

## Climate, Peace and Security Fact Sheet

# Iraq

Iraq is highly vulnerable to climate change and its impacts. The country's vulnerability is shaped by its physical exposure, a strong natural resource dependency and low adaptive capacity due to violent conflict, poverty, political instability and corruption. Iraq is particularly exposed to floods, droughts and dust storms, increasingly linked to temperature and precipitation variability.

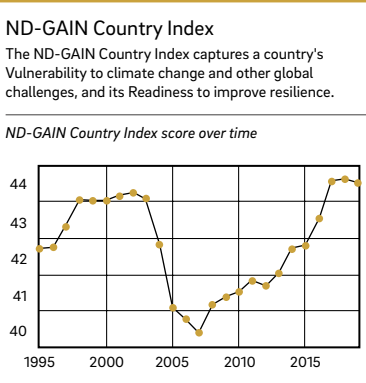
- Increasing temperatures, decreasing water availability and greater interannual variability in rainfall negatively affect agriculture, reduce household income and food availability, and exacerbate livelihood insecurity. Women and girls are disproportionately affected by the adverse effects of climate change, due to pre-existing gender norms and persisting inequalities.
- Low agriculture yields and loss of livelihoods contribute to increased urban migration, with urban challenges including the risk of social unrest and protests in host cities.
- Armed groups and militias leverage the economic hardships, further exacerbated by the compounding effects of climate change, for recruitment and support.
- Weak governance increases the opportunities for elite exploitation and corruption, which leads to further marginalization and exclusion that feed grievances and drive instability.

The effects of climate change are felt in several critical sectors – agriculture, water, economy, public health and the environment – directly affecting the lives of Iraqi citizens. However, responses to climate change have been inadequate and significantly affected by violent conflict, political competition, corruption and lack of financial resources. If left unattended, climate change impacts will exacerbate poverty and insecurity, and may lead to social unrest and further instability.

### RECOMMENDED ACTIONS:

- ▶ The Government of Iraq, its regional and international partners, and the United Nations (UN), should cooperate on developing comprehensive analytic tools for climate-related security risks. The analysis can be incorporated into the Iraq National Adaptation Plan.
- ▶ The Government of Iraq should strengthen its planning and implementation capacity to respond to challenges in public service provision due to the adverse effects of climate change. Mechanisms should be put in place to enhance participation, transparency and accountability and to reform the electricity and water sectors. International actors should assist in these efforts.
- ▶ The government and UN agencies should capitalise on the potential to strengthen the social contract between society and government through effective, climate-resilient service delivery.
- ▶ The mandate of the UN Assistance Mission for Iraq (UNAMI) – to advise, support and assist the Government of Iraq on addressing the adverse impacts of climate change and environmental degradation – should be expanded to include support for climate mitigation and adaptation, including in the area of climate-related security risks.
- ▶ The Government of Iraq and its regional and international partners should work closely with diverse local civil society actors, including marginalised and excluded groups, women and girls, and ethnic, religious and tribal minorities in addressing climate-related security risks.

Mid-term projected temperature increase: 2.0°C (2050)	Human Development Index: 0.67 / 1.0 (2020)
Increasing evapotranspiration, severe droughts and dust storms	Population: 41.2 million (2021)
Decreasing annual rainfall, fewer rainy days and increasing water insecurity	Estimated food insecure population: 2.2 million (2022)
25 per cent of households supported by agriculture (2017)	Global Peace Index score 3.2 / 5 (2021)
Internally Displaced Persons: 1,186,556 (2021)	<b>43.6</b> ND-GAIN Country Index score 43.6 / 100 (2019)



Country comparison	ND-GAIN Country	Global Peace Index score
	Lebanon 44.3/100	2.8/5
	Timor-Leste 44.3/100	1.9/5
	Philippines 43.6/100	2.4/5
	Guatemala 43.5/100	2.2/5

