



Sand storm in Basra, Iraq, 2022. Shutterstock

DUST STORMS AND CLIMATE CHANGE: A CRISIS FOR THE IRAQI ECONOMY, AND THE NEED FOR MULTILATERAL SOLUTIONS

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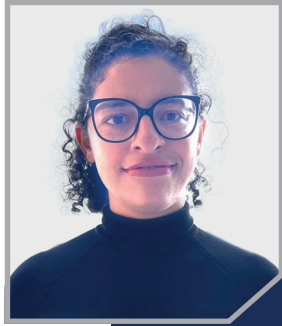
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Dust Storms and Climate Change: A Crisis for the Iraqi Economy, and the Need for Multilateral Solutions

As the month of May arrived in Iraq this year, mild spring days gave way to a typical summer inferno. The heat ushered in sand and dust storms (SDSs), events that turn the sky orange and angry, the billows depositing thick layers of dust in their wake. While SDSs are not a new phenomenon in Iraq, meteorologists have documented a marked increase in the number and intensity of SDSs in the past 20 years.¹ Baghdad experienced an annual average of 7.9 days of major dust storms from 1980 to 2015,² compared to around ten such events since January 2022, each lasting for

at least two to four days.³ International borders are irrelevant for this hazardous trend. One particular SDS that led to the hospitalization of 4,000 Iraqis in May 2022 subsequently tracked south to Saudi Arabia and Bahrain, and disrupted air traffic in Kuwait.⁴

This paper highlights the relationship between drought and SDSs, the impact of these storms on Iraq's rentier economy, and the dangers such conditions represent to the region. The paper calls for multilateral cooperation among Iraq and its neighbors to meet

1 Kieran Cooke, "Rise in sandstorms threatens Middle East and North Africa." Middle East Eye, August 28, 2017. <https://www.middleeasteye.net/opinion/rise-sandstorms-threatens-middle-east-and-north-africa#:~:text=Dust%20and%20sandstorms%20are%20some.losses%20to%20the%20region's%20economies>.

2 Ali A. Attiya and Brian G. Jones, "Climatology of Iraqi dust events during 1980-2015." SN Applied Science 2, no. 845 (2020). <https://doi.org/10.1007/s42452-020-2669-4>.

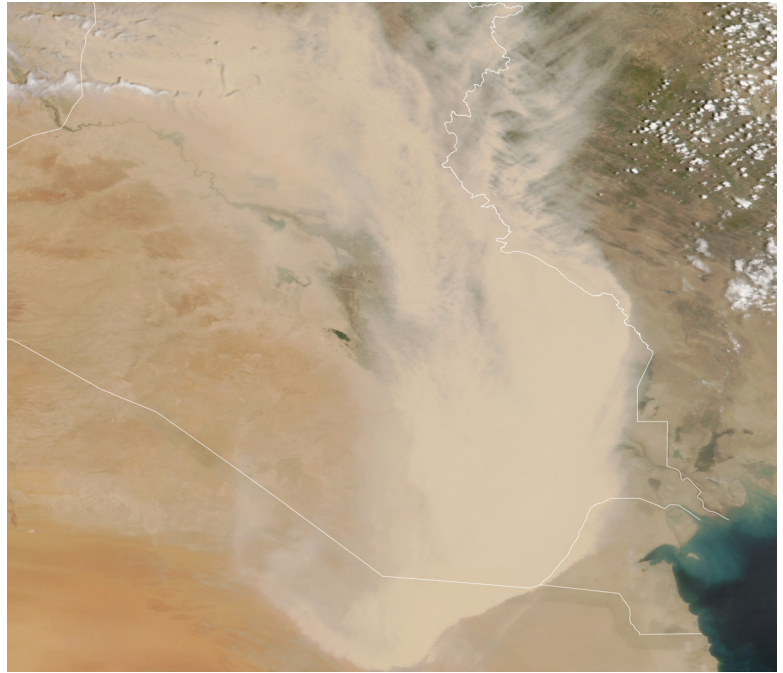
3 "Weather forecast counts the dust storms recorded since January until today," Nas News, May 23, 2022. <https://www.nasnews.com//view.php?cat=86534>.

