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# Climate Change-Induced Drought As Internal Displacement Factor In The South Of Iraq

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***ABSTRACT***
*Iraq is a state highly vulnerable to waves of internal displacement. It has experienced and continues to suffer from this phenomenon due to the presence of large numbers of internally displaced people (IDPs) resulting from war, prolonged conflicts, and instability over the past two decades. However, the factors driving internal displacement in Iraq extend beyond violence to include non-traditional security (NTS) threats, most notably climate change-induced drought. In Iraq, drought is considered the most significant outcome of climate change, severely impacting people's daily lives and contributing to internal displacement. This paper examines drought as a factor of internal displacement in southern Iraq from 2019 to 2024. A qualitative method is employed, utilising primary and secondary data sources, including published and unpublished documents. The findings demonstrate that drought has emerged as a new driver of internal displacement, compelling citizens to leave their areas of origin. The severity of the drought, exacerbated by climate change, has led to new and frequent waves of internal displacement in southern Iraq. Therefore, fundamental measures are necessary to mitigate the expansion of this phenomenon and the resultant increase in the number of IDPs due to climate factors.*
***Keywords:*** *Climate Change, Drought, Human Security, Internally Displaced Persons (IDPs), Iraq*

## INTRODUCTION

Iraq is a state highly vulnerable to waves of internal displacement. It has experienced and continues to suffer from this phenomenon due to the presence of large numbers of IDPs resulting from war, prolonged conflicts, and instability over the past two decades. This state of security instability appeared after the invasion of Iraq by foreign forces led by the United States of America in 2003. Since then, traditional security threats have been the driving factor behind the internal displacement of people in Iraq. It began due to the military operations accompanying the entry of the occupation forces. The sectarian fighting in 2006 after the bombing of the Al-Askari shrine in Samarra and the acts of violence that prevailed (Anzellini et al., 2021, p. 30), and later the Islamic State of Iraq and Syria (ISIS) domination over vast areas of Iraq, led to 6.1 million IDPs between 2014-2017 (Office for the Coordination of Humanitarian Affairs [OCHA], 2021, p. 10).

However, the factors driving internal displacement in Iraq extend beyond violence to include NTS threats, most notably climate change-induced drought. Iraq is at the forefront of the countries most affected by climate change. It is ranked first in the Arab region and fifth in the world in terms of the affected by climate change, which has led to catastrophic results that have increased the extremes of weather phenomena, as Iraq is witnessing a severe rise in temperatures, a decrease in the amount of rainfall, a scarcity of water, an expansion and worsening of drought, and an increase in the number of sand and dust storms. Iraq is also considered the least prepared country to confront climate change (Amnesty International, 2024, p. 9). In Iraq, the climate change-induced drought led to broad, complex, and interconnected implications that impact people's daily lives and ways of living. Thus, the climate change-

induced drought contributed as an NTS driver of internal displacement, especially in southern Iraq. The annual precipitation rate decreased from 214.4 mm in 2018 to 160.5 mm in 2022 (World Bank, n.d.). Also, Iraq's water shares from the Tigris and Euphrates rivers decreased by 80% (Rudaw, 2023). On the other hand, desertification expanded from 39% in 2021 (Salih, 2021) to approximately 70% in 2023 (Flaih, 2023).

Moreover, in late 2023, the number of IDPs, due to the drought, reached more than 130,000 IDPs, after it was 80,000 IDPs in August of the same year (Islam & Wilson, 2023, p. 24). Indeed, this number represented a big jump, whether over the few months of the same year or compared to 2019, which recorded 15,000 IDPs due to drought (IOM, 2022, p. 10); it must be noted that these statistics include only southern Iraq. Moreover, these jumps and the rapid increase in the number of IDPs within the scope of climate internal displacement, and more precisely due to climate change-induced drought, are considered a dangerous indicator of problems and impacts of a broad scope; the effect is not limited to a specific field, but rather multiple fields, which require for the necessary response to confront this problem and limit its expansion.