Figure 1. Data sources: USAID (2017), [Climate Risk Profile: Iraq](#); World Bank Climate Change Knowledge Portal (n.d.) Iraq. [Climate data: projections](#); Adamo, N. et al. (2018) [Climate Change: Consequences on Iraq's Environment](#); Journal of Earth Sciences and Geotechnical Engineering, vol. 8, no. 3, Scientific Press International Limited; IOM DTM (2021) [Displacement Report 124 \(October-December 2021\)](#); UNDP (2020) [Human Development Reports: Iraq](#); UNFPA (2021) [World Population Dashboard: Iraq](#); WFP (n.d.) [HungerMap Live: Iraq insights and key trends](#) [accessed 23 February 2022]; Vision of Humanity (2021) [Global Peace Index](#); Notre Dame Global Adaptation Initiative (2019). [ND-GAIN Rankings](#).

## Climate Trends and Projections

Iraq has three main climate zones: an arid lowland desert in the west and south-west, a semi-arid steppe largely covering the central region, and a moist Mediterranean climate in the north and north-east.<sup>1</sup> These climate zones have variations in temperature and precipitation.<sup>2</sup> Iraq has experienced low rainfall rates and unprecedented temperature increases.<sup>3</sup> It has also increasingly been experiencing flash floods.<sup>4</sup>

**Temperature:** Temperatures in Iraq have been rising, with the change felt more acutely in the last decade.<sup>5</sup> Iraq is increasingly witnessing summer temperatures above 50°C, with extreme heatwaves predicted to become more frequent in the future.<sup>6</sup> Mean annual temperature is likely to increase by 2°C by 2050.<sup>7</sup> Temperature increases will adversely affect soil moisture and water security, increasing the likelihood of longer and more severe droughts and dust storms.<sup>8</sup>

**Precipitation:** Iraq's precipitation is characterised by high seasonal and regional variability. Most rainfall happens in the north and north-east with between 400 to 1,000 mm a year, mostly falling between November and March, while the steppe's annual average ranges between 200 to 400 mm.<sup>9</sup> The south receives only between 40 to 60 mm, mainly between October and December.<sup>10</sup> Projections indicate that Iraq's mean annual rainfall will decrease by 9 per cent by 2050, with the maximum number of rainy days expected to decrease as well.<sup>11</sup> Declining rainfall is expected to prolong drought periods, with severe impacts on food and water security.<sup>12</sup>

## Socio-ecological Dynamics

Iraq's economy is dominated by oil, which contributes more than 90 per cent of government revenue.<sup>13</sup> High reliance on oil revenue contributes to economic instability, as economic growth is hindered by the volatility of oil prices and the lack of economic diversification. Further, emissions from the aging oil wells have also affected the country's environment and people's health.<sup>14</sup> Despite the dependence on oil for revenue, the agriculture sector provides a livelihood for 25 per cent of the population.<sup>15</sup> Agriculture, however, is mostly characterised by small-scale rainfed or irrigated farms. Reduced rainfall levels and water availability, prolonged droughts, dust storms and decreasing soil fertility have adversely affected agriculture and the livelihoods dependant on it.<sup>16</sup>

In addition, the water crisis in Iraq is exacerbating socio-ecological dynamics. Iraq's water supplies largely depend on the Tigris–Euphrates river system, whose major tributaries originate in Turkey and Iran.<sup>17</sup> As climate change is increasing erratic rainfall in the region, downstream riparian Iraq is dependent on regional stability and cooperation with its neighbours for sustained water access.<sup>18</sup>

Further, water availability and quality is worsened by outdated and poor water and sewage infrastructure and irrigation systems, as well as the lack of adequate water management policies and practices.<sup>19</sup> Tribal tensions have emerged over water competition and further intercommunal conflict may emerge.<sup>20</sup> The Covid-19 pandemic has also taken a toll on the economy, exacerbated already high levels of unemployment and poverty, and created further instability in Iraq.<sup>21</sup>

## Climate-related Peace and Security Risks

Climate change can undermine development gains and affect the dynamics of conflict and disrupt fragile peace processes. Although there is no direct causal relationship between climate and conflict, research has identified multiple pathways through which climate change interacts with political, social and environmental stresses to compound existing vulnerabilities and tensions.<sup>22</sup>

This fact sheet uses four interrelated pathways to navigate the complex relationship between climate change, peace and security: (1) livelihood deterioration, (2) migration and mobility, (3) tactics of military and armed actors, and (4) elite exploitation and mismanagement.<sup>23</sup>

### Livelihood Deterioration

Climate change already impacts livelihoods in Iraq. The societal burdens of a weak economy and governance systems are compounded by climate change impacts that negatively affect agriculture and reduce household income, food and livelihood security.

