Vulnerability Assessment on Climate Displacement in Southern Iraq

for Première Urgence International

Final Report

January 2024

EXECUTIVE SUMMARY

Background and Methodology

This report examines the vulnerabilities arising from climate-induced displacement across five governorates in Southern Iraq: Thi-Qar, Missan, Muthanna, Qadissiya, and Basrah. Commissioned by Première Urgence Internationale (PUI), the assessment aims to inform future climate-responsive interventions. Data collection employed a mixed-methods approach, including 387 surveys, 10 focus group discussions (FGDs), and 15 key informant interviews (KIIs), complemented by a comprehensive desk review. Sampling ensured representation of vulnerable groups such as women, people with disabilities, agricultural workers, and displaced populations.

Key Findings

Vulnerability Assessment

The findings emphasize the diverse vulnerabilities faced by specific groups and highlight critical multi-sectoral needs:

- **Women and Girls**: Women face heightened risks of exploitation and limited access to adaptive resources, particularly in displacement settings, identified by 44% of respondents as the most vulnerable group to climate change. FGDs revealed a "double burden" through extended care work and labour expectations and challenges in accessing healthcare, education, and employment opportunities.
- **Children**: Children were identified by 43% of respondents as one of the most vulnerable groups to climate change. Displacement disrupts education, leaving children vulnerable to exploitation and long-term economic instability. Families report struggling to secure basic necessities for children in displacement settings.
- **Elderly and People with Disabilities**: These groups are disproportionately affected by climate impacts, with limited mobility and access to essential services exacerbating their vulnerabilities. The elderly were identified as the most vulnerable group by the highest number of respondents (49%).
- **Low-Income Households**: Unemployment among low-income households was noted for 32% of respondents, with limited financial means to adapt to climate impacts or relocate to safer areas. Heightened vulnerability through possible unemployment is exacerbated for women and IDPs.
- **Displaced Populations**: Temporary housing remains common among internally displaced persons (31%), reflecting ongoing instability and challenges in accessing permanent shelter and livelihoods.

Multi-sectoral Needs

- **Water Resources**: Scarcity is a critical concern, with 21% of respondents overall and 55% in Qadissiya reporting water shortages. Very scarce water availability was reported by 7%, peaking at 34% in Qadissiya. Women experienced higher levels of scarcity (32%) compared to men (26%), and access was notably better for higher-income groups, highlighting disparities in water accessibility.

- **Agricultural Support**: Up to 70-100% of crop producers in southern governorates lack sufficient irrigation, underlining the need for sustainable agricultural practices and support for affected farmers. Displacement is closely tied to abandonment of agricultural activities and rural areas.

- **Health Services**: Rising temperatures, water pollution, and poor sanitation contribute to widespread health issues, including respiratory illnesses, heatstrokes and waterborne diseases, such as diarrhea, cholera and other gastrointestinal diseases. Over half of respondents (52%) reported experiencing health issues related to climate change, with the prevalence highest in Muthanna (100%), Qadissiya (88%), and Missan (65%). The most common health issues included respiratory problems (60%). Health issues were more often reported by women and by IDPs.

- **Mental Health and Psychosocial Support (MHPSS):** Climate change-induced stress, anxiety, and displacement are driving mental health challenges, particularly among women and displaced individuals. MHPSS integration into response programs is critical to strengthen resilience.

- **Education and Training**: Displacement disrupts education, particularly for children and youth. Investment in educational facilities and vocational training is essential for building long-term resilience.

- **Housing and Infrastructure**: Rapid rural-to-urban migration has strained urban infrastructure. Displaced populations report inadequate housing and limited access to essential services, requiring targeted urban planning and housing solutions.

- **Environmental Rehabilitation**: Desertification, salinity, and biodiversity loss have severely impacted ecosystems and livelihoods, necessitating ecosystem restoration and sustainable land management initiatives.

Gaps in Services and Governance

Existing legal frameworks and government responses are insufficient to address climate-induced displacement. Policies lack specific provisions for environmental migration, and coordination among key stakeholders remains weak. Displaced populations often fall outside the scope of current social protection systems, leaving significant gaps in support for housing, healthcare, and livelihoods.

Recommendations

The following recommendations summarize actionable solutions to address these challenges effectively:

Legal and Policy Frameworks

- Advocate for the development of a comprehensive legal framework that formally recognizes climate-induced displacement and protects the rights of affected populations.

- Work with government stakeholders to ensure climate migrants are included in social protection systems such as education, vocational training, and social insurance.

- Promote regional and international partnerships to improve shared water resource management, combat desertification, and implement regional climate adaptation strategies.
- Support the establishment and capacity building of local committees focused on designing and implementing climate adaptation strategies at the community level.
- Advocate for policy reforms that integrate climate adaptation strategies, prioritize sustainable agriculture, regulate industrial discharge and improve water resource management at the national level. Develop equitable water distribution systems to address severe shortages in regions like Qadissiya and Muthanna.
- Develop incentives for industries to adopt energy-efficient technologies and climate-resilient production processes.

Water Resources

- Implement modern irrigation methods, including drip and precision irrigation, to conserve water and optimize agricultural efficiency across all governorates.
- Invest in water treatment systems, desalinization projects, and pollution control to address water quality issues in Basrah and Missan.
- Promote community-based water-sharing agreements and awareness campaigns to rationalize water use and reduce over-extraction of resources.

Sustainable Agriculture

- Support farmers in adopting drought-resistant crops, crop rotation, and organic farming techniques to mitigate climate impacts.
- Provide financial grants, subsidies, and access to soft loans to enable farmers to invest in modern equipment and climate-smart practices.
- Develop infrastructure for storage facilities and promote sustainable value chains for agricultural products, such as agro-industries in Basrah and Missan.
- Implement sustainable irrigation methods and repair infrastructure to ensure consistent water supply for agriculture.

Livelihood Diversification

- Encourage diversification of income sources by promoting small-scale industries and non-agricultural manufacturing, particularly in Qadissiya and Muthanna.
- Provide vocational training for displaced individuals and marginalized groups to equip them with skills for alternative livelihoods.

- Introduce microcredit facilities and grants to empower women and displaced populations to engage in income-generating activities.

Infrastructure Development

- Repair irrigation systems with durable materials to restore water access in Qadissiya and Muthanna. Consider utilizing community labor to create further income opportunities.
- Rehabilitate critical roads in flood- and heat-affected areas, prioritizing routes to markets, schools, and health facilities.
- Install solar energy systems in Muthanna and Missan, training youth to maintain and repair renewable energy solutions.
- Train local artisans and laborers in climate-resilient construction techniques for housing and small-scale infrastructure projects.
- Engage communities in participatory urban planning to identify and prioritize climate-resilient infrastructure upgrades.
- Construct and repair climate-resilient roads and housing, especially in areas like Qadissiya, Muthanna, and Basrah, to withstand extreme weather conditions.
- Develop rainwater drainage systems to prevent flooding in urban and rural areas, particularly in Qadissiya and Basrah.
- Reconstruct essential infrastructure, such as schools, to withstand extreme weather conditions by using climate-resilient materials and designs, ensuring they are safe, energy-efficient, and accessible for children in vulnerable communities.

Shelter Rehabilitation

- Support vulnerable households in rehabilitating shelters using locally sourced climate-resilient materials, with direct involvement of community-led construction groups.
- Provide micro-grants or in-kind support (materials/tools) to vulnerable households for self-led shelter repairs, prioritizing women-headed households, families with young children, or elderly members.
- Provide small-scale solar kits for lighting in shelters, especially for displaced families, improving living conditions while reducing reliance on strained energy systems.

Health and Social Services

- Establish mobile health centers to improve access for vulnerable populations, especially in rural and marshland areas.

- Conduct health education campaigns to raise awareness about the prevention of climate-related health risks.

Women's Empowerment and Inclusion

- Provide tailored education and training for women in sustainable agriculture, small business management, and climate risk management.
- Address social and cultural barriers by integrating gender-sensitive approaches into climate adaptation programs.

Support for Displaced Groups

- Mitigate displacement by strengthening rural livelihoods through agricultural support, infrastructure improvements, and equitable access to resources.
- Provide displaced populations with orientation programs, vocational training, and job opportunities to support integration into host communities.
- Enhance access to legal protection, healthcare, and education for displaced women and children.

Capacity Building and Awareness

- Conduct widespread awareness campaigns on climate change impacts, waste management and adaptation strategies, leveraging social media and local platforms.
- Organize training programs for farmers, businesses, and local communities on sustainable practices, renewable energy, and resource management.
- Encourage collaboration between local organizations, government agencies, and international bodies to deliver capacity-building initiatives.

Advocacy

- Advocate for stricter environmental regulations to control pollution from oil refineries and factories, focusing on reducing industrial discharge into water sources, promoting cleaner production methods, and enforcing waste management standards.
- Engage community representatives, local authorities, and civil society organizations in lobbying efforts, emphasizing the health, environmental, and livelihood benefits of reducing industrial pollution.

Ecosystem Rehabilitation

- Focus on afforestation projects and marshland rehabilitation in Basrah and Missan to restore biodiversity and mitigate environmental degradation.
- Promote the use of sustainable land management practices to combat desertification in Qadissiya and Muthanna.
- Integrate renewable energy projects, such as solar energy for farmers, to enhance environmental sustainability.

Social Cohesion and Community Engagement

- Promote social cohesion by organizing cultural and community events that bridge gaps between displaced and host populations.
- Empower local leaders and community organizations to implement grassroots adaptation initiatives.
- Facilitate knowledge-sharing networks to spread successful climate-resilient practices across regions.

Shelter and Housing

- Promote the development of climate-resilient housing using materials and designs suited for extreme weather conditions, such as heat-resistant and flood-proof structures. This includes incentives for adopting sustainable building practices and incorporating renewable energy solutions like solar panels for cooling and lighting.
- Expand affordable and accessible housing projects for displaced populations, with a focus on integrating these communities into urban areas without overburdening existing infrastructure.
- Support shelter rehabilitation initiatives in areas affected by climate-induced damage, focusing on providing resources for rebuilding and retrofitting existing homes to withstand future climate impacts.

Mental Health and Psychosocial Support (MHPSS)

- Integrate mental health services into climate adaptation programs. Ensure accessible mental health care for affected populations, particularly in displacement areas and rural communities.
- Provide psychosocial support to individuals and families affected by climate-induced displacement, livelihood loss, and resource scarcity.
- Train community leaders and healthcare workers to identify and address climate-related mental health challenges.

- Implement awareness campaigns to destigmatize mental health issues and promote stress management strategies, particularly for women and youth.

- Address underlying causes of mental health stressors, such as water scarcity, livelihood insecurity, and inadequate public services, through coordinated, multi-sectoral interventions.

TABLE OF CONTENTS

List of Tables

List of Figures

ACRONYMS

COP	Conference of the Parties
CSOs	Civil Society Organization(s)
FGD	Focus Group Discussion
GoI	Government of Iraq
IDP	Internally Displaced Person
IOM	International Organization for Migration
ISIL	Islamic State of Iraq and the Levant
KII	Key Informant Interview
NAP	National Adaptation Plan
NGO	Non-Governmental Organization
PUI	Première Urgence Internationale
ToR	Terms of Reference
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
QA	Quality Assessment
WHO	World Health Organization

INTRODUCTION

Background of Assessment

In October 2024, Première Urgence Internationale (PUI) commissioned STOOS Consulting to conduct an assessment of vulnerabilities arising from climate-induced displacement in Iraq's southern governorates, namely Thi-Qar, Missan, Muthanna, Qadissiya, and Basrah governorate. This research aimed to inform PUI's strategy for supporting communities affected by climate change and enhancing resilience. With rising temperatures, water scarcity, and extreme weather severely impacting these regions, the assessment focused on identifying the most vulnerable groups, understanding their multi-sectoral needs, and mapping at-risk areas.

The assessment gathered data on socio-economic factors contributing to vulnerability, such as poverty, inadequate infrastructure and coping mechanisms, while also reviewing legal frameworks related to displacement and protection. Insights guided the development of a targeted intervention that addresses immediate needs and supports long-term adaptation efforts. This resulted in the creation of an evidence-based operational plan for PUI's climate-responsive activities.

Climate Change Context

Iraq faces severe and multifaceted challenges due to climate change. The region is highly vulnerable to **heatwaves, increasing droughts, flash floods, dust storms**, and other environmental hazards, which have severely impacted (agricultural) livelihoods, water resources, public health and day-to-day aspects of people's lives. Iraq's agricultural sector, a key source of livelihood for around 25% of its population, is particularly vulnerable. Many communities rely on small-scale rainfed and irrigated farms, which are critical for food security and household incomes.[1] However, agricultural productivity has declined dramatically due to water shortages, poor water management, and increasing water salinity.[2] Nearly three-quarters of locations in Iraq experience 6–8 types of extreme weather and slow-onset hazards, with droughts and sand/dust storms being the most common, affecting over 85% of locations.[3] In addition, most locations report increased water salinity, soil degradation, and changing rainfall patterns. A recent IOM study revealed that it is the governates in central and southern Iraq that have the largest share of subdistricts deemed climate-affected.[4] However, climate change is not the sole driver of displacement. Human factors such as poor water management, outdated farming practices, pollution, and reduced water flow from upstream countries exacerbate its effects and play a significant role in forcing people to relocate.[5]

Water scarcity is a central issue in southern Iraq and has far-reaching consequences for the local population. **Decreasing rainfall, rising temperatures, and upstream damming** on Iraq's major rivers, such as the Tigris and Euphrates, have exacerbated water shortages. In 2024, UNICEF predicted that Iraq's water scarcity crisis

1 Norwegian Institute of International Affairs and Stockholm International Peace Research Institute, "Climate, Peace and Security Factsheet: Iraq," (April 2023).

2 International Organization for Migration (IOM), "International Migration from Climate-Affected Areas in Iraq: Exploring the Influence of Climate Change on Mobility Patterns." (Baghdad: IOM, June 2024)

3 IOM, "Drivers of Climate-Induced Displacement in Iraq: Climate Vulnerability Assessment." (Baghdad: IOM, October 2023)

4 IOM, 2024.

5 IOM, "Migration, Environment and Climate Change in Iraq." (Baghdad: IOM, 2022).

would deepen, with groundwater depletion and reduced river flows becoming more acute.[6] The governorates of Thiqar, Muthanna, and Missan have experienced some of the worst impacts.[7] In Basrah, the combination of industrial waste and salinization from seawater intrusion in the Shatt al-Arab has contaminated drinking water supplies, leading to health crises and further compromising agriculture and fishing.[8]

Rural-to-urban migration is accelerating as climate-induced pressures make traditional agricultural livelihoods unsustainable. Families in southern Iraq, particularly in Thiqar, are increasingly abandoning rural areas where farming and livestock rearing are no longer viable due to low water levels, high salinity, and rising input costs, such as those associated with water trucking.[9] Many households have resorted to **migration as a coping mechanism**, sending members to urban centers in search of jobs. This is especially true for children, who are often sent to work in cities to compensate for the loss of agricultural income.[10] A significant portion of this climate migration originates from rural areas, with 98% of migrants coming from agricultural zones and resettling in urban areas where they hope to find alternative livelihoods.[11] For example, between January and September 2022 alone, Thiqar saw 62% of its population migrate due to climate-related factors, primarily driven by water scarcity and salinization.[12] Other governorates like Muthanna and Qadissiya have also witnessed increased migration due to the collapse of local farming economies.

The displacement figures paint a stark picture. As of March 2024, 140,184 individuals (23,364 families) across 12 governorates have been displaced due to climate change, with nearly half (47%) displaced from their districts of origin and resettled in urban locations.[13] In southern Iraq, Thiqar governorate alone accounts for 44% of these displacements, followed by Missan (22%) and Muthanna (10%) governorates.[14] These movements reflect not only the dire water situation but also broader socio-economic challenges such as **food insecurity, lack of services, and the collapse of local livelihoods**. Families who were once self-sufficient farmers or livestock rearers are now struggling to meet basic needs, and food insecurity is a significant predictor of climate-induced migration, being specifically pronounced in the Southern governorates.[15] With the exception of Basrah (50-70%), in all Southern governorates examined in this assessment, 70-100% of crop producers reported insufficient irrigation or rainfall for their production.[16] Further, difficult access to services or infrastructure plays an essential role specifically in Southern Iraq where almost all locations lack access to water and aid/assistance and around 50% of locations are unable to access functional secondary schools and health centres in a five-kilometer radius.[17]

Over the past decade, Iraq has faced significant conflict, causing local and national authorities to prioritize security and political stability over addressing the growing risks of climate change.[18] However, climate-related migration is increasingly exacerbating **tensions within communities**, heightening the potential for

6 UNICEF, "Iraq Appeal," UNICEF, 2024, www.unicef.org/appeals/iraq (last access: 02.01.24)..

7 IOM, 2023.

8 ibid.

9 ibid.

10 Raber Aziz, "The Silent Enemy: How Climate Change Is Wreaking Havoc in Iraq," IOM: The Storyteller (IOM, November 28, 2023), https://storyteller.iom.int/stories/silent-enemy-how-climate-change-wreaking-havoc-iraq.

11 IOM, 2023.

12 ibid.

13 ibid.

14 ibid.

15 Food and Agriculture Organization of the United Nations (FAO), "Iraq: DIEM - Data in Emergencies, Monitoring Brief, round 12", Baghdad: FAO, April 2024.

16 ibid.

17 IOM, 2023.

18 ICRC, "Iraq's Perfect Storm – a Climate and Environmental Crisis amid the Scars of War," International Committee of the Red Cross, July 19, 2021, https://www.icrc.org/en/document/iraqs-perfect-storm-climate-and-environmental-crisis-amid-scars-war%C2%A0 .

further violence and conflict. The shrinking of water resources has triggered competition over access, fueling **tribal disputes** and increasing the risk of conflict, particularly as different communities vie for the dwindling supply.[19,20]

Climate change also affects quality of life through significant impacts on health, mental well-being, and social stability. Extreme weather conditions increase the risks of physical health problems, including respiratory illnesses and waterborne diseases, exacerbated by the strain on water and sanitation infrastructure. This heightened risk especially affects those already vulnerable, such as IDPs.[21] Mental health issues linked to climate-related events, including anxiety, PTSD, and depression, are increasingly prevalent due to the stress of displacement and exposure to extreme conditions. In particular, communities facing prolonged environmental stressors experience heightened levels of psychological distress, eco-anxiety, and solastalgia—a form of distress from losing one's environment.[22] A recent World Vision study found that children in Ninewa governorate were deeply affected by climate change, experiencing high levels of anxiety, sadness, and frustration linked to fears about their future and disruptions to their education from extreme weather events.[23] Climate change also disrupts social ties, which are crucial for coping and resilience. The fragmentation of these connections often worsens the mental health impacts on displaced individuals, as seen among those with interrupted support networks who face challenges integrating into new communities.[24]

The Government of Iraq (GoI) has taken steps to address these challenges, beginning with the 2013-2017 National Environmental Strategy and Action Plan, developed in collaboration with the Ministry of Environment, the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the World Health Organization (WHO).[25] In 2020, the GoI initiated the development of a National Adaptation Plan (NAP) alongside UNEP, aimed at increasing Iraq's resilience to the effects of climate change. At COP 28 in December 2023, Iraq positioned itself as a key advocate for integrated solutions addressing the interconnected challenges of water, food, energy, and security.[26] At COP 29 in December 2024, Iraq not only participated as an active member but also pushed for greater international support, including more funding, developing local capacities and transferring technology.[27] In March 2024, the Iraq Environment and Climate Change Policy Advisory Group was launched in Baghdad to further promote collaboration and policy development.[28] These initiatives reflect the GoI's commitment to reducing vulnerabilities to climate change and promoting coordination, however, progress remains limited due to inadequate investment in adaptation

19 Nussaibah Younis, "Early warning: How Iraq can adapt to climate change", Berlin: European Council on Foreign Relations, July 2022.

20 European Union Agency for Asylum (EUAA), "Iraq - Security Situation", (Luxembourg: Publications Office of the European Union, March 2024).

21 Marzouk, H. A., Duman, Y., Meier, J., Khudhur, Q. L., & Alani, O. (2022). Assessment of Perceptions of Climate Change and Its Causes and Impacts on Mental Health and Psychosocial Wellbeing among a Group of Internally Displaced Persons in Iraq. Intervention, 20(1), 98-106.

22 ibid.

23 World Vision International, "GROWING UP IN THE CLIMATE CRISIS - The impact of climate change on children and young people in Ninewa governorate, Iraq", (N.a.: World Vision International, 2023).

24 Marzouk et al., 2022.

25 Ministry of Environment, Government of Iraq, "The National Environment Strategy for Iraq," www.fao.org, 2013, https://faolex.fao.org/docs/pdf/irq155814E.pdf.

26 Zainab Salih, "Iraq Takes Center Stage and Makes Its Mark at the UN Climate Change Conference," UNDP, December 3, 2023, https://www.undp.org/iraq/press-releases/iraq-takes-center-stage-and-makes-its-mark-un-climate-change-conference.

27 Maria Kaiser, "Iraq at COP29: Advancing climate action and resilience in times of urgency," Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), n.a., https://www.giz.de/en/worldwide/202618.html#:~:text=Iraq's%20presence%20at%20COP29&text=Iraq's%20participation%20highlights%20its%20commitment,and%20secure%20the%20necessary%20finance.

28 United Nation in Iraq, "Launch of the Iraq Environment and Climate Change Policy Advisory Group: A Vital Initiative to Foster a United Front for Effective Implementation of Climate Policies," iraq.un.org, March 11, 2024, https://iraq.un.org/en/263022-launch-iraq-environment-and-climate-change-policy-advisory-group-vital-initiative-foster.

and mitigation measures.[29] Iraq continues to face significant challenges, particularly in improving its water infrastructure, which suffers from inefficiencies such as large-scale water losses through evaporation and contamination from industrial waste, problems that remain largely unresolved.[30]

Looking ahead, the situation is expected to worsen unless immediate and coordinated action is taken. By 2030, Iraq could face the displacement of up to four million people due to water shortages alone.[31] The region's ongoing water crisis, coupled with the impact of economic pressures like the rising cost of food, is likely to fuel further migration and internal displacement, which will only increase tensions over limited resources. In southern Iraq, where communities are heavily reliant on agriculture and livestock for their livelihoods, the combination of environmental degradation, poor water governance, and insufficient government response poses a critical threat to both human security and social stability. Immediate attention and investment in water management, infrastructure improvement, and climate adaptation measures are essential to mitigate the impacts of climate change and reduce the risks of large-scale displacement in southern Iraq.

Background on Governorates

Thi-Qar Governorate

Thi-Qar Governorate, situated in southern Iraq, shares borders with Wassit, Missan, Basrah, Muthanna, and Qadissiya governorates, with Nasiriya as its capital. Divided into five districts—Al-Jubayish, Al-Nasiriya, Al-Shatra, Suq Al-Shuyukh, and Al-Rifa'i—Thi-Qar had an estimated population of 2.32 million in 2022, with approximately 1.45 million residing in urban areas.[32] The population is predominantly Shia Arab, but there is also a Sunni minority, along with small Christian and Sabean Mandean communities and Marsh Arabs who reside in the southern Mesopotamian Marshes.[33] Thi-Qar is among Iraq's most underdeveloped areas, with infrastructure suffering from years of neglect.[34] Although Thi-Qar was not occupied by ISIL, the redeployment of security forces in 2014 led to increased tribal clashes, exacerbated by water shortages.[35,36] As of August 2024, 1,950 internally displaced persons (IDPs) were registered in the governorate,[37] and no returns to Thi-Qar have been documented.[35]

Despite being an agriculturally dependent region, the sector has been severely impacted by environmental degradation, water contamination, and high salinity levels.[37] The Mesopotamian Marshes, once vital for agriculture, livestock, and fishing, are rapidly drying due to reduced rainfall, upstream dam construction, and poor water management. The region now faces severe water shortages, within nearly all communities reliant on water trucking (97% in Thi-Qar).[38] Between 2014 and 2022, dense vegetation in Al-Nasiriya district

29 Norwegian Institute of International Affairs and Stockholm International Peace Research Institute, 2023.

30 Laila Barhoum and Elise Nalbandian, 2022.

31 Skills House, "Policy Guidelines on Climate Change-Induced Displacement in Ninewa Governorate" (Norwegian Refugee Council, May 14, 2024), https://www.nrc.no/resources/reports/policy-guidelines-on-climate-change-induced-displacement-in-ninewa-governorate/.

32 European Union Agency for Asylum (EUAA), "Iraq - Security Situation", (Luxembourg: Publications Office of the European Union, March 2024).

33 ibid.

34 ibid.

35 ibid.

36 IOM, 2023.

37 United Nations High Commissioner for Refugees (UNHCR), "Iraq Operation (Operational Data Portal)", https://data.unhcr.org/fr/country/irq (last access: 21.10.24).

38 IOM, 2023.

decreased by 69%, while water sources shrank by 95%.[39] Climate change has also caused widespread displacement, with nearly half (44%) of displaced families—10,385 families—originating from Thi-Qar.[40] Nasiriya district, with 3,902 displaced families, and Al-Shatra (2,461 families) and Al-Rifa'i (2,082 families) districts have experienced particularly high levels of climate-induced displacement.[41]

Missan Governorate

Missan Governorate, located in southeastern Iraq, borders with Wassit, Basrah and Thi-Qar governorates, as well as with the Islamic Republic of Iran to the east. Divided into six districts – Ali Al-Gharbi, al-Mijar Al-Kabir, Al-Maimouna, Al-Kahla, Amara and Qal'at Salih, it hosts a population of over 1.2 million people as of 2022.[42] While the vast majority of Missan's population is composed of Shia Arabs, it is also home to a Sunni minority as well as to small communities of Christians and Mandeans, among others.[43] With 1,236 recorded IDPs, Missan hosts the second-lowest number of IDPs across the country and has no recorded number of returnees.[44]

Approximately 22% of Iraq's climate-displaced population originates from Missan[45], with the district of Qal'at Saleh being particularly affected—around 50% of its population (1,728 families) has been displaced as of October 2023.[46] An IOM vulnerability assessment has found the districts of Al-Maimouna, Al-Mejar Al-Kabir, Amara, Qal'at Saleh and Al-Kahla among the 10 districts showing particularly high levels of vulnerability, where worsening droughts, water scarcity, and agricultural collapse are forcing families to leave their homes and where almost 100% of locations rely on water trucking.[47] In Amara district, nearly 78% of families in some areas have relocated due to water scarcity and deteriorating agricultural conditions, with most displaced families moving from rural to urban areas.[48] A high portion of locations in Missan (72%) attributed the decreased supply of water to reduced allocation.[49] Environmental degradation is severe in Missan, especially in Qal'at Saleh, where barren land increased from 57% to 95% between 2014 and 2022 due to reduced river flows and damming, both locally and from neighboring Iran. This has drastically reduced vegetation cover and water sources, such as Jaraiyah Lake, which shrank by half during the same period.[50] Large portions of Missan still suffer from poor access to essential services, with districts like Amara reporting significant shortages in all infrastructure and basic amenities.[51][52] Missan was one of the Iraqi governorates with the highest number of tribal disputes, where water shortages have reportedly led to conflicts between tribes living in the border regions of Missan and Wassit governorates, leading to violent clashes in the past.[53]

---

39 IOM, 2023.

40 IOM, "DTM EMERGENCY TRACKING: Climate-Induced Displacement – Central and Southern Iraq", Baghdad: IOM, March 2024.

41 ibid.

42 EUAA, 2024.

43 ibid.

44 United Nations High Commissioner for Refugees (UNHCR), "Iraq Operation (Operational Data Portal)", https://data.unhcr.org/fr/country/irq (last access: 21.10.24).

45 IOM "DTM EMERGENCY TRACKING: Climate-Induced Displacement – Central and Southern Iraq", Baghdad: IOM, March 2024.

46 IOM, 2023.

47 ibid.

48 ibid.

49 ibid.

50 ibid.

51 IOM, 2024.

52 IOM, 2023.

53 EUAA, 2024.

Muthanna Governorate

Muthanna Governorate, located in southwestern Iraq, is the country's second-largest governorate, bordered by Najaf, Qadissiya, Thi-Qar, Basrah, and Saudi Arabia. It includes four districts, Al-Samawa, Al-Khidhir, Al-Rumaitha, and Al-Salman and is home to around 902,480 people, mostly Shia Arabs and small Bidoon communities, with the more densely populated areas around the Euphrates River in the north.[54] Further, with 624 IDPs recorded in August 2024, Muthanna has the lowest number of IDPs in Iraq.[55] Predominantly consisting of desert and dry lands, Muthanna faces severe environmental challenges, including drought, sandstorms, and increasing water salinity,[56] with 81.78 square kilometers contaminated by cluster munitions—more than any other governorate in southern Iraq.[57] Despite these challenges, Muthanna remains relatively secure, with a stable security situation reported in 2024, thereby one of Iraq's safest governorates.[58] However, climate-induced displacement is significant, with over 2,365 families (10% of climate displacement in Iraq) forced to leave between 2016 and 2022, making Muthanna the third region most affected by climate migration according to IOM.[59] Along with other southern governorates, Muthanna reports widespread service deficiencies, particularly in districts like Al-Samawa and Al-Rumaitha, where access to essential services remains limited.[60]

Qadissiya Governorate

Qadissiya Governorate, located in southern central Iraq and home to approximately 1.43 million people, equally faces increasing vulnerability due to environmental pressures.[61] Predominantly Shia Arab, the governorate is divided into four districts: Diwaniya, Afak, Shamiya, and Al-Hamza, with its capital in Diwaniya. Environmental degradation, including droughts, landslides, sandstorms, and water shortages, has severely impacted livelihoods in Qadissiya. Nearly 950 families were displaced due to climate-related factors between 2016 and 2022, with the highest rates of depopulation in Afak (44%) and Al-Hamza (42%).[62] Across the governorate, over 92% of locations attributed reduced water supply to decreased allocations, reflecting broader issues with transboundary water sharing.[63]

The displacement has caused significant rural-to-urban migration, with many families moving to nearby urban centers, while agricultural, livestock, and fishing practices have dramatically declined. In Al-Hamza district, for example, over 75% of families have abandoned traditional livelihoods due to environmental challenges.[64] Qadissiya also faces critical gaps in essential services and infrastructure, with almost all assessed locations reporting inadequate access to key services.[65] These conditions, compounded by tribal conflicts over water resources with neighboring governorates, specifically with tribes in Muthanna,[66] make Qadissiya one of the most climate-vulnerable regions in Iraq.

