



CLIMATE CHALLENGES AND SUSTAINABLE DEVELOPMENT IN IRAQ: NATIONAL STRATEGIES FOR ADAPTATION AND ALIGNMENT WITH THE UN 2030 AGENDA

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ABSTRACT

PURPOSE: This study examines Iraq's escalating climate vulnerabilities, water scarcity, rising temperatures, desertification, and pollution, while assessing the effectiveness of national adaptation strategies in alignment with the UN 2030 Agenda, particularly Sustainable Development Goals (SDGs) 6, 7, and 13. Recent assessments confirm that Iraq is among the world's most climate-vulnerable countries, particularly to heatwaves, drought and water stress (Atlantic Council, 2023).

DESIGN/METHODOLOGY: A descriptive-analytical and comparative methodology is employed using national reports, international databases, and institutional assessments to evaluate governance, finance, and institutional responses. Iraq's national adaptation strategy builds on a sequence of UNDP-supported diagnostics and capacity-building programmes (UNDP, 2022).

FINDINGS: Results reveal significant adaptation gaps caused by weak coordination, fragmented data, and heavy reliance on external funding, which undermine resilience-building and sustainable development goals.

ORIGINALITY/VALUE: The research provides an integrated policy-oriented roadmap that links Iraq's national climate challenges with global sustainability frameworks, highlighting governance reforms, green finance tools, and energy transition strategies. This approach is consistent with the sustainable development paradigm linking poverty reduction, environmental protection and inclusive growth (Sachs, 2015).

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RESEARCH LIMITATIONS/IMPLICATIONS: The analysis is limited by insufficient national data systems and the conditional nature of Iraq’s international commitments. Updated diagnostics underscore the need to link climate action with economic reform and institutional modernisation (World Bank, 2024).

PRACTICAL IMPLICATIONS: Recommendations include establishing a National Climate Council, scaling renewable energy, modernising irrigation, and integrating climate justice into policy frameworks. Achieving Iraq’s energy-transition targets will require major investment in grid modernisation and renewable capacity (IEA, 2025).

KEYWORDS: *Climate Change; Iraq; Climate Policy; Resilience; SDGs; Adaptation Strategies; Water Security; Energy Transition; Climate Governance; Climate Justice; 2030 Agenda.*

INTRODUCTION

As shown in Table 1, climate-induced internal displacement in Iraq increased significantly between 2021 and 2024, particularly in central and southern governorates.

Table 1: Climate-induced International Displacement

Year	Number of IDPs
2021	20,000
2022	68,670 (11,445 families)
2023	80,000-130,000
2024	168,000

Source: Compiled by the author based on IOM (2021-2024); United Nations Iraq (2023)

Figure 1 illustrates the projected widening water deficit in Iraq between 2021 and 2050, confirming the severe long-term pressure on the Tigris-Euphrates river system.

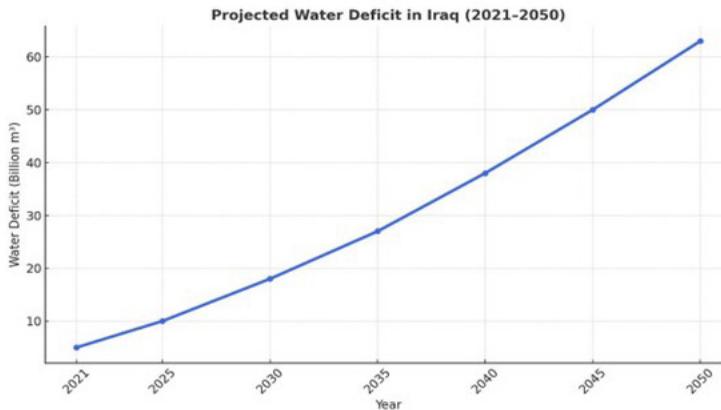


Figure 1: Projected Water Deficit in Iraq (2021-2050)

Source: Compiled by the author based on Ministry of Water Resources, 2023; World Bank (2022)

Figure 2 shows the sharp rise in climate-induced internal displacement between 2021 and 2024, reflecting the cumulative impact of drought, salinisation and dust storms on livelihoods.