Consequently, this paper aims to examine and investigate climate change-induced drought in southern Iraq as an NTS threat and a factor in climate internal displacement. In addition, it will analyse the effects of drought to explore its impacts, which have become an NTS threat that threatens the Human Security of individuals and forces them to leave their areas of origin in southern Iraq and displace them internally to new places. Besides, it contributes to filling the gap on the issue of drought and internal displacement in Iraq, as there is a lack of studies about it. Therefore, this paper consists of five main sections: literature review, methodology, result, discussion, and finally, conclusion.

## LITERATURE REVIEW

According to Ali et al. (2024), climate change has affected public life and many aspects of Iraq, especially since Iraq suffers from several problems that put it in a weak situation and deteriorating infrastructure. In addition, the most significant consequences of climate change in Iraq are the rise in temperatures, the scarcity of water and the decrease in rainfall, which has dramatically affected the quantities of water, whether the water of the Tigris and Euphrates rivers or water swamps or the drying up of wells, springs and irrigation canals. On the other hand, water scarcity and the dryness of its sources will increase pollution. In connection with water scarcity, neighbouring countries, Syria, Turkey, and Iran, have built dams on the sources and flow of the Tigris and Euphrates rivers, reducing the water supplies of the two rivers within Iraqi territory. Also, the high water salinity in many areas has made their soil unusable for agriculture. The occurrence of significant droughts led to several problems, such as the expansion of desertification, which led to an increase in the number of dust and sandstorms, and this constituted a new problem, which is the increase in the number of patients with asthma cases, in addition to encouraging many families in central and southern Iraq to displaced internally to new areas (Ali et al., 2024, pp. 4–10).

IOM (2023) studied the drivers of internal displacement resulting from climate change in Iraq. Among climate-induced drivers are water problems such as drought, scarcity of water, low quality of water, low rainfall, water quotas, deterioration of water infrastructure, and soil salinity. The salinity of the water in Basra also played a role in the decline of water quality, as seawater seeps from the Arabian Gulf into the Shatt al-Arab due to low water levels, leading to a threefold increase in its salinity, which leads to its pollution. Accordingly, climate change has affected the livelihood of families who depend on water and land for agriculture and raising livestock. Because of climate change, crop production and the quality of livestock grazing lands have decreased, and fodder costs have increased. Consequently, this prompted many farmers to abandon it and migrate to new places in search of new job opportunities, knowing that the number continues to grow (IOM, 2023, pp. 11–15).

Mamshai (2023) illustrated that Iraq is suffering from climate change, which has led to extreme weather patterns, such as temperatures rising over 50 degrees Celsius in summer, dust storms recurring throughout the year, rainfall decreasing, water scarcity, and drought expanding. The study indicated that drought affected the farming and production of wheat in Nineveh Governorate, northern Iraq. Also, the agricultural land area decreased in various regions of Iraq, accompanied by the fragility of the

infrastructure. As a result, many farmers began to flee, whether in areas liberated from ISIS control or in southern Iraq. Water scarcity also threatened many farmers' food security and livelihoods and led them to leave their lands and livestock. The paper indicated that the migration of individuals to different parts of Iraq will increase pressure on the capabilities and institutions of the state and that the economic situation will worsen in some governorates. It also confirmed that the number of IDPs due to climate change and its implications has increased because of the failure to manage water resources and the ineffective management of climate change. Moreover, climate migrants are exploited to work with low wages and long working hours because they suffer from difficulty in finding job opportunities to secure food for their families after they leave their original areas (Mamshai, 2023, pp. 5–13).

Sissakian et al. (2023) also found that climate change has dramatically affected Iraq, and its consequences are catastrophic, whether on citizens or infrastructure, resulting in disasters that harm living conditions in various parts of Iraq. On the other hand, there needs to be more concern and awareness among many Iraqis about the effects of climate change, with insufficient and weak government preparedness to confront it. The study also found an increase in temperatures and the number of dusty days, a decrease in annual rainfall and snowfall, a massive water shortage, and a decline in agricultural areas converted into residential sites. In addition, migration of farmers from their places of origin to neighbouring cities led to an increase in the number of unemployed people and people living below the poverty line (Sissakian et al., 2023).