54 ibid.
55 UNHCR, 2023.
56 IOM, 2023.
57 EUAA, 2024.
58 ibid.
59 IOM, 2023.
60 ibid.
61 EUAA, 2024.
62 IOM, 2023.
63 ibid.
64 ibid.
65 ibid.
66 ibid.

Basrah Governorate

Basrah, Iraq's southeasternmost governorate, shares borders with Muthanna, Thi-Qar and Missan, as well as with Kuwait, Iran, and Saudi Arabia and had an estimated population of 3.22 million in 2022.[67] It is divided into seven districts, namely, Abu Al-Khaseeb, Al-Mahoudiya, Al-Qurna, Al-Zubair, Basrah, Al-Faw, and Shatt Al-Arab. The majority of the population are Shia Arabs, with minorities of Sunni Arabs, Christians, and Mandaeans.[68] Known for its vast oil reserves, Basrah is economically significant but struggles with chronic environmental issues.[69] Droughts, sandstorms, and especially water salinity, have drastically affected livelihoods, leading to a threefold increase in waterway salinity over the past 50 years.[70] This has contributed to health crises, notably in 2018, when 118,000 residents were hospitalized due to poor water quality.[71] The degradation of water sources, especially in the Shatt al-Arab waterway, is tied to upstream damming, unchecked pollution, and climate change. These challenges have impacted agriculture, fishing, and livestock, with over 75% of families in Basrah's Fao district abandoning traditional livelihoods.[72]

Unemployment, food insecurity, and access to basic services remain critical concerns, exacerbated by the region's fragile infrastructure and poor governance. In terms of social cohesion, Basrah has witnessed protests, particularly in 2019, against poor water quality and government corruption.[73] Tensions over access to water resources have also led to tribal conflicts.[74] Environmental stress, economic hardship and limited access to services continue to drive migration, with a significant portion of climate-affected emigrants from Basrah citing lack of employment or education opportunities as their reasons for leaving.[75]

Summary

The desk review highlights the severe impact of climate change on southern Iraq, especially in the governorates of Thi-Qar, Missan, Muthanna, Qadissiya, and Basrah, which are notably the governorates most affected by climate change in the Southern region of Iraq. While efforts by organizations like IOM have begun to address the crisis-induced vulnerabilities, there remain significant gaps in research, particularly on long-term impacts, adaptation strategies, coping mechanisms, and the specific vulnerabilities of marginalized groups such as women, the elderly, and people with disabilities. Data collection on climate-induced displacement has only recently expanded, and certain regions remain under assessed. Data also still lacks comprehensive insights into the sustainability of return or relocation for climate-displaced individuals. Further, the effects of displacement on local infrastructure and basic services in urban areas remain under-researched. Humanitarian aid has been insufficient, and government responses have been inadequate in meeting the socio-economic and service needs of climate-affected populations. This desk review informed targeted data collection and shaped the conception of an intervention aimed at strengthening resilience and reducing displacement in southern Iraq.

67 EUAA, 2024.
68 ibid.
69 Human Rights Watch (HRW), "Basra is thirsty - Iraq's Failure to Manage the Water Crisis", n.a: HRW, July 2019.
70 IOM, 2023.
71 ibid.
72 ibid.
73 HRW, 2019.
74 IOM, 2023.
75 IOM, 2024.

RESEARCH OBJECTIVES

This assessment aimed to support PUI's future climate-responsive efforts in Iraq's southern governorates. Of particular relevance was the goal of developing an integrated intervention strategy that addresses climate-induced vulnerabilities and displacement, grounded in a thorough understanding of the socio-economic, environmental, and legal challenges faced by affected communities, constituting Phase 1 of the ongoing PUI intervention. The findings of this assessment will guide the formulation of evidence-based, locally contextualized recommendations for PUI's climate adaptation and resilience-building activities in Phase 2.

The specific objectives, as outlined in the terms of reference (ToR), includ:

- Mapping the affected and at-risk areas in southern Iraq, identifying multi-sectoral needs, and assessing the socio-economic factors contributing to vulnerabilities. (GO1)
- Identifying and categorizing vulnerable groups, particularly marginalized populations, and evaluating their specific needs. (GO1)
- Assessing the impact of climate change on communities (GO2)
- Analyzing the coping mechanisms and adaptation strategies employed by affected communities, with a focus on access to resources and traditional knowledge. (GO2)
- Reviewing the legal and policy frameworks related to displacement and protection mechanisms through conducting a rapid review, highlighting gaps and areas for improvement. (GO2)
- Developing an operational strategy that includes targeted, actionable recommendations for addressing climate-related displacement and building resilience. (GO3 + GO4)

RESEARCH METHODOLOGY

The assessment utilized a mixed-methods approach to understand and analyze the climate-induced vulnerabilities and displacement in the selected governorates in Southern Iraq. This approach included a comprehensive desk review, surveys, focus group discussions (FGDs), and key informant interviews (KIIs). By combining these methods, the assessment ensured the collection of diverse and nuanced data, enabling a triangulated and thorough analysis that led to actionable and relevant findings.

Stakeholder engagement and inclusive community involvement were central to this methodology. The desk review had already identified key stakeholders, including marginalized groups such as women, youth, the elderly, people with disabilities and climate-displaced individuals. Additionally, local authorities, local and international NGOs in Southern Iraq and people reliant on agriculture for livelihood were engaged, as each group faces unique climate-related challenges. This inclusion of underrepresented perspectives ensured that the assessment captured the full spectrum of socio-economic vulnerabilities and coping strategies in these areas.

The combination of these methods and the active involvement of diverse community groups strengthened the validity of the findings and provided a solid foundation for developing targeted interventions to address climate-induced displacement.

Data Collection Methods

Desk Review

The research began with a comprehensive review of existing climate change literature. It included academic publications, reports, and policy documents on climate change concerns and awareness, primarily in Iraq, ideally in the five focus locations (Thiqar, Misan, Muthanna, Qadissiya and Basrah governorates), but at times including the surrounding regions. This literature was reviewed and synthesized to extract key findings and insights and to identify gaps in the literature. It served to contextualize the purpose of this research project, and its connection to the associated PUI project, that was devised accordingly. The desk review then further informed the research methodology and data collection methods.

Surveys

A vital source of quantitative data, surveys were designed to gather information on vulnerability, coping mechanisms and migration concerns. The surveys were administered face-to-face. These were conducted systematically by well-trained field researchers to ensure consistency and comparability across answers. Quantitative analysis techniques such as descriptive statistics, correlation analysis, and regression analysis were used to interpret survey responses and identify patterns.

The sample size for surveys was calculated to achieve a confidence level of 95% with a 5% margin of error, resulting in a total sample size 384, due to the large population size (over 9.1 million people between the 5 governorates).

Table 1: Survey sampling table

Governorates / Districts	Estimated population79	Selected governorate's % of population of all 5 governorates	Planned survey sample per governorate (n =384)	Realized Surveys per governorate (n=387)
Thi-Qar				
Thi-Qar Governorate	**2,321,851 (2022)**	17% (17.19)	66	66
Missan				
Missan Governorate	**1,233,053 (2022)**	10% (9.63)	37	37
Muthanna				
Muthanna Governorate	**902,480 (2022)**	6.5% (6.51)	25	25
Qadissiya				
Qadissiya Governorate	**1,430,714 (2022)**	20.5% (20,57)	79	82 (+3)
Basrah				
Basrah Governorate	**3,223,158 (2022)**	46% (46.09)	177	177
TOTAL population	9,111,256	100%	384	

Survey participants were selected using a random sampling method across the 5 designated governorates of Thi-Qar, Missan, Muthanna, Qadissiya and Basrah. The random sampling procedure began by locating the central point within any given village, city or camp in the designated districts, from which every fifth house or domicile was systematically invited to participate in the survey. To ensure a comprehensive representation, the sampling strategy also incorporated a stratified approach, whereby a mix of urban and rural locations, as well as host and IDP status individuals were selected. Furthermore, within these strata, careful attention was paid to demographic variables such as gender, age, disability status, and employment/income status, in aiming for a balanced and inclusive representation of the population's diversity. This blended approach ensured that every individual in the population had an equal chance of being selected, thereby minimizing selection bias, while also striving to gather diverse and representative data from a broad cross-section of the community in each location.

Focus Group Discussions (FGDs)

Held in person with 6-8 participants at a time, FGDs are a valuable source of qualitative data as they allow for open-ended questions and discussion among participants. This format enables participants to share their experiences, perspectives, and recommendations related to how climate change affects themselves and their communities and on the coping mechanisms they employ. Discussions explored the specific socio-economic factors that contribute to community vulnerabilities, as well as the effectiveness of existing adaptation strategies and any gaps in resources or support. Skilled field researchers facilitated these discussions, either recording the conversations or taking detailed notes later for analysis.

To analyse the data, discourse and content analysis techniques were employed to identify recurring themes, perspectives, and critical needs. This analysis provided insight into multi-sectoral needs and the effectiveness of existing coping mechanisms, directly contributing to the development of a contextualized intervention strategy. The resulting data guided operational recommendations and informed targeted, evidence-based strategies that address the climate-induced vulnerabilities and displacement risks faced by affected communities.

The FGDs engaged specific demographic groups to gain in-depth insights from women, people with disabilities, the elderly, agricultural workers, workers in informal employment, and climate-displaced individuals. Since these groups are targeted based on particular characteristics, the FGDs sampling process requires purposive sampling followed by random selection within the defined groups.

STOOS used a two-step sampling process to balance access, representation and methodological rigor. Using their well-established connections and local access, STOOS field teams reached out to local authorities, such as mayors and mukthars, asking them for recommendations / referrals to relevant organisations such as women's groups, farmers' associations, CSOs, and NGOs. Following that, purposive sampling selected targeted organisations to ensure coverage of a diverse range of organisations/groups. Once these organizations and groups were identified, they were contacted to explain the purpose of the research and their (coded) membership lists were requested. Participants for the FGDs were chosen using a randomization technique based off the organizations' membership lists (such as drawing lots or using a random number generator). This two-step process - first purposive then random - strikes a balance between the need for specific demographic groups to be represented in the study and the methodological rigor of random sampling.

Key Informant Interviews (KIIs)

KIIs were conducted one-on-one, either in person or online, to gather in-depth insights directly from key informants. These interviews offered an opportunity for detailed, candid conversations between the informant and the interviewer, enabling the collection of rich, nuanced data. The one-on-one format ensured that key informants could share their experiences and insights freely, providing valuable information that may not emerge in group settings.

Each interview was carefully documented, either through audio recordings or detailed notes, to ensure accuracy and comprehensiveness. Like the FGDs, the data collected from KIIs underwent discourse and content analysis. This process helped identify recurring themes, perspectives, gaps, and actionable recommendations to help comprehensively inform PUI for future humanitarian programmes. For the KIIs, the aim was to gather insights from a diverse range of stakeholders relevant to understanding climate-induced vulnerabilities and community needs. Because of the specific target groups, as with the FGDs, the sampling process involved purposive sampling to identify key individuals within each group and then selecting a representative from each group in a systematic manner. There were two steps to follow in this process:

01 In each Governorate, we first identified potential key informants based on the defined target groups. This involved consulting local directories, organizational charts, and community networks and/or engaging with local partners and stakeholders to recommend potential key informants.

02 From the pool of identified potential key informants, we created a list of potential contacts applying the selection criteria to ensure they meet the required qualifications and relevance. We then randomly selected the informants from these shortlisted individuals to ensure impartiality in our selection.

This systematic and structured approach ensured that the KIIs are conducted with a diverse and representative set of informants from each key demographic group, providing comprehensive insights into climate-induced vulnerabilities, coping mechanisms, existing policies, and gaps in support within Southern Iraq. By using purposive sampling followed by random selection within each category, the process maintained both relevance and impartiality. PUI was also consulted before finalising the list of KII participants to ensure adequate coverage and alignment with PUI project goals and objectives.

The research sampling ensured diverse stakeholders were interviewed and consulted. Sampling included a total of **387 surveys, 10 FGDs** with 6-8 participants each, and **15 KIIs.** Sampling was distributed proportionally for the surveys, and evenly for the FGDs and KIIs, between all five governorates. Table 2 below provides a breakdown of the data collection methods, sources, objectives, and corresponding sample size.

Table 2: Sampling Framework

D/C Method	Respondents / Data Sources	Objectives / Insights to be gained	Sample
Surveys	Thi-Qar	Broad-based understanding of perspectives, knowledge, vulnerabilities and experiences regarding climate change.	66
	Missan	As above.	37
	Muthanna	"	25
	Qadissiya	"	82
	Basrah	"	177
	Total Surveys		387
FGDs	Women	Understanding the specific concerns and vulnerabilities of women and other vulnerable groups to effectively draft an intervention that addresses their needs and concerns.	2 in total in Thiqar and Muthanna
	People with disabilities and the elderly	As above.	2 in total in Qadissiya and Basrah
	Farmers' Associations or Agricultural stakeholders, such as farmers, fishermen, shepherds, pastoralists	Insights from agricultural stakeholders are based on the specific vulnerability to climate displacement on this group and are set to inform most urgent needs.	2 in total in Muthanna and Missan
	Workers in informal employment	Insights from low-income members of rural areas will inform the assessment as per the needs of the most vulnerable who may not be able to migrate due to limited financial resources.	2 in total in Missan
	Climate-displaced individuals	Examining the experiences of climate-displaced individuals serves to inform the drivers of climate-migration as well as their situation post-migration.	2 in total (in urban areas) in Basrah and in Qadissiya
	Total FGDs		10

KIIs	Local government representatives, Community leaders (tribal / religious)	Gathering knowledge on policy perspectives, resource allocation strategies, and mitigation challenges specific to climate displacement. Understanding community concerns, values, and local adaptation strategies.	1 per governorate
	Local environmental NGOs, Local CSOs, Local Educators	Understanding of and connection with local environmental NGOs, CSOs and Educators will help understand how complex topics such as climate change are best tackled locally and the specific needs and situation with regards to Southern Iraq.	1 per governorate
	Local Business Leaders	Assessing the economic impact of climate change on local businesses, exploring opportunities for adaptation and resilience in the private sector.	2 in total in Muthanna and Qadissiya
	Agricultural Sector Leader	Assessing the effects of climate change on agricultural practices and food security in vulnerable communities.	2 in total in Thiqar and Basrah
	Legal and Policy Expert	Gaining insight into the legal and policy challenges and recommendations for the context.	1 in total in Missan
	Total KIIs		15

Limitations

The assessment proceeded smoothly overall, but the data collection team identified a few challenges to note:

- Challenges in engaging women, particularly in rural and remote areas, due to tribal customs. Hesitation among some participants, particularly women, to openly express their opinions.
- Limited survey timeframe, which added pressure to the data collection process.
- Sensitivity of certain topics such as income, which occasionally led to incomplete responses from participants.
- Cultural differences affecting the understanding of questions and answers during sessions and interviews.

FINDINGS

Legal Frameworks on Climate-Induced Displacement and Protection

Existing Legal Frameworks

Iraq's legal and policy frameworks addressing climate-induced displacement remain underdeveloped and fragmented, despite notable efforts in recent years. The **Constitution of Iraq (2005)** includes provisions indirectly related to environmental protection and resilience. For instance, **Article 33** guarantees every individual's right to safe environmental conditions and obligates the state to protect biodiversity. However, it does not explicitly address displacement caused by climate change or mechanisms to protect vulnerable populations affected by environmental degradation, rising temperatures, water scarcity, and extreme weather events.

The **Ministry of Environment**, established in 2003 to institutionalize environmental legislation in Iraq, led to the enactment of laws such as the **Ministry of Environment Law No. 37 of 2008** and the **Environment Protection and Improvement Law No. 27 of 2009**. These laws focus on environmental preservation but fail to incorporate provisions addressing climate-induced migration or displacement. Similarly, the **Ministry of Displacement and Migrants (MoDM)** primarily addresses conflict-induced displacement, with limited scope for environmental or climate-related factors.

Iraq is a signatory to the **Paris Agreement** and the **United Nations Convention to Combat Desertification** and finalized its **Nationally Determined Contributions (NDCs)** in 2021. These commitments focus on reducing greenhouse gas emissions and enhancing resilience to climate change. However, they lack measures addressing climate-induced displacement. Similarly, the **Policy on Internal Displacement (2014)** is designed for conflict-related displacement and does not extend to environmental causes.

Iraq lacks a national disaster risk reduction strategy or emergency management framework specifically addressing displacement caused by climate change. While laws such as the **Emergency Use Law No. 37 of 1961** and the **Civil Defence Law of 1978** include disaster response provisions, they do not account for protecting migrants during and after crises. Annual emergency plans are prepared but do not address displacement caused by environmental factors.

Efforts to address climate change and displacement include the **National Adaptation Plan (NAP)**, initiated in 2020 in partnership with the **United Nations Environment Programme (UNEP)**. The NAP aims to enhance resilience to climate change but remains incomplete as of September 2023. Its current scope does not adequately address human mobility challenges.

The **National Strategy for Migration Management (NSMM)**, endorsed in 2020, explicitly acknowledges migration linked to environmental degradation and climate change. It outlines actions to integrate migration-related policies with disaster response capacities and emphasizes developing contingency plans for large-scale displacement caused by crises or environmental factors. The NSMM also highlights the need for the **National Disaster Risk Reduction Strategy (NDRRS)** to address the displacement impacts of climate change.

Iraq has engaged regionally by participating in the **Fifth Arab Regional Platform for Disaster Risk Reduction** (2021) where it assessed progress under the **Sendai Framework** and defined regional priorities, and the **14th Session of the Arab Ministerial Water Council** (2022) where it highlighted climate change's impact on water resources and its role in displacement. Iraq actively participated in the **29th United Nations Climate Change**

Conference (COP29) held in Baku, Azerbaijan, from November 11 to 22, 2024, reflecting its commitment to addressing climate change challenges while balancing economic dependencies.

The **Iraq Vision 2030 Plan** outlines a strategy to empower Iraqis through sustainable development, good governance, and economic diversification. However, migration issues, especially those linked to climate change, remain a secondary consideration. Similarly, the **Reconstruction and Development Framework (2018)** prioritizes IDPs' needs through enhanced security and localized services but does not include climate-induced migration.

The **National Strategy for the Protection and Improvement of the Environment in Iraq (2024–2030)** aims to mitigate climate impacts through improved environmental governance, water resource management, and pollution reduction. Despite its broad scope, the strategy fails to explicitly address climate migration (though acknowledging the risk once in the report) or provide detailed plans for protecting displaced populations.

As such, Iraq's evolving frameworks reflect growing recognition of climate-induced displacement but require urgent development of comprehensive strategies to address this complex challenge effectively.

Effectiveness of Legal Frameworks and Policies

The majority of survey respondents (75%) reported **being unaware** of any local policies or initiatives addressing climate change impacts. Awareness was highest in Muthanna (60%) but considerably lower in other governorates. Gender, age, and displacement status influenced awareness, with men (31%) more likely than women (17%) to be aware. Older respondents showed the highest levels of awareness (30%), followed by younger (25%) and working-age individuals (23%). Awareness was slightly higher among IDPs (36%) compared to host community members (23%).

When **evaluating the effectiveness** of these policies, only 3% of respondents considered them highly effective. A larger proportion (27%) rated them as moderately effective, while 35% perceived them as slightly effective, and 34% viewed them as ineffective. This indicates a general dissatisfaction or skepticism about the current local efforts to address climate change impacts.

In practice, Iraq's legal and policy frameworks have been largely ineffective in addressing climate-induced displacement. One significant limitation is the **absence of specific provisions targeting this form of displacement**. The existing frameworks are primarily designed to respond to displacement caused by conflict, leaving communities affected by environmental factors without adequate support. For instance, while the Ministry of Environment and the Ministry of Migration and Displacement play critical roles in managing environmental and displacement issues, coordination between these agencies is reported to be weak, leading to fragmented responses and inefficiencies.

According to a key informant, gaps in the legal framework exacerbate these inefficiencies. The informant highlighted the **lack of clarity** regarding the rights and duties of individuals displaced by climate change, **poor coordination** among government ministries, and **inadequate procedures** for obtaining support. Vulnerable groups, including women, children, and the elderly, are particularly at risk due to these deficiencies.

"Yes, mechanisms exist to protect the displaced and mitigate displacement, but their effectiveness is hindered by limited resources, corruption, weak infrastructure, and inadequate government response, particularly in rural regions. National plans for climate adaptation and local development programs are in place, but their scope and implementation remain constrained. Improved coordination between local government, international organizations, and resource allocation is essential to enhance their impact"
[KII with Legal Expert/University Professor of Law in Missan Governorate]

Iraq's capacity to respond to climate-induced displacement remains limited. Government institutions, including the Ministry of Environment and the Ministry of Water Resources, spearhead climate initiatives but face significant challenges due to insufficient financial resources and technical expertise. The **Permanent National Committee on Climate Change** and the **National Climate Change Center** were established to strengthen institutional capacity, yet their activities remain constrained by a lack of coordination and operational efficiency.

Implementation of environmental strategies, such as the National Strategy for the Protection and Improvement of the Environment and the NAP process, has been **slow** and **hindered by political instability and underfunding**. Moreover, the government's focus remains predominantly on **restoring environmental conditions rather than addressing the human impacts of climate change**, such as displacement. The **limited institutional capacity of government institutions to forecast and respond** to slow-onset disasters like desertification exacerbates this issue.

Key gaps in response capacity include the **absence of a comprehensive framework** for climate-induced displacement, **insufficient data** on displacement trends, and **limited climate risk assessments**. The federal government does not publish hazard maps, nor does it provide clear guidance on relocation and housing plans for displaced populations. Additionally, there is **a lack of community involvement** in the design and implementation of climate and displacement strategies, reducing the relevance and sustainability of existing plans. International organizations and humanitarian partners play a critical role in filling these gaps, but their focus is often limited to short-term relief rather than long-term solutions.

Iraq's participation in international agreements, such as the Paris Agreement and its active involvement in COP29, demonstrates a **commitment** to addressing climate change at a high level. However, this commitment has **not translated into actionable national legislation or policies** to protect communities displaced by climate impacts. The lack of contingency planning for climate migration, as noted in the NSMM,, further highlights the inadequate approach to this growing challenge.

Informants highlight significant challenges in the effectiveness of existing frameworks. **Funding constraints** limit the scale and reach of climate adaptation projects, particularly in rural areas where resources are most needed. **Political instability and security concerns** divert government attention and resources from addressing climate-induced displacement. Additionally, **bureaucracy** and **corruption** complicate the timely delivery of legal protections and assistance to displaced populations. **Local adaptive projects and international cooperation efforts**, such as joint ventures with neighboring countries, have shown promise but remain underfunded and poorly coordinated. There is an **absence of comprehensive climate migration legislation**, leaving those displaced by climate factors without the legal protections afforded to conflict-displaced populations. Existing policies addressing displacement are fragmented, with **limited coordination** between key ministries such as the environment, agriculture, migration and displacement, and water resources. Additionally, social protection systems do not adequately cover climate migrants, who face barriers in accessing housing, education, and healthcare. The **lack of comprehensive data** on climate displacement further complicates policy development and resource allocation, leaving many affected communities underserved.

> *"The issue of climate change migration is one of the most important national challenges, as a number of regions suffer from the effects of accelerating and diverse climate changes, prompting local people to seek a safe and stable environment in other regions. Legally, local and central governments should work together to address the issue of climate change migration… We consider the current state of affairs to be a serious legal loophole"*
> **[KII with the Coordinator of the Iraqi Women's Association in Thiqar Governorate]**

Overall, Iraq's response to climate-induced displacement remains inadequate. Without significant reforms to strengthen legal and institutional frameworks, enhance coordination, and allocate resources effectively, the country will continue to face challenges in protecting vulnerable communities from the impacts of climate change.

Recommendations for the Legal and Policy Framework

Iraq's ability to address climate-induced displacement and build resilience to climate change requires significant enhancement of its policies and frameworks. Developing a **comprehensive legal framework** that formally recognizes climate-induced displacement and guarantees the rights of climate migrants is a foundational step. Such a framework should include measures to **protect displaced populations**, **ensure access to essential resources**, and **facilitate their integration** into host communities. Additionally, **updating social protection laws** to include climate migrants in systems of **social insurance, education, and vocational training** is essential to help them rebuild their lives and contribute to the economy in host areas.

Strengthening **coordination among stakeholders** is critical for cohesive strategies. The establishment of a **national committee** comprising relevant ministries, local governments, NGOs, and international partners would facilitate comprehensive climate adaptation and displacement management. At the local and regional levels, **climate impact assessments** should be integrated into development plans, prioritizing **improved water resource management**, **land rehabilitation**, and **sustainable agriculture practices**.

Enhancing **regional and international cooperation** is necessary to address shared challenges effectively. Iraq could collaborate with neighboring countries to manage **shared water resources**, **combat desertification**, and develop **joint strategies** for climate migration. The creation of **regional centers** for data collection and knowledge exchange would further improve cross-border coordination and foster scalable, effective solutions.

Another vital area is improving **data collection and research**. Establishing **specialized research centers** would ensure accurate information on climate impacts and displacement patterns, supporting informed decision-making and efficient resource allocation. At the local level, Iraq could form **local committees** dedicated to climate affairs, conduct **awareness campaigns** to educate communities on climate risks, and develop **localized plans** that address displacement risks.

Regionally, fostering **partnerships focused on water management**, **knowledge-sharing**, and organizing **conferences** to exchange best practices would contribute to more cohesive efforts. At the national level, it is crucial to **review and update existing policies** to integrate climate adaptation strategies, **enact laws** to protect climate-affected communities, and **invest in sustainable agriculture and water resource management**.

Respondent Demographics

The survey respondents were distributed across **five governorate**s, with the majority coming from Basrah, which accounted for 46% of participants (n=177). Qadissiya followed with 21% (n=82), Thiqar with 17% (n=66), Missan with 10% (n=37), and Muthanna with 6% (n=25). Distribution sizes were populated according to population sizes to account for a representative sample of the five governorates.

The **residential distribution** of respondents reflects a predominantly urban demographic, with 85% residing in urban areas and only 15% in rural locations. Urbanization is most pronounced in Basra and Missan, where over 95% of respondents live in urban centers. Muthanna stands out with a nearly even rural-urban split (52% rural, 48% urban). Qadissiya and Thiqar also show a notable rural representation, with 27% and 24%, respectively, respondents living outside urban areas.

Gender representation was nearly equal, with females comprising 49% of respondents and males 51%. This balance provides a gender-inclusive perspective on the findings, ensuring the experiences and vulnerabilities of both men and women are adequately captured.

In terms of **age** demographics, most respondents fell within the economically active age group of 26-59 years, making up 60% of the sample. Meanwhile, 24% of respondents were between 18-25 years old, and 17% were aged 60 and above.

Regarding **displacement status,** 90% of respondents were host community members, while 10% identified as internally displaced persons (IDPs). The distribution of IDPs varied slightly by governorate. Muthanna reported no IDPs, while Thiqar and Missan had the highest proportions of displaced respondents at 14%.

The **type of housing** among respondents shows that 73% live in permanent housing, while 27% reside in temporary accommodations. Permanent housing was most prevalent in Qadissiya (93%) and least common in Missan (49%), where temporary housing accounted for the majority (51%). Basrah also reported a significant proportion of temporary housing (36%), followed by Muthanna (20%), Thiqar (18%), and Qadissiya (7%). Younger respondents (18-25 years) were more likely to reside in temporary housing (45%) compared to 22% of older age groups, indicating a potential correlation between age and housing stability. Temporary housing was also slightly more common among IDPs (31%) than host populations (27%), reflecting the greater housing insecurity faced by displaced individuals. Income levels influenced housing type, with those earning more than 500,000 IQD reporting the lowest rates of temporary housing (23%), compared to 37% in lower-income groups (under 100,000 IQD and 200,000-500,000 IQD) and 53% in the 100,000-200,000 IQD range.

Regarding **housing ownership**, 37% of respondents owned their homes, 28% rented, and 35% lived in housing owned by relatives. Homeownership was strongly linked to income, with higher-income households being more likely to own their homes. Renting was highest in Missan (54%) and lowest in Qadissiya (5%), reflecting regional disparities in housing affordability and access. Younger respondents (18-25 years) were more likely to rent (47%) compared to 23% of those aged 26-59 and 19% of those aged 60 and older. The reliance on relatives for housing (35%) suggests a strong social support network, particularly in regions where formal housing options may be limited.

The survey also highlighted significant economic challenges among respondents. **Monthly household income levels** varied, with 33% reporting incomes between 200,000-500,000 IQD and 34% earning above 500,000 IQD. However, 8% of respondents reported earning less than 100,000 IQD, and 5% earned between 100,000-200,000 IQD. Notably, 20% of respondents preferred not to disclose their income. (Data comparisons showed that answer patterns were similar to those of the lowest reported income groups, which may indicate that those preferring not to disclose their income may have done so out of stigma associated with low finances.)

Employment data revealed stark differences across income groups. Among those earning less than 100,000 IQD, 50% were unemployed and a significant portion being students (40%). In the 100,000-200,000 IQD bracket, unemployment remained high at 58%, while 21% were students, and 11% had part-time jobs. The situation improved among households earning 200,000-500,000 IQD, where part-time employment (31%), retirement (16%), and full-time work (9%) were more prevalent. Those earning above 500,000 IQD were predominantly employed full-time (55%), highlighting a clear link between stable, full-time employment and higher income levels. Across all income groups, unemployment remains a critical concern, particularly for the lower-income brackets, indicating a need for job creation and skills training programs.