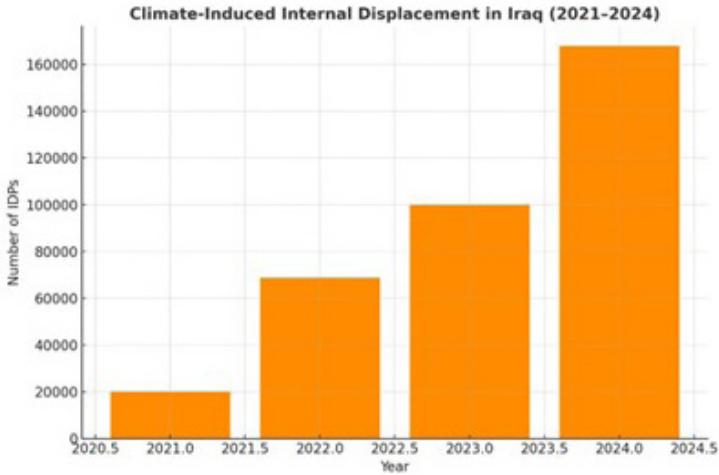


Figure 2: Climate-Induced Internal Displacement in Iraq (2021-2024)

Source: Compiled by the author based on IOM (2022, 2023, 2024); United Nations Iraq, 2023)

Figure 3 compares past and projected average annual temperatures in Iraq and highlights a clear warming trend that exacerbates heatwaves and drought conditions.

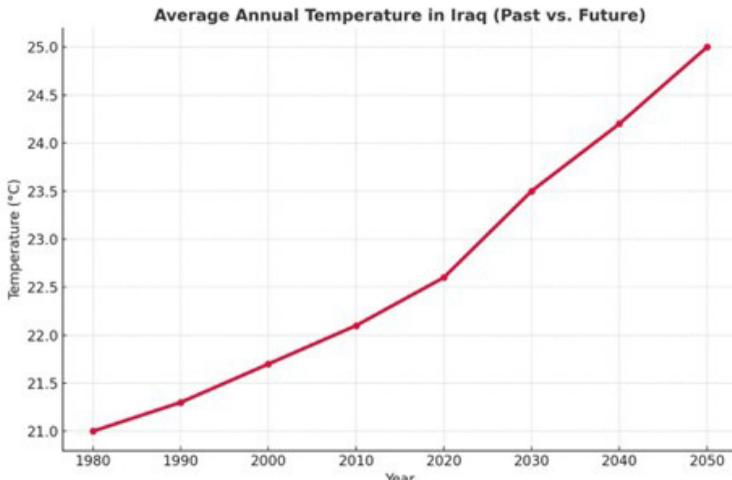


Figure 3: Average Annual Temperature in Iraq (Past vs. Future Projections)

Source: Compiled by the author based on UNEP (2023); World Bank (2022)



Figure 4 maps the alignment between Iraq’s key national strategies and SDGs 6, 7 and 13, revealing both progress achieved and remaining gaps.

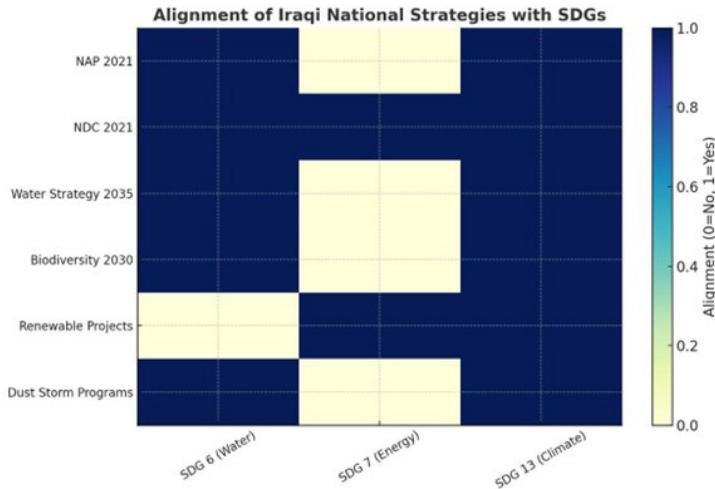


Figure 4: Alignment of Iraqi National Strategies with SDGs (6, 7, 13)

Source: Compiled by the author based on national strategies (NAP 2021, NDC 2021, Water Strategy 2020-2035, Biodiversity Strategy 2015-2030, Renewable Energy Projects, Dust Storm Mitigation Programmes).