In 2021, northern Iraq was affected by droughts owing to low levels of rainfall, while the southern part of the country experienced a decrease in fresh water supply; both resulted in significant crop failure.<sup>24</sup> Droughts in northern parts of the country – generally considered a cereal surplus area – resulted in low harvest in Nineveh province and halved crop production in the Kurdistan Region of Iraq (KRI). In Nineveh, the wheat harvest was estimated to be 70 per cent lower than in 2020, and 50 per cent lower than in 2019. In the KRI, wheat production was forecast at 50 per cent lower than the 2020 harvest.<sup>25</sup> Crop failure has contributed to an increase in food prices, as local production is supplemented by food imports.<sup>26</sup> Crop losses, reduced income and increase in food prices are exacerbating vulnerabilities and threatening food and livelihood security.<sup>27</sup> Tensions between communities have already emerged, and livelihood deterioration linked to climate change and water shortages may increase the risk of resource competition, migration, armed groups' recruitment and violent conflict.<sup>28</sup> In recent years, protests and riots have emerged as one of the primary forms of contention linked to climate-related risks.

1 USAID (2017). [Climate Risk Profile: Iraq](#).

2 USAID 2017.

3 World Bank (n.d.). [Iraq Climate Change Knowledge Portal Iraq](#).

4 Mustafa, A. et al. (2019). [Extreme Rainfalls as a Cause of Urban Flash Floods: A Case Study of the Erbil-Kurdistan Region of Iraq](#). Acta Scientiarum Polonorum Formatio Circumectus, 18(3); UN OCHA (2018). [Iraq – Floods: Flash Situation Report](#).

5 World Bank n.d.

6 Washington Post (2020). [Baghdad soars to 125 blistering degrees, its highest temperature on record](#); Zittis, G. et al (2021). [Business-as-usual will lead to super and ultra-extreme heatwaves in the Middle East and North Africa](#). npj Clim Atmos Sci 4(1).

7 USAID 2017.

8 Adamo, N. et al. (2018). [Climate Change: Consequences on Iraq's Environment](#). Journal of Earth Sciences and Geotechnical Engineering 8(3); World Bank n.d.

9 USAID 2017.

10 FAO (2021). [Iraq Accumulate Precipitation](#).

11 World Bank n.d.; USAID 2017.

12 Adamo et al. 2018.

13 UNDP (2020). [Impact of the Oil Crisis and COVID-19 on Iraq's Fragility](#).

14 Rubin, A. & Krauss, A. (2020). [Southern Iraq's Toxic Twilight Burning Gas and Poisoning the Air](#). New York Times; Billing, L. (2021). ['Everything Living Is Dying': Environmental Ruin in Modern Iraq](#). UNDARK.

15 USAID 2017.

16 Adamo et al. 2018.

17 Mahmoud, S. & Tollast, R. (2021). [Iraq Faces Harsh Summer of Water Shortages as Turkey and Iran Continue Dam Projects](#). The National News; Solomon, E. (n.d.). [Why water is a growing faultline between Turkey and Iraq](#). Financial Times.

18 O'Driscoll, D. (2018). [Emerging Trends of Conflict and Instability in Iraq](#). IDS.

19 HRW (2019). [Basra is Thirsty: Iraq's Failure to Manage the Water Crisis](#); Netherlands MFA (2019). [Climate Change Profile: Iraq](#).

20 Al Hasan, S. (2020). [Drought Ignites Tribal Conflicts in Southern Iraq](#). Planetary Security Initiative.

21 UNDP (2020). [Impact of Covid-19 on the Iraqi Economy](#); World Bank (2020). [COVID-19 and Low Oil Prices Push Millions of Iraqis into Poverty](#).