Employment data highlights significant regional and demographic disparities. Full-time employment was reported by 23% of respondents, with the highest rates in Basra (33%) and Missan (24%), underscoring Basra's relative economic stability. Part-time work was less common, reported by 13%, with Basra and Missan leading at 19%. Freelance work accounted for 7% of respondents, with more men (11%) than women (3%) engaged in this type of work, and IDPs (13%) were more likely than hosts (7%) to work freelance. Retired individuals made up 10% of the respondents, with higher representation in Thiqar (15%) and Basra (11%). Daily labor, reported by only 2% overall, was most common in Muthanna (9%) and Thiqar (6%) and was more prevalent among IDPs (5%) than hosts (2%).

Unemployment remains a critical issue, affecting 32% of respondents overall. It was most severe in Qadissiya (73%) and Muthanna (52%), compared to just 15-16% in Basra and Thiqar. Women were disproportionately affected, with 44% unemployed compared to 21% of men, highlighting gender-based economic vulnerabilities. Among young adults aged 18-25, 46% were students, but unemployment was still a concern at 27%. For the economically active age group of 26-59 years, 35% were unemployed, while 37% reported full-time employment. Among those aged 60 and older, 53% were retired, but unemployment was still notable at 31%, indicating potential economic strain among elderly individuals.

The main **sources of income** among respondents varied significantly across regions, gender, age, and displacement or income status, reflecting diverse economic realities. Public sector or government employment was the most frequently reported source of income, comprising 35% of respondents overall, and was particularly prominent in Basra (52%) and Missan (43%). However, it was far less common in Muthanna (4%) and Qadissiya (6%), underscoring a stark disparity in stable job opportunities between governorates. Family help or allowances were the second most common source of income at 17%, most reported in Basrah (25%) and Missan (24%), with fewer mentions in Thiqar (12%) and Muthanna (8%).

Daily labor was reported by 16% of respondents and was most frequent in Muthanna (44%) and Qadissiya (39%), reflecting the precarious nature of livelihoods in these regions. Agriculture accounted for 8% of income sources, predominantly in Qadissiya (22%), Muthanna (12%), and Thiqar (11%), while it was nearly absent in Basra and Missan. Construction work, at 7%, was entirely absent in Basra and Missan but was notable in Muthanna and Qadissiya. These findings indicate a strong dependence on informal and seasonal labor in less urbanized governorates. Daily labor accounted for 16% of respondents' income sources, predominantly in Muthanna (44%) and Qadissiya (39%), with smaller proportions in Thiqar (21%), Missan (11%), and Basra (1%). Agriculture was reported by 8% of respondents, with the highest percentages in Qadissiya (22%), Muthanna (12%), and Thiqar (11%), but negligible representation in Missan (3%) and Basra (1%).

Construction work was cited by 7% of respondents, primarily in Muthanna and Qadissiya, and was entirely absent in Basra and Missan. Retired income was reported by 6% of respondents but was notably absent in Muthanna and Qadissiya. Trade was reported by 4%, with no representation in Muthanna and Qadissiya. Livestock was a source of income for 3%, found exclusively in Thiqar, Muthanna, and Qadissiya, and absent in Basra and Missan. Freelancing was reported by 3% of respondents and is notable for providing relatively stable income levels. Welfare salaries accounted for 2% of respondents' income.

Gender differences in income sources were pronounced. Women were more likely to rely on family allowances (26%) and daily labor (20%), pointing to more precarious work conditions outside of government employment. Men, on the other hand, had greater representation in agriculture (12%), retirement income (10%), and trade (4%), reflecting slightly more diverse income streams. The higher prevalence of physical labor among men may indicate better access to certain job markets, but it also highlights the physical risks and instability associated with such work. **Age** also influenced income sources. Younger respondents (18-25 years) were more likely to report daily labor (17%) and allowances from family (38%) as their primary income, while public sector employment (22%) was less common. The economically active age group (26-59 years) showed the highest engagement in government jobs (48%), while allowances (7%) and daily labor (18%) were less frequent. Among older respondents (60+ years), retirement income (53%) was the main source, though allowances from family (20%) also played a significant role. The reliance of younger and older populations on allowances underscores their economic vulnerability and limited access to stable employment. **Displacement status** also impacted income sources. Hosts were more likely to engage in public sector jobs (37% versus 21% for IDPs) and freelancing (8% versus 3%). IDPs, however, had higher reliance on daily labor (23% compared to 15% for hosts) and trade (10% versus 3%), reflecting their limited access to stable employment and more precarious livelihoods. Retired income was more common among IDPs (15%) than hosts (5%), possibly reflecting older demographic profiles among displaced communities.

Income categories further revealed disparities in economic security. Among those earning less than 100,000 IQD, 40% relied on family allowances, while 27% reported daily labor, 10% construction, and 10% social welfare salaries, highlighting precarious livelihoods. For households earning 100,000-200,000 IQD, daily labor (32%), allowances (26%), and agriculture (11%) were common sources. Those in higher income brackets, such as 200,000-500,000 IQD or above, were more likely to report government employment (42%-58%) and allowances (15%-20%), indicating greater stability. The income levels by job type showed that certain sectors provided relatively better earnings. Freelancing and trade were among the most lucrative, with 42% and 73% of respondents, respectively, earning over 500,000 IQD. Public sector jobs (56%) and retirement income (56%) also offered stable earnings. In contrast, daily labor, construction, and agriculture had high proportions of respondents preferring not to disclose their income (53%-77%), potentially reflecting stigma associated with low earnings. Social welfare salaries were the most limited, with 43% earning under 100,000 IQD, underscoring the insufficiency of this income source.

Climate Change Impact and Coping Mechanisms

Environmental Changes and Affected and At-risk Areas

4.3.1.1. Perceptions of Environmental Changes

Overall

Across southern Iraq, perceptions of environmental changes reflect the profound and escalating impacts of climate change on the region. Key informants, focus group participants, and survey respondents consistently reported rising temperatures, drought, desertification, and declining water resources as dominant challenges. These changes have severely disrupted agricultural productivity, livelihoods, and ecosystems, with water salinity, biodiversity loss, and environmental pollution further compounding vulnerabilities. Regional variations are notable: Basrah is heavily affected by water salinity and marine life loss, Missan and Qadissiya face severe desertification and water shortages, and Muthanna endures prolonged drought and extreme heat. Dust storms and industrial emissions, particularly from oil sites and factories, were also frequently highlighted as exacerbating environmental degradation. Survey findings confirmed widespread perceptions

of worsening climate conditions, with significant increases in temperatures, droughts, and water shortages across all governorates.

Governorates

Key informants in **Thiqar** highlighted water scarcity, poor water quality, and prolonged drought as critical concerns exacerbated by rising temperatures. Desertification was identified as a major issue, significantly reducing agricultural productivity. Environmental pollution from gas emissions by oil companies was also noted, contributing to rural-to-urban migration and placing additional pressure on urban infrastructure and resources. Women in focus group discussions reported dust storms, emissions from oil sites, water scarcity, displacement, diseases, and the decline of agricultural lands as pressing challenges. Participants further emphasized the lack of environmental awareness and ineffective governmental strategies, including poor water distribution planning and inadequate policies, as key barriers to addressing climate impacts. These issues collectively exacerbate water scarcity, desertification, and agricultural decline, compounding the region's vulnerability to climate change.

In **Missan**, key informants identified rising temperatures, soil degradation, and water shortages as critical concerns, with seasonal changes such as insufficient rainfall and flash floods worsening agricultural challenges. These factors have led to reduced productivity, higher food prices, and increased financial strain on communities. Biodiversity loss and habitat degradation were also highlighted as persistent threats to ecosystems and livelihoods. Male farmers reported that high temperatures, declining Tigris River water levels, and increased weather fluctuations have severely impacted agriculture. Informal employees raised concerns about water pollution, dust storms, and farmland desertification, while the drying of marshes has caused significant biodiversity loss, further straining local ecosystems. Participants pointed to pollution from oil companies and factories as additional stressors on both the environment and human health. Desertification, driven by land abandonment and deforestation, has further reduced soil fertility and agricultural productivity. Criticism of inadequate governmental action, poor resource management, and insufficient policies was also prominent, with participants emphasizing that these shortcomings intensify the region's climate challenges.

Key informants and FGD participants in **Muthanna** highlighted severe climate challenges, including drought, desertification, and extreme temperatures, which have heavily impacted agriculture and daily life. Women particularly emphasized flooding as a critical concern, noting its detrimental effects on farmers and livelihoods, while key informants focused on the lack of rain and rising temperatures. These issues were seen as driving up agricultural costs and reducing the region's resilience to climate shocks. Urban expansion, often unregulated, was also noted as a significant contributor to environmental degradation. Water mismanagement emerged as a prominent challenge, with participants pointing to unequal distribution and inefficient irrigation practices. Reliance on coal and oil as primary energy sources, along with improper disposal of industrial and agricultural waste, was identified as harming biodiversity and exacerbating environmental degradation. Participants consistently criticized the lack of governmental strategies and environmental awareness, citing poor resource management as a key factor exacerbating desertification, drought, and agricultural decline.

Key informants in **Qadissiya** highlighted severe declines in river levels, particularly the Tigris and Euphrates, which have led to drinking water shortages and the loss of irrigation for agricultural land. Salinization, worsened by seawater intrusion into the Shatt al-Arab, and desertification turning fertile lands barren due to insufficient rainfall and high temperatures were major concerns. Biodiversity loss in the marshes and extreme heat waves, with summer temperatures exceeding 50°C, were also emphasized. Seasonal flooding has intermittently damaged infrastructure, while agricultural decline and water shortages have driven forced migration, increasing pressure on urban areas. Rising poverty levels and resource disputes were noted as significant social and economic consequences. Focus group participants echoed these concerns, with people with disabilities highlighting the impacts of rising temperatures, occasional winter rain, and factory

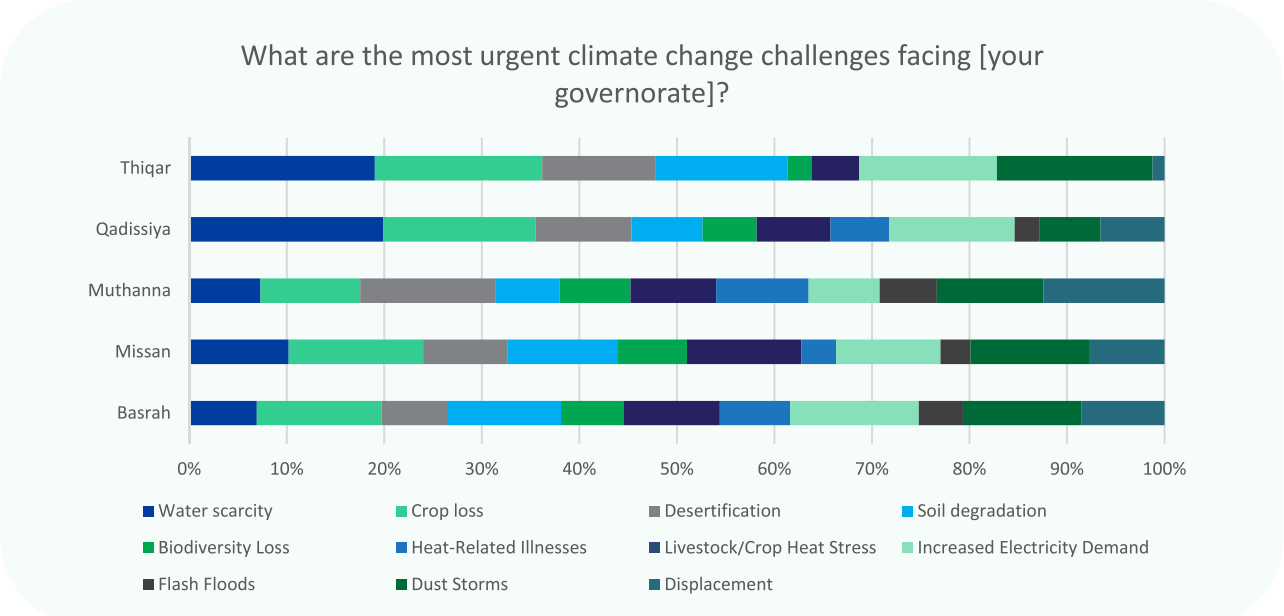
pollution. Climate-displaced individuals pointed to reduced water levels, drought, land degradation, and extreme heat over the last decade, with sudden winter flooding further complicating mobility and access. Water mismanagement, particularly the lack of planning and unsustainable practices such as unequal water distribution and wasteful irrigation methods, was identified as a critical challenge. Desertification, driven by land abandonment and deforestation, was highlighted as a pressing issue, with soil erosion and loss of fertility severely undermining agricultural production. Criticism of inadequate governmental action and resource management was prevalent, with participants emphasizing that poor policies have compounded the impacts of climate change.

Key informants in **Basrah** identified it as one of Iraq's most climate-affected regions, with extreme temperatures often exceeding 55°C and severe water salinity significantly impacting agriculture and marine life in the Shatt al-Arab. Frequent sandstorms, degraded water quality, and desertification have driven agricultural decline and forced rural residents to migrate. These combined effects have disrupted the local economy, particularly in agriculture and fishing, which are vital to Basrah's livelihoods. Male participants reported challenges such as extreme heat, water and air pollution, desertification, and rising dust levels. Water and soil salinity, as well as pollution in the Shatt al-Arab, were noted as critical issues that have reduced agricultural productivity and caused the death of marine life, including fish. Climate-displaced individuals echoed concerns about water scarcity, drought, and desertification, linking these challenges to the loss of livestock and fish, further compounding the economic and environmental struggles in the governorate.

Survey Findings

The survey results reveal significant perceptions of climate change and its impacts across the governorates. When asked about **average temperatures**, 98.71% of respondents observed an increase, with IDPs unanimously agreeing (100%). Only 1.29% reported a decrease. Similarly, the **frequency of droughts** was widely perceived to have increased (96.64%), with minimal respondents observing a decrease (1.55%) or no change (1.81%). **River water levels** were predominantly reported to have decreased (75%), with the highest reported decreases in Muthanna (100%), Qadissiya (98%), and Thiqar (88%). A small percentage (2%) stated that water levels stayed the same, while 22% were unsure.

Figure 1: Survey question on Most Urgent Climate Challenges



Dust storms (47%) were a major concern, reported as the second most critical climate change-related issue in Missan and the third in Basrah, Muthanna, and Thiqar. Dust storms, which worsen air quality and exacerbate respiratory issues, were notably significant for men, older people, and the lowest-income households. **Soil degradation** (44%) emerged as another key issue, with male respondents identifying it as their second-highest concern. This challenge affects agricultural productivity and contributes to the overall vulnerability of rural livelihoods. **Desertification** was identified by 37% of respondents as a critical issue, with Muthanna being the governorate where this challenge was most significant. Respondents highlighted the alarming transformation of fertile land into desert, which threatens agriculture and local livelihoods. **Biodiversity loss** was also reported by 25% of respondents as a moderately significant issue. Respondents noted the diminishing variety of plant and animal species as a result of climate change. **Flash floods** (15%) were the least reported issue but remain a concern in areas where sudden flooding has caused damage to homes, roads, and farmland.

Affected and At-Risk Areas

Governorates[76]

In **Thiqar,** All-Dawiyah sub-district and Al-Ghashim villages were highlighted as facing significant drought, while Al-Rifai District, including Al-Shuwailat villages and areas north of the district, experiences severe desertification. The Al-Fashakh area in Bani Rekab has witnessed displacement due to the harsh environmental conditions, with families leaving their homes in search of better living conditions. High temperatures are a critical issue across Rural Shatra North District, as noted by multiple participants. The villages of Hatem in Atab sub-district are similarly affected by drought and desertification, severely impacting agricultural productivity. Areas near the Gharraf oil field in Al-Rifai District suffer from gas emissions, contributing to environmental pollution and further degrading local ecosystems. Key informants emphasized the vulnerability of agricultural areas in Sayed Dakhil sub-district within Nasiriyah District, Al-Tar sub-district in Suq Al-Shuyukh District, and Al-Islah sub-district, where water sources have dried up, severely impacting agriculture. The marshes in Chabaish and Manar, known for their heritage and tourism industries, are also under threat, with reduced water reserves disrupting ecosystems and livelihoods. Agricultural areas in Sayed Dakhil, Al-Tar, and Al-Fudaliyah are similarly struggling due to water scarcity and environmental degradation.

In **Missan**, the Hawiza marshes and surrounding marshland areas were frequently highlighted due to significant water scarcity and drought, leading to ecosystem degradation, including the death of fish and livestock. Villages such as Abu Khasaf have experienced displacement as residents, unable to sustain agriculture or animal husbandry, moved to urban areas. Agricultural areas across Missan have also been heavily affected, particularly in districts and sub-districts such as Al-Kahla, Al-Maimouna, Ali al-Gharbi, Al-Musharrah, and Al-Azir. These regions, reliant on irrigation and groundwater, face challenges from water scarcity, extreme heat, and declining water allocations, which have severely impacted agriculture. Villages near the Tigris River have similarly struggled with lower water levels and rising temperatures. Urban areas, particularly the city of Amara, have faced significant challenges, including high temperatures, air pollution, and humidity. Population pressure from rural-to-urban migration, driven by drought and agricultural decline, has further strained infrastructure and services. Border areas like Al-Shib, near Iran, were also noted as vulnerable due to rising temperatures and additional cross-border environmental impacts. While flooding is less common in Missan, some areas near the Tigris River have become prone to occasional floods due to changing rainfall patterns.

In **Muthanna**, agricultural areas, particularly those on the outskirts of the city, such as Al-Majd and Al-Najmi districts, have been severely affected by drought and water shortages. Low water levels in rivers, such as the Euphrates River, have disrupted irrigation, leading to the deterioration of farmland and a decline in crop

76 A concise list of affected locations can be found in Annex 2.

production, posing a serious threat to food security. Urban areas in Samawa Governorate were noted for their heightened vulnerability to desertification. Limited rainfall and high temperatures have caused soil infertility, further reducing agricultural potential. Additionally, areas experiencing urban expansion, characterized by dense cement structures, have seen rising temperatures that exacerbate the impact of climate change. Pollution from oil extraction is another significant issue, with areas near oil fields suffering from environmental contamination and ecological degradation. Specific areas, such as Najmi, Warka, Majd District, Al-Zawalem and Karama, were identified as particularly affected by environmental pollution, making them vulnerable to further deterioration. Key informants also emphasized the difficult situation in rural areas surrounding the city, which are increasingly threatened by drought.These rural and neighboring areas collectively face challenges related to water scarcity, soil degradation, and desertification, which have far-reaching implications for local livelihoods and ecosystems.

In **Qadissiya**, districts such as Afak, Shamiya, Al-Badir, and Hamza are severely impacted by water scarcity, desertification, and soil degradation, leading to a decline in farming activities and migration of farmers. Villages like Al-Bu Ali and Al-Bu Hussein in Al-Badir are particularly vulnerable, with farmers abandoning their land due to drought and insufficient irrigation. Desert border areas in the southern and western parts of the governorate face significant desertification caused by minimal rainfall and high temperatures, rendering the soil unfit for cultivation. Areas near factories and electrical production stations are heavily polluted and experience extreme heat, compounding environmental challenges. Flooding occasionally impacts areas near rivers and water canals, particularly in agricultural regions such as Shamiya and Afak. While flooding is infrequent, heavy rains can cause localized damage. Shamiya also struggles with irrigation and soil salinity, while Sunni district faces sand encroachment and agricultural land degradation. Marshland areas near the governorate, including the Tigris and Euphrates rivers, are affected by drought, threatening biodiversity and traditional livelihoods such as hunting and animal husbandry. Diwaniya, considered as one of Iraq's poorest governorates, is an economically struggling area with high levels of administrative corruption. In Diwaniya city, agriculture has reportedly nearly disappeared compared to ten years ago due to severe drought and water shortages caused by climate change and widespread pollution in Iraq. Urban slum areas, such as Al Insaf village, which serves as a refuge for impoverished groups, and neighborhoods like Al Sadr Al Thalith, Al Rabi'a, Al Furat, Al Amin Al Awal, and Al Thani, suffer from weak infrastructure, making them more vulnerable to heatwaves and dust storms.

In **Basrah**, the Shatt al-Arab region emerged as a focal point of vulnerability, as rising salinity from saltwater intrusion has degraded agricultural land and disrupted the marine ecosystem, including fish populations. Areas near the Shatt al-Arab, such as Old Basra, Zubair, and agricultural lands in Qurna, Al-Shafi, Al-Madinah, and Al-Haratha, are particularly affected. These areas experience a combination of water scarcity, high temperatures, and soil degradation, which have collectively led to significant losses in agricultural productivity. Agricultural regions, especially in the north of Basrah, such as Qurna, Al-Shafi, and Al-Haratha, have been severely impacted by water scarcity and extreme heat, causing a decline in crop production. Marshland areas near the rivers have similarly suffered from these conditions, which have disrupted traditional livelihoods such as farming, fishing, and animal husbandry. Industrial zones, such as the Zubair Industrial Area, are also vulnerable, with climate-related factors like high temperatures and pollution affecting industrial processes and infrastructure. Residential neighborhoods, including popular neighborhoods in the city center and newly developed areas, face challenges due to inadequate infrastructure, rising temperatures, and water scarcity. These issues have contributed to worsening living conditions and health problems for residents. The rising salinity in the Shatt al-Arab and its interference with fresh water are among the most critical issues in the governorate. This problem has far-reaching consequences, impacting marine biodiversity, agriculture, and the availability of fresh water for residents. The degradation of soil and agricultural land in northern Basrah, compounded by desertification and high temperatures, continues to threaten livelihoods and food security.

Impact of Climate Change on Communities

Overall

The vulnerability assessment found climate change effects as having an impact on various different topics such as agricultural activity, health, as well as climate displacement. Focus group discussants consistently reported that the observed climate-related changes have significantly affected their daily lives. Many cited disruptions to agriculture and livelihoods, increased costs, and health issues as key outcomes. The compounded effects of water scarcity, pollution, and rising temperatures have forced some participants to migrate in search of more stable living conditions or alternative sources of income. Across all groups, the challenges have strained both individual well-being and community resilience.

Agricultural Activity

Survey Findings

When asked about the perceived impact of climate change on agriculture, 67% of survey respondents indicated a significant impact, with an additional 24% reporting a somewhat significant impact and 10% noting a slight impact.

Respondents identified crop loss as the most urgent climate change challenge, with 59% reporting it as a critical issue. This was primarily driven by insufficient water for farming. Crop loss was reported as most acute in Missan, followed by Qadissiya, Thiqar, and Basrah. It was consistently identified as the most urgent challenge across all demographics. Livestock and crop heat stress was identified by 25% of respondents as a moderately significant issue. Respondents emphasized the ongoing strain on agricultural systems caused by extreme heat.

The availability of water for irrigation was overwhelmingly described as extremely scarce (57%), with the issue most acute in Qadissiya (83%), Basrah (62%), and Missan (46%). Only 7% reported abundant irrigation water, primarily in Missan (38%), with negligible availability in Muthanna (0%) and Qadissiya (1%). About 18% described irrigation water as scarce, and 8% reported it as adequate. These findings highlight critical challenges for agricultural practices in the region.

Governorates

Declining rainfall, rising temperatures, and increasing salinity from seawater intrusion have reduced arable land and crop yields in **Thiqar**, particularly for wheat, barley, and vegetables. Water scarcity, outdated irrigation methods, and limited water-sharing systems have forced many farmers to abandon agriculture for government jobs.

The Director of the Shatra District Agriculture Division noted that shrinking agricultural areas are a major challenge, worsening economic hardships for farmers. Soil degradation, loss of biodiversity, and frequent dust storms linked to desertification were also reported as key issues. Traditional practices like livestock rearing and buffalo farming in the marshlands have declined due to water shortages, disrupting food production systems and cultural heritage. The loss of traditional industries, such as dairy production and crafts, has further reduced income sources and pushed many to seek alternative livelihoods. Sustainable water and soil management are urgently needed to address these challenges. In **Missan**, declining rainfall, prolonged droughts, and high temperatures have reduced the productivity of key crops like rice and wheat, leading to food shortages and increased costs. Fluctuating weather patterns and water scarcity hinder planting during traditional seasons, while rising soil salinity and the spread of pests and diseases have further degraded

farmland and raised agricultural expenses. The decline in agricultural production has aggravated poverty and unemployment, contributing to food insecurity and limiting income opportunities for families. These challenges have deepened socio-economic hardships across the region. Key informants reported that agriculture in **Muthanna** is significantly impacted by drought and increasing soil salinity, which have reduced the availability of arable land and hindered crop production. Informants emphasized that water shortages and poor soil conditions have led to a noticeable decline in agricultural output, leaving farmers struggling to sustain their livelihoods.

Key informants reported that climate change has severely impacted agriculture in **Qadissiya**, particularly in areas such as Al Shamiya and Al Badir. Prolonged droughts and declining river flow have caused severe water scarcity, reducing the production of staple crops like wheat and barley. This has significantly decreased farmers' incomes, increased poverty in rural areas, and forced many to abandon their land. Rising temperatures and desertification, especially in Afak and the Sunni sub-district, have degraded soil fertility and rendered large areas unsuitable for cultivation. These challenges have made farming unsustainable for many, directly threatening the livelihoods of rural households who depend on agriculture.

> *"I used to plant about 220 dunums but the last season before moving, I planted only 20 dunums because there was no water"*
>
> ***FGD with climate-displaced individuals in Qadissiya, male, 34 years old***

Rising temperatures, declining rainfall, and changes in rainfall timing have drastically reduced water availability for crops in **Basrah**, particularly heat-sensitive ones like wheat and barley. Saltwater intrusion has increased soil salinity, further degrading soil fertility and reducing agricultural productivity. Soil erosion from storms and floods has also worsened these challenges, threatening food security and forcing reliance on unsustainable water sources. Key informants noted an increase in pests and crop diseases, compounding the decline in agricultural output. Representatives from the Basra Agriculture Directorate highlighted that prolonged drought and water salinization have disrupted crop yields and livelihoods, leading to higher food prices and economic hardship for families with limited incomes. Another key informant emphasized the rising costs of agricultural production and its negative effects on local industries dependent on farming. Focus group discussions revealed that male participants in Basrah reported significant reductions in both farming and fishing, their primary livelihoods, due to rising temperatures, desertification, and water salinity. These issues have also forced some farmers to abandon their land, contributing to rural-to-urban migration

Livelihood and Income

Overall

Focus group discussants reported that climate change has significantly impacted livelihoods across all locations, particularly for those dependent on agriculture and natural resources. The effects include reduced agricultural productivity, migration due to lack of income and resources, and a shift to alternative or informal livelihoods. Participants noted that water scarcity, rising costs of agricultural inputs, and deteriorating soil quality have forced many to abandon traditional farming and animal husbandry. Additionally, increased poverty, health challenges, and displacement due to drought or natural disasters were highlighted as critical consequences. Women in particular face added burdens as caregivers and often lack opportunities to adapt to changing circumstances.

Survey Findings

Nearly half (48%) of respondents reported a significant impact of climate change on their personal ability to earn income, with the issue most acute in Muthanna (100%) and Qadissiya (84%). The impact was consistent across genders and slightly higher among IDPs (49%) compared to host communities (47%). Income level played a critical role, with significant impacts reported most frequently by lower-income groups: 67% of those earning less than 100,000 IQD, 74% of those earning 100,000–200,000 IQD, and decreasing to 29% among those earning more than 500,000 IQD. Notably, 86% of those in the "prefer not to say" income group reported a significant impact, further suggesting that this group may include lower-income individuals.

A severe impact was reported by 5% of respondents, primarily in Qadissiya (12%), followed by Missan (8%). This issue was more common among males (7%) compared to females (3%) and was slightly higher among IDPs (8%) compared to hosts (5%). Older individuals aged 60+ were more likely to report a severe impact (9%) compared to younger age groups (3%-4%).

Slight impacts were reported by 44% of respondents, especially in Thiqar (64%), Basrah (60%), and Missan (54%), with no such reports in Muthanna. Higher-income groups were more likely to report slight or no impact (4%), indicating greater resilience.

Climate change has affected the livelihoods of communities to varying degrees, with 36% of respondents reporting that it has impacted their community to a great extent. This was particularly prominent in Missan (73%) and Qadissiya (50%), with the lowest levels reported in Basrah (24%). Men (52%) were far more likely than women (21%) to report this level of impact, and IDPs (51%) reported greater effects compared to hosts (35%). Lower-income groups were disproportionately affected, with 50% of those earning less than 100,000 IQD and 47% of those earning 100,000–200,000 IQD reporting a great extent of impact, compared to 29% of those earning over 500,000 IQD.

The majority of respondents (59%) indicated that climate change had affected their community's livelihood to some extent, with the highest levels in Basrah (72%), Thiqar (68%), and Muthanna (52%). Only a small proportion of respondents (2%) believed climate change had not affected their community at all, and 3% were unsure.

Governorates

In **Thiqar**, focus group participants reported widespread displacement due to drought and diminishing water resources, which have rendered farming unsustainable and therefore affected their livelihood. Many described the disappearance of agricultural crops and the need to migrate or seek informal employment in cities. Women and rural families face particularly acute challenges as they struggle to adapt to these changes. In **Missan**, climate change has also had severe effects on agricultural livelihoods and rural economies. Key informants and participants reported reduced crop quality, limited water access, and rising production, transportation, and marketing costs. These challenges have led to significant job losses, forcing many into informal work and increasing poverty and unemployment. The decline in agricultural activity, coupled with the lack of alternative employment opportunities, has placed immense economic pressure on families, particularly those with already limited resources.

> *"As citizens of Missan, climate change has greatly affected our ability to earn a living, as most of us depended on agriculture or fishery as a main source of livelihood. Most of us also worked in formal work and were forced to move to informal work because of the loss of jobs, a lack of income and unstable conditions"*
>
> ***consensus within FGD with men in informal employment in Missan***

In **Muthanna**, rural participants, including women, described significant declines in agricultural activity and animal husbandry due to water shortages. Women noted additional vulnerabilities, such as higher probability of poverty and reduced income from traditional crafts, as well as the strain of caregiving responsibilities. Many families have migrated in search of alternative jobs in urban areas. Those remaining in rural areas face deteriorating economic conditions and increasing poverty as crops and livestock fail.