NATIONAL POLICIES AND ENVIRONMENTAL LEGISLATION TO COMBAT CLIMATE CHANGE

Legislative Framework

Iraq has established a foundational legal structure to address environmental degradation and climate impacts, primarily through the Environmental Protection and Improvement Law No. 27 of 2009; this set mechanisms for pollution control, natural resource protection, and institutional environmental management. Article 33 of the Iraqi Constitution further obligates the state to safeguard the environment and preserve its natural systems from pollution and depletion (Al-Mohammed, 2020). As widely demonstrated in the literature, the long-term economic costs of inaction on climate change far exceed the short-term costs of mitigation and adaptation (Stern, 2007).

National Institutions and Ministries

The Ministry of Environment and the Ministry of Water Resources are primarily responsible for policy-making and implementation. Specialised climate change units have also been created across line ministries to strengthen institutional co-ordination. Nonetheless, overlapping mandates and weak inter-ministerial alignment remain critical challenges (UNDP, 2023a, b). Iraq's vulnerabilities fit within a wider regional pattern of escalating climate risks across the Middle East (UNEP, 2021).

National Strategies

The Government of Iraq adopted the National Environmental Protection Strategy (2024-2030) and the Iraq Climate Vision 2030, in addition to the First National Communication (2009) and the updated Nationally Determined Contribution (NDC 2021). These documents emphasise mitigation and adaptation pathways, alongside economic diversification and reduced dependence on oil (World Bank, 2022; UNEP, 2023).

Environmental Programmes and Projects

Recent years have seen the launch of projects such as the Baghdad Green Belt and the Sustainable Baghdad Forest initiative. These interventions aim to combat desertification, reduce urban heat, expand green cover, and improve air quality. However, these programmes remain limited geographically and lack performance indicators such as CO₂ reduction, water savings, and survival rates of planted seedlings (UN-Habitat, 2022; UN Iraq, 2023). The expansion of decertified areas and the increasing frequency of dust storms mirror regional patterns of land degradation documented in the World Atlas of Desertification (Middleton and Thomas, 2019).

International Commitments

Iraq acceded to the United Nations Framework Convention on Climate Change (UNFCCC) in 2009 and ratified related international agreements including the Paris Agreement, the Convention on Biological Diversity, and the UN Convention to Combat Desertification. These commitments enable access to financial and technical support while embedding Iraq's national policies within a global framework (UNEP, 2023; World Bank, 2022).

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Iraq Climate Vision 2030

Iraq's Climate Vision 2030 revolves around four pillars: adaptation, a shift towards a green economy, improved energy efficiency, and strengthened international co-operation. According to recent projections, achieving Iraq's energy transition targets will require substantial investment in grid modernisation and renewable energy capacity (IEA, 2025).

ASSESSMENT OF IRAQ'S CLIMATE RESPONSE: FROM PLANNING TO IMPLEMENTATION

Strength of the Legislative and Policy Framework

Iraq's legislative foundation, supported by Law No. 27 (2009), Article 33 of the Constitution, and strategic documents such as the National Environmental Protection Strategy (2024-2030), Iraq Climate Vision 2030, and the NDC (2021), provides a coherent framework. However, its effectiveness depends on translating these into programmatic budgets and actionable plans at the provincial level.

Governance and Institutional Co-ordination

As highlighted by Harbi (2025), Iraq's interaction with international commitments under the Paris Agreement requires the formulation of integrated national policies that strengthen institutional capacities and expand financing sources, while linking scientific research with policy implementation to ensure a balance between environmental, economic, and social dimensions (Harbi, 2025).

Institutional structures have evolved with climate change units embedded in ministries. However, coherence across environment, water, agriculture, and energy remains limited. Mandates often overlap, decentralisation mechanisms are weak, and monitoring systems are fragmented. Establishing a unified Measurement, Reporting, and Verification (MRV) system is essential to link data, budgets, and outcomes (UNDP, 2023a, b; IOM, 2024).

Access to Climate Finance

Iraq benefits from readiness programmes such as the Green Climate Fund and Technology Needs Assessment initiatives. However, financing remains limited to preparatory phases,

and large-scale investments have yet to materialise. A recent climate-investment plan highlights the scale of resources required to implement priority adaptation projects (UNDP, 2025). Water scarcity and declining service quality also have direct implications for children’s health and education outcomes (UNICEF, 2021).