4 Ibrahim al-Khazen and Ali Jawad, "Thousands suffer as sandstorm hits Iraq," Anadolu Agency, May 16, 2022. <https://www.aa.com.tr/en/middle-east/thousands-suffer-as-sandstorm-hits-iraq/2589628>.

these challenges and to bring about an effective and sustainable climate response. Of unique importance is the impact of SDSs on Iraq's economy, due to the immediate and long-term challenges that these weather events pose to oil production and the broader economy. With a few notable exceptions, scarce research exists examining the impact of SDSs on Iraq and for MENA economies.⁵ Without such research, targeted policy interventions will be insufficient and/or ineffective.

SAND AND DUST STORMS ON THE RISE

Sand and dust storms have generated dire conditions across Iraq this year. In April 2022, one storm left 5,000 individuals in hospitals and at least one person dead.⁶ A month later, another storm left 4,000 hospitalized, and Baghdad became one of the most polluted cities in the world with around 60 tons of sand covering the city in one day.⁷ Images surfaced online of internally displaced children in camps covered in a thick layer of dust, highlighting the impact of these storms on those with limited resources. Of Iraq's total population of 41.2 million, nearly 13.1 million live in poverty⁸ and this group is particularly vulnerable to feeling the impact of SDSs. There is more to come: unless the country introduces meaningful measures that address its drought and lack of green coverage, experts expect that Iraq will turn into a "dust



NASA Earth Observatory images by Lauren Dauphin, using MODIS data from NASA EOSDIS

bowl" with around 300 SDSs per year by 2050.⁹ Why are such phenomena on the rise? Lack of moisture and water shortage destroys native vegetation and is directly responsible for increasing SDSs. Water shortage has contributed to the desertification of Iraq's land at an increased rate of 39%, leaving about 54% of land under similar threat.¹⁰ The combination of increased temperatures due to the oil and gas industries, gas flaring, outdated irrigation practices, mismanagement of water usage and storage, water policies by Iraq's neighbors, as well as the combined effects of war and conflict on the land has contributed to Iraq losing around 100 square kilometers annually

5 Bashar Muneer Yahya and Dursun Zafer Seker, "The Impact of Dust and Sandstorms in Increasing Drought Areas in Nineveh Province, North-Western Iraq," *Journal of Asian and African Studies* 54, no. 3 (2019): 346-359. <https://doi.org/10.1177/0021909618812913>.

6 Isabella Kwai, "Iraqis Choke Under a Blanket of Dust as Sandstorms Sweep the Country," *The New York Times*, May 5, 2022. <https://www.nytimes.com/2022/05/05/world/middleeast/iraq-sandstorms-climate.html>.

7 "Environment: Baghdad was exposed to the largest global pollution after the recent dust storms," *Nas News*, May 18, 2022. <https://www.nasnews.com/view.php?cat=86144>.

8 This figure includes 961,000 people in acute need; 180,000 internally displaced people (IDPs) inside camps; and 549,000 IDPs outside camps. "Humanitarian Needs Overview: Iraq," United Nations Office for the Coordination of Humanitarian Affairs (OCHA), March 27, 2022. <https://reliefweb.int/attachments/da96d784-39d8-3c39-96cd-0be4ccf1a0cb/Iraq%20-%20Humanitarian%20Bulletin%2C%20January%20-%20March%202022.pdf>.

9 Claire Parker and Kasha Patel, "Sandstorm wave sweeps Middle East, sending thousands to hospitals," *The Washington Post*, May 26, 2022. <https://www.washingtonpost.com/world/2022/05/26/sand-storms-middle-east-climate-change/>.

10 Rana Alfardan, "Iraq's Growing Desertification Problem," *Iraq: Climate Change Adaptation, Planetary Security Initiative*, May 4, 2021. <https://www.planetarysecurityinitiative.org/news/iraqs-growing-desertification-problem#:~:text=Desertification%20is%20a%20consequence%20of,and%2054%25%20is%20under%20threat>.