> *"As women, we bear the greatest burden in caring for the family, which limits our chances of working to earn income"*
>
> ***FGD with women in Muthanna, female, 30 years old***

> *"Declining crops and agricultural productivity in rural areas have led to a deterioration in of the economic situation of rural women"*
>
> ***FGD with women in Muthanna, female, 49 years old***

Climate change has severely impacted livelihoods and incomes in **Qadissiya**, particularly in rural communities. Key informants reported heightened poverty and unemployment due to declining crop production and shrinking agricultural areas. Younger populations, unable to sustain agricultural livelihoods, are increasingly migrating to urban centers or abroad in search of work. Participants with disabilities noted that those with social welfare salaries are less personally affected, but many others in the community face worsening poverty or are forced to migrate due to drought and water scarcity. Business leaders in Diwaniya highlighted that this internal migration places additional strain on urban infrastructure and limited job opportunities, worsening economic pressures in cities. In **Basrah**, climate-displaced individuals reported losing traditional sources of income, particularly in agriculture and fishing, due to desertification, water salinity, and reduced water resources. Rising farming costs and declining agricultural outputs have significantly increased poverty, forcing many to migrate or take up alternative work, such as construction. Key informants highlighted worsening economic conditions, with limited job opportunities outside the shrinking agricultural sector. Low-income families struggle to meet basic needs as poverty and unemployment rise. A representative from the Basra Agriculture Directorate noted that declining agricultural activity has further reduced employment opportunities and deepened poverty levels. Participants emphasized the urgent need for coordinated domestic and international efforts to support sustainable livelihoods in the region.

Local Economy

Overall

Key informants emphasized that local industries, particularly those reliant on agriculture, have suffered greatly due to climate change. Flour mills, dairy production, and textile industries dependent on agricultural raw materials have faced significant production declines. The drop in agricultural yields has also reduced the availability of inputs for these industries, leading to economic instability and rising unemployment. Industries such as brick-making and energy production have been affected by rising energy and water consumption costs, further straining local businesses. Focus group discussants noted the rising costs of agricultural production due to water shortages and the declining availability of crops and expressed concerns about the economic burden of climate-related changes on rural communities, including the increased costs of food and other essentials.

Survey Findings

Regarding the economic impacts of climate change, 36% of respondents reported significant impacts. The governorate of Muthanna had the highest proportion of respondents reporting significant impacts (80%), while Thiqar and Basra reported the lowest proportions (18%). An additional 43% of respondents viewed the economic impact as somewhat significant, while 14% perceived only a slight impact.

Governorates

In **Thiqar**, local industries reliant on agriculture and livestock, such as dairy, leather production, and traditional crafts, have suffered significantly due to climate change. Informants reported that reduced access to raw materials and the displacement of livestock owners and farmers have disrupted production, diminishing economic stability. The decline in agricultural productivity has also reduced the availability of crops in local markets, increasing reliance on imported food and contributing to rising unemployment, particularly among those dependent on agriculture for income. Key informants reported that local industries in **Missan**, particularly those reliant on agriculture, have been adversely affected by climate change. Industries such as food processing (e.g., tomato paste production) face a shortage of raw materials due to declining agricultural yields. Rising costs of irrigation and pest control, coupled with fluctuating demand for local products, have increased production expenses and reduced industrial output. This economic instability has further impacted employment and local economic growth. In **Muthanna**, key informants note that the dates and molasses industry is on the brink of extinction due to insufficient water for agriculture. In **Qadissiya**, the local economy has been severely disrupted by declining agricultural productivity, rising food costs, and increasing dependency on imported goods, creating economic hardship for rural and urban households. Business leaders reported reduced overall economic activity, with ripple effects on local markets and trade. Agriculture and its associated industries, including food production, have been particularly affected by drought, high temperatures, and declining crop quality. Other industries, such as brick manufacturing and traditional handicrafts, have struggled due to desertification and the scarcity of raw materials, prompting adaptations with alternative techniques and materials.

In **Basrah**, local industries dependent on agricultural inputs and natural resources have faced significant disruptions due to climate change. Key informants reported that raw material shortages, rising costs, and inefficiencies caused by high temperatures have reduced industrial production, negatively affecting employment and economic stability. Increased costs of maintaining infrastructure and industrial facilities further exacerbate these challenges. Local government representatives and business leaders highlighted the financial losses in industries affected by declining agricultural production and water salinization. High living costs, driven by food price inflation and water scarcity, have intensified economic hardships for the population.

> *"Perhaps the agriculture and water resources sectors are the most affected by climate change and its effects because of the scarcity of water and lack of rainfall on the one hand … and this is clearly reflected in the shrinking areas of agriculture and the increase in the rate of desertification in other areas. With regard to the industrial aspect, we see that climate change is a cause of large migration, especially for the livestock owners"*
>
> ***KII with the Director of a District Agriculture Division in Basrah***

Water Resources

Survey Findings

Respondents were asked about the impact of climate change on water resources, with 73% reporting significant impacts. The highest proportions of respondents perceiving significant impacts were in Muthanna (84%), Qadissiya (80%), and Missan (81%). Overall, water scarcity was identified as the third most significant climate change challenge, with 50% of respondents reporting it as a critical issue. This challenge was particularly prevalent in Qadissiya and Thiqar, as well as among IDPs and respondents under the age of 60. Respondents emphasized the pressing issue of inadequate water resources for both domestic and agricultural use.

The availability of water for household use showed significant variation across the surveyed governorates. While 43% of respondents described water availability as abundant, this was most pronounced in Missan (76%) and Basrah (62%), contrasting sharply with Qadissiya (1%) and Muthanna (4%). About 28% of respondents reported adequate water availability, but scarcity was a significant concern for 21%, particularly in Qadissiya (55%), Thiqar (33%), and Muthanna (28%). An additional 7% described water availability as very scarce, with the highest prevalence in Qadissiya (34%). Women reported higher levels of water scarcity (32%) compared to men (26%), though displacement status had little impact on perceived water availability. Access was generally better for higher-income groups, indicating income-related disparities in water accessibility.

In terms of water quality, 67% of respondents described it as "good"—clean but requiring boiling before safe consumption. Thiqar reported the highest levels of good water quality (89%), followed by Basrah (81%) and Muthanna (76%). However, Missan (43%) and Qadissiya (27%) lagged significantly. Meanwhile, 24% of respondents described the quality of water as poor, with visible impurities. Missan (51%) and Qadissiya (38%) were the most affected, whereas Basrah (18%) fared better. An additional 9% rated water as very poor, citing unsafe, unpleasant odor or taste, with the highest levels in Qadissiya (35%). Women were more likely to report poor or very poor water quality (36%) compared to men (30%), and IDPs reported slightly worse quality (36%) than hosts (32%). Access to better-quality water was positively correlated with higher income levels.

Water shortages have had severe consequences for communities. Reduced crop yields were reported by 71% of respondents, with the issue most severe in Qadissiya (95%) and least severe in Muthanna (48%). Livestock deaths due to water shortages affected 43%, with Qadissiya (66%) being the hardest hit and Thiqar (14%) the least affected. Migration emerged as another significant impact, reported by 40%, with Qadissiya (88%) leading the trend, followed by Missan (46%). Men were slightly more likely to report migration (43%) than women (37%). Conflict over water resources affected 30% of respondents, again most notably in Qadissiya (66%). Food insecurity due to water shortages was reported by 18%, highest in Muthanna (72%) and Qadissiya (35%), and lowest in Thiqar (6%) and Basrah (4%). Women (21%) were slightly more likely than men (16%) to report food insecurity. Notably, only 2% of respondents were unaware of any water shortages, with none from Muthanna, Qadissiya, or Thiqar reporting unawareness.

Governorates

Key informants reported that water scarcity is a critical challenge in **Thiqar**, with declining river levels, reduced rainfall, and salinity intrusion degrading water quality and rendering it unsuitable for irrigation and livestock. One Engineer from Qada Al-Shatra highlighted that irregular rainy seasons and insufficient central water releases have exacerbated water pollution and further reduced water availability. Civil society organizations and agricultural leaders reported health issues linked to poor water quality, including dehydration and respiratory diseases, which are further aggravated by frequent dust storms. Informants also emphasized the inefficiency of water resource management and outdated irrigation practices, compounding the effects of water scarcity on agriculture and daily life. In **Missan**, key informants reported significant impacts of climate change on water resources. Reduced rainfall and the declining flow of the Dahla River have caused severe

water shortages for agriculture, drinking, and other uses. Pollution and salinity have further degraded water quality, making it unsuitable for irrigation and household consumption in many areas. The scarcity of both surface and groundwater has become a critical challenge, particularly for rural communities dependent on these resources. Informants also noted that competition over water and land has increased tensions and conflicts within the community. Focus group discussants emphasized the struggles to secure adequate water for both agricultural and household needs, further highlighting the vulnerability of affected populations. In **Qadissiya**, key informants reported that reduced river flows from the Euphrates and rising groundwater salinity, particularly in areas like Shamiya, have severely impacted agricultural irrigation and drinking water supplies. Erratic weather patterns have caused occasional flash floods, damaging agricultural land and disrupting water management. Water scarcity has left many households reliant on potentially contaminated groundwater, raising public health concerns. Community leaders noted that competition over scarce water resources has led to local disputes. Male climate migrants linked water shortages to rural-to-urban migration, as rural livelihoods become increasingly unsustainable. In **Muthanna**, focus group discussants equally highlighted the struggle to obtain sufficient water for agriculture and household use, In **Basrah**, key informants reported that reduced river flows, including those of the Tigris, and increasing salinity and pollution in groundwater have rendered water unsuitable for agriculture and drinking. Industrial activities have further contributed to water pollution, exacerbating clean water scarcity. Water scarcity and salinization were identified as major drivers of agricultural decline and environmental migration in the region. The sheikh of a local clan and other local leaders emphasized the far-reaching effects of water resource deterioration on agriculture, household consumption, and public health. Many communities have been forced to rely on expensive or unsafe water sources. Male participants and climate migrants highlighted conflicts over water access, with salinity making much of the available water unusable.

Societal Impacts

Survey Findings

The impacts of climate change on community relationships varied in perception. Overall, 26% of respondents stated that climate change has a significant effect on society, with unanimous agreement in Muthanna (100%) and high agreement in Qadissiya (61%). In contrast, Basrah and Thiqar reported the lowest levels of perceived significant societal impact (8%). Economic disparity also influenced perceptions, with lower-income groups (earning less than 100,000 IQD) more likely to view climate change as having a significant societal effect (53%) compared to those earning over 500,000 IQD (8%).

Moderate societal effects were noted by 45% of respondents, suggesting that while the impact of climate change is not always considered severe, it is still recognized as an important factor in community dynamics. A smaller proportion (23%) observed slight effects, with men (30%) more likely than women (16%) to hold this view. Only 1% believed that climate change has no effect, with slightly higher agreement among women (2%) than men (1%). Meanwhile, 4% of respondents were unsure.

Governorates

In **Thiqar**, water scarcity has heightened tensions among communities, particularly in agricultural areas. The Director of one District Agriculture Division reported that disputes over water resources have escalated into infighting, undermining social cohesion. In shared clan areas such as Al-Shaha, powerful clans often exceed their allocated water quotas, leading to conflicts. Rural displacement to urban areas has further fueled tensions, with tribal conflicts arising from cultural and lifestyle differences. Key informants emphasized the need for fair water allocation and strict enforcement of laws to prevent violations. Supporting rural development and

stabilizing rural populations through economic and social initiatives were recommended to reduce migration pressures and mitigate conflicts.

> *"The social challenge is one of the most important challenges of climate change, as water scarcity has caused many problems among people and clans in adjacent agricultural areas that have reached the point of infighting in some areas"*
> ***KII with the Director of a District Agriculture Division in Thiqar***

In **Missan**, water and agricultural land scarcity have exacerbated tensions and conflicts, particularly in rural areas like Qalaat Saleh and Al Musharrah. Key informants reported that competition over limited resources, unemployment, and poverty are destabilizing social relations and contributing to broader instability. Conflicts over land ownership and livelihoods are further straining relations between displaced and host populations. Informants highlighted weakening community participation and limited involvement in decision-making as additional challenges, compounded by the pressures of climate change. Mitigation strategies include strengthening government support for public services such as water and health infrastructure, providing economic assistance to ease resource pressures, and promoting awareness campaigns to foster peaceful coexistence and reduce stereotypes. Enhancing dialogue and building positive relationships between communities were also emphasized as critical solutions. Key informants in **Muthanna** equally reported some tensions between displaced and host communities. To mitigate these issues, informants recommend equitable distribution of resources, including humanitarian assistance, and implementing programs to increase local production and employment. Initiatives such as cultural integration programs, joint community activities, and training on social skills can promote mutual understanding. Additionally, improving infrastructure and public services and providing psychosocial support to both communities were highlighted as necessary measures. Strengthening government and NGO coordination and raising awareness about displacement and climate change impacts are essential for promoting solidarity and reducing tensions. In **Qadissiya**, climate-displaced individuals reported growing disputes over water resources, driven by increased demand in rural areas. Key informants highlighted that water scarcity and the loss of agricultural livelihoods have strained community relations, with frequent conflicts over land and water rights undermining cohesion, particularly in resource-dependent rural areas. Tensions between displaced populations and host communities were also reported. Competition for limited resources, economic disparities, and pressure on public services, such as water and food supplies, have exacerbated social tensions. Locals often perceive that displaced persons receive preferential assistance, contributing to feelings of inequity. Cultural differences further hinder integration, while the influx of displaced populations places additional strain on already overburdened infrastructure and public services.

Conflicts over water resources and agricultural land are growing challenges in **Basrah**, particularly in rural areas like Qurna and Al-Haratha, where access to these resources is critical for livelihoods. Environmental organizations and agricultural leaders reported that competition for limited water and land has heightened tensions within and between communities. Tensions also stem from disputes over land ownership, water allocation, and social differences between displaced populations and host communities. In urban areas, job competition further exacerbates conflicts. Informants recommended equitable distribution of water resources and stronger government intervention to mediate disputes and regulate resource use. They also emphasized the importance of dialogue sessions and workshops to foster understanding between displaced and host communities. Initiatives to support small projects and create jobs were suggested to enhance economic stability and reduce tensions.

> *"As a tribal sheikh, I have noticed many conflicts between the displaced and the host community due to social customs that differ between rural and urban. There are also disputes that occur due to ownership and control of agricultural land by influential farmers and due*

to water quotas. They can be mitigated through equitable distribution of resources among people, job opportunities for displaced people in urban areas, as well as strengthening social ties and communication between areas through workshops or awareness sessions"
KII with the sheikh of a local clan in Basrah

Host community perceptions of displaced individuals vary across the governorates, ranging from sympathy and support to concerns about resource competition, cultural differences, and the lack of government planning to address displacement effectively. Many host community members emphasized the importance of communication, awareness programs, and government support in fostering understanding and improving integration.

"The feeling towards the arrival of IDPs to the community varies among individuals. On one hand, there is empathy and support for them, especially when knowing the difficult circumstances they have experienced. On the other, the members of the Missani community are concerned about the impact of their influx and on the strain on local resources such as jobs and social services"
consensus in FGD with workers in informal employment in Missan

"Acceptance does currently not exist because of the difference between the rural mentality and the urban mentality in many parts of life, however, it is possible gradually"
FGD with women in Thiqar, female, 34 years old

"We feel sympathy and support for the IDPs because they were suffering from harsh conditions, also at the same time fear and anxiety regarding some individuals and the impact of displacement on local resources such as jobs and infrastructure"
consensus in FGD with men in Basrah

In **Thiqar**, women pointed to cultural and lifestyle differences between rural and urban populations as key barriers to acceptance. Participants noted that while acceptance might improve over time, challenges caused by the behavior of some displaced individuals and inadequate government planning have hindered smooth integration. Suggestions for improvement included adherence to local laws by displaced populations and the implementation of awareness and education programs to address misunderstandings and build mutual respect. In **Missan**, farmers reported generally positive attitudes toward displaced individuals, noting that communication and cultural exchange facilitated their integration. Participants highlighted the role of community initiatives, awareness programs, and government-provided services in fostering acceptance. Despite these efforts, challenges such as economic pressures and instances of discrimination persist, often stemming from misunderstandings about displacement. Informal workers in Missan echoed these views, emphasizing that while empathy is common, resource scarcity and social tensions remain significant barriers. Civil society and government involvement were seen as essential for promoting understanding and easing integration.

"The factors that contribute to the acceptance of the displaced include community initiatives by CSOs or local associations as well as government support. As for the challenges in accepting them, they are the difficult economic pressures that the Missani community suffers from as well as ignorance and discrimination about the conditions and causes of displacement"
consensus in FGD with workers in informal employment in Missan

In **Muthanna**, women identified several challenges to acceptance, including conflicts arising from differing customs and traditions, competition for job opportunities, and the absence of targeted integration initiatives. These issues highlight the need for structured programs to bridge cultural gaps and address resource-based tensions. In **Qadissiya**, participants expressed a welcoming attitude toward displaced individuals, showing acceptance and a willingness to integrate them into their communities. This positive perception underscores the potential for harmonious coexistence when communities are supportive. In **Basrah**, men conveyed sympathy for displaced individuals, recognizing the harsh conditions they had endured. However, some participants voiced concerns about the strain on local resources, including jobs and infrastructure, resulting from increased population pressures. Suggestions to enhance acceptance included involving displaced people in social events, providing government support to both displaced and host communities, and improving access to education and healthcare for all.

Food Availability

Survey Findings

The majority of respondents (65%) reported no significant issues related to food insecurity, with Thiqar (100%) and Basrah (82%) faring the best among the surveyed governorates. Younger respondents aged 18-25 (73%) and older respondents aged 60 and above (67%) were slightly more likely to report no issues compared to those aged 26-59 (61%). However, 21% of households experienced a limited variety of foods, with this issue most prevalent in Muthanna (52%), Missan (41%), and Qadissiya (29%). Gender differences were evident, as males (25%) were more likely than females (17%) to report this challenge.

When asked whether they or any member of the HH experienced any of the following issues due to a lack of food or resources in the past three months, a recent reduction in meal size was reported by 17% of respondents, with the highest incidence in Qadissiya (72%), followed by Muthanna (24%), and minimal occurrences in Basrah (1%). Notably, Thiqar and Muthanna reported no such cases. Women (22%) were more likely than men (13%) to reduce meal sizes, and 73% of those in the “prefer not to say” income group reported this issue—suggesting that this group may include individuals from lower-income households. Reliance on food assistance or charity was reported by only 2% of respondents, concentrated entirely in Qadissiya (10%). This issue was more common among IDPs (10%) compared to the host community (1%). Skipping meals was rare, affecting only 1% of respondents, with occurrences in Missan (3%), Qadissiya (1%), and Basrah (1%). Thiqar and Muthanna reported no cases. Skipped meals were reported only by hosts (1%), with no cases among IDPs. The most severe form of food insecurity—going a whole day without eating—was reported by just 1% of respondents, with incidents recorded in Muthanna (4%) and Qadissiya (2%), while other governorates reported no such cases. This issue was slightly more prevalent among IDPs (3%) compared to the host community (1%).

Governorates

In **Thiqar** and **Muthanna**, women in FGDs expressed concerns about the availability of affordable food, linking this directly to declining agricultural productivity and increased costs. In **Missan**, focus group participants emphasized that reduced crop yields have led to rising agricultural prices, straining household food security. Key informants highlighted that the decline in local crop production and increased food costs have worsened food insecurity, particularly among vulnerable populations. In **Qadissiya**, informants reported that droughts and desertification have reduced crop yields, diminishing local food supplies and driving up prices. Families that previously relied on farming for sustenance now struggle to afford basic necessities, deepening poverty and malnutrition among vulnerable groups. In **Basrah**, informants noted that the decline in agricultural production has led to higher food prices and reduced access to essential goods. Rising costs were frequently

mentioned as a significant burden on low-income families, contributing to food insecurity in the region.

Infrastructure

Survey Findings

The most commonly reported infrastructure issue was irrigation systems, with 74% of respondents identifying these as lacking or damaged. The issue was particularly severe in Qadissiya (95%) but less pronounced in Missan (51%). Roads were also heavily impacted, with 53% reporting damage, especially in Qadissiya (78%) and least in Basrah (42%). Electricity supply was identified as a concern by 38% of respondents, with the highest prevalence in Muthanna (56%) and Missan (54%), while Basrah (20%) reported the lowest levels. Water supply was also a critical issue, cited by 28% of respondents, with Muthanna (76%) and Qadissiya (65%) reporting the most damage and Basrah the least (10%). Only 1% of respondents (primarily in Basrah and Missan) reported no climate-related damage to infrastructure.

When asked about their level of concern regarding infrastructure vulnerability to climate-related risks, 12% of respondents reported being very concerned, with the highest levels in Qadissiya (23%) and the lowest in Basrah (6%). Men (17%) expressed greater concern than women (7%), while IDPs (15%) reported higher levels of concern compared to hosts (11%). Concern levels were consistent across age groups. Another 47% were somewhat concerned, with the highest rates in Muthanna (88%) and Missan (78%) and the lowest in Thiqar (27%). Slight concern was reported by 39% of respondents, while only 2% were not at all concerned, primarily in Basrah (4%) and Missan (3%).

Increased electricity demand (53%) was the second most reported climate change challenge, with Basrah leading in prevalence due to the rising need for cooling during extreme heat. This was the second most urgent concern for women and all age groups, as well as for middle- and higher-income respondents, reflecting the strain on infrastructure and energy resources.

Governorates

Key informants reported that climate change has severely impacted infrastructure and living conditions in **Thiqar**. Dust storms, rising temperatures, and extreme weather events such as flooding and heatwaves have damaged roads, schools, healthcare facilities, and utilities, increasing repair costs and reducing access to essential services. Environmental pollution from oil fields has further degraded living conditions, particularly in informal settlements housing displaced individuals. These challenges have contributed to rural-to-urban migration, loss of livelihoods, and food insecurity. Community leaders emphasized that infrastructure damage hinders development efforts and exacerbates existing socio-economic challenges. Key informants reported significant challenges to infrastructure and health sectors in **Missan** due to climate change. Extreme weather events have damaged housing, roads, and electricity systems, resulting in costly repairs and limited access to basic services. Informants also highlighted an increase in climate-related diseases, including infectious and waterborne illnesses, which disproportionately affect vulnerable populations. The rising costs of repairing infrastructure and addressing health impacts have further strained local resources. In **Muthanna**, women also highlighted flooding as a cause of damage to agricultural infrastructure. Key informants reported significant challenges to housing and infrastructure in **Qadissiya** due to rising temperatures and occasional flooding. Extreme heat damages infrastructure and increases energy consumption, while floods disrupt roads and public utilities. Climate-displaced individuals highlighted that flooding in displacement areas has rendered streets inaccessible, complicating mobility and access to basic services. Key informants reported that rising temperatures, floods, and prolonged droughts have significantly damaged infrastructure in **Basrah**. Roads, schools, water systems, and public utilities are deteriorating, leading to higher maintenance costs and straining

the region's limited resources. Housing quality has also declined in flood-prone areas. A local educator from Basra Center emphasized that inadequate investment in infrastructure rehabilitation is worsening the region's socio-economic vulnerabilities.

Pollution and Public Health

Survey Findings

Heat-related illnesses were reported as among the most significant climate change issues by 38% of respondents. This challenge was particularly critical in Missan, where it was ranked as the third-highest priority.

Over half of respondents (52%) reported experiencing health issues related to climate change, with the prevalence highest in Muthanna (100%), Qadissiya (88%), and Missan (65%). Basrah (40%) and Thiqar (17%) reported lower levels of health impacts. The incidence was similar between genders (54% for men and 51% for women) and highest among working-age respondents (55%), followed by those over 60 years old (53%) and younger respondents aged 18-25 (43%). IDPs (77%) reported significantly more health issues compared to host community members (49%), and the prevalence was highest among lower-income groups, particularly those earning less than 100,000 IQD (73%) and in the "prefer not to say" group (86%).

The most common health issues included respiratory problems (60%), which were most prevalent in Qadissiya and least in Basrah (33%). These issues were more frequently reported by women (67%) than men (55%), and by IDPs (63%) compared to hosts (60%). Lower-income groups reported higher rates, with 82% of those earning under 100,000 IQD affected. Heat-related illnesses also affected 60% of respondents, with the highest rates in Basrah (74%) and Missan (67%) and the lowest in Thiqar (9%). Males (74%) were much more likely to report heat-related illnesses than females (45%). Waterborne diseases, such as gastrointestinal diseases, were another major issue, affecting 57% of respondents, particularly in Muthanna (96%) and Missan (83%), while Qadissiya reported lower rates (21%). Men (63%) were more affected than women (50%), and incidence was slightly higher among IDPs (60%) compared to hosts (56%). Mental health issues were reported by 9% of respondents, predominantly in Missan (33%), with no cases in Muthanna or Thiqar. Males (11%) and IDPs (17%) were more likely to report mental health impacts than females (6%) and hosts (8%).
When asked about the impact of climate change on public health, 56% of respondents indicated significant impacts. Muthanna (88%), Missan (70%), and Basra (68%) were the governorates with the highest proportions of respondents reporting significant impacts. An additional 33% of respondents reported somewhat significant impacts, while 10% noted slight impacts, and 2% were unsure.

Governorates

Focus group discussants in **Thiqar** reported significant health challenges tied to climate change, including dietary changes due to contaminated water and dust storms. Intensified reliance on unsafe water sources has increased the prevalence of waterborne illnesses such as cholera, diarrhea and other gastrointestinal diseases. Participants also highlighted widespread water and air pollution, with factory and oil site emissions identified as major contributors. Environmental stressors have closely linked health issues to displacement, as communities struggle to cope with deteriorating living conditions. Key informants in **Missan** reported that rising temperatures and water scarcity have negatively impacted public health, leading to deteriorating healthcare outcomes and strained infrastructure. Water pollution has further affected both health and livelihoods, as noted by informal employees. Focus group discussants highlighted the spread of diseases linked to high temperatures, water scarcity, and drought. Environmental pollution from recurring dust storms

continues to worsen, increasing respiratory illnesses, particularly among children and the elderly. Rising temperatures and air pollution have reportedly reduced the quality of life in both urban and rural areas. Key informants in **Muthanna** highlighted water pollution and the lack of safe drinking water as major health challenges, particularly in districts like Al-Majd. These issues disproportionately affect rural areas, especially women and children. Dust storms and gaseous thermal emissions have exacerbated respiratory conditions, further straining the region's limited healthcare resources. Environmental organizations reported an increase in disease prevalence linked to deteriorating environmental conditions, while business leaders noted that these challenges are undermining community well-being. Emerging behavioral problems were also identified as concerns within affected communities. In **Qadissiya**, climate-displaced individuals reported an increase in skin diseases among children due to rising temperatures and poor housing conditions in displacement areas. Rising temperatures have also led to more heat-related illnesses, such as heat stress and dehydration, while water scarcity has caused outbreaks of waterborne diseases. Dust storms and polluted water sources have further contributed to respiratory and waterborne illnesses, with poor sanitation in rural areas exacerbating these health risks. Limited access to healthcare, particularly in remote areas, has added strain to the region's under-resourced system. Key informants highlighted that climate change has significantly impacted public health in **Basrah**. Contaminated water supplies have increased exposure to waterborne diseases, while rising temperatures and pollution have contributed to general health deterioration. Dust escalation has exacerbated respiratory problems, particularly among vulnerable populations such as children and the elderly. Participants reported widespread water and air pollution, with emissions from factories and oil sites identified as major contributors. Respiratory and waterborne illnesses are particularly prevalent in areas with limited access to clean water and healthcare.

Mental Health and Concern About Climate Change

Survey Findings

Respondents expressed varying levels of mental stress and concern regarding the effects of climate change on their lives and communities. A third of respondents (33%) reported being very concerned, with concern highest in Missan (54%) and Qadissiya (46%). Gender and age played a role in the intensity of concern; men (46%) were more likely than women (20%) to report being very concerned, and older respondents (60+ years) expressed the highest levels of concern (38%) compared to middle-aged (33%) and younger respondents (30%). Displacement status also influenced concern levels, with IDPs (64%) expressing significantly more concern than hosts (30%). The majority (64%) were somewhat concerned, with women (78%) expressing higher levels of moderate concern than men (51%). Stress and anxiety were reported by 33% of respondents, underscoring the growing mental health burden associated with climate challenges, particularly among vulnerable populations.

Respondents identified the impact on agriculture productivity as their greatest concern (42%). This was particularly significant in Basrah (57%), Missan (38%), and Thiqar (44%). Men (46%) were more likely than women (38%) to prioritize agriculture, and concern was consistent across all age groups but highest among youth (39%). IDPs (44%) and higher-income earners (500,000+ IQD) expressed the greatest concern about agricultural impacts. Water resources were the second most frequently cited concern (35%), with Qadissiya reporting the highest level of concern (71%). This issue was more prominent among females (37%) than males (33%), with 38% of men and 34% of women highlighting it as a major issue. Concerns about extreme weather events, such as droughts, dust storms, and flash floods, were expressed by 12% of respondents, with the highest levels reported in Muthanna (64%) and among lower-income groups (40% earning under 100,000 IQD). Other concerns included health-related issues (4%), such as respiratory illnesses, which were relatively low overall but significant given the wider public health impacts of climate change. Economic losses (3%), food security issues (2%), and increased business costs (3%) were also noted but ranked lower.

When asked about personal daily life concerns, respondents highlighted the loss of income or livelihood as their primary issue (39%). This was particularly pronounced in Qadissiya, where 77% identified stress of economic instability as their main concern. Negative health impacts were the second most common concern (53%), with the highest levels reported in Basra (74%). Forced displacement due to climate change was a concern for 4% of respondents, particularly in Qadissiya (13%) and Thiqar (9%). Younger respondents (18-25 years) were less concerned about displacement (3%) than middle-aged (6%) and older respondents (2%). Thiqar reported the highest proportion of respondents who were not concerned about climate change (14%), followed by Basra and Missan (3% each), with no such responses from other governorates.