CHALLENGES AND GAPS IN IRAQ’S CLIMATE RESPONSE (TABLE 2)

As highlighted in Harbi’s review of UN reform debates, “diplomats and UN officials recognise that threats ranging from climate change to the weakening of the global non-proliferation regime also promise to increase international instability” (Harbi, 2024). As Harbi (2024) notes, climate risks compound existing socio-economic tensions and may increase instability. Climate change thus operates as a risk multiplier (Weathering Risk, 2021). Despite Iraq’s adoption of legal frameworks and national strategies, its climate response continues to face structural, institutional, and financial gaps that undermine effectiveness. Weak governance and inter-ministerial co-ordination lead to overlapping mandates and poor monitoring. Financial reliance on external support makes projects vulnerable to disruption, while national budgets cover only a fraction of adaptation needs. Furthermore, the absence of a unified climate database reduces the ability to forecast and plan effectively. Most implemented projects remain limited in scope and lack quantitative performance indicators. Socially, southern provinces and vulnerable groups are under-supported, exacerbating inequalities. Finally, Iraq’s international commitments under its NDC (2021) remain largely conditional on external assistance, limiting credibility and autonomous progress.

Table 2: Analytical Matrix of Iraq’s Climate Response Gaps

<i>Main Gap</i>	<i>Manifestations</i>	<i>Impacts</i>	<i>Proposed Solutions</i>
Weak governance and institutional co-ordination	Overlapping mandates, centralised decision-making, absence of unified MRV system	Slow implementation, duplication of efforts	Establish a National Climate Council; operationalise MRV linking data, budgets, and outcomes
Unsustainable finance	Heavy reliance on international aid, limited national allocations	Project discontinuity, weak sustainability	Increase national budget share; develop local green finance tools (e.g., green bonds)
Data and information gap	Absence of a unified climate database, fragmented indicators	Weak planning and forecasting capacity	Create a national climate observatory; link universities and government in data production

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Weak on-ground implementation	Limited projects (e.g., Green Belt, Baghdad Forest), lack of Key Performance Indicators (KPIs)	Minimal impact on desertification and pollution, no measurable achievements	Scale up projects; adopt measurable KPIs (CO2 reduction, water saved, reforested land)
Lack of climate justice	Southern provinces most vulnerable, exclusion of women and youth from planning	Increased climate-induced displacement, higher poverty and unemployment	Direct more resources to vulnerable provinces; integrate women and youth in planning
Conditional international commitments	Most NDC pledges (13% of 15%) dependent on external support	Low credibility in self-achievement, slow energy transition	Develop national self-financed emission reduction plan; invest in renewables and flare gas recovery

Source: Compiled by the author based on UNDP (2023a, b), UNEP (2023), World Bank (2022), IOM (2024).

POLICY RECOMMENDATIONS FOR STRENGTHENING IRAQ'S CLIMATE RESPONSE (TABLE 3)

Policy Recommendations

The analysis of Iraq's climate governance and adaptation efforts reveals the urgent need for an integrated and multi-level approach. Key recommendations span governance, finance, data, energy transition, sectoral adaptation, climate justice, and international commitments. These recommendations are aligned with best international practices and tailored to Iraq's specific vulnerabilities and institutional context.

Analytical Explanation

On governance, Iraq requires the establishment of a National Climate Council and the operationalisation of a unified MRV system to link data with budgets and outcomes. In climate finance, increasing domestic allocations and developing green financial instruments, such as green bonds, are key to ensuring sustainability. In the field of data and transparency, a national climate observatory that connects ministries with universities and research centres is essential for evidence-based policy-making. Energy transition policies should include carbon pricing, gradual subsidy reform, accelerated renewable energy deployment, and flare gas recovery. Sectoral adaptation should focus on modernising irrigation, drought-resistant crops, and urban cooling solutions. Climate justice requires



allocating more resources to southern governorates and engaging women and youth in planning. Finally, Iraq should increase the share of unconditional commitments in its NDC, participate in carbon markets under Article 6 of the Paris Agreement, and strengthen regional and bilateral climate partnerships.