Sand Storm in Basra, Iraq. May 23, 2022. Shutterstock

from its arable lands,¹¹ and to a drop in pasture area and the productivity of cultivated land. Additionally, as Mohammed Al Allaf, Dean of the Faculty of Agriculture at Mosul University, argued during a recent forum on climate change, water shortage and poor agricultural practices have led to the decrease of tree-covered land from 60% to 4%.¹² Soil degradation, droughts, and the dramatic decrease in local vegetation and arable lands are all factors directly connected to the increase in SDSs. Allaf issued a dire prediction that, “Everyone will lose with any environmental collapse.”¹³

SDSS AND THE ECONOMY

Other than the devastating human and health costs of these storms, SDSs have a significant effect on Iraq’s economic system. The agricultural sector contracted by

36.8% according to World Bank estimates in the past year due to the combination of climate-related events and weak infrastructure.¹⁴ Transportation suffered from frequent flight grounding at Baghdad International Airport, there were more car accidents, and a halting of ground transportation. Finally, the country’s primary source of income, oil and gas production, is severely hampered during SDS events. Combined with a severe water shortage, which directly impacts the energy sector, climate change insecurity and SDSs will have a disastrous impact on the country’s budget and its economic diversification agenda, leaving an already fragile economic, political, and social equilibrium dangerously close to collapse. In addition to limiting the country’s oil revenues, dire climate conditions negatively impact other sectors of the economy, such

¹¹ Ibid.

¹² Sinan Mahmoud, “Experts and officials warn of a bleak outlook for drought-hit Iraq,” The National News, May 9, 2022. <https://www.thenationalnews.com/mena/iraq/2022/05/09/experts-and-officials-warn-of-bleak-outlook-for-drought-hit-iraq/>.

¹³ Ibid.

¹⁴ “Iraq’s Economic Update - April 2022,” Where We Work: Iraq, World Bank, April 14, 2022. <https://www.worldbank.org/en/country/iraq/publication/economic-update-april-2022>.

as transportation and agriculture, as well as limiting available income necessary to fund much-needed infrastructure building. These environmental events not only directly impact the country's available budget to invest in a more resilient and diversified economy, but they also threaten the very survival of the current economic structure in Iraq.

SDSs are especially harmful to oil and gas production. They reduce visibility on the field, which can bring operations to a halt. Their high winds snuff out flare ignition, a necessary feature of oil production that disposes of flammable gas. Sand and dust can clog equipment and machinery, increasing down time, maintenance, and parts replacement costs. SDS deposits can also reduce tank capacity and require additional work hours to account for the lost time. Finally, SDSs severely hamper visibility, meaning that transport of gas and oil over land or sea reduces the country's export capacities. During the May 17, 2022 storm, the General Company for Ports of Iraq (GCPI)¹⁵ suspended all maritime operations on its docks, resulting in the turning away of all incoming ships. Because more than 97% of Iraq's oil exports exit south by sea,¹⁶ the continuation of these storms will cost Iraq massive revenue loss.

As one of the biggest producers of oil in the world, Iraq's reduced production will impact the energy market and other members of the Organization of the Petroleum Exporting Countries (OPEC). Moreover, as SDSs are not only a local phenomenon, their increasing frequency and intensity can impact oil and

gas fields in neighboring countries, affecting their production too.

BROADER ECONOMIC CONSEQUENCES OF CLIMATE INSECURITY IN IRAQ

Iraq's recent SDSs have brought heightened public attention to related climate challenges that impact the country's economy. Water shortage is one of the biggest obstacles facing Iraq. A combination of poorly maintained water distribution infrastructure, outdated farming and irrigation methods, summer temperatures reaching 122 degrees Fahrenheit, and several upstream dams and hydroelectric projects in Iran and Turkey, have all contributed to a water deficit of approximately 11 billion cubic meters per year.¹⁷ While drought affects biodiversity, patterns of human and animal migration, as well as social conditions, insecure water sourcing from rivers and local lakes also represents a threat to oil production. Water is essential for lubricating and cooling the drill itself, for removing debris, and sometimes for "waterflooding" (a process of transporting oil to production wells).¹⁸

With water being essential for oil and gas development, extraction, and processing, water shortages in Iraq have predictable consequences for the industry. In February 2022, for example, Basra Oil Company (BOC) announced that the current water supplies would cover only a portion of its production needs in Iraq's giant southern oil fields, forcing Iraq to produce less than its full capacities, and less than the country's OPEC+ quota.¹⁹ Adding to this economic

¹⁵ The GCPI operates under Iraq's Ministry of Transportation and is responsible for managing major ports and territorial waters.

¹⁶ "Dust storm hits the Iraqi oil sector...great financial losses," Nas News, May 17, 2022. <https://www.nasnews.com/view.php?cat=86066>.