Respondents expressed through reiterated additional comments to the survey (n=32) significant concerns about water scarcity, drought, and their impacts on agriculture, livestock, and public health, emphasizing the urgent need for government action. They called for clear strategies to address climate risks, including water conservation, afforestation, diversifying agriculture, and supporting farmers with better water management and financial assistance. Many criticized the government for insufficient planning and corruption while highlighting the importance of public awareness and international agreements on water resources. Pollution from industries, particularly oil companies, was linked to community health issues, prompting calls for stricter regulations.

Governorates

Stress, anxiety, and other mental health challenges are deeply connected to climate-related issues, such as water scarcity, food insecurity, and livelihood loss. Focus group discussants and survey respondents emphasized the interconnectedness of these challenges, which collectively strain community resilience and individual mental well-being. In **Missan**, respiratory illnesses from pollution were linked to frustration and helplessness, while in Qadissiya, water shortages and disputes over resources have increased conflict, further straining mental health. Key informants in Basrah noted that climate migrants often experience social isolation and difficulty adapting, exacerbating feelings of anxiety and depression. In all governorates, FGD participants expressed concern and significant mental health challenges stemming from climate-related stressors. Many noted that the frequency and severity of environmental changes have increased over the past decade, creating uncertainty about the future. Key informants from various sectors expressed growing concern about the long-term impacts of climate change, for instance in **Qadissiya**. Community leaders highlighted how these changes threaten the region's ability to sustain its population, while business leaders worried about the economic implications of declining agricultural productivity and water scarcity. Environmental NGOs emphasized the urgent need for climate adaptation measures to mitigate these impacts. Key informants and focus group participants also highlighted that women and caregivers are disproportionately affected by mental health stressors due to their dual roles in maintaining family well-being and contributing to household income. In **Muthanna**, women noted that caregiving responsibilities amid declining income sources and food insecurity add to their mental strain. Displacement further compounds mental health challenges, with both displaced and host communities reporting heightened stress due to resource competition, cultural differences, and economic pressures.

Climate-induced Displacement

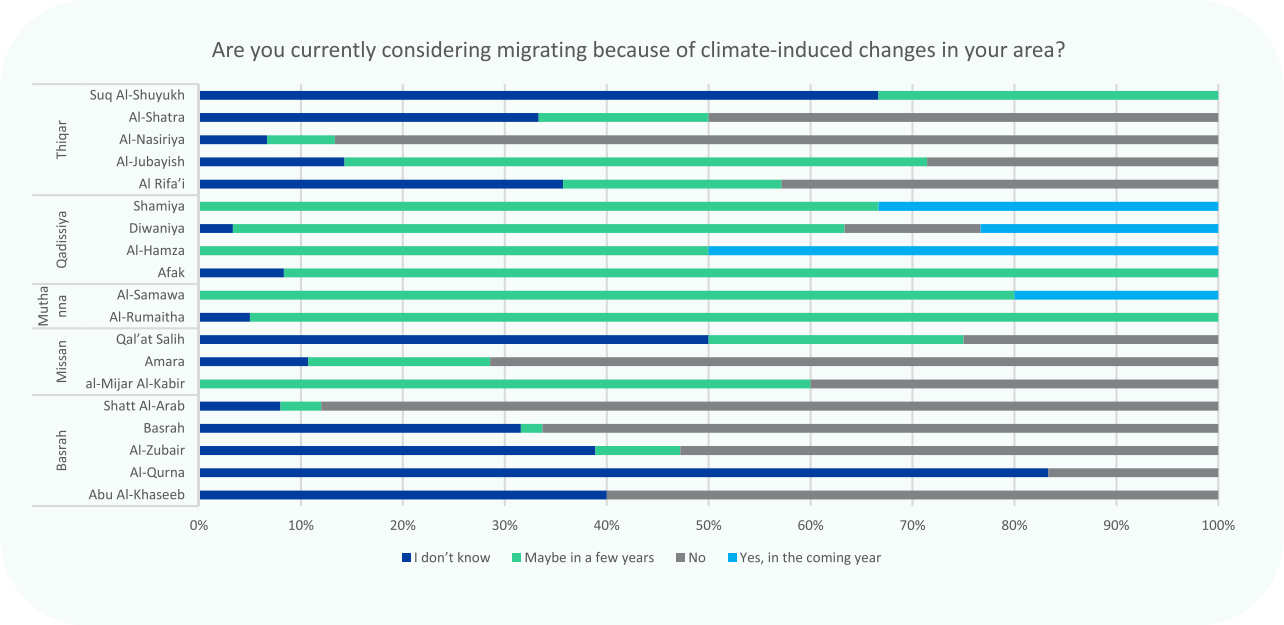
Survey Findings

Displacement was identified by 32% of respondents as among the most urgent climate change challenges, especially in Muthanna, where climate impacts are forcing some communities to relocate, often leading to the loss of livelihoods.

A significant proportion of respondents (27%) reported that they or someone in their household had moved due to climate-related issues, with the highest levels in surveyed locations in Qadissiya (87%). Climate-induced migration was least common among younger respondents and was more prevalent among lower-income households (e.g., 20% earning less than 100,000 IQD, compared to 10% earning more than 500,000 IQD).

The primary reasons for migration were stated as lack of water (87%), with Muthanna, Qadissiya, and Thiqar reporting the highest levels. Livelihood issues were the second most cited reason (62%), particularly in Basrah, Missan, and Muthanna. Health issues were also significant (56%), with Missan reporting the highest levels. Safety concerns (21%) were mentioned less frequently, indicating that water scarcity and livelihood challenges are the primary drivers of migration in these areas.

Figure 2: Survey question: "Are you currently considering migrating because of climate-induced changes in your area?"



When asked if they were currently considering migrating due to climate change, 5% of respondents indicated they were planning to move within the coming year. This was highest in Qadissiya (22%), followed by Muthanna (4%), with no respondents in the other governorates reporting immediate plans to migrate. Women (7%) were more likely than men (3%) to consider migration, and middle-aged individuals (7%) were more likely than younger (1%) or older (3%) age groups. This trend was also more common among host community members (5%) than IDPs (0%), and among lower-income households (5% of those earning 100,000-200,000 IQD) compared to wealthier households.

A larger proportion (27%) reported they might consider migration in a few years, with the highest levels in Muthanna (92%) and Qadissiya (65%). Basrah reported the lowest proportion (3%). This trend was slightly higher among men (28%) than women (25%), and perceptions were similar across all age groups. Host communities (27%) and IDPs (26%) were equally likely to consider future migration. Income levels also influenced responses, with lower-income groups being more likely to consider migration (50% of those earning less than 100,000 IQD) compared to higher-income groups (6% of those earning more than 500,000 IQD).

Meanwhile, 48% stated they were not considering migration, with the highest proportions in Basrah (64%), Missan (62%), and Thiqar (61%). Muthanna reported no respondents opting for this response, reflecting its higher vulnerability. Another 21% were unsure, indicating a degree of uncertainty about future prospects.

Looking at Basrah Governorate, areas such as Al-Qurna show a high percentage of individuals not planning to migrate (83.33%), while areas like Al-Zubair and Shatt Al-Arab show that many people are not considering migration soon (52.78% and 88%, respectively). However, areas like Abu Al-Khaseeb (40%) and Shatt Al-Arab (4%) reflect a potential consideration of migration due to climate change impacts. In Missan Governorate, there is a clear divide, with regions like Amara (71.43%) showing no consideration for migration, while Qal'at Salih (50%) has a notable proportion considering migration. Similarly, Qadissiya Governorate demonstrates mixed responses, with areas like Afak (91.67%) and Shamiya (66.67%) showing significant concern about climate-induced migration. These findings suggest that while migration is not the immediate response for many communities, some areas are beginning to seriously consider it due to the worsening impacts of climate change.

Governorates

In **Thiqar**, climate-induced displacement is a growing issue as families leave rural areas due to water scarcity, agricultural decline, and tribal conflicts over dwindling water quotas and overlapping land claims. Many participants recounted personal experiences of being forced to flee their homes, citing economic hardship, resource scarcity, and security concerns as primary push factors. Pull factors included better services, job opportunities, and stability in urban areas, though migration was often described as a last resort for farmers facing severe climate impacts.

Displaced individuals frequently settled in urban areas, making return less likely. Adaptation to urban environments proved challenging, especially for rural migrants, with difficulties finding work that matched their qualifications and adjusting to new social structures. Participants noted that many converted farmland into residential land or relocated in search of stable incomes, though these shifts often failed to yield better opportunities.

> *"The hardest challenge for me was the integration with the new society, which is completely different from the rural environment that I am used to"*
>
> ***FGD with climate-displaced individuals in Thiqar, female, 29 years old***

The lack of government support, including financial assistance and development reforms in rural areas, was identified as a key obstacle to return. Participants emphasized the need for government-led reforms, environmental recovery, and improved safety to encourage returns. The absence of suitable housing and resources has forced some displaced families to sacrifice education for their children or withdraw women from the workforce, further deepening socio-economic challenges.

In **Missan**, water scarcity, drought, and declining agricultural productivity were consistently reported as major drivers of displacement. Farmers and rural residents have moved to urban areas in search of stability, while high unemployment and lack of job opportunities have pushed young people to migrate. Participants also cited unstable security conditions and frequent conflicts as significant migration drivers, alongside aspirations for better healthcare, education, and living conditions.

Displacement has significantly undermined livelihoods, with the loss of agricultural land and reduced productivity affecting farmers and fishermen. Increased competition for jobs in urban areas has made employment scarce, particularly for those without skills suited to new sectors. Key informants noted that migration has strained urban infrastructure and basic services, leading to overcrowding, declining healthcare and education quality, and increased poverty in host communities.

Social integration challenges, such as tensions between displaced and host communities, have further limited access to support networks and stable livelihoods. Families leaving rural areas for urban centers have experienced disrupted social ties, creating additional pressures on urban infrastructure and services.

> *"There are circumstances that make people in the governorate opt for migration, including the search for a better quality of life, standard of living, income opportunities and services for them, such as health and education, as well as the search for a safe environment free of conflicts and security threats… The decline in agriculture and fishing as a result of climate change affected the ability to live a decent life"*
>
> ***consensus in FGD with Farmers and Agricultural Workers in Missan***

> *"People migrate searching for government jobs as an alternative income for the family. Migration is the last option for the farmer after he loses hope in the addressing of the effects of climate change"*
>
> ***FGD with Farmers and Agricultural Workers in Missan, male, 53 years old***

In **Muthanna**, focus group participants linked migration to economic difficulties caused by the decline in agriculture. Water scarcity and the lack of alternative income opportunities were identified as key drivers of migration, prompting families to leave rural areas for urban centers. While some participants expressed a strong connection to their land, many acknowledged migration as necessary for survival. Key informants highlighted that this rural-to-urban shift is reshaping the region's social and economic dynamics. Displaced individuals prioritize improving their living conditions but expressed a willingness to return if environmental recovery, water availability, and stable incomes could be achieved.

> *"There are difficulties in housing and this is often a reason for separating households and leaving our wives and children"*
>
> ***FGD with Farmers and Agricultural Worker in Muthanna, male, 42 year sold***

> *"I think the belonging and nostalgia for their area of origin would push many displaced people to return if circumstances allowed"*
>
> ***FGD with women in Muthanna, female, 35 years old***

In **Qadissiya**, water scarcity, land degradation, drought, and desertification were identified as major drivers of rural-to-urban migration. Focus group participants emphasized that migration was often a last resort after traditional farming and alternative income strategies failed. Pollution, economic strain, and limited opportunities also contributed to displacement, while pull factors such as better healthcare, education, and housing were frequently cited. Key informants reported that many farmers are leaving rural areas for urban centers like Basra and Najaf, further straining urban infrastructure. Some families have pursued international migration to escape worsening climate impacts, contributing to a growing population of climate refugees within and beyond Iraq.

Displaced individuals in Qadissiya face challenges in finding stable employment, with many transitioning to construction work, food stores, or water factories. However, unemployment remains widespread, and most struggle to find jobs that match their skills or previous livelihoods. Shelter access is a significant issue, particularly for large families and those responsible for elderly or chronically ill relatives. Participants highlighted the need for rapid employment opportunities to address financial responsibilities.

Mixed perspectives emerged on the likelihood of displaced individuals returning to their regions of origin. Participants emphasized that return depends on factors such as environmental recovery, improved water access, agricultural support, and government intervention. Uncertainty remains, with some displaced individuals likely to settle permanently in their current locations in the absence of effective reforms and support.

> *"Only those who move have money can relocate but we cannot move because of our financial situation"*
>
> ***FGD with People living with Disabilities in Qadissiya, male, 38 years old***

In **Basrah**, climate-induced displacement has become a critical issue as rural families, unable to sustain livelihoods in agriculture and fishing due to water scarcity and declining productivity, migrate to urban areas. Climate-displaced individuals cited poverty, unemployment, security threats, and the loss of income from traditional livelihoods as primary drivers of migration. Additional factors included inadequate healthcare, lack of education opportunities, and social pressures.

Displaced individuals reported significant challenges in transitioning to alternative livelihoods. While some found employment in other sectors, most described these jobs as less stable and lower-paying compared to previous roles. Increased competition for jobs in host areas further compounded their struggles, making it difficult to sustain their families. Many also faced difficulties accessing basic resources such as clean water, electricity, and safe, affordable housing. Cultural and social differences created barriers to integration and limited access to support networks.

> *"The challenges related to migration due to climate problems in Basrag are multiple, and the biggest challenges I faced were searching for shelter and basic resources and looking for a job opportunity to earn a living. Because after the migration, I had difficulty finding a safe place to stay, which led to harsh living conditions for me and my family"*
>
> ***FGD with climate-displaced individuals in Basrah, male, 33 years old***

> *"We found work, but not like the work we were working in previously, and we found it difficult because most of us left our original work and were displaced to areas that lacked the work we were specialized in"*
>
> ***consensus of FGD with climate-displaced individuals in Basrah***

> *"The greatest challenge that I faced was integrating with the new community. It was difficult to communicate with the residents of the area where I lived because they belong to different sects and clans and it was difficult to understand their culture, which made it difficult to build new relationships"*
>
> ***FGD with climate-displaced individuals in Basrah, male, 40 years old***

Participants expressed optimism about returning to their areas of origin if conditions improved. Key requirements included better services, agricultural support, modern technologies, and job opportunities. However, ongoing insecurity, lack of financial support, and limited access to loans for rebuilding livelihoods were cited as major barriers to return.

The influx of displaced families has placed immense pressure on urban infrastructure and services in Basrah, further destabilizing the region's social fabric and highlighting the urgent need for comprehensive support and reform.

"Yes, we expect to return to our areas of origin if there are good services and also the government's support for us to improve agricultural land and provide job opportunities for us."

Coping Mechanisms and Adaptation Strategies

Survey Findings

Based on the data regarding strategies for coping with climate change impacts, it is clear that the strategies adopted vary significantly across communities. In general, the data shows that 26% of individuals are considering migration to other areas as a strategy to cope with climate change, with the highest levels in Muthanna (64%) and Qadissiya (93%), while 21% are relying on changing crops or livestock, ranking as the second most common strategy in Basrah, Missan, and Thiqar. 8% have resorted to community water-sharing agreements, suggesting limited collective responses to water scarcity, and 11% are looking for alternative jobs, which was noted as the second-highest strategy in Muthanna and Qadissiya. 34% of individuals indicated that they are uncertain about the strategies they can use. This uncertainty was shared equally among men and women.

At the governorates level, Basrah shows the highest percentage of consideration for migration, with 19% of males and 2% of females indicating they are considering it. On the other hand, in areas like Qadissiya, a large percentage of females (72%) are thinking about migrating due to climate change impacts, while males in Missan (35%) show significant interest in changing crops or livestock as a coping strategy. In areas like Thiqar, changing crops or livestock remains one of the primary strategies, with females showing a response rate of 31% in this regard.

As for community water-sharing agreements, the percentages are generally low in most areas, with a few exceptions like in Missan, where the impact did not exceed 10%. Regarding the search for alternative jobs, there is little interest in Basrah (2% of males and 0% of females) compared to areas like Qadissiya and Missan, where many individuals are seeking alternative employment opportunities.

The data clearly shows significant gender differences in the strategies for coping with climate change. Overall, women in many areas tend to consider migration as a solution to cope with climate change impacts, as seen in Qadissiya, where a large percentage of women are considering migration. On the other hand, men show more interest in strategies such as changing crops or livestock or seeking alternative jobs. This suggests that men are more likely to focus on adapting agricultural practices or improving livelihoods, while women may lean toward mobility or improving access to resources like water.

Governorates

In **Thiqar**, residents reportedly planted and maintained trees around homes to mitigate rising temperatures and adopted household water filtration systems. Agricultural practices shifted toward drought-resistant crops and avoided planting those vulnerable to dust storms. However, reliance on rainwater and natural cycles, such as rainfall, remained significant. Informants noted skepticism toward state-led initiatives, prompting some to relocate or explore alternative livelihoods. Others adopted metaphysical beliefs to guide agricultural decisions. Despite these measures, barriers such as financial constraints and insufficient state support were prominent. Dietary adjustments were reported as a response to water contamination, and clan conflicts over dwindling resources often led to displacement.

> *"People always rely on nature and the metaphysical side, especially in the issue of rainfall for agriculture, watering and avoiding going out of homes when dust storms hit"*
>
> ***KII with the Director of a District Agricultural Division in Thiqar***

Key informants, including a Christian cleric and environmental activist, described a mix of traditional and modern strategies in **Missan**. Farmers used no-till farming, mixed agriculture, and natural fertilizers to improve soil quality, relying on drought-resistant local seeds. Traditional irrigation systems, such as rainwater harvesting and suction systems, were critical for managing water scarcity. Livelihood diversification included raising livestock resilient to harsh conditions, enhancing food security. Housing adaptations utilized renewable materials like clay and wood to provide natural insulation, and infrastructure improvements focused on renewable energy and resilient sewage systems. Health services emphasized preventive care, technology for rural access, and cost-effective measures to address climate-related health challenges. Key informants in **Muthanna**, including business leaders and local environmental NGOs, reported limited coping mechanisms in response to climate change. Some residents have resorted to low-wage labor to support their families, while others search for alternative means of livelihood. Business leaders noted that companies occasionally provide temporary support to specific groups, but this assistance is limited and short-term. In agriculture, individual efforts are prevalent, but there is no collective action or cooperation among farmers. Informants highlighted the absence of sustainable approaches in housing, infrastructure, or health services, leaving the community with minimal support to address the challenges posed by climate change. In **Qadissiya**, farmers increasingly adopted drought-resistant crops like barley, wheat, and sesame and employed modern techniques such as drip irrigation and hydroponics. Traditional irrigation methods, including aflaj and manual wells, were also used, though they struggled under severe drought conditions. Housing adaptations included natural insulating materials like clay and bricks, while green spaces improved ventilation. Crop diversification, greenhouse farming, and protected agriculture helped counter agricultural challenges. Authorities focused on improving water distribution, disaster-resistant infrastructure, and health services. However, financial constraints and limited access to modern technology hindered long-term sustainability.

> *"Many of us have adapted to the situation for a very long time, as the climate change effectss in the last three years have been very difficult, especially in our region, where we have previously dug artesian wells as well as changed some agricultural crops that do not consume water"*
>
> ***FGD with climate-displaced individuals in Qadissiya, male, 45 years old***

In **Basrah**, key informants, including local authorities and environmental NGOs, reported the integration of traditional and modern approaches. Farmers cultivated drought-resistant crops like barley, wheat, and citrus fruits and used drip irrigation to conserve water. Traditional practices, such as small canals and crop rotation, were combined with vocational training and small business ventures to diversify incomes. Urban agriculture and improved housing designs with heat-resistant materials were noted, along with relief programs for post-disaster rebuilding. Infrastructure adaptations included modernized water systems, rainwater drainage channels, and urban planning to manage flooding. Health services focused on equipping facilities to handle climate-related diseases, particularly in rural areas, with an emphasis on coordinated efforts among stakeholders.

Focus group participants across locations noted both positive and negative coping mechanisms. **Positive strategies** included adopting modern agricultural methods like drip irrigation, organic farming, and rainwater reservoirs, although overuse of wells in Qadissiya and Muthanna led to soil degradation. Livelihood diversification, such as shifts to non-agricultural work supported by loans and vocational training, was widely reported, particularly in Missan and Basrah. Migration was a significant coping mechanism in Qadissiya and Muthanna due to water scarcity and tribal conflicts. **Negative coping mechanisms** included reduced agricultural activity, reliance on contaminated water, and unsafe practices like exposure to dust storms.

Financial constraints limited access to technologies such as generators and air conditioners. In Thiqar, clan disputes over resources caused further displacement, compounding economic vulnerabilities.

Participants highlighted several **barriers to effective adaptation**. Financial support, including affordable loans and subsidies, was a consistent challenge across all locations. Technical knowledge and access to modern equipment were particularly limited in Muthanna and Thiqar. Water scarcity and pollution were critical issues, with Basrah and Muthanna reporting inadequate water quotas and reliance on contaminated sources. Tribal conflicts in Thiqar exacerbated vulnerabilities, while limited access to awareness campaigns and workshops hindered community preparedness.

Vulnerability and Needs

Vulnerability and Exacerbating Socio-Economic Factors

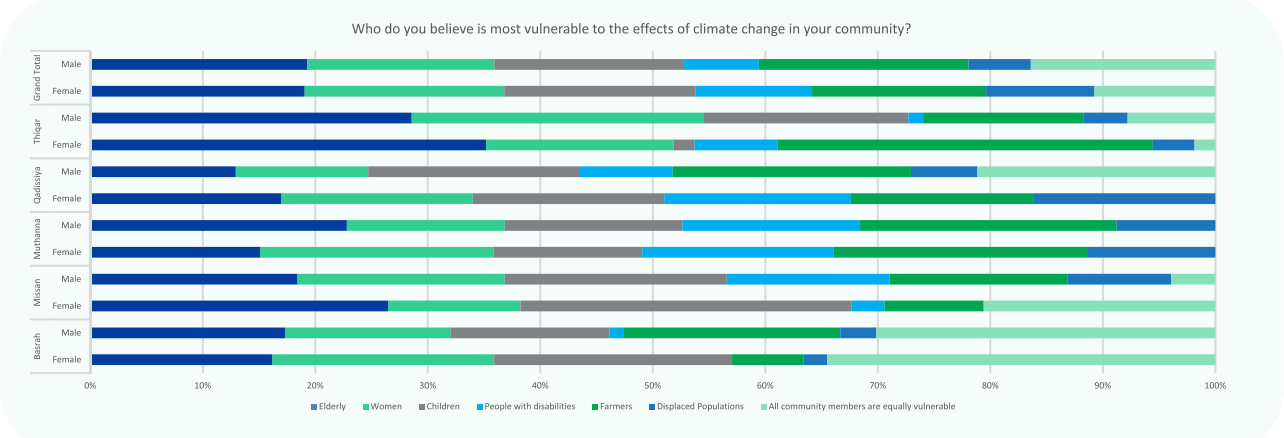
General Vulnerability

Participants across locations agreed that everyone in the community is affected by climate change, but specific groups—such as women, children, elderly individuals, persons with disabilities (PwDs), farmers, and fishermen—face disproportionate challenges. Notably, 34% of respondents felt all community members were equally vulnerable, with this view ranking second among internally displaced persons (IDPs). In Basrah, 35% of women and 30% of men shared this perspective, the highest proportion across governorates.

> *"In my view, all groups in Missan are vulnerable because of climate change due to the great burden they have received, the lack of job opportunities, the scarcity of water, and the high temperatures that have affected them and their daily lives"*
>
> ***FGD with Informal Workers in Missan, male, 35 years old***

Key informants in Muthanna and Thiqar highlighted that nearly all population groups are affected by climate change due to resource scarcity, food insecurity, and environmental degradation. Rising temperatures, drought, and desertification have exacerbated challenges, placing pressure on water, food, and other essential resources. Informants emphasized that vulnerability is pervasive and deeply interconnected with economic instability and health risks.

Figure 3: Survey question: "Who do you believe is most vulnerable to the effects of climate change in your community?"



The vulnerability criteria assessment reveal significant challenges across households. A majority (67%) of respondents reported having seven or more family members, with the highest prevalence in Basrah (80%) and Muthanna (72%), and the lowest in Qadissiya (52%). Larger households were more common among hosts (70%) than IDPs (44%), and slightly less frequent in higher-income households (68% for those earning over 500,000 IQD). More than half (53%) of households included a person aged 60 or older, with the highest prevalence in Missan (70%) and the lowest in Qadissiya (26%). Pregnant or breastfeeding women were present in 37% of households, most commonly in Basrah (47%) and Missan (46%), but far less frequently in Muthanna (12%). Households with three or more children under the age of five were reported by 23% of respondents, with Basrah (31%) and Missan (30%) having the highest proportions, and Muthanna (8%) the lowest. The presence of a person with a disability was reported in 6% of households, with the highest prevalence in Muthanna (12%), Missan (8%), and Qadissiya (7%). Thiqar reported the lowest at 2%. Notably, 4% of households did not meet any of the assessed vulnerability criteria, with the highest proportions in Thiqar (8%) and Qadissiya (7%). No respondents in Muthanna or Missan reported being free of vulnerabilities.

The Elderly

The elderly were consistently identified as the group most vulnerable to the effects of climate change across all five governorates. Vulnerability was particularly pronounced among elderly individuals in lower-income brackets and those with limited resources, such as displaced populations.

Survey respondents identified the elderly as the group most vulnerable to the effects of climate change (49%), particularly in Thiqar, where this perception was highest. Vulnerability among the elderly was consistently ranked highest across demographic and socioeconomic categories, including gender (both men and women), age groups (young adults and elderly), displacement status (host and IDP), and income levels (particularly those earning under 100,000 IQD and 100,000-200,000 IQD, especially among IDPs).

In **Thiqar**, survey respondents ranked the elderly as the most vulnerable demographic, citing health problems and difficulty adapting to harsh conditions as key factors. FGDs and KIIs highlighted that extreme heat, dust storms, and inadequate access to healthcare are significant challenges, especially in rural and marshland areas. Chronic health conditions and limited mobility further hinder access to clean water, proper nutrition, and essential health services. In **Missan**, FGDs noted that the elderly struggle to adapt to changing conditions due to limited natural and financial resources. KIIs further identified health issues such as heart disease and heatstroke as significant challenges. Mobility difficulties and inadequate healthcare access were particularly pronounced in rural and remote areas. This governorate reported the highest prevalence of elderly individuals in households, at 70%. In **Muthanna**, FGDs emphasized that elderly individuals who are unable to work face significant challenges, particularly due to declining agricultural productivity. Climate change has reduced income opportunities and heightened their reliance on external support, further exposing their vulnerability. In **Qadissiya**, FGDs revealed concerns about the elderly's susceptibility to physical impacts of climate change, particularly heat-related illnesses such as dehydration and heatstroke. KIIs emphasized that high temperatures, water scarcity, and environmental degradation exacerbate health risks. Social isolation, worsened by family migration, leaves the elderly even more vulnerable. Despite some efforts to provide clean water and sanitation, these measures remain insufficient, particularly in rural areas. In **Basrah**, FGDs and KIIs consistently emphasized the acute vulnerabilities of elderly individuals. Chronic illnesses and mobility challenges limit access to health services, water, and food. With temperatures frequently exceeding 50°C, risks such as dehydration and heatstroke are common. Social isolation, particularly when families migrate, compounds their challenges. Recommendations included mobile health services, financial support for low-income elderly individuals, and community-based initiatives to promote inclusion.

Overall, the elderly face a range of climate-induced challenges, including extreme weather, health issues, and resource scarcity. Across all governorates, 53% of households included at least one elderly person, with variations from 26% in Qadissiya to 70% in Missan. Chronic health conditions, mobility limitations, and social isolation were consistent themes which highlight the need for targeted interventions such as improved healthcare access, financial aid, and community support systems.

Women and girls

Women and girls across the five governorates face significant and distinct vulnerabilities due to climate change, exacerbated by their roles in resource management, caregiving, and limited participation in decision-making. These challenges include water scarcity, economic hardships, and health risks, alongside increased exposure to domestic violence and interruptions to education. Pregnant or breastfeeding women were present in 37% of surveyed households, with the highest prevalence in **Basrah** (47%) and **Missan** (46%).

In **Thiqar**, women face dual pressures of managing households and supporting livelihoods. Women engaged in animal husbandry and crafts experience significant economic challenges, especially during periods of drought and environmental degradation. Poor water quality, high temperatures, and diseases such as malaria and dengue fever heighten health risks. Social customs and cultural constraints limit women's participation in decision-making and access to adaptation resources. Key informants highlighted that women are often responsible for securing food, water, and fuel, tasks that become increasingly arduous under harsh environmental conditions. Efforts to support women in small enterprises, improve healthcare access, and include women in decision-making processes were identified as crucial to reducing their vulnerability. In **Missan**, women bear a disproportionate burden from climate change impacts, particularly in rural areas. Water scarcity, poverty, and health issues such as hemorrhagic fever and waterborne diseases were commonly reported by focus group discussants. Women's responsibilities in agriculture, water collection, and household management increase under extreme weather conditions. Social constraints, including limited education and exclusion from decision-making, further hinder adaptation. Key informants emphasized that women's economic vulnerabilities and lack of access to resources exacerbate these challenges. Interventions to promote economic empowerment, education, and targeted healthcare support are essential to addressing their needs.

