawsat.com/english/home/article/1327826/year-after-mosul-liberation-misery-still-looms-over-iraq%E2%80%99s-second-largest-city>>
- Otten, C., 'Rising from the rubble: "If we don't rebuild Mosul, maybe ISIS will come back"', *The Guardian*, 26 Mar. 2018, <<https://www.theguardian.com/cities/2018/mar/26/mosul-struggles-recover-ruins-iraq-isis>>.
- Schwartzstein, P., 'Climate change and water woes drove ISIS recruiting in Iraq: Battered by shifting resources, desperate farmers were driven into terror recruiters' clutches, can it happen again?', 14 Nov. 2017,
- Sumeri, H., 'Iraq's water crisis: A threat to national security', 1001 Iraqi Thoughts, 8 Mar. 2018, <<http://1001iraqithoughts.com/2018/03/08/iraqs-water-crisis-a-threat-to-national-security/>>.
- The Star Online, 'Turkey halts filling Ilisu Dam until July, ambassador to Iraq', 7 June 2018, <<https://www.thestar.com.my/news/world/2018/06/07/turkey-halts-filling-of-ilsu-dam-until-july--ambassador-to-iraq>>.
- T-Zero, Strategy for Water and land Resources in Iraq, 6 Oct. 2015, <<http://t-zero.it/en/portfolio/swlri-strategy-for-water-and-land-resources-in-iraq/>>.
- Taha, Y., 'Iraq's thirst for water is not only due Turkey and Iran', 7 June 2008, <<http://kirkuknow.com/english/?p=22668>>.
- Transparency International, Iraq: Corruption Perceptions Index, 2017, <<https://www.transparency.org/country/IRQ>>.
- Transparency International, Iraq: Overview of corruption and anti-corruption', Undated, <<https://knowledgehub.transparency.org/helpdesk/iraq-overview-of-corruption-and-anti-corruption>>.
- Tollast, R. 'Beyond Oil: Restoring Iraq's Economic Sovereignty', 19 Jan. 2018, <<https://www.iraqincontext.com/single-post/2018/01/19/Between-the-Bakken-and-Beijing-Restoring-Iraqs-economic-sovereignty>>
- United Nations Development Programme, 'UNDP helps the Government of Iraq to enhance international cooperation on sustainable management of Euphrates and Tigris Rivers', Press release, 15 Nov. 2016, <<http://www.iq.undp.org/content/iraq/en/home/presscenter/pressreleases/2016/11/15/undp-helps-the-government-of-iraq-to-enhance-international-cooperation-on-sustainable-management-of-euphrates-and-tigris-rivers.html>>.
- United Nations Development Programme, Iraq UNDAF Fund, Joint Programme document template, Aug. 2011, <<http://www.iq.undp.org/content/dam/iraq/docs/cpr/UNDP-IQ-drm-prodoc-2012.pdf>>.
- United Nations, Iraq Country Team, 'How environmental damage causes food insecurity in Iraq', 10 June 2013, <<https://reliefweb.int/report/iraq/how-environmental-damage-causes-food-insecurity-iraq-enar>>.
- United Nations, Iraq Country Team, Briefing to the Security Council by SRSG for Iraq Ján Kubiš, New York, 20 Feb. 2018 [AS PREPARED], <[http://www.uniraq.org/index.php?option=com\\_k2&view=item&id=8604:briefing-to-the-security-council-by-srsg-for-iraq-jan-kubis-new-york-20-february-2018-as-prepared&Itemid=712&lang=en](http://www.uniraq.org/index.php?option=com_k2&view=item&id=8604:briefing-to-the-security-council-by-srsg-for-iraq-jan-kubis-new-york-20-february-2018-as-prepared&Itemid=712&lang=en)>.
- United Nations, Inter-Agency Information and Analysis Unit, 'Climate change in Iraq',

- undated, <https://reliefweb.int/sites/reliefweb.int/files/resources/Climate%20change%20In%20Iraq%20Fact%20sheet%20-%20English.pdf>>.
- UN Web TV, United Nations, Security Council, Understanding and addressing climate-related security risks, Opening statement by Amina J. Mohammed (Deputy Secretary-General), 11 July 2018, <<http://webtv.un.org/media/watch/understanding-and-addressing-climate-related-security-risks-security-council-8307th-meeting/5808209837001/?term>>.
- United Nations, World Food Programme (WFP), *Baseline Food Security Analysis in Iraq* (WFP Iraq Country office: Rome, 2004), <<https://documents.wfp.org/stellent/groups/public/documents/ena/wfp193130.pdf?iframe>>.
- USAID, 'Climate change risk profile: Iraq', Fact sheet, March 2017, <[https://www.climatelinks.org/sites/default/files/asset/document/2017Mar3\\_GEMS\\_Climate%20Risk%20Profile\\_Iraq\\_FINAL.pdf](https://www.climatelinks.org/sites/default/files/asset/document/2017Mar3_GEMS_Climate%20Risk%20Profile_Iraq_FINAL.pdf)>.
- US Central Intelligence Agency, 'World Factbook: Iraq', Updated 14 Aug. 2018, <<https://www.cia.gov/library/publications/the-world-factbook/geos/iz.html>>.
- Vidal, J., 'Water supply key to outcome of conflicts in Iraq and Syria, experts warn: Security analysts in London and Baghdad say control of rivers and dams has become a major tactical weapon for Isis', *The Guardian*, 2 July 2014, <<https://www.theguardian.com/environment/2014/jul/02/water-key-conflict-iraq-syria-isis>>.
- von Lossow, T., 'More than infrastructures: Water challenges in Iraq', *Planetary Security Initiative Policy Brief*, Clingendael Netherlands Institute of International Relations, July 2018, <[https://www.clingendael.org/sites/default/files/2018-07/PB\\_PSI\\_water\\_challenges\\_Iraq.pdf](https://www.clingendael.org/sites/default/files/2018-07/PB_PSI_water_challenges_Iraq.pdf)>.
- World Bank, 'Iraq dashboard: Climate future', Undated, <[http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country\\_profile&CCode=IRQ&ThisTab=ClimateFuture](http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile&CCode=IRQ&ThisTab=ClimateFuture)>.
- World Development Indicators Database, 'Country Profile: Iraq', Undated, <[http://databank.worldbank.org/data/views/reports/reportwidget.aspx?Report\\_Name=CountryProfile&Id=b45ofd57&tbar=y&dd=y&inf=n&zm=n&country=IRQ](http://databank.worldbank.org/data/views/reports/reportwidget.aspx?Report_Name=CountryProfile&Id=b45ofd57&tbar=y&dd=y&inf=n&zm=n&country=IRQ)>.
- Zaid Al-Ali, *The Struggle for Iraq's Future: How Corruption, Incompetence and Sectarianism Have Undermined Democracy* (Yale University Press: Newhaven, CT 2014). See in particular chapter 8, 'The third insurgency: Environmental disaster'.



# About this report

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## The Expert Working Group on Climate-related Security Risks

The Expert Working Group on Climate-related Security Risks aims to produce high-quality and policy-relevant assessments of climate-related security risks, which can strengthen decision-making and programming on those risks within the United Nations. In 2018, the expert working group – together with external researchers and the working group secretariat – will produce research on four geographies: Iraq, Lake Chad, Somalia and a further geography in Central Asia. The reports will build on research and insights from the field to provide integrated risk assessments of climate-related change and security – as well as other social, political and economic aspects.





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