¹⁷ Zvi Bar'el, "Iraq's Water Crisis Is Getting Dire – and Its Neighbors Aren't Helping," Haaretz, November 26, 2021. <https://www.haaretz.com/middle-east-news/iraq/2021-11-26/ty-article/.premium/iraqs-water-crisis-is-getting-dire-and-its-neighbors-arent-helping/0000017f-dbc3-db5a-a57f-dbeb8d4b0000>.

¹⁸ E. Allison and B. Mandler, "Water in the Oil and Gas Industry: An overview of the many roles of water in oil and gas operations," *Petroleum and the Environment* 2, no. 24 (2018). <https://www.americangeosciences.org/geoscience-currents/water-oil-and-gas-industry>.

¹⁹ OPEC+ is a group of oil-producing nations consisting of OPEC's 14 members and 10 non-members. The group was first convened in 2017 to coordinate global production and stabilize prices.

and ecological crisis, political deadlock is also expected to impact the TotalEnergy project,²⁰ which is expected to process around 5 million barrels per day of seawater that would aid in oil and gas extractions.

CLIMATE ACTION: THE ROLE OF STATE AND SOCIETY

Iraq represents a unique case due to its rentier economic system and hybrid political state. Along with other weather events worsened by climate conditions, SDSs have a particularly devastating impact on Iraq and other such “hybrid rentier states” that suffer from weak institutions, limited state capacities, fractured bureaucratic capacity, and the invested interest of hybrid actors to sustain this system for private and group gain.²¹ In that sense, Iraqi institutions lack the capacity and agency to respond to the climate crisis effectively, whether by sparking comprehensive systems change or by supporting action at a grassroots level.

Civil society has a role to play: increasing public awareness, demystify the climate crisis via awareness campaign and educational programs, and pressuring political actors to strengthen environmental policy. Erica Simmons, a political scientist, describes the “artisanal” relationship that develops between people and the natural resources they draw upon.²² Such a relationship can motivate a community to take action and pressure the state to address environmental degradation. This relationship between citizens and resources can be contrasted with an abstract or “industrial” relationship between the community and the resources, where citizens would fail to see a clear connection between SDSs, climate conditions, and drought, either due to the complexity of the issue, the lack of proximity to the crisis, or lack of awareness

campaigns. Scholars of climate change in Iraq report that climate change as a concept is still an abstract concept to the average Iraqi citizen, despite the direct impact of this ecological destruction on their lives. Individual actions, such as planting trees or clearing riverbanks, are positive signs of increasing awareness among people. Mosul Eye’s “Green Mosul” project, a citizen-led initiative, planted 5,000 trees in Mosul late last year in effort to revive part of the area’s forests damaged during the war against ISIL.²³ Such local actions, while admirable and capable of inspiring similar action in other communities, fall short of a comprehensive response to the existential crisis of environmental degradation in Iraq and the region. Civil society is most effective when people mobilize to generate large-scale awareness and an organized movement towards institutional change that prioritizes ecological issues.

Beyond mass mobilization of the public to demand change, civil society must also pressure policymakers to diversify the economy away from practices that incur environmental damage. Civil society could stridently advocate for the state to better regulate gas flaring in oil production, to develop modern and more efficient irrigation and agricultural systems, and to negotiate with regional countries to do the same. If civil society and individual actions alone are not a substitute for state action, and if Iraq’s state capacity is limited, where does that leave the country?

THE REGIONAL AND GLOBAL SCALE

While the Iraqi government and political elite bear much of the responsibility for the country’s poor response to climate change, this is not only an Iraqi crisis alone. 90% of the water feeding Iraq’s Tigris and

20 In 2021, Iraq started negotiating a \$27 billion deal with France’s TotalEnergy to invest in four oil, gas, and renewables projects in the Basra region over 25 years. This deal also includes developing a \$3 billion sea water supply project, a solar power plant, and a 600 million cubic feet/day gas processing facility.

21 Zeinab Shuker, “The Hybrid-Rentier States and Climate Change: The Case of Iraq,” The Emirates Policy Center, May 22, 2022. <https://epc.ae/en/details/featured/the-hybrid-rentier-states-and-climate-change-the-case-of-iraq>.

22 Erica S. Simmons, *Meaningful Resistance: Market Reforms and the Roots of Social Protest in Latin America*. Cambridge University Press, 2016.