> *"From my point of view, women and children are the most vulnerable and affected by climate change, as work has increased on them, especially in collecting water and food, which has affected their health and way of life"*
>
> ***FGDs with informal workers in Missan, male, 33 years old***

In **Muthanna**, rural women face significant challenges related to agricultural productivity and daily responsibilities worsened by climate conditions. Water scarcity, pollution-related diseases, and economic hardships, particularly for women farmers, were frequently mentioned in focus group discussions. Limited access to financial and material resources further restricts women's ability to adapt to environmental and economic pressures. Key informants noted that some women have received support to engage in income-generating activities, such as small-scale farming, which helps them meet household needs. However, these efforts are inadequate to fully address their vulnerabilities. In **Qadissiya**, rural women face growing challenges due to extreme weather conditions. Water scarcity during summer and mobility issues caused by poor infrastructure during winter hinder access to education and healthcare, exacerbating their vulnerability. Women's caregiving responsibilities increase under these conditions, with limited support available. Key informants, including the Director of the Human Rights Commission in Diwaniyah, emphasized that rural women are particularly vulnerable due to their central role in agriculture and home care. Climate change impacts, such as drought and desertification, intensify their unpaid labor in securing water and food for their families. Forced migration resulting from declining agricultural productivity exposes women to risks

of exploitation and violence, particularly in displacement settings. Economic disadvantages due to limited access to resources further restrict their ability to adapt. Local NGOs and CSOs have implemented training programs in sustainable agriculture and supported women-led projects, but these efforts remain insufficient in scale and reach. In **Basrah**, women are disproportionately burdened by climate stressors. Responsibilities such as water collection and caregiving are compounded by domestic violence and health issues linked to pollution and environmental degradation. Women in agriculture and animal husbandry are particularly vulnerable to economic and health challenges. Key informants reported that women in rural areas face limited access to financial and technical resources, which hinders their ability to adapt to climate change. They also face exclusion from economic activities and decision-making processes. Women farmers struggle to adapt to changing conditions due to a lack of modern irrigation systems. To address these challenges, informants advocated for women's economic empowerment through training, financial support, and small business development, alongside efforts to increase their representation in decision-making bodies.

> *"The increasing scarcity of water makes girls take on the responsibility for all the water for the family. They are also exposed to more domestic violence due to the harsh climatic conditions which sometimes make it hard to leave home"*
>
> ***FGD with PwDs in Basrah, male, 45 years old***

Across all locations, focus group participants consistently emphasized that women and girls face heightened risks due to their roles in caregiving, resource management, and economic support. These roles are often intensified by water scarcity, environmental degradation, and exclusion from decision-making processes. While some support programs exist, they remain insufficient to address the broader systemic challenges. Comprehensive strategies, including economic empowerment, improved healthcare and education access, and greater inclusion in decision-making, are essential to mitigating these vulnerabilities.

Children

Children were identified as one of the most vulnerable groups to climate change, as highlighted by 43% of survey respondents, particularly in Basrah, Missan, and Qadissiya. Women ranked children as the third most vulnerable group, while men ranked them second. Households with three or more children under five were most prevalent in Basrah (31%) and Missan (30%), with the lowest reported in Muthanna (8%).

Focus group discussions consistently emphasized the vulnerability of children to climate-induced challenges. In **Qadissiya**, participants highlighted the health risks posed by high temperatures and broader climate impacts. In **Basrah**, children were reported to suffer from malnutrition and climate-related diseases. Similarly, in **Missan**, malnutrition and poor environmental conditions were noted as major issues for children, exacerbated by water scarcity and inadequate sanitation. In **Muthanna**, rural children were said to face increased exposure to environmental hazards that affect their health and development. In **Thiqar**, children were noted to be particularly vulnerable to food insecurity and illnesses linked to climate change. Key informant interviews echoed these findings. In **Qadissiya**, children were reported to suffer from malnutrition, waterborne diseases, and respiratory illnesses, with migration and drought often forcing them to leave school to support their families. Educational programs integrating climate awareness and adaptive skills exist but have limited reach. In **Basrah**, rising temperatures and water scarcity were identified as major contributors to heat-related illnesses and waterborne diseases among children, especially in informal settlements and rural areas. Malnutrition was highlighted as a significant concern due to declining agricultural productivity and limited access to clean water. Informants also stressed the psychological toll of displacement and poverty on children, who are frequently forced to leave school to help support their families. Recommendations included targeted health interventions, improved access to clean water, and child-focused educational initiatives. In

Missan, key informants noted similar issues, with children in rural areas particularly affected by waterborne diseases, malnutrition, and heat-related illnesses. Economic pressures have forced many children to abandon their education, compounding their vulnerability. In **Thiqar**, displacement, poverty, and environmental degradation have disrupted children's education and exposed them to respiratory and waterborne diseases caused by dust storms and polluted water. Representatives from the Iraqi Women's Association emphasized the urgent need to address these vulnerabilities through improved healthcare, education, and living conditions.

Overall, children across all locations face significant challenges due to climate change, with health risks such as malnutrition, waterborne diseases, and respiratory illnesses compounded by displacement, poverty, and limited access to education. Comprehensive interventions, including targeted healthcare, improved water and sanitation, and expanded educational programs, are essential to mitigate these risks and support children's development.

People with Disabilities

People with disabilities (PwDs) were identified as one of the most vulnerable groups to climate change, with 22% of survey respondents highlighting their heightened susceptibility.

Regarding disability status, 87% of respondents reported no disability, while 12% had a physical disability, making it the most common type. Mental or psychological disabilities were reported by 8%, followed by sensory (2%) and cognitive or intellectual disabilities (1%, n=5). Disabilities were disproportionately reported in Qadissiya, where 52% of respondents had at least one form of disability. Women reported disabilities more frequently than men, with 20% of females identifying as having a disability compared to 7% of males. Notably, women were also more likely to report mental or psychological disabilities (15% versus 1% among men), possibly reflecting greater awareness or willingness to discuss mental health issues among women. Disabilities were more common among older age groups, with 17% of respondents aged 26-59 and 16% of those 60 years and older reporting a disability, compared to only 2% among 18-25-year-olds. Disabilities were slightly more frequent among host communities (14%) than IDPs (8%), though the smaller sample size of IDPs may have influenced this finding. Disability prevalence was almost consistent across income levels, suggesting that socioeconomic status is not a primary factor in the distribution of disabilities.

PwDs face mobility challenges, limited access to resources, and heightened vulnerability during environmental crises. In Muthanna, 17% of women identified PwDs as highly vulnerable, the highest percentage reported. The presence of PwDs was noted in 6% of households overall, with the highest prevalence in Muthanna (12%) and Missan (8%). Informants across locations underscored the lack of support systems for this group.

Focus group discussions consistently identified PwDs as highly vulnerable. In **Qadissiya**, participants emphasized the significant impact of high temperatures and environmental changes on PwDs, who face mobility challenges and physical health issues. In **Basrah**, participants noted severe barriers for PwDs in coping with climate-related challenges. In **Missan**, PwDs were reported to struggle with accessing basic resources and adapting to changing conditions. In **Muthanna**, environmental stressors and the lack of support systems were highlighted as critical issues affecting PwDs. In **Thiqar**, participants identified climate-related health problems, such as mobility issues and inadequate access to resources, as major challenges for this group. Key informants reinforced these findings. In **Qadissiya**, PwDs face challenges navigating environmental changes such as desertification and floods, compounded by limited mobility and insufficient access to clean water, sanitation, and humanitarian services. Informants from local environmental NGOs mentioned initiatives to improve infrastructure and provide accessible transportation and technical assistance, though these efforts are sporadic and underfunded. In **Muthanna**, informants highlighted the lack of tailored infrastructure and resources for PwDs, which limits their ability to adapt to climate challenges. Mobility issues and inadequate

access to healthcare and clean water exacerbate their difficulties. Similarly, in **Thiqar**, key informants emphasized the vulnerability of PwDs to environmental changes, including water scarcity and pollution, noting the absence of tailored health and economic support.

Focus group participants described the direct impacts of climate change on PwDs. In **Qadissiya**, participants reported that high temperatures severely affect mobility and physical health, especially in the absence of electricity and cooling systems.

> *"The high temperature has a great impact on us disabled people, as it is difficult to move when the temperatures rise"*
>
> ***FGD with PwDs in Qadissiya, male, 44 years old***

> *"The high temperatures affect me to a great extent, as my leg aches very much in the summer and there is no electricity to cool down"*
>
> ***FGD with PwDs in Qadissiya, male, 22 years old***

> *"The most affected are us because of the difficulty of movement"*
>
> ***FGD with PwDs in Qadissiya, male, 38 years old***

Overall, PwDs face compounded vulnerabilities due to limited mobility, inadequate infrastructure, and insufficient access to basic resources and tailored support systems. Across all locations, the absence of robust healthcare, accessible infrastructure, and economic assistance for PwDs increases their susceptibility to climate-induced challenges. Recommendations include expanding infrastructure improvements, providing accessible transportation, and ensuring targeted health and social services for this highly vulnerable group.

Farmers and Agricultural Workers

Farmers and agricultural workers were consistently identified as one of the most vulnerable groups to climate change, with 43% of survey respondents highlighting their susceptibility. This vulnerability was particularly pronounced in **Muthanna** and **Qadissiya**, where agriculture is a dominant livelihood. Farmers ranked second in vulnerability among the elderly and were considered the most affected among IDPs and low-income groups earning under 100,000 IQD.

FGDs across all governorates underscored the severe challenges faced by farmers. In **Qadissiya**, participants noted that drought and desertification have led to significant losses in agricultural livelihoods, with many farmers unable to sustain their activities. In **Basrah**, farmers and fishermen were reported to be severely affected by water scarcity, soil salinity, and environmental degradation, all of which have led to reduced agricultural productivity and disrupted fishing activities. In **Missan**, participants highlighted substantial losses in crop yields, making it increasingly difficult for farmers to maintain their livelihoods. In **Muthanna**, rural farmers were noted to struggle with irrigation challenges and declining productivity, further exacerbated by erratic rainfall patterns. Similarly, in **Thiqar**, participants described the impact of desertification and water scarcity as major obstacles to agricultural sustainability. KIIs corroborated these findings, offering additional insights into the plight of farmers. In **Basrah**, key informants, including the Sheikh of the Marian Clan and agricultural sector leaders, emphasized the severe impact of water scarcity and soil salinity, which have drastically reduced agricultural productivity and incomes. Fishermen in Basrah face similar challenges, as environmental degradation and increased salinity in the Shatt al-Arab have disrupted fishing seasons and

diminished fish stocks, forcing many to abandon their traditional livelihoods. In **Missan**, informants reported that water shortages, high temperatures, and irregular rainfall patterns have significantly affected farmers. These issues have led to declining crop yields and increased poverty, particularly among those relying on traditional practices who lack access to modern agricultural technologies and climate-resilient resources. In **Thiqar**, key informants, including the Chief Engineer of a District, described how worsening water scarcity and degraded agricultural lands have undermined the agricultural sector, historically the backbone of the local economy. Drought and poor water quality have caused substantial reductions in crop yields, forcing some farmers to abandon their work and migrate in search of alternative opportunities.

Farmers and agricultural workers face compounded challenges, including water scarcity, salinization of land, declining productivity, and erratic weather. These issues are particularly acute in rural and marshland areas. In **Thiqar**, 33% of women considered farmers the most affected group, compared to 14% of men, reflecting gendered perceptions of vulnerability. Informants in **Basrah** and **Missan** also emphasized the significant impacts of environmental degradation and the loss of agricultural livelihoods, highlighting the need for targeted interventions to support this critical yet vulnerable group.

Displaced Populations

Displaced populations were identified as one of the most vulnerable groups to climate change, with 20% of survey respondents highlighting their susceptibility. Displacement was particularly linked to environmental factors such as drought, water scarcity, and desertification, driving migration from rural to urban areas and exacerbating social and economic vulnerabilities.

FGDs revealed consistent reports of climate-induced displacement across multiple governorates. In **Missan**, participants noted that rural residents have been forced to migrate to urban areas due to the loss of agricultural livelihoods. Similarly, in **Muthanna**, rural communities facing drought and desertification have relocated to cities in search of better opportunities. In **Qadissiya**, participants reported that farmers abandoned their land due to severe drought and water scarcity, further increasing displacement. KIIs provided additional insights into the hardships faced by displaced populations. In **Qadissiya**, 16% of women identified displaced populations as highly vulnerable, the highest percentage reported. Informants highlighted significant challenges, including inadequate access to housing, food, and water, as well as barriers to integrating into host communities. These populations often lack support systems, compounding their vulnerability. In **Thiqar**, informants emphasized the severe impact of displacement caused by climate change, particularly in agricultural and marshland areas. Between 2016 and 2022, over 55,000 individuals were displaced due to environmental degradation and water scarcity. Women and girls represent a large proportion of these displaced populations, facing heightened risks of unemployment, health issues, and exploitation during migration. Displaced women and girls were noted to be particularly vulnerable to economic pressures and unsafe living conditions.

Displaced populations across all locations face unique challenges, including limited access to clean water, shelter, and basic resources. These hardships are further aggravated by insufficient support systems and difficulties integrating into host communities. The combined effects of climate-induced migration and socioeconomic vulnerabilities highlight the need for targeted interventions to support displaced populations, including improved access to housing, healthcare, and sustainable livelihood opportunities.

4.3.1.8. Low-income Households

Low-income households were also mentioned as one of the more vulnerable groups to the impacts of climate change. This vulnerability stems from their limited financial capacity to adapt, reliance on precarious livelihoods, and inadequate access to resources and infrastructure. Households earning under 100,000 IQD per month—reported by 8% of survey respondents—are particularly susceptible, with challenges exacerbated by rising costs of living, unemployment, and the economic repercussions of climate change.

FGDs highlighted region-specific challenges for low-income households. In **Qadissiya**, participants noted that poor families face rising living costs and the loss of income due to agricultural decline. In **Basrah**, low-income urban residents, particularly those in informal settlements, endure worsening living conditions compounded by inadequate infrastructure and environmental stressors. **Missan** participants linked rising poverty rates among marginalized groups to climate change and the collapse of livelihoods. In **Muthanna**, rural low-income households struggle with water scarcity and reduced agricultural opportunities, which further limit their ability to sustain their livelihoods. KIIs reinforced these findings, particularly in urban and rural areas. In **Basrah**, the urban poor living in informal settlements face critical shortages of water, food, and electricity, worsened by rising temperatures and inadequate infrastructure. Workers in informal sectors, such as daily laborers, have experienced declining incomes and job opportunities due to the economic impacts of climate change. Informants highlighted that these households often lack access to healthcare, which increases their vulnerability to heat-related illnesses and waterborne diseases. Recommendations included improving infrastructure, expanding water and electricity networks, and establishing health centers closer to vulnerable communities. Low-income households in **Muthanna** face compounded vulnerabilities due to their reliance on agricultural livelihoods, which are severely impacted by drought, water scarcity, and declining productivity. Informants emphasized that these households lack access to climate-resilient housing and technologies, limiting their ability to adapt to extreme weather and environmental changes.

Across all locations, the precarious nature of income sources among low-income households exacerbates their challenges. Many rely on daily labor (reported by 16% of respondents overall) and agriculture (8%), both of which are highly sensitive to climate impacts. In **Qadissiya** and **Muthanna**, daily labor accounted for 39%-44% of income sources, reflecting the precarious nature of livelihoods in these governorates. Poor housing conditions further compound the risks for low-income households, particularly in **Basrah** and **Missan**, where informants emphasized that inadequate shelter heightens their exposure to extreme weather and environmental degradation.

Employment and income data further illustrate the economic strain faced by low-income households. Among those earning less than 100,000 IQD, unemployment rates were as high as 50%, with 40% relying on family allowances and 27% on daily labor. This group also reported limited access to stable employment, healthcare, and adaptive resources. Even in higher income brackets, such as 100,000-200,000 IQD, daily labor remained a primary income source (32%), underscoring the instability of livelihoods in these segments. Income challenges for low-income households are compounded by factors such as age, gender, and displacement status, showing the intersectionality of vulnerability. Women face disproportionate economic vulnerabilities, with 44% unemployed compared to 21% of men, and are more likely to rely on precarious income sources like family allowances (26%) and daily labor (20%). Young adults (18-25 years) and older individuals (60+ years) also experience heightened income insecurity, relying heavily on family support and allowances due to limited access to stable employment. Displaced populations face unique challenges, with higher reliance on daily labor (23%) and trade (10%) compared to host communities, reflecting their limited access to formal job opportunities and more precarious livelihoods. These intersecting factors exacerbate the financial precarity of low-income households and hinder their ability to adapt to climate-induced challenges.

Overall, low-income households face a cycle of economic precarity, limited adaptive capacity, and disproportionate exposure to climate risks. Addressing their needs requires targeted interventions, including job creation, skills training, and expanded access to climate-resilient infrastructure, healthcare, and social support systems. These measures are critical to reducing the vulnerability of low-income households and enhancing their ability to adapt to the challenges of climate change.

Residents of the Marshes

Though mentioned less frequently specifically, informants, including a university professor, highlighted that residents of the marshes in **Missan** face unique challenges due to the degradation of the ecosystem. Drought and the loss of natural resources have forced many to migrate, disrupting their cultural identity and traditional way of life. The decline in biodiversity has also impacted their livelihoods, especially for those relying on fishing or livestock.

Multi-sectoral Needs

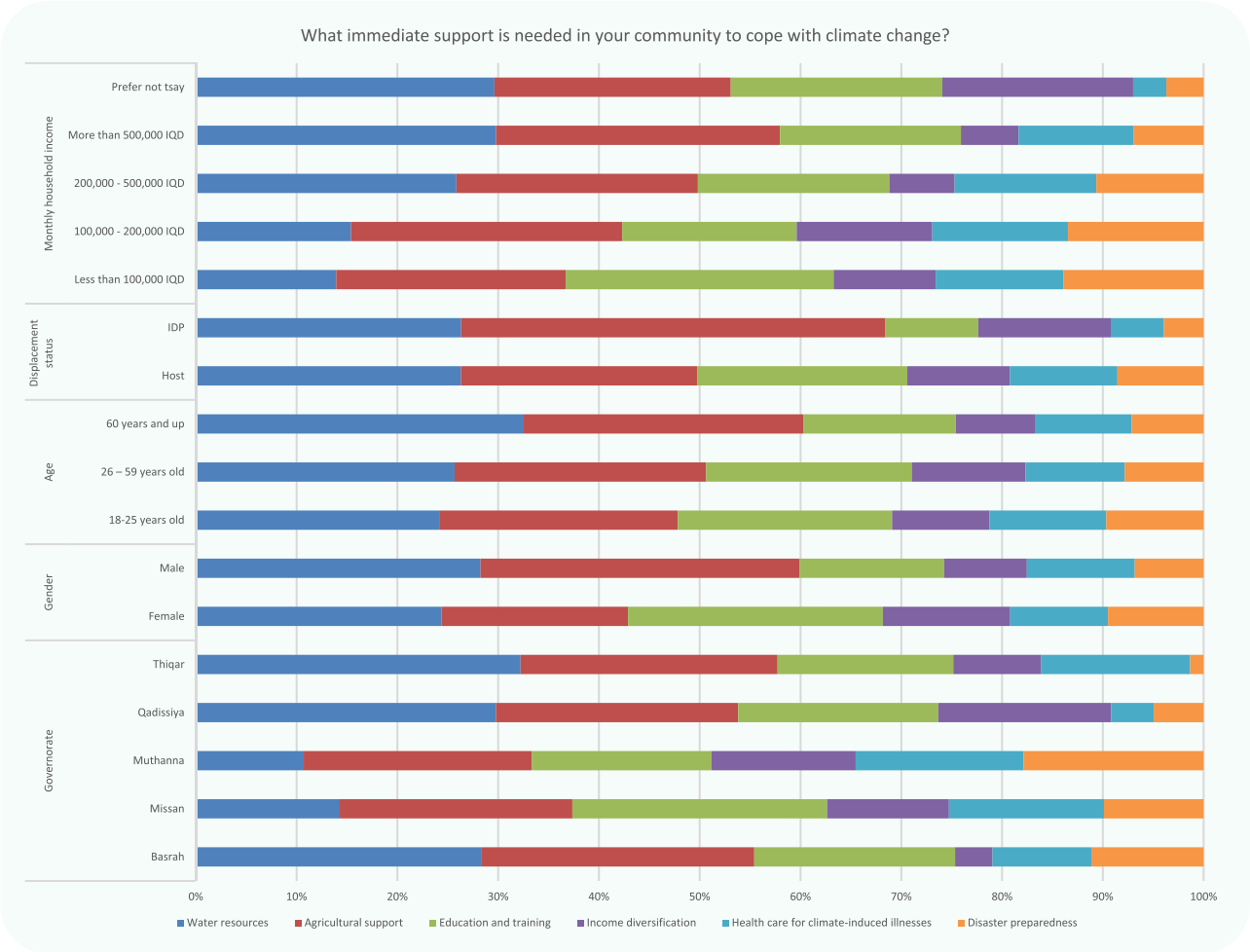
Heads of households who participated in the survey reported that immediate support to cope with climate change impacts is most urgently needed in the area of water resources. According to the data, around 26% of communities require assistance in this field to address water scarcity caused by climate change. For instance, in Al-Qurna (71%) in Basrah, the community emphasized the need for better water management systems and sustainable irrigation technologies. Similarly, areas such as Al-Zubair (40%) and Shatt Al-Arab (33%) also highlighted the urgent need to ensure stable water supplies and protect them from climate change impacts.

Agricultural support also ranks highly among immediate needs, with 25% of respondents identifying it as a critical area for intervention. For example, communities in Al-Zubair (42%) and Shatt Al-Arab (33%) are in urgent need of sustainable agricultural techniques to cope with drought and extreme weather conditions. Providing support to farmers through climate-resilient agricultural practices will be essential to ensure food security.

In addition, income diversification is a significant concern, with areas like Al-Jubayish (36%) and Al-Nasiriya (23%) indicating the necessity of diversifying economic activities. Over-reliance on agriculture is seen as a vulnerability, and there is a call for alternative income-generating activities such as small industries or tourism.

Lastly, training and education in areas such as climate risk management and healthcare for climate-induced illnesses are also critical. Communities need more awareness and training to adapt to the climate challenges, with regions like Shatt Al-Arab and Afak highlighting the importance of healthcare services that address climate-related health issues.

Figure 4: Survey question "What immediate support is needed in your community to cope with climate change?"



Focus group discussants from all locations emphasized the urgent need for targeted interventions to mitigate the impacts of climate change. The most frequently mentioned needs include improving water resources, enhancing agricultural support, providing education and training programs, and offering financial and logistical support to vulnerable populations. Participants also highlighted the necessity of addressing pollution, infrastructure issues, and the equitable distribution of resources.

Water Resources

Water resources were identified as the top priority by 60% of respondents when asked about the most immediate support needed to cope with climate change. This need was particularly emphasized in **Basrah**, **Qadissiya**, and **Thiqar**, reflecting widespread challenges with water scarcity. The issue was most pronounced among men and host community members, which highlights the critical nature of water-related vulnerabilities in these regions.

In **Thiqar**, focus group discussions highlighted specific concerns from women, including the need to strengthen water quotas for areas in need and maintain water allocations. Additionally, addressing oil field-related gaseous emissions was identified as a priority. Key informants emphasized rationalizing water consumption, protecting water resources from pollution, and raising public awareness about conservation. Recommendations included logistical support for water-related projects, such as constructing reservoirs and

modernizing irrigation systems to improve water use efficiency. Key informants in **Missan** stressed the critical need for enhanced water resource management. Proposed measures included constructing reservoirs to store rainwater for drought periods, rehabilitating traditional flood irrigation systems, and adopting modern techniques like drip and spray irrigation to reduce water loss. Improving water quality in marsh areas was also emphasized to sustain ecosystems and community livelihoods. Local and international support is required to fund and implement these initiatives. In **Muthanna**, focus group discussions highlighted the importance of upgrading irrigation tools and adopting modern techniques to mitigate soil degradation. Male farmers specifically stressed the need for improved irrigation systems to address water shortages and enhance agricultural productivity. In **Qadissiya**, focus group discussants emphasized the urgent need for improved access to water. Suggestions included digging artesian wells, providing potable water, and ensuring equitable water distribution. Key informants echoed these concerns, recommending modernizing irrigation techniques, such as smart and drip irrigation, to conserve water and increase efficiency. Establishing water reservoirs and systems for rainwater harvesting, as well as improving governance of groundwater resources and implementing desalination initiatives, were identified as critical steps to address water scarcity. In **Basrah**, FGDs underscored the need to develop irrigation networks and water storage systems. Key informants emphasized adopting modern irrigation techniques, such as drip and precision irrigation, alongside expanding water storage infrastructure. Additionally, improving sewage networks was highlighted as essential for enhancing water quality and efficiency. Support from local and international organizations is vital to fund these projects and provide technical expertise.

Overall, the need for improved water management, including modern irrigation, water storage infrastructure, and better governance of resources, is critical across all regions. Addressing these priorities will require concerted efforts and funding from local and international stakeholders to ensure sustainable water management and resilience to climate challenges.

Agricultural Support

Agricultural support was identified by 57% of respondents as the second most critical need to cope with climate change. Demand was highest in **Muthanna**, among IDPs, and for households earning between 100,000-200,000 IQD, highlighting the reliance of these groups on farming for their livelihoods.

In **Thiqar**, participants emphasized the need for financial and logistical support for farmers, alongside afforestation and green belt initiatives to mitigate the effects of climate change. Key informants advocated for implementing climate-smart agricultural practices, such as cultivating soil-enriching crops and adopting modern irrigation techniques tailored to water scarcity. Recommendations included constructing dams and reservoirs to harness rainwater, drilling canals for efficient water distribution, and introducing large-scale afforestation projects to combat desertification and soil erosion. Informants also stressed the importance of providing farmers with modern equipment, fertilizers, and training programs to improve productivity and adapt to climate challenges, thereby reducing urban migration. In **Missan**, farmers and informal workers called for modern agricultural techniques, such as improved water management, desalination, and reuse technologies. Informants stressed the importance of crop storage facilities and sustainable farming practices, recommending the introduction of drought- and heat-resistant crops, organic farming, and training on sustainable agriculture. Financial support, including soft loans and access to modern machinery and fertilizers, was highlighted as a key priority to boost productivity and reduce dependence on harmful chemicals. Farmers in **Muthanna** highlighted the urgent need for precise irrigation tools to conserve water and mitigate its pollution. Focus group participants proposed alternative farming methods and soil rehabilitation techniques to address declining productivity. Key informants echoed these priorities, emphasizing the need for financial assistance and planned projects to support environmental preservation. Recommendations included pest

control tools, machinery to clear overgrown areas, and investments in green spaces to stabilize populations and sustain livelihoods. Informants noted that small-scale agricultural projects have proven effective in improving yields and promoting self-reliance, demonstrating the importance of material and financial support for long-term success. In **Qadissiya**, informants proposed sustainable agricultural practices, such as organic and integrated farming, to combat desertification and maintain productivity. Afforestation projects and planting drought-resistant trees were suggested to improve soil quality and stabilize ecosystems. Financial incentives, such as subsidies for renewable energy adoption in agricultural operations, were identified as critical for enhancing resilience and reducing dependency on traditional energy sources. Climate migrants also called for modern irrigation techniques to support local farmers. In **Basrah**, men and climate migrants emphasized the importance of technical support, workshops, and awareness programs to enhance agricultural techniques. Informants recommended diversifying crops with drought- and heat-resistant varieties, promoting organic farming, and introducing crop rotation to restore soil nutrients. Training programs for sustainable agriculture, coupled with government-provided loans and incentives, were deemed essential. Encouraging youth and women's participation in agricultural programs was highlighted as a strategy to strengthen community resilience. Informants also advocated for the development of small agricultural enterprises, such as organic or value-added products, to improve farmers' financial stability.

Across all governorates, agricultural support remains a critical need to sustain livelihoods and ensure resilience to climate change. Recommendations focus on financial aid, modern techniques, improved water management, and sustainable practices, coupled with training and infrastructure development to empower farmers and enhance productivity.

Education, Training and Awareness-Raising

Education, training, and awareness-raising were identified by 45% of respondents as the third most immediate community support need, with the highest demand in **Missan**, among women, and among households earning under 100,000 IQD. These findings highlight a critical need for knowledge-building programs to empower vulnerable groups to adapt to climate challenges. Additional related priorities included income diversification (24%), healthcare for climate-induced illnesses (23%), and disaster preparedness (19%).

In **Basrah**, focus group participants emphasized the need for awareness campaigns to educate farmers and the public about climate change and adaptive agricultural practices. Key informants highlighted the importance of training programs on sustainable agriculture, water management, and renewable energy. They also recommended forming community groups, such as collectives of farmers and fishermen, to facilitate knowledge sharing and collective action for climate resilience. Informants noted that these efforts should be supported by financial and logistical resources to ensure their effectiveness. In **Missan**, farmers and community members stressed the importance of awareness campaigns and training programs to teach modern agricultural and water management technologies. Participants also emphasized the need for educational opportunities for youth and girls to build their capacity and engagement in climate adaptation efforts. Key informants called for raising awareness about water conservation, sustainable farming, and reforestation through targeted campaigns. Training programs for resource management and organic farming were identified as critical for enhancing community resilience. In **Muthanna**, participants underscored the value of training farmers in modern agricultural techniques and raising awareness about soil preservation and pollution reduction. Informants emphasized that such initiatives would not only improve agricultural productivity but also contribute to long-term environmental sustainability in the region. In **Thiqar**, women highlighted the importance of community education about green belts and pollution mitigation strategies. Key informants recommended comprehensive awareness programs focusing on water conservation, the effects of displacement and migration, and the benefits of afforestation. They also proposed leveraging media and educational platforms to promote environmental protection and the rational use of natural resources. Youth-

led voluntary initiatives, such as afforestation and health awareness campaigns, were identified as promising but insufficient without broader governmental and community collaboration. In **Qadissiya**, informants prioritized launching community-wide training programs on resource conservation and sustainable farming practices. Awareness campaigns through local media and community activities were recommended to increase understanding of climate risks and the importance of adaptation strategies, particularly among farmers and other resource-dependent groups.