22 Van Baalen, S. & Mobjörk, M. (2017). [Climate Change and Violent Conflict in East Africa: Integrating Qualitative and Quantitative Research to Probe the Mechanisms](#). International Studies Review 20(4), 547–575.

23 Mobjörk, M. et al (Nov. 2020). [Pathways of Climate Insecurity: Guidance for Policymakers](#). SIPRI.

24 Norwegian Refuge Council (2021). [Iraq's Drought Crisis and the Damaging Effects on Communities](#).

25 FAO (2021). [The Republic of Iraq: Drought in Northern Parts of the Country](#); Dahan, M. & Jalabi, R. (2018). [How Iraq's Agricultural Heartland is Dying of Thirst](#). Reuters.

26 Norwegian Refuge Council 2021.

27 Norwegian Refuge Council 2021.

28 Hassan, K. et al. (2018). [Iraq: Climate-Related Security Risk Assessment](#).

Women are disproportionately affected by climate change in Iraq, due to pre-existing gender roles and inequality which means women often lack the livelihood options and resources of men. Iraq was ranked 154 out of 156 countries in the Global Gender Gap Report 2021, with women having lower economic opportunities and participation, education and political empowerment.<sup>29</sup> In the Hawizeh marshes, for example, women are adversely affected by water shortages and drought conditions and they must search for other water sources in distant areas to provide for families and livestock.<sup>30</sup> When livelihoods deteriorate, men migrate to cities in search of jobs leaving women to support their families and livestock, adding an extra burden of responsibility in times of distress.<sup>31</sup> Thus, addressing livelihood deterioration should consider the gender dynamics in Iraq.

**Migration and Mobility**

Iraq has been experiencing large-scale urban migration due to crop failures and loss of livelihoods.<sup>32</sup> For example, in Basra city, migration from rural areas was mainly driven by a lack of economic opportunities, water scarcity and severe environmental degradation to rural livelihoods. Many of these migrants live in poor and unsafe urban areas already prone to social problems related to economic security. Urban migration patterns in Iraq have shown that most migrants settle in slums and these slums, together with the migrants’ precarious conditions, have created a breeding ground for recruitment into armed groups and the growth of criminal networks.<sup>33</sup> Sources of insecurity in host cities are centred around tribal conflicts, unemployment, lack of services, and drug and alcohol trafficking.<sup>34</sup> Increased urban migration adds to challenges in urban areas, straining local authorities’ capacities to manage and meet population demand for services.<sup>35</sup>

As of December 2021, over 1 million people were internally displaced in Iraq, while 4.9 million have been registered as returning to their region of origin.<sup>36</sup> Many internally displaced persons (IDPs) and returnees are in regions experiencing heightened food insecurity, including along the Euphrates River in Anbar and the Tigris River in Salah Al-Din. Ninewa governate hosts the largest number of IDPs and returnees in Iraq, where drought conditions in 2021 led to the displacement of returnee households.<sup>37</sup> Displacement has negative effects on individual and household resilience, and returnees may be more vulnerable to the adverse effects of climate change because displacement can have negative impacts on livelihood and financial security.

**Tactics of Military and Armed Actors**

Increased climate-related and environmental stress may motivate armed groups to capture or destroy agricultural land and water infrastructure such as dams, pipelines and waste water plants. This phenomenon has been observed in other conflicts in the Middle