Table 3: Policy Matrix for Enhancing Iraq's Climate Response

<i>Domain</i>	<i>Recommendation</i>	<i>Objective</i>	<i>Responsible Entity</i>	<i>Time Horizon</i>
Governance and Co-ordination	Establish a National Climate Council; operationalise MRV system	Improve institutional co-ordination and link data with budgets	Council of Ministers; Ministry of Environment; Ministry of Planning	Short-Medium term (1-3 years)
Climate Finance	Increase national budget allocations; develop green bonds	Ensure sustainable finance; reduce aid dependency	Ministry of Finance; Central Bank; Private Sector	Medium term (3-5 years)
Data and Transparency	Create a National Climate Observatory; adopt quantitative KPIs (CO ₂ , water, green cover)	Enhance transparency and attract international finance	Ministry of Environment; Universities; Central Statistical Organisation	Short term (1-2 years)
Energy Transition	Introduce carbon pricing; phase out fossil fuel subsidies; expand renewables; capture flare gas	Reduce emissions and improve air quality	Ministry of Oil; Ministry of Electricity; National Investment Commission	Medium-Long term (3-10 years)
Sectoral Adaptation	Modernise irrigation; introduce drought-resistant crops; promote urban green solutions	Strengthen water, food, and urban resilience	Ministry of Water Resources; Ministry of Agriculture; Municipalities	Medium term (3-5 years)
Climate Justice	Allocate more resources to southern governorates; engage women and youth in planning	Achieve climate justice and reduce social vulnerability	Ministry of Planning; Ministry of Labor and Social Affairs; Local Governments	Short-Medium term (1-4 years)
International Commitments	Increase unconditional NDC targets; participate in Article 6 carbon markets	Strengthen credibility and enhance partnerships	Ministry of Foreign Affairs; Ministry of Environment; Ministry of Oil	Long term (up to 2030)

Source: Compiled by the author based on UNDP (2023a, b), UNEP (2023), World Bank (2022), FAO (2022), IOM (2024), IEA (2021).

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CONCLUSIONS AND FINDINGS

Conclusions

The comprehensive assessment of Iraq's climate challenges, national policies, and institutional responses reveals that Iraq remains one of the most climate-vulnerable countries in the Middle East. While the country has adopted laws, strategies, and international commitments, significant gaps persist in governance, finance, data, and implementation. These weaknesses, if left unaddressed, risk undermining Iraq's ability to achieve the 2030 Sustainable Development Goals (SDGs).

Key Findings

- Iraq faces acute climate vulnerabilities including rising temperatures, declining river flows, desertification, and biodiversity loss. These risks threaten food and water security and fuel climate-induced displacement.
- Iraq's legal and strategic frameworks, such as Law No. 27 (2009), the Constitution (Article 33), NDC 2021, and the Iraq Climate Vision 2030, provide direction but remain under-implemented.
- Institutional overlap and weak inter-ministerial co-ordination hinder policy effectiveness, with the absence of a national MRV system limiting monitoring and evaluation.
- Climate finance is heavily dependent on external support, with insufficient domestic allocations and limited access to large-scale investment finance.
- Data and transparency remain weak, as climate indicators are fragmented across institutions, reducing planning reliability and donor confidence.
- Climate justice challenges persist, as southern governorates bear disproportionate burdens while vulnerable groups, particularly women and youth, are excluded from decision-making.
- Iraq's international commitments under the NDC 2021 are largely conditional (13% out of 15%), with little clarity on self-financed mitigation (2%).

Final Synthesis

Iraq stands at a crossroads: either continue along a reactive path heavily reliant on external aid, which risks worsening socio-environmental crises, or embrace a strategic transformation grounded in integrated governance, sustainable finance, robust data

systems, and climate justice. Adopting the policy recommendations proposed in this study, including the establishment of a National Climate Council, green finance instruments, accelerated energy transition, and equitable resource allocation, offers Iraq a roadmap to align with the United Nations 2030 Agenda, strengthen resilience, and secure a sustainable future. Thus, Iraq's climate response requires not only sustained external support but, more importantly, an internal paradigm shift towards integrated governance, sustainable finance, and resilient development pathways.

Scientific Contribution

This study provides an integrated assessment of Iraq's climate governance and adaptation gaps, offering a policy-oriented roadmap that connects national vulnerabilities with global frameworks such as the UN 2030 Agenda. It fills a gap in the literature by combining national policy analysis with international comparative insights.

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BIOGRAPHY



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