Across all regions, education and training programs are seen as fundamental to empowering communities to address climate challenges. Recommendations include raising awareness through targeted campaigns, providing training on sustainable practices, and fostering collaborative initiatives that engage diverse community groups. These efforts are essential for building resilience and equipping vulnerable populations with the skills and knowledge needed to adapt to a rapidly changing environment.

Infrastructure and Access to Services

The accessibility and quality of infrastructure and essential services remain critical challenges across all governorates, significantly affecting community resilience to climate change. While 53% of respondents reported very accessible essential services within 5 kilometers of their residence, disparities emerged by region, income level, and population group. Accessibility was highest in **Basrah** (73%) and **Thiqar** (58%), while **Qadissiya** (11%) and **Muthanna** (20%) lagged behind, with 27% and 12% of respondents in these areas, respectively, reporting no access to essential services. Higher-income groups consistently reported better access, highlighting economic disparities in infrastructure and services.

Education accessibility varied, with only 34% of respondents finding it very accessible. **Missan** reported the highest accessibility (68%), followed by **Basrah** (39%) and **Thiqar** (38%). Conversely, **Qadissiya** and **Muthanna** faced the most significant challenges, with 24% and 12% of respondents, respectively, reporting no access to education. IDPs faced slightly more barriers than host communities, with 10% of IDPs reporting no education access compared to 6% of hosts. These disparities call for targeted efforts to improve educational infrastructure and outreach in underserved regions.

Transportation accessibility was reported as very accessible by 32% of respondents, with **Missan** leading at 70% and **Qadissiya** trailing at 11%. Most respondents (59%) found transport somewhat accessible, while 9% reported no access, with **Qadissiya**, **Thiqar**, and **Muthanna** reporting the highest rates of inaccessibility. Women found transport slightly more accessible than men, reflecting their relatively higher dependency on local infrastructure. Income levels also influenced accessibility, with higher-income groups reporting better transport services, underscoring the intersection of economic and infrastructural vulnerabilities.

In **Thiqar**, key informants recommended constructing climate-resilient roads and bridges capable of withstanding higher temperatures and severe storms. Developing rural infrastructure to support vulnerable populations was emphasized as a means to strengthen community resilience. Additionally, integrating rural development projects with climate adaptation strategies would help reduce migration and sustain livelihoods. In **Missan**, upgrading infrastructure to withstand extreme weather events was identified as vital for community resilience. Recommendations included improving sewage systems, developing renewable energy projects like solar and wind power, and constructing durable roads and buildings. These measures aim to enhance access to services while reducing environmental vulnerabilities. In **Muthanna**, improving transport and road infrastructure, alongside investments in irrigation systems and soil preservation, was highlighted as critical for addressing the dual challenges of accessibility and environmental degradation. In **Qadissiya**, participants stressed the urgent need for consistent electricity supply and infrastructure improvements, particularly climate-resilient roads and housing. Upgrading rainwater drainage systems to prevent flooding

and strengthening urban planning to adapt to future climate variability were also identified as critical needs. Financial and technical support, including loans for farmers and capacity-building initiatives, is essential to facilitate these upgrades. In **Basrah**, improving road networks, particularly those leading to agricultural areas, was highlighted as a key priority to enhance access to markets and services. Expanding sanitation infrastructure and constructing climate-resilient buildings to withstand extreme weather conditions were also emphasized. Renewable energy projects, such as solar energy installations, were recommended to reduce environmental impact and promote sustainable development.

Across all governorates, infrastructure development and service accessibility are central to building resilience against climate change. Investments in climate-resilient roads, housing, and sanitation systems, coupled with renewable energy projects and improved urban planning, are essential to mitigate disparities and enhance community adaptability. Targeted support for underserved regions, particularly Qadissiya and Muthanna, is crucial to ensure equitable access to essential services and infrastructure.

Social Cohesion Activities

Strengthening social cohesion is vital for helping displaced individuals integrate into host communities and for building resilience to climate challenges. Successful integration relies on access to housing, job opportunities, education, and community engagement. However, issues like cultural differences, competition for resources, and lack of planning often hinder these efforts, making coordinated approaches essential.

In **Thiqar**, women stressed the importance of displaced individuals complying with local laws and adapting to urban life without transferring practices that might conflict with city norms. Training and awareness programs at community centers were recommended to facilitate adaptation, alongside fostering acceptance through positive contributions to the community. In **Missan**, farmers stressed the importance of collaboration between farmers and fishermen to share knowledge and practices. They highlighted the need for job opportunities, vocational training, and education for displaced children. Informal workers added that cultural and social events could strengthen ties between displaced individuals and host communities, fostering mutual understanding. In **Muthanna**, women pointed to the need for social and psychological support, education, income opportunities, and healthcare to assist displaced individuals. Awareness initiatives were seen as critical for helping people navigate new environments. Male farmers suggested providing resources for small-scale projects and job opportunities to help newcomers achieve independence and engage with their communities. In **Qadissiya**, participants saw adequate housing and essential services as key to integration. Informants suggested better coordination between government agencies, NGOs, and local communities to address climate and displacement issues effectively. Encouraging farmers to join cooperatives was noted as a way to improve resilience and promote knowledge-sharing. In **Basrah**, men emphasized the importance of housing, education, healthcare, and infrastructure for displaced populations. They also highlighted social support networks, legal assistance, and awareness campaigns as critical for easing integration. Climate migrants noted the value of orientation programs to help newcomers adapt to local customs, along with skill-building initiatives to support employment. Successful community-driven projects, like reforestation campaigns and income-generating activities, were highlighted as examples of how collaboration can foster social cohesion and resilience.

Social cohesion depends on addressing practical needs like housing and jobs while also fostering cultural integration and collaboration. Across all governorates, community-driven efforts, cooperation between agencies, and tailored support programs are essential for ensuring that displaced individuals can rebuild their lives and contribute to their new communities.

Ecosystem Rehabilitation

Restoring natural ecosystems is essential for enhancing biodiversity, mitigating climate impacts, and supporting livelihoods. Specific recommendations and challenges collectively focus on protecting marshlands, promoting afforestation, promoting proper waste management and improving water quality and management.

In **Missan**, rehabilitating the marshes is a top priority for biodiversity and livelihoods. Informants emphasized the need for projects to enhance water quality in marsh areas, protect natural habitats, and develop strategies to improve the ecosystem's resilience to climate change. These efforts would restore the ecological balance and mitigate the effects of drought, ensuring that the marshlands continue to sustain communities and wildlife. In **Basrah**, restoring marshlands and initiating afforestation projects were highlighted as critical strategies for enhancing biodiversity and mitigating climate impacts. Informants recommended targeted interventions to protect marsh ecosystems, improve water quality, and promote ecological balance. Such measures would also support livelihoods dependent on natural resources in these areas. Promoting renewable energy was identified as a critical strategy to reduce greenhouse gas emissions and enhance energy independence. In **Qadissiya**, informants recommended financial incentives for households and farmers to adopt solar and wind energy technologies. These measures would accelerate the transition to sustainable energy sources, reducing reliance on traditional energy systems and promoting long-term environmental sustainability.

Legal and Policy Frameworks

Strengthening legal and policy frameworks is essential for addressing climate change and ensuring effective adaptation across governorates. Gaps in legislation, enforcement, and coordination have hindered efforts to manage resources sustainably and protect vulnerable communities. Improved collaboration between government agencies, civil society organizations, and international entities is needed to bridge these gaps and build long-term resilience.

In **Thiqar**, participants stressed the need for policy-level action to regulate water allocations and manage gaseous emissions from oil fields. Informants emphasized the importance of a strong legal framework to enforce environmental protection measures and promote renewable energy adoption. They also recommended mechanisms to rationalize water use, particularly in regions affected by water scarcity, as well as laws to mitigate industrial emissions that exacerbate climate impacts.In **Basrah**, participants emphasized the importance of activating the role of local and international organizations in addressing climate challenges. Informants highlighted the need for stronger partnerships with entities like the UNDP and FAO to access financial and technical resources. Developing legal frameworks to support sustainable agriculture, manage water resources, and guide infrastructure development was identified as a priority. Key informants also called for establishing local research centers to study the impacts of climate change on critical sectors such as water and agriculture. These centers would provide data-driven insights to inform policy planning and ensure targeted responses to emerging challenges.

Across all regions, there is a clear need for improved governance and legal measures to address climate change systematically. Establishing comprehensive policies for resource management, environmental protection, and sustainable development is critical. These policies must be supported by active partnerships with international organizations, robust research initiatives, and community engagement to ensure they are effective and inclusive. Addressing these gaps in legal and policy frameworks will play an important role in enhancing resilience and promoting sustainable growth.

Preventing Climate-Induced Displacement

Preventing displacement caused by climate change requires a multifaceted approach that combines adaptation strategies, sustainable livelihoods, community engagement, and strong government and organizational involvement. Across all governorates, focus group participants emphasized improving water management, supporting agriculture, strengthening infrastructure, and ensuring equitable access to services. Financial and technical support, awareness-raising efforts, and community participation in decision-making were frequently cited as critical to stabilizing communities and mitigating the risk of displacement.

In **Thiqar**, women highlighted empowering rural women, strengthening the agricultural sector, and improving water releases to affected areas as key priorities. They called for coordinated planning between government agencies and civil society to develop comprehensive climate adaptation strategies. Participants also emphasized providing material grants for reclaiming agricultural land and empowering vulnerable groups, particularly women and youth, to strengthen resilience and reduce migration pressures.In **Missan**, farmers stressed the importance of financial and technical support to adopt modern agricultural technologies and increase productivity. Expanding access to health and education services was also identified as a key measure to stabilize communities. Informal workers in the region called for comprehensive adaptation strategies, including improved irrigation systems, drought-resistant farming techniques, and awareness campaigns. Participants also noted the need for government policies to address climate adaptation and for organizations to provide technical training, grants, and loans for resilience-building projects. In **Muthanna**, women advocated for a holistic approach that combines prevention, adaptation, and planning. This includes land rehabilitation to combat desertification, afforestation campaigns, and the establishment of early warning systems for natural disasters. Male farmers emphasized the importance of maintaining livelihoods through the provision of tools for agriculture and animal husbandry, which they identified as critical for community stability and reducing displacement. In **Qadissiya**, participants highlighted the need for continuous support for farmers and communities severely affected by water shortages and climate change. Equitable water distribution and access to basic services, such as healthcare and education, were seen as essential measures to stabilize populations and reduce displacement risks. Addressing these needs was viewed as a pathway to strengthening community resilience and ensuring long-term stability. In **Basrah**, addressing shortages of water and agricultural resources was seen as a priority. Men emphasized the importance of providing basic services, improving infrastructure, and resolving tribal conflicts to prevent displacement. Community involvement in decision-making and the provision of educational and awareness programs were also highlighted as necessary steps. Climate migrants in Basrah added that diversifying livelihoods, financing small and medium enterprises, and improving irrigation systems and farming techniques would enhance resilience and reduce migration pressures.

Ensuring that communities can remain in their homes rather than migrate requires targeted financial support, improved services, and enhanced livelihoods. Across governorates, participants consistently called for soft loans, grants, training programs, and infrastructure improvements. Raising awareness, promoting sustainable agricultural practices, and diversifying income sources were frequently mentioned as essential measures.

In **Thiqar**, women emphasized raising awareness about the importance of preserving agricultural land, providing material grants for land reclamation, and supporting vulnerable populations through financial assistance. They also advocated for comprehensive development initiatives targeting the agricultural sector and projects focused on empowering women and youth to promote long-term community stability. In **Missan**, farmers emphasized the importance of soft loans for small and medium enterprises and financial grants for families affected by climatic conditions. Access to clean water, electricity, healthcare, and education was seen as critical for improving quality of life and reducing displacement pressures. Informal workers reiterated the need for economic assistance, agricultural infrastructure development, and modern technologies to increase productivity. In **Muthanna**, women focused on improving water resource management, rehabilitating soil, and providing financial support through agricultural loans. Expanding income sources was viewed as essential

for enhancing resilience and reducing migration risks. Efforts to support sustainable livelihoods were seen as crucial for stabilizing vulnerable communities. In **Qadissiya**, financial support was identified as the most critical factor, particularly for improving education and training services, constructing schools and hospitals, and upgrading basic services like electricity. These investments were seen as essential for enhancing the quality of life and stabilizing communities. In **Basrah**, participants highlighted the need for financial assistance through soft loans and grants, coupled with training workshops. Improved infrastructure, clean water access, healthcare, and education were cited as essential components for encouraging communities to stay. Supporting small and medium enterprises and encouraging entrepreneurship were also seen as important steps, alongside providing food aid to ensure families have adequate nutrition.

> *"To reduce displacement, there are three important points: The local community must play a role and participate in decision-making, financial support must be provided to farmers and health and education services need to be extended"*
>
> ***FGD with farmers and agricultural workers in Missan, male, 45 years old***

Across all governorates, preventing displacement and stabilizing communities requires a combination of financial, technical, and social support measures. Interventions that address regional and community-specific needs will be important for reducing migration pressures and building resilience to the challenges posed by climate change.

Current Interventions, Coordination, Gaps and Funding Opportunities

Current Interventions

Survey Findings

The survey findings reveal that humanitarian aid in the past three months was received by only 1% of respondents, all of whom were women from Thiqar. Among these recipients, food aid was the primary form of assistance (67%), followed by health services (33%). The extremely low access to aid highlights significant gaps in the humanitarian response across the assessed regions.

Among those who did not receive aid (99% of respondents), the predominant reasons were lack of awareness (49%) and unavailability of aid in their area (38%). This was more commonly reported by hosts (39%) than IDPs (28%), indicating the need for better outreach and geographic coverage. Additionally, 4% of respondents stated they did not need assistance, predominantly individuals in higher income brackets: 3% of those earning 200,000-500,000 IQD and 8% of those earning over 500,000 IQD. IDPs (10%) were more likely than hosts (3%) to claim they did not need aid, though this could be attributed to the smaller sample size of IDPs. Meanwhile, 2% of respondents said they did not meet eligibility criteria, disproportionately affecting women (4%) compared to men (1%), and IDPs (5%) compared to hosts (2%). Finally, 8% reported being unable to access aid due to barriers, with the issue most commonly reported by men (10%) and individuals aged 18-25 (10%). Economic vulnerability was evident, as 59% of those reporting access barriers earned below 200,000 IQD.

A majority of respondents (55%) were unaware of any organizations or groups in their area working on climate adaptation. Awareness was particularly low in Qadissiya (76%) and Missan (65%) but better in Thiqar (30%). Among those aware, 32% mentioned NGOs or CSOs, with the highest awareness in Thiqar (50%) and

Basrah (41%) and the lowest in Qadissiya (6%). Local government efforts were recognized by 14%, while 5% mentioned community groups. Farmer's associations were mentioned by only 2%, exclusively in Muthanna (20%) and Thiqar (3%).

Forty-one percent of respondents expressed interest in participating in climate-related training or initiatives, while 59% indicated a lack of interest. Disinterest was highest in Thiqar (71%) and Basrah (72%) and was notably more common among females (26%) compared to males (55%). Younger respondents showed the highest interest (52%), followed by middle-aged individuals (41%) and older adults (27%). IDPs were more interested in such opportunities (56%) than host community members (39%), possibly reflecting their heightened vulnerability and need for support.

The primary source of information about climate change and environmental issues was social media, cited by 80% of respondents. Family and friends followed at 44%, and television was noted by 39%. Other sources included environmental NGOs (25%), community meetings (9%), and government publications (4%). Traditional sources such as newspapers (0%) and radio (3%) were rarely mentioned, while schools (0%) were not identified as sources of climate education. This reliance on social media highlights the potential for digital platforms to play a key role in awareness-raising campaigns, particularly in reaching younger and digitally connected populations.

Governorates

In **Thiqar**, perspectives on organizational involvement were divided. Some women noted the occasional presence of international and local organizations, along with volunteer and youth teams, but others pointed to a lack of clear and consistent support. Participants questioned the effectiveness of existing initiatives, such as workshops and seminars, citing their infrequency and limited tangible outcomes. The need for sustained and impactful organizational involvement was a common theme. Notably, several NGOs and CSOs, such as the Civilized Dialogue Organization, Southern Youth Organization, Orfen Organization, Women's Balance, Sanabel Al Amal for Human Rights, Humanitarian Bonds to Promote Democracy and Human Rights, and Dhi Qar Foundation for Culture and Media, were reportedly active in the governorate. In **Missan**, farmers and informal workers acknowledged the significant role of international organizations such as UNDP and FAO in implementing impactful projects. Examples include providing solar panels to farmers and supporting small and medium enterprises, such as dairy production for animal breeders. These efforts were praised for raising awareness about climate change and its impacts while promoting sustainable practices. However, participants emphasized the importance of scaling these initiatives to reach more beneficiaries and address broader community needs. In **Muthanna**, participants expressed mixed experiences with organizational support. While some women reported effective assistance from international organizations, others described the support as minimal and insufficient to meet local needs. Male farmers highlighted the contributions of local organizations, such as the Iraqi Foundation for Cultural Communication, in promoting agricultural development. The World Food Programme (WFP) was reported to also be active in the region, contributing to food security initiatives. Despite these efforts, participants called for more intensive interventions to address the scale of environmental and agricultural challenges in the region. In **Qadissiya**, participants highlighted the absence of both governmental and non-governmental organizations providing support in their areas. People with disabilities and male climate migrants reported a lack of intervention, stressing the need for financial assistance to develop parallel wells and introduce new crops. These gaps underscore the pressing need for targeted and sustained support to address local challenges effectively. While UNICEF, IOM, DRC, and UNAMI reportedly work periodically in the governorate without maintaining offices in Diwaniyah, several local organizations, including Awan, Insan Lil Insan, Al Waha Al Khadra, Ard Al Amal, and Sana Al Majd, are present in the area. In **Basrah**, participants recognized the contributions of international organizations such as the International Organization for Migration (IOM) and the United Nations Development Programme (UNDP). These organizations have raised awareness about climate risks and provided support to farmers and fishermen. However, male climate migrants noted that while organizations like the Food and Agriculture

Organization (FAO) and the World Food Programme (WFP) are involved, their efforts often fall short due to limited grants and inadequate targeting of beneficiaries. Improved funding and more focused interventions were suggested to enhance the effectiveness of these initiatives.

Key informants reported various ongoing initiatives addressing climate challenges, such as supporting sustainable agriculture, improving water management, and providing renewable energy solutions like solar panels. Local organizations contribute through awareness campaigns, training programs, and community projects such as afforestation. However, many initiatives remain in their infancy, particularly in rural areas where coordination and resources are limited. Youth-led voluntary efforts, such as afforestation and health awareness campaigns, were noted as promising but constrained by insufficient funding and governmental support.

While international organizations bring technical expertise and resources, logistical challenges, inadequate funding, and limited reach in remote areas undermine the broader impact of their efforts. Local initiatives are often more responsive to community needs but face significant barriers to scaling up due to resource and capacity limitations.

Coordination

Key informants across sectors highlight the need for collaboration between local businesses, agricultural leaders, NGOs, and government agencies to effectively address climate change and promote sustainable practices. Each stakeholder brings unique strengths, including resources, technical expertise, and local knowledge, making their combined efforts essential for creating impactful and lasting solutions.

Collaboration can begin with the establishment of formal partnerships and alliances. Agricultural leaders and local businesses can work with NGOs and government agencies to jointly implement projects that address climate adaptation. These partnerships may include sharing resources and expertise, as well as co-developing programs tailored to specific community needs. For example, joint efforts could focus on model agricultural projects using modern irrigation techniques or the cultivation of drought-resistant crops, demonstrating the feasibility and benefits of sustainable practices.

Informants emphasize the importance of education and training programs. NGOs and government agencies can organize workshops to teach farmers and business leaders about modern agricultural practices, including climate-smart irrigation systems, renewable energy use, and soil management techniques. Establishing platforms for knowledge exchange between stakeholders ensures that successful practices and innovations are widely disseminated. Local businesses and agricultural leaders can also benefit from site visits to successful farms or projects that demonstrate effective climate adaptation methods.

Key informants note that financial and logistical support is critical to enabling the adoption of sustainable practices. Government agencies can offer tax incentives and low-interest loans to businesses that invest in sustainable technologies. NGOs can assist in securing funding through international grants or co-financing initiatives. Local businesses and agricultural leaders can pool resources to invest in shared infrastructure, such as water reservoirs or renewable energy projects, that benefit entire communities.

Policy development is a crucial area for collaboration. Informants suggest that government agencies should create and enforce policies that incentivize sustainable farming practices, such as subsidies for organic farming or penalties for water overuse. NGOs can advocate for these policies and educate communities about their benefits. Agricultural leaders and businesses can contribute practical insights to ensure that policies are both feasible and effective.

Integrated projects involving multiple stakeholders can address specific climate challenges, such as water scarcity, desertification, and soil erosion. Informants highlight the potential for partnerships to support initiatives like reforestation, coastal protection, and biodiversity conservation. These projects not only promote environmental sustainability but also strengthen community resilience to climate impacts.

Public awareness campaigns were seen as essential for promoting a culture of sustainability. Informants suggest that NGOs and businesses work together to organize campaigns that educate communities about the impacts of climate change and the importance of adaptation. These campaigns can also encourage local participation in sustainability initiatives, ensuring that communities are actively involved in shaping solutions.

Effective adaptation strategies require accurate data on climate impacts and resource use. Informants propose that NGOs and businesses collaborate with government agencies to collect and analyze data using tools like geographic information systems (GIS). This data can inform planning and decision-making, ensuring that resources are allocated effectively. Stakeholders can work together to develop and implement innovative technologies that address climate challenges. For example, businesses can invest in smart irrigation systems, while NGOs and government agencies provide training on their use. Partnerships with research institutions can support the development of new technologies, such as genetically modified drought-resistant crops, that enhance resilience and productivity. Informants point to examples like climate-smart agriculture projects, where NGOs have partnered with farmers to implement sustainable practices such as drip irrigation and renewable energy use. In Basra, collaborations have included solar energy projects and improved water distribution systems, reducing the economic burden on farmers and increasing agricultural productivity.
When asked about lessons learned, stakeholders mentioned that successful collaborations depend on mutual trust, resource sharing, and a commitment to long-term goals. Informants stress the importance of involving local communities in planning and decision-making to ensure that solutions address real needs and are embraced by those they aim to benefit. Flexibility and innovation are also critical, allowing stakeholders to adapt their approaches as challenges evolve. By encouraging collaboration between businesses, agricultural leaders, NGOs, and government agencies, stakeholders can pool their strengths to promote sustainable practices and resilience to climate change. This collaborative approach is essential for building a more sustainable future for Iraq's communities and agriculture.

Stakeholders

Local Organizations

Key informants state that local organizations play a vital role in mitigating climate-induced displacement by providing humanitarian assistance, psychological support, and awareness campaigns to affected communities. These organizations implement projects aimed at sustainable agriculture, water resource management, and renewable energy while serving as key actors in raising awareness and training communities on climate adaptation strategies, such as smart irrigation techniques and climate-resilient agriculture. Informants highlighted their ability to collaborate with displaced populations and local governments to promote social cohesion, equitable resource distribution, and community stabilization. Partnerships with international organizations like the UN and FAO further enhance the capacity of local organizations to secure funding and technical expertise for climate adaptation initiatives.

To strengthen their involvement, key informants recommend increasing financial support and providing specialized training to enhance the operational capacity of these organizations. Partnerships between local organizations, government agencies, private sector actors, and other NGOs should be expanded to improve coordination and maximize the impact of their work. Informants also noted the need for establishing communication platforms to facilitate knowledge sharing and collaboration, as well as encouraging research

partnerships with academic institutions to develop innovative and locally appropriate solutions. Additionally, addressing obstacles such as bureaucratic barriers, a lack of clear legal frameworks, and insufficient awareness among international donors about regional needs would significantly enhance the effectiveness and reach of local organizations in mitigating climate-induced displacement.

Confidence in local government efforts was mixed among respondents, with 22% somewhat confident, 46% slightly confident, and 33% not at all confident. Confidence was lowest in Thiqar (38% not at all confident). Young respondents (37%) were the most confident, while confidence was higher among IDPs (44%) than hosts (31%).

International Organizations

Key informants state that international organizations play a crucial role in mitigating climate-induced displacement by providing financial and technical support, implementing climate adaptation programs, and offering humanitarian assistance. Their efforts include funding through mechanisms like the Green Climate Fund, supporting sustainable agriculture, improving resource management, and developing infrastructure to enhance community resilience. International organizations also provide technical expertise, conduct climate risk assessments, and raise awareness through educational campaigns about climate change and displacement. In regions like Basrah and Missan, these organizations have worked on projects improving agricultural practices, managing natural resources, and supporting vulnerable communities, although their presence and impact vary across governorates.

To strengthen their involvement, key informants recommend increasing funding for long-term climate adaptation projects and enhancing coordination between international organizations, local governments, and civil society. Establishing networks and partnerships to share knowledge and experiences would improve the effectiveness and reach of these efforts. Expanding program coverage to include vocational training, education, and rural areas is also critical to addressing growing needs. Reducing bureaucratic obstacles and ensuring strong government communication with international organizations would further enable impactful interventions. Lastly, engaging discreet and trusted local organizations to implement funded projects could ensure efficient and contextually appropriate solutions.

International organizations or agreements garnered slightly more confidence, with 2% very confident, 43% somewhat confident, 35% slightly confident, and 20% not at all confident. Confidence was highest in Basrah (25%) and among men (25%) compared to women (14%). Host community members (36%) were more confident than IDPs (28%), reflecting possible disparities in perceived accessibility or effectiveness of international initiatives.

Iraqi Government

Key informants state that the Iraqi government plays a significant role in mitigating climate-induced displacement by developing policies and strategies for climate adaptation, allocating financial support for affected communities, and coordinating with local and international organizations. The government supports infrastructure improvements in areas such as water, energy, and transportation, while also implementing national strategies to enhance resilience against climate impacts. Financial assistance, including soft loans and development project budgets, has been provided to farmers and vulnerable communities to reduce displacement and support sustainable livelihoods. Additionally, the government promotes awareness campaigns on climate adaptation and facilitates collaboration with civil society and international financiers.

> *"Civil society is an important actor that the Iraqi government must engage in its response to climate change… The efforts of Iraqi civil society in general have been critical in*

supporting the government in various crises and topics. As agricultural government departments and local businesses suffer from insufficient capacity to implement a robust climate adaptation and mitigation strategy, integrating evolving civil society capacities may be necessary to achieve ambitious nationally determined contributions in Iraq through the implementation of projects and expertise in reaching affected communities"

KII with Chief Engineer/Local Government Official in Thiqar

To strengthen its involvement, key informants recommend improving domestic policies to align with sustainable development goals, increasing government funding for climate adaptation projects, and enhancing inter-ministerial coordination, particularly between the ministries of environment, agriculture, and water resources. Encouraging community participation in decision-making processes would ensure that policies and programs address the real needs of affected populations. Building partnerships with international organizations and the private sector to secure additional funding and technical expertise is essential for scaling up efforts. Finally, enhancing monitoring and evaluation mechanisms would improve the effectiveness and accountability of government initiatives in addressing climate-induced displacement.

National government efforts received similarly lukewarm confidence levels, with 25% somewhat confident, 41% slightly confident, and 34% not at all confident. Confidence was lowest in Basrah (40% not at all confident). Women (28%) expressed slightly more confidence than men (40%). Confidence decreased with rising income levels, with those earning over 500,000 IQD expressing the least confidence (42%).

Gaps and Recommendations

Informants pointed to several major gaps in addressing climate-induced challenges, particularly the lack of adequate funding, poor coordination among stakeholders, and the absence of long-term solutions. Efforts by local and international organizations often fall short due to fragmented approaches and limited reach, especially in remote and underserved areas where needs are most acute.

To close these gaps, informants stressed the importance of stronger collaboration between government agencies, international organizations, and local groups. Better coordination could ensure that responses are more focused and efficient, with resources directed toward areas of greatest need. Financial support was also a recurring concern, with calls for increased investment in infrastructure, water resource management, and sustainable agriculture. These efforts must prioritize rural and marginalized communities, which are particularly vulnerable to the impacts of climate change.

Building the capacity of local organizations was highlighted as a critical step. Informants suggested targeted training and technical support to help these groups scale up successful initiatives and implement practical solutions. Greater involvement of local communities in planning and execution was also seen as essential. By integrating community input, projects can be tailored to meet specific local challenges, fostering trust and a sense of ownership.

Another key recommendation was the development of comprehensive legal and policy frameworks to address climate-induced displacement. Informants emphasized the need for clear policies that balance immediate relief efforts with longer-term strategies for resilience. These frameworks should focus on sustainable resource management, the integration of displaced populations, and protecting vulnerable groups.

Addressing these gaps requires a shift from short-term fixes to sustained, inclusive, and well-funded strategies. With better coordination, stronger community engagement, and a commitment to systemic change, stakeholders can create effective responses that build resilience and address the root causes of climate vulnerability.

Potential Funding

Key informants identified several opportunities for partnerships and funding to address climate-induced vulnerabilities. Collaboration with international organizations, local governments, NGOs, and private sector actors was highlighted as essential. Organizations like the United Nations Development Program (UNDP), Food and Agriculture Organization (FAO), and the World Bank provide critical financial and technical support for projects focused on sustainable agriculture, renewable energy, and climate adaptation. Initiatives supported by the Green Climate Fund and the Global Environment Facility also contribute significantly to environmental conservation and resilience-building in vulnerable communities.

Public-private partnerships offer another valuable avenue for addressing climate challenges. Local businesses and agricultural leaders can team up with government agencies and NGOs to invest in renewable energy, improve water management systems, and develop climate-resilient infrastructure. These collaborations can also advance sustainable agricultural technologies, such as smart irrigation systems and drought-resistant crops. Partnerships with academic institutions can enhance innovation through research into effective adaptation strategies, including improved water resource management and resilient crop varieties.

NGOs and civil society organizations play a key role by providing funding, training, and technical resources to local communities. Their focus on promoting sustainable farming, biodiversity conservation, and community-led adaptation has already led to impactful initiatives. For example, projects in Basrah have improved water distribution systems and trained farmers in modern techniques. In Maysan, partnerships with organizations like UNIDO and the World Bank have supported agricultural development and renewable energy projects.