**Internal Displacement and Food Insecurity**

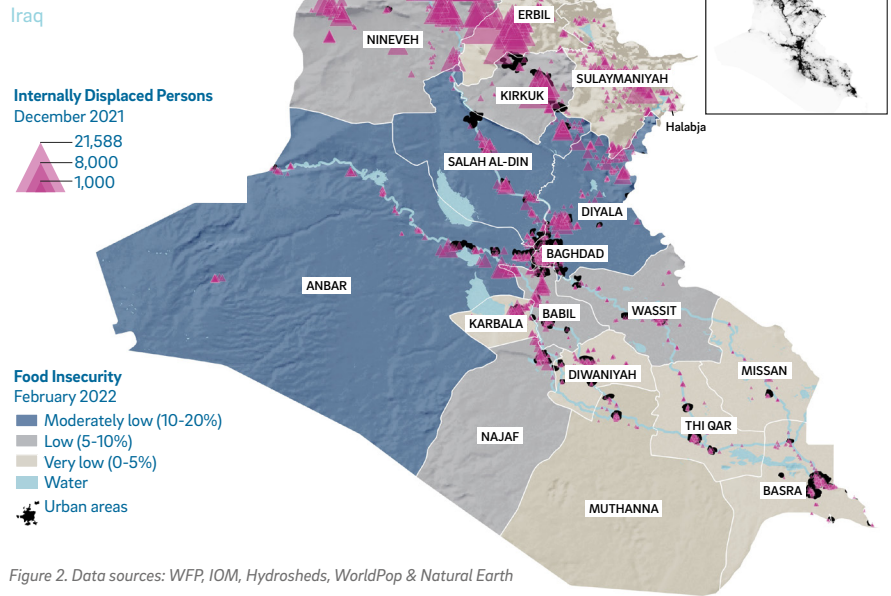


Figure 2. Data sources: WFP, IOM, Hydrosheds, WorldPop & Natural Earth

East and North Africa. During the Islamic State (IS) occupation of territory in Iraq between 2013–2017, the group targeted important water sources such as the Mosul and Falluja dams and destroyed irrigation infrastructure.<sup>38</sup> The fear was that the armed group might divert or cut the flow of water to the Shia-majority southern parts of Iraq, a key agriculture region that relies on irrigation, and let it dry out.<sup>39</sup> Arable lands have also been affected by conflict and intentional destruction by IS. Due to the exacerbating impact of climate change, strategic water infrastructure may continue to play a significant role in future armed conflicts in Iraq.

In addition, as livelihood insecurity lowers the opportunity cost of illicit activities, it can provide an avenue for armed groups to gain support and recruit new members.<sup>40</sup> For example, IS has previously used food and water shortages to gain support in certain communities in Iraq in exchange for livelihood security, resources and other services not provided by the state.<sup>41</sup> In southern Iraq, recruitment into militia groups is considered a livelihood option for many households owing to environmental degradation and lack of economic opportunities.<sup>42</sup>

**Elite Exploitation and Mismanagement**

In Iraq, the combined effects of weak governance, elite exploitation, marginalisation and exclusion mean that climate change impacts some groups more than others, in turn feeding the grievances that drive instability.

Corruption, patronage networks, and the politicization of state institutions through their apportionment between ethnic and sectarian groups limit the government’s capacity to implement policies, which leads to the unequal distribution of resources and creates instability. Political competition has impeded government action despite pledges from successive governments to address

29 World Economic Forum (2021). [Global Gender Gap Report 2021](#).  
 30 UNDP (2021). [Ahwari Women, The Beating Heart of the Iraqi Marshes](#).  
 31 UNDP 2021.  
 32 USAID 2017.  
 33 IOM (2021). [Migration into a Fragile Setting: Responding to Climate-Induced Informal Urbanization and Inequality in Basra, Iraq](#).  
 34 IOM 2021.  
 35 Adamo et al. 2018.  
 36 IOM DTM (2021). [Master List Report 124, October – December 2021 \(Including Annual Summary\)](#).  
 37 IOM DTM (2021). [Climate-Induced Displacement – Ninewa](#).