23 Sinan Mahmoud, “Experts and officials warn of a bleak outlook for drought-hit Iraq,” The National News, May 9, 2022. <https://www.thenationalnews.com/mena/iraq/2022/05/09/experts-and-officials-warn-of-bleak-outlook-for-drought-hit-iraq/>.

Euphrates Rivers comes from sources in Turkey and Iran.²⁴ Yet with both of those countries facing their own water shortages, they have built dams and diverted water, leading to a significant decline in downstream water. With drought as a major contributor to SDSs, and with SDSs often exacting cross-border fallout, economic and political fragility will continue to be a regional phenomenon. Tehran has been one of the most polluted cities in the world with an air quality index (AQI) that reached a record 236 on April 8, 2022, with some local estimates suggesting an index of more than 500 (compared to the acceptable average of air quality that ranges between 50-100, with 500 being the maximum amount).²⁵ Yet Iran is also a contributing actor in the worsening climate conditions in Iraq. Iran benefits from Iraq's limited capacity to control its own gas flaring,²⁶ contributing positively to the Iranian economy, since Iraq depends on Iranian gas to operate its electricity grid among other needs, while gas flaring increase the temperature, drought levels, and SDSs in Iraq. With hybrid actors complicating the social and political stability in the region, no state – not even Iran – would benefit from an Iraq in crisis as a result of poor climate policy. Additionally, as SDSs continue to intensify, so does their impact on the oil sector in Iraq. A decline in Iraq's ability to produce oil might have a serious impact on oil prices and the energy sector globally.

THE URGENCY OF COORDINATED ACTION

As the SDSs of 2022 have shown, the economic,

humanitarian, and political crises tied to climate change are increasingly difficult to ignore. When combined with financial stressors, an unstable or collapsing polity will generate mass human migration within and outside the country, patterns we are already witnessing.²⁷ It will also increase internal social, political, and economic conflict among different actors, such as tribal groups, the rise of radical groups, and the further militarization of existing hybrid actors, some of which are proxies for other countries. General insecurity is bound to affect neighboring countries and threaten the stability of OPEC+ nations and the global oil market. Since many Gulf countries are oil producers, and as Iraq is a significant contributor to the global energy market, a disruption in the energy supply chain will further put economic and political pressure on Iraq's neighbors. Though Iraq is characterized by weak and undermined social institutions and structures, other countries in the region, Like Saudi Arabia, do not struggle with the same degree of institutional incoherence and have the political weight to work constructively with Iraqi partners on the climate change portfolio. Given the high stakes of climate change, the region now faces an urgent moral and economic mandate to collaborate across borders. Especially in the Middle East region,²⁸ the usual political and economic strategies that have dominated the international system and intrastate relationships in recent years must be reexamined to include climate change as a pivotal moment in international cooperation, state relations, and resilience.

24 "Turkey, Syria and Iraq: Conflict over the Euphrates-Tigris." Climate Diplomacy, May 28, 2022. <https://climate-diplomacy.org/case-studies/turkey-syria-and-iraq-conflict-over-euphrates-tigris#:~:text=Turkey%20contributes%2090%25%20to%20the,%25%20and%209%25%2C%20respectively>.

25 Maziar Motamedi, "Cities across Iran engulfed in thick layers of dust, pollutants," Al-Jazeera, April 9, 2022. <https://www.aljazeera.com/news/2022/4/9/irans-capital-tehran-enveloped-by-pollutants-due-to-strong-wind>;

"Air Quality Index (AQI) Basics," Air Now-US Air Quality Index, May 28, 2022. <https://www.airnow.gov/aqi/aqi-basics/#:~:text=Think%20of%20the%20AQI%20as.300%20represents%20hazardous%20air%20quality>.

Air quality above 300 is considered hazardous and is classified as a level of pollution that requires health warning of emergency conditions.

26 Zeinab Shuker, "Gas Flaring in Iraq: Structural Issues, Geopolitical Players, and Policy Implications," The Emirates Policy Center, April 11, 2022. <https://epc.ae/en/details/featured/gas-flaring-in-iraq-structural-issues-geopolitical-players-and-policy-implications>.

27 Zeinab Shuker, "The Hybrid-Rentier States."

28 Ranj Alaaldin, "Climate change may devastate the Middle East. Here's how governments should tackle it." Brookings, March 14, 2022. <https://www.brookings.edu/blog/planetpolicy/2022/03/14/climate-change-may-devastate-the-middle-east-heres-how-governments-should-tackle-it/>.

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