Despite these opportunities, several barriers hinder effective collaboration and project implementation. Bureaucratic inefficiencies often delay funding allocation and slow the execution of projects, particularly when international funding is involved. Limited financial resources constrain the scale of adaptation initiatives, leaving many vulnerable communities underserved. Poor coordination between government agencies, NGOs, and private sector actors leads to fragmented efforts and reduces the overall impact of these initiatives.

Awareness gaps among local leaders, farmers, and communities about climate change further complicate adaptation efforts. Without sufficient understanding of the issues, participation in sustainable practices remains low. Data deficiencies, such as outdated or incomplete information about climate impacts, also hinder effective planning and resource allocation. Additionally, concerns about the sustainability and effectiveness of past projects have created hesitancy among stakeholders to commit to new initiatives, particularly in regions like Maysan and Dhi Qar.

To address these challenges, informants recommended streamlining administrative processes to ensure timely funding and project approvals. Improved coordination among stakeholders could reduce redundancies and enhance the impact of collaborative efforts. Awareness campaigns and capacity-building initiatives are needed to help communities and decision-makers understand climate risks and the importance of adaptation. Investments in data collection and research would support accurate planning and resource prioritization. Incentivizing private sector participation through tax breaks and risk-sharing agreements could further strengthen implementation efforts. Finally, involving local communities in planning and decision-making ensures that initiatives address specific needs and build long-term resilience.

While partnerships and funding opportunities exist, overcoming systemic barriers is critical to unlocking their potential. A coordinated, inclusive, and well-supported approach will be essential to effectively mitigate climate vulnerabilities and foster sustainable adaptation.

RECOMMENDATIONS

The vulnerability assessment concludes with the following recommendations:

Legal and Policy Frameworks

- Advocate for the development of a comprehensive legal framework that formally recognizes climate-induced displacement and protects the rights of affected populations.
- Work with government stakeholders to ensure climate migrants are included in social protection systems such as education, vocational training, and social insurance.
- Promote regional and international partnerships to improve shared water resource management, combat desertification, and implement regional climate adaptation strategies.
- Support the establishment and capacity building of local committees focused on designing and implementing climate adaptation strategies at the community level.
- Advocate for policy reforms that integrate climate adaptation strategies, prioritize sustainable agriculture, regulate industrial discharge and improve water resource management at the national level. Develop equitable water distribution systems to address severe shortages in regions like Qadissiya and Muthanna.
- Develop incentives for industries to adopt energy-efficient technologies and climate-resilient production processes.

Water Resources

- Implement modern irrigation methods, including drip and precision irrigation, to conserve water and optimize agricultural efficiency across all governorates.
- Invest in water treatment systems, desalinization projects, and pollution control to address water quality issues in Basrah and Missan.
- Promote community-based water-sharing agreements and awareness campaigns to rationalize water use and reduce over-extraction of resources.

Sustainable Agriculture

- Support farmers in adopting drought-resistant crops, crop rotation, and organic farming techniques to mitigate climate impacts.
- Provide financial grants, subsidies, and access to soft loans to enable farmers to invest in modern equipment and climate-smart practices.
- Develop infrastructure for storage facilities and promote sustainable value chains for agricultural products, such as agro-industries in Basrah and Missan.

- Implement sustainable irrigation methods and repair infrastructure to ensure consistent water supply for agriculture.

Livelihood Diversification

- Encourage diversification of income sources by promoting small-scale industries and non-agricultural manufacturing, particularly in Qadissiya and Muthanna.
- Provide vocational training for displaced individuals and marginalized groups to equip them with skills for alternative livelihoods.
- Introduce microcredit facilities and grants to empower women and displaced populations to engage in income-generating activities.

Infrastructure Development

- Repair irrigation systems with durable materials to restore water access in Qadissiya and Muthanna. Consider utilizing community labor to create further income opportunities.
- Rehabilitate critical roads in flood- and heat-affected areas, prioritizing routes to markets, schools, and health facilities.
- Install solar energy systems in Muthanna and Missan, training youth to maintain and repair renewable energy solutions.
- Train local artisans and laborers in climate-resilient construction techniques for housing and small-scale infrastructure projects.
- Engage communities in participatory urban planning to identify and prioritize climate-resilient infrastructure upgrades.
- Construct and repair climate-resilient roads and housing, especially in areas like Qadissiya, Muthanna, and Basrah, to withstand extreme weather conditions.
- Develop rainwater drainage systems to prevent flooding in urban and rural areas, particularly in Qadissiya and Basrah.
- Reconstruct essential infrastructure, such as schools, to withstand extreme weather conditions by using climate-resilient materials and designs, ensuring they are safe, energy-efficient, and accessible for children in vulnerable communities.

Shelter Rehabilitation

- Support vulnerable households in rehabilitating shelters using locally sourced climate-resilient materials, with direct involvement of community-led construction groups.
- Provide micro-grants or in-kind support (materials/tools) to vulnerable households for self-led shelter repairs, prioritizing women-headed households, families with young children, or elderly members.

- Provide small-scale solar kits for lighting in shelters, especially for displaced families, improving living conditions while reducing reliance on strained energy systems.

Health and Social Services

- Establish mobile health centers to improve access for vulnerable populations, especially in rural and marshland areas.
- Conduct health education campaigns to raise awareness about the prevention of climate-related health risks.

Women's Empowerment and Inclusion

- Provide tailored education and training for women in sustainable agriculture, small business management, and climate risk management.
- Address social and cultural barriers by integrating gender-sensitive approaches into climate adaptation programs.

Support for Displaced Groups

- Mitigate displacement by strengthening rural livelihoods through agricultural support, infrastructure improvements, and equitable access to resources.
- Provide displaced populations with orientation programs, vocational training, and job opportunities to support integration into host communities.
- Enhance access to legal protection, healthcare, and education for displaced women and children.

Capacity Building and Awareness

- Conduct widespread awareness campaigns on climate change impacts, waste management and adaptation strategies, leveraging social media and local platforms.
- Organize training programs for farmers, businesses, and local communities on sustainable practices, renewable energy, and resource management.
- Encourage collaboration between local organizations, government agencies, and international bodies to deliver capacity-building initiatives.

Advocacy

- Advocate for stricter environmental regulations to control pollution from oil refineries and factories, focusing on reducing industrial discharge into water sources, promoting cleaner production methods, and enforcing waste management standards.
- Engage community representatives, local authorities, and civil society organizations in lobbying efforts, emphasizing the health, environmental, and livelihood benefits of reducing industrial pollution.

Ecosystem Rehabilitation

- Focus on afforestation projects and marshland rehabilitation in Basrah and Missan to restore biodiversity and mitigate environmental degradation.
- Promote the use of sustainable land management practices to combat desertification in Qadissiya and Muthanna.
- Integrate renewable energy projects, such as solar energy for farmers, to enhance environmental sustainability.

Social Cohesion and Community Engagement

- Promote social cohesion by organizing cultural and community events that bridge gaps between displaced and host populations.
- Empower local leaders and community organizations to implement grassroots adaptation initiatives.
- Facilitate knowledge-sharing networks to spread successful climate-resilient practices across regions.

Shelter and Housing

- Promote the development of climate-resilient housing using materials and designs suited for extreme weather conditions, such as heat-resistant and flood-proof structures. This includes incentives for adopting sustainable building practices and incorporating renewable energy solutions like solar panels for cooling and lighting.
- Expand affordable and accessible housing projects for displaced populations, with a focus on integrating these communities into urban areas without overburdening existing infrastructure.
- Support shelter rehabilitation initiatives in areas affected by climate-induced damage, focusing on providing resources for rebuilding and retrofitting existing homes to withstand future climate impacts.

Mental Health and Psychosocial Support (MHPSS)

- Integrate mental health services into climate adaptation programs. Ensure accessible mental health care for affected populations, particularly in displacement areas and rural communities. Provide psychosocial support to individuals and families affected by climate-induced displacement, livelihood loss, and resource scarcity.
- Train community leaders and healthcare workers to identify and address climate-related mental health challenges.
- Implement awareness campaigns to destigmatize mental health issues and promote stress management strategies, particularly for women and youth.

- Address underlying causes of mental health stressors, such as water scarcity, livelihood insecurity, and inadequate public services, through coordinated, multi-sectoral interventions.

BIBLIOGRAPHY

Arab Reform Initiative, "Environmental Mobilization in Iraq: NGOs, Local Actors and the Challenge of Climate Change," Arab Reform: Paris - Beirut - Tunis, May 2023.

European Union Agency for Asylum (EUAA), "Iraq - Security Situation," Publications Office of the European Union: Luxembourg, March 2024.

Food and Agriculture Organization of the United Nations (FAO), "Iraq: DIEM - Data in Emergencies, Monitoring Brief, Round 12," FAO: Baghdad, April 2024.

Human Rights Watch (HRW), "Basra is Thirsty - Iraq's Failure to Manage the Water Crisis," HRW: n.p., July 2019.

International Committee of the Red Cross (ICRC), "Iraq's Perfect Storm – A Climate and Environmental Crisis Amid the Scars of War," ICRC, July 19, 2021. Accessed October 20, 2024. https://www.icrc.org/en/document/iraqs-perfect-storm-climate-and-environmental-crisis-amid-scars-war%C2%A0.

International Organization for Migration (IOM), "Drivers of Climate-Induced Displacement in Iraq: Climate Vulnerability Assessment," IOM: Baghdad, October 2023.

International Organization for Migration (IOM), "DTM Emergency Tracking: Climate-Induced Displacement – Central and Southern Iraq," IOM: Baghdad, March 2024.

International Organization for Migration (IOM), "International Migration from Climate-Affected Areas in Iraq: Exploring the Influence of Climate Change on Mobility Patterns," IOM: Baghdad, June 2024.

Laila Barhoum and Elise Nalbandian, "Policy Guidelines on Climate Change-Induced Displacement in Ninewa Governorate," Skills House and Norwegian Refugee Council, May 14, 2024. Accessed October 21, 2024. https://www.nrc.no/resources/reports/policy-guidelines-on-climate-change-induced-displacement-in-ninewa-governorate/.

Ministry of Environment, Government of Iraq, "The National Environment Strategy for Iraq," FAO, 2013. Accessed October 24, 2024. https://faolex.fao.org/docs/pdf/irq155814E.pdf.

Norwegian Institute of International Affairs and Stockholm International Peace Research Institute, "Climate, Peace and Security Factsheet: Iraq," n.p.: April 2023.

Nussaibah Younis, "Early Warning: How Iraq Can Adapt to Climate Change," European Council on Foreign Relations: Berlin, July 2022.

Raber Aziz, "The Silent Enemy: How Climate Change Is Wreaking Havoc in Iraq," IOM: The Storyteller, November 28, 2023. Accessed October 23, 2024. https://storyteller.iom.int/stories/silent-enemy-how-climate-change-wreaking-havoc-iraq.

United Nations High Commissioner for Refugees (UNHCR), "Iraq Operation (Operational Data Portal)," UNHCR. Accessed October 21, 2024. https://data.unhcr.org/fr/country/irq.

UNICEF, "Iraq Appeal," UNICEF, 2024. Accessed October 20, 2024. https://www.unicef.org/appeals/iraq.

Zainab Salih, "Iraq Takes Center Stage and Makes Its Mark at the UN Climate Change Conference," UNDP, December 3, 2023. Accessed October 19, 2024. https://www.undp.org/iraq/press-releases/iraq-takes-center-stage-and-makes-its-mark-un-climate-change-conference.

United Nations in Iraq, "Launch of the Iraq Environment and Climate Change Policy Advisory Group: A Vital Initiative to Foster a United Front for Effective Implementation of Climate Policies," United Nations: Iraq, March 11, 2024. Accessed October 19, 2024. https://iraq.un.org/en/263022-launch-iraq-environment-and-climate-change-policy-advisory-group-vital-initiative-foster.

ANNEX 1: MAPS

Figure 5: GIS Mapping of Qualitative Mapping of Affected and At-Risk Areas

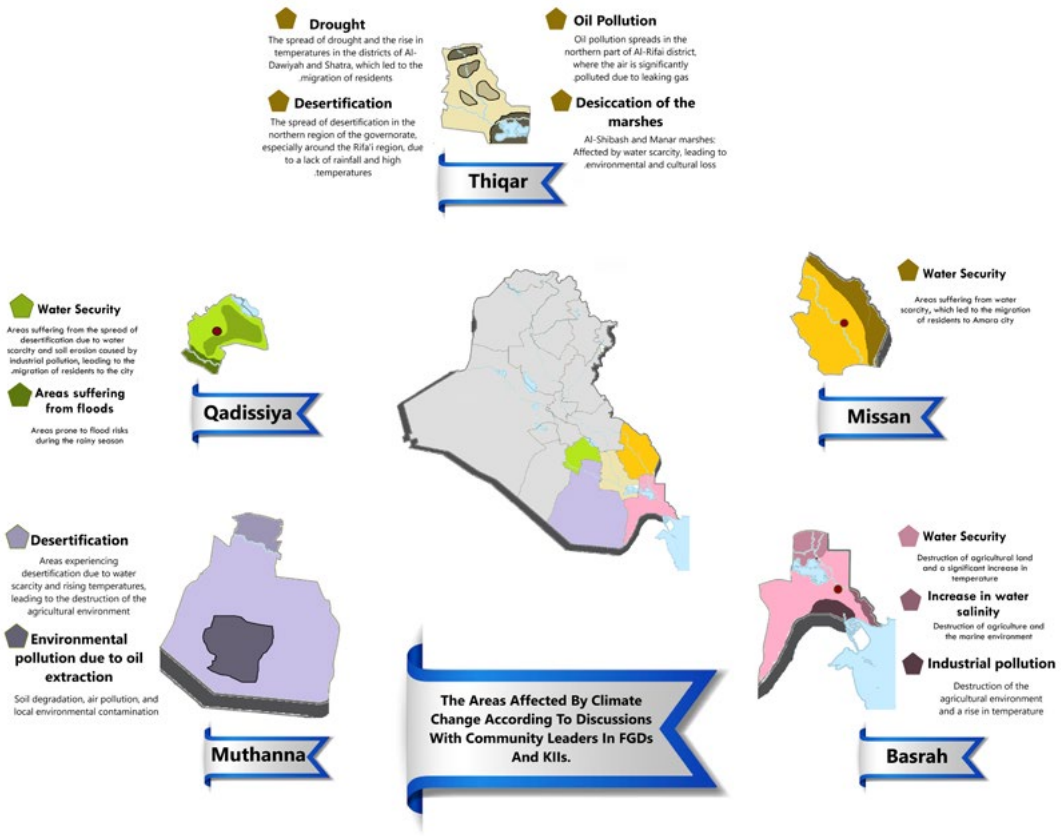


Figure 6: GIS Mapping of the Most Vulnerable to the Effects According to Household Surveys

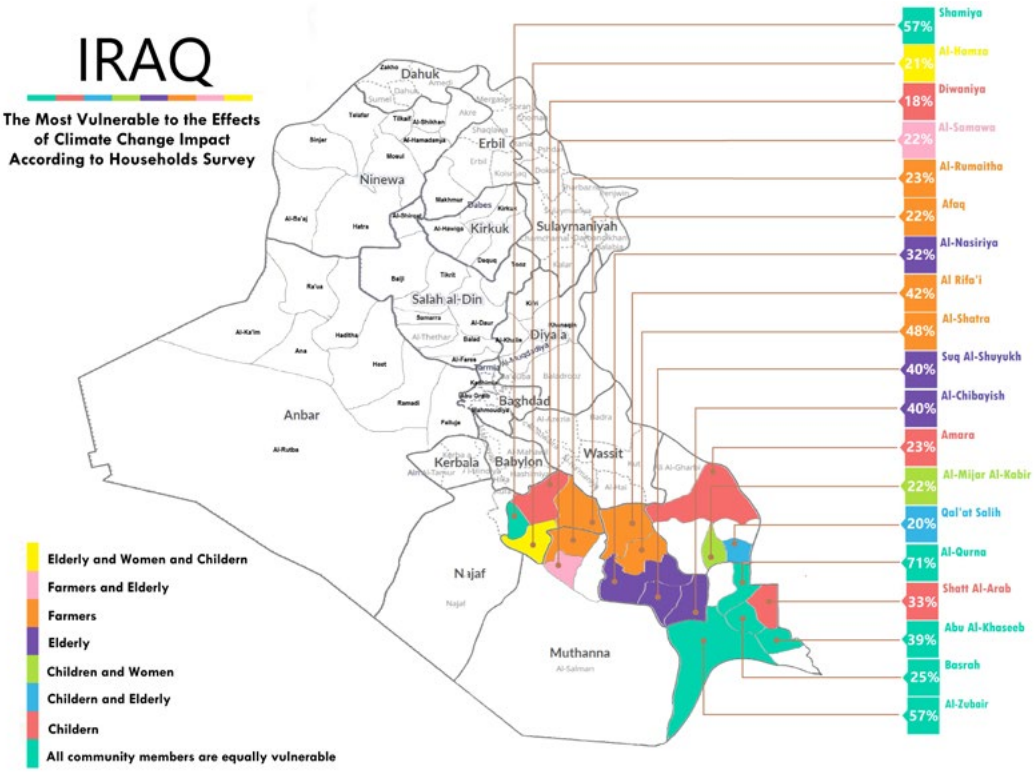


Figure 7: GIS Mapping of Level of Concern according to Household Survey

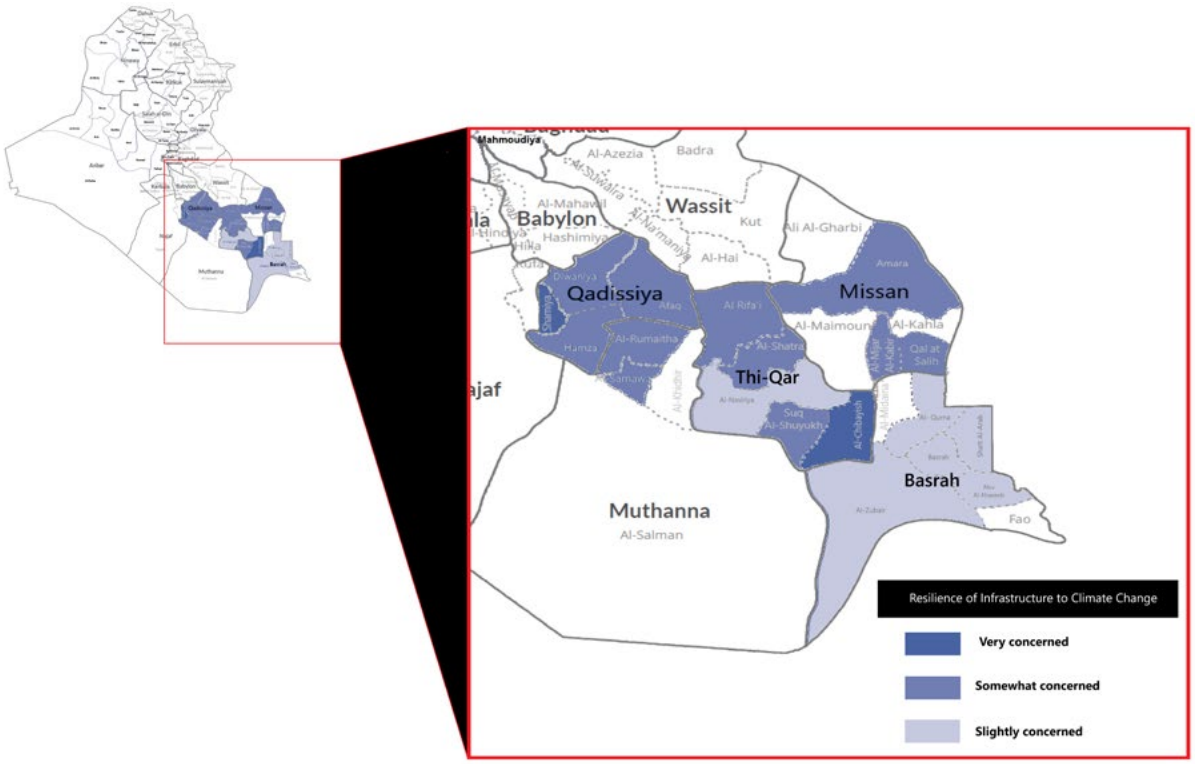
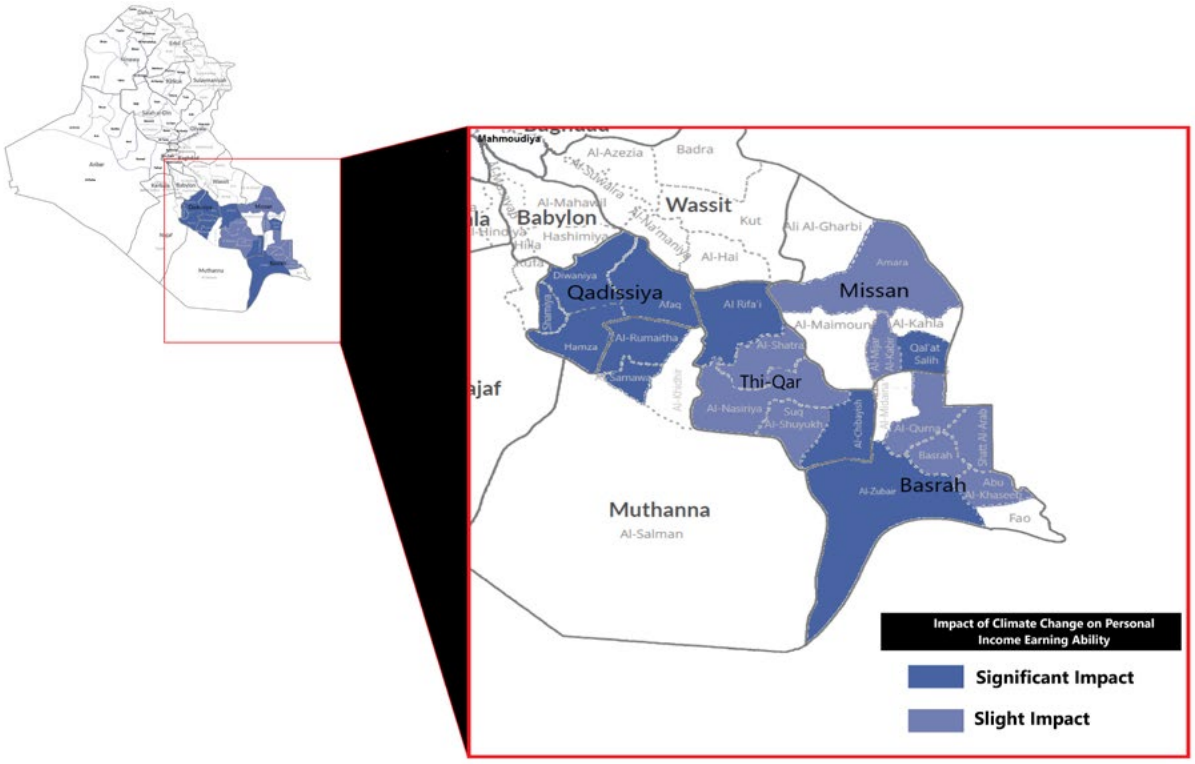


Figure 8: GIS MApping of Impact of Climate Change on Personal Ability to earn Income according to Household Survey



ANNEX 2: LIST OF AFFECTED AND AT-RISK AREAS

This list is based on information gathered through key informant interviews and focus discussions.

Missan

- Marshlands, particularly the **Hawiza Marshes**, face water scarcity, impacting biodiversity and traditional livelihoods and are specifically sensitive to water-level changes.
- Agricultural areas in **Al-Kahla, Al-Maimouna**, **Al-Musharrah, Ali al-Gharbi, Al-Azir**, and **regions near the Tigris River** are highly vulnerable to flooding and drought.
- Urban areas such as **Amara** are affected by population pressure due to rural migration, leading to infrastructure strain. They also experience increased air pollution and extreme temperatures.
- Villages like **Abu Khasaf** and districts like **Al-Salam, Al-Maimouna, and Sayed Ahmed Al-Rifai** face severe water shortages, causing declines in agriculture and displacement.
- Border regions like **Al-Shib suffer** from climatic stress, requiring targeted mitigation efforts.

Qadissiya

- Agricultural areas near rivers in **Afak, Al-Badir, Al-Shamiya, and Hamza** districts are affected by drought, desertification, and irrigation challenges, leading to migration. In general, agricultural zones near rivers, desert-border areas, and areas near water canals face water scarcity, desertification, and occasional floods.
- Areas near factories and power stations are heavily polluted.
- Flooding occurs sporadically in areas adjacent to large rivers, such as the Shatt al-Diwaniya.
- Marshlands near the governorate are vulnerable to drought.
- Urban slums are at risk due to inadequate infrastructure, heatwaves, and dust storms.

Basrah

- **Northern Basra**, including **Qurna, Al-Madinah and Al-Shafi**, is heavily affected by water scarcity and high temperatures, facing significant crop loss.
- Areas near the **Shatt al-Arab and marshlands** face rising salinity and ecosystem degradation. **Shatt al-Arab and Arabian Gulf** areas suffer from salinity intrusion and sea-level rise.
- Agricultural lands near rivers and marine environments are at risk.
- **Urban areas**, particularly in central Basra, face heat, pollution, and insufficient services.
- Industrial zones like **Zubair** are affected by environmental and productivity challenges.

Muthanna

- Agricultural areas such as **Al-Majd and Al-Najmi** districts experience severe drought and crop decline.
- Urban centers like **Samawa** face high temperatures and desertification.
- **Oil field zones** near urban areas are impacted by pollution.
- Areas like **Warka and Karama** are vulnerable to environmental degradation.
- Rural areas near urban centers face drought and water scarcity.
- Bordering regions experience desertification, threatening local communities.

Thiqar

- Villages in **Al-Dawiyah** sub-district and **Al-Ghashim**, as well as areas in **Al-Shuwailat** and **Al-Fashakh** (Bani Rekab/Al-Rifai district), suffer from drought and desertification.
- Agricultural areas near the **Gharraf oil field and Sayed Dakhil** sub-district face pollution and extreme temperatures.
- Vulnerable areas include agricultural zones in **Sayed Dakhil and Al-Tar** (Suq Al-Shuyukh district), as well as the marshes in Chabaish and Manar.
- Key areas like **Al-Islah and Al-Fudaliyah** experience water source depletion.

ANNEX 3: POSITION PAPER

This position paper outlines an operational strategy to address climate-induced vulnerabilities and displacement across five governorates in southern Iraq: Basrah, Missan, Muthanna, Thiqar, and Qadissiya. Based on comprehensive assessment findings, this strategy focuses on actionable, targeted interventions designed to build resilience, reduce displacement risks, and promote sustainable development. The proposed activities for Phase II prioritize the integration of climate-adapted shelter, communal water infrastructure, agricultural support, mental health and psychosocial support (MHPSS), and community awareness initiatives. This document also identifies two high-priority governorates for Phase II activities: **Qadissiya** and **Muthanna**, based on their acute vulnerabilities and potential for impactful interventions.

Qadissiya: Severe water scarcity, drought, and desertification are driving rural-to-urban migration and disrupting agricultural livelihoods. Infrastructure gaps and limited healthcare access further exacerbate the region's challenges. Addressing these issues presents opportunities for agricultural support, including modern irrigation systems, drought-resistant crops, and sustainable farming practices. Developing climate-resilient infrastructure and equitable water distribution systems will also be critical. Additionally, programs targeting women and marginalized groups can enhance resilience and inclusion.

Muthanna: Muthanna faces extremely low access to essential services, high unemployment, and reliance on agriculture heavily impacted by water scarcity and soil salinity. Infrastructure upgrades, such as improved irrigation systems and climate-resilient housing, are necessary to address these challenges. Income diversification initiatives and community-based approaches to promote resilience and social cohesion are also critical.

Proposed Phase II Activities include:

01 **Climate-Adapted Shelter Rehabilitation:** Rehabilitating a number of shelters in Qadissiya and Muthanna will enhance resilience against extreme weather events. Targeted beneficiaries include women-headed households, families with children under five, and those with elderly or disabled members. Technical assessments will ensure selection based on socio-economic and protection criteria, improving living conditions and climate adaptation for vulnerable households.

02 **Community Water Infrastructure:** Rehabilitating community water infrastructure in each governorate will address critical health and WASH needs. Collaborative designs will emphasize equitable access and pollution control, enhancing water quality and sustainable usage.

03 **Sustainable Agriculture Support:** Technical and financial assistance will help farmers adopt drought-resistant crops, modern irrigation techniques, and organic farming practices. Training programs and grants will promote sustainable agriculture, mitigate climate impacts, and strengthen rural livelihoods.

04 **Community Awareness and Capacity Building** Culturally sensitive awareness initiatives on climate adaptation strategies will focus on health, hygiene, and environmental practices. Gender-balanced community mobilizers will lead sessions and disseminate IEC materials, promoting environment-friendly behaviors and building adaptive capacities.

05 **Mental Health and Psychosocial Support (MHPSS):** Group MHPSS activities will target 40 individuals in each governorate, prioritizing youth and vulnerable groups. Tailored support initiatives will strengthen resilience and recovery.

Expected Outcomes

Enhanced climate resilience for vulnerable populations will result from improved housing, water infrastructure, and sustainable livelihoods. Community awareness and capacity to adapt to climate challenges will increase, while strengthened social cohesion will include marginalized groups in adaptation efforts. Health and well-being will improve through targeted MHPSS and healthcare initiatives, and sustainable development pathways will mitigate climate-induced displacement.

By prioritizing Qadissiya and Muthanna, Phase II interventions can address the most urgent needs of vulnerable populations while laying the groundwork for sustainable, climate-resilient communities in Southern Iraq. Collaborative efforts with local stakeholders and international partners will be essential to achieving these goals.

STOOS
Monitoring & Evaluation, Training and Development

PREMIERE URGENCE INTERNATIONALE