38 Lossow, T. (2016). [Water as Weapon: IS on the Euphrates and Tigris](#). SWP comments; Collard, R. (2014). [Iraq’s Battleground Dams Are Key to Saving the Country from ISIS](#). Time; King, M. D. (2015). [The Weaponization of Water in Syria and Iraq](#). The Washington Quarterly 38(4), 153–169; Sowers, J. et al. (2017). [Targeting Environmental Infrastructures, International Law, and Civilians in the New Middle Eastern Wars](#). Security Dialogue 48(5), 410–430.  
 39 HRW 2019; Netherlands MFA 2019.  
 40 Hassan, K. et al (2018). [Iraq: Climate-Related Security Risk Assessment](#).  
 41 O’Driscoll 2018.  
 42 IOM 2021.

the socio-economic impacts of climate change.<sup>43</sup> This has prevented Iraq from making long-term investment in infrastructure to tackle the impacts of climate change, for example, Iraq has not managed to invest in long-term water infrastructure to reduce water waste, take advantage of water flowing downriver, and maximise seasonal flows.<sup>44</sup> UN-led reconstruction efforts post the 2003 invasion have been unsuccessful in setting the country's water infrastructure on a good footing. Years of mismanagement have culminated in prolonged and persistent water shortage.<sup>45</sup>

Iraq has already witnessed protests over the lack of, or poor quality, water, electricity and other services, as well as the lack of employment opportunities.<sup>46</sup> These protests have been met with violence from security actors and have created further instability in the country.<sup>47</sup> At the same time, protests over water issues in Basra have also led to promises of investment in the local area, rather than broader countrywide policy adoption. The impacts of climate change will exacerbate existing issues of service provision. Left unaddressed, weak governance, elite exploitation and mismanagement, and marginalisation will accentuate vulnerability and instability in Iraq, especially when compounded by adverse impacts of climate change. Deteriorating livelihoods are likely to increase the risk of protests and create political instability, and in some instances lead to violence.

### Water Stress

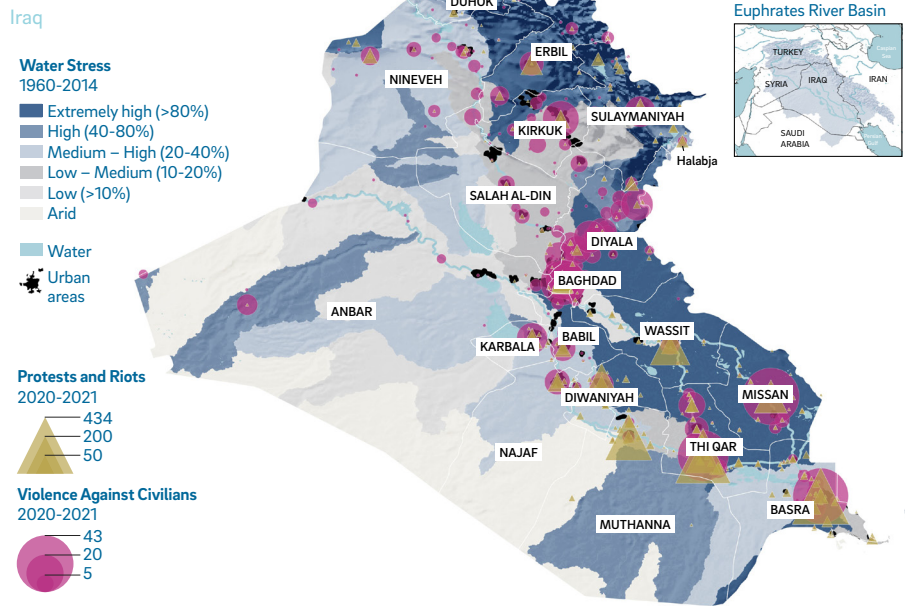


Figure 3. Data sources: WRI Aqueduct, ACLED, Hydrosheds & Natural Earth

43 Bourhrous, A. et al. (2021). [Reform Within the System: Governance in Iraq and Lebanon](#). SIPRI Policy Paper 61.  
 44 Bourhrous et al. 2021.  
 45 HRW 2019.  
 46 Associated Press (2018). [Iraqi City of Basra Seethes Over Water Crisis, Unemployment](#). VOA; Lahn, G. & Shamout, N. (2018). [Basra's Poisonous Water Demands International Action](#). Chatham House.  
 47 O'Driscoll, D. et al (2020). [Protest and State-Society Relations in the Middle East and North Africa](#). SIPRI Policy Paper 56.

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