Marzouk et al. (2022) conducted a study among IDPs in displacement camps in northern Iraq. However, the study showed that Iraq is among the countries most vulnerable to climate change, as Iraq is affected by extreme weather phenomena, which have become more intense and frequent, with environmental deterioration increasing over time. Hence, it led to broad climate-related challenges, the most important of which are drought, desertification, decreased surface water levels, and water scarcity. In addition, the study concluded that weather conditions significantly impact people's lives and vary depending on where they settle and the extent of their exposure to the effects of climate change. Also, scorching weather affects mental health and psychological and social well-being, and the lower the temperature, the less this effect (Marzouk et al., 2022, pp. 99–104).

According to Adamo et al. (2022), Iraq is one of the countries whose weather is most likely to become more extreme and one of the countries most exposed to drought over the past few decades. In addition, climate change led to decreased water levels and a reduction in surface water areas, and some of them have dried up, as happened in Lake Sawa in southern Iraq, due to intense heat waves and water evaporation. Therefore, extreme weather and drought could threaten the agricultural, energy, health security, and environmental sectors. Hence, citizens' suffering will increase due to water scarcity, health threats, and migration. Also, the expansion of drought in Iraq is accompanied by a decline in the area of green lands and vegetation and an expansion in desertification (Adamo et al., 2022, pp. 242–262).

Guiu (2020) conducted a study on southern Iraq, which found it suffers from water scarcity and widespread pollution. It has increased significantly since 2007, leading to difficulties sustaining livelihoods in rural areas. In addition, the number of irrigation canals that dried up increased, leading farmers to leave their agricultural lands and move to new places to escape water scarcity and search for alternative sources to secure their income. They sold their livestock to cover transportation costs, while the value of their lands decreased to nothing due to water scarcity. Also, salinity posed an additional problem in Basra Governorate due to low levels of fresh water and the intrusion of salty seawater instead (Guiu, 2020, pp. 6–19).

Adamo et al. (2018) concluded that Iraq faces broad challenges due to climate change, which are not limited to a specific aspect. On the other hand, Iraq has a limited role in confronting climate challenges, which are expected to increase in intensity in the future. Iraq suffers from extreme weather patterns, leading to a significant deterioration of the agricultural sector. The study also found that due to climate change, there has been an increase in migration movements from rural areas to the city and in the quantities of food and agricultural materials imported from abroad (Adamo et al., 2018, pp. 44–54).

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## METHODOLOGY

This paper aims to study the climate change-induced drought in southern Iraq and investigate the challenge of drought as an NTS challenge that has shaped factors for the internal displacement due to threats to Human Security. Also, utilising the qualitative approach in this paper to investigate and analyse the problems, reaching their roots to explore the resulting impact on the human security of the population in southern Iraq.

### Area of the Study

This study targeted southern Iraq, which consists of three governorates: Basra, Maysan, and Dhi Qar. These governorates and their districts suffer from climate change-induced drought. Figure 1 shows the map of Iraq with surface waters represented by the Tigris, Euphrates, Shatt al-Arab, the water lakes, and the three governorates targeted in this study.


*Figure 1.* Map of Iraq with surface waters (Aljanabi et al., 2018, p. 106)

In addition, the significance of studying southern Iraq comes from the fact that the marshes are spread there, in addition to the passage of the Tigris and Euphrates rivers through it and their confluence to form the Shatt al-Arab in Basra Governorate. However, southern Iraq suffers from drought, a severe water crisis, and a decrease in the areas of the marshes, which has led to the formation of the phenomenon of climate internal displacement. Hence, it forced the population into internal displacement and headed to new areas in large numbers, in successive and continuous waves.

Figure 2 shows the map of the distribution of the marshes between the three governorates, with a comparison between their areas in 1979 and 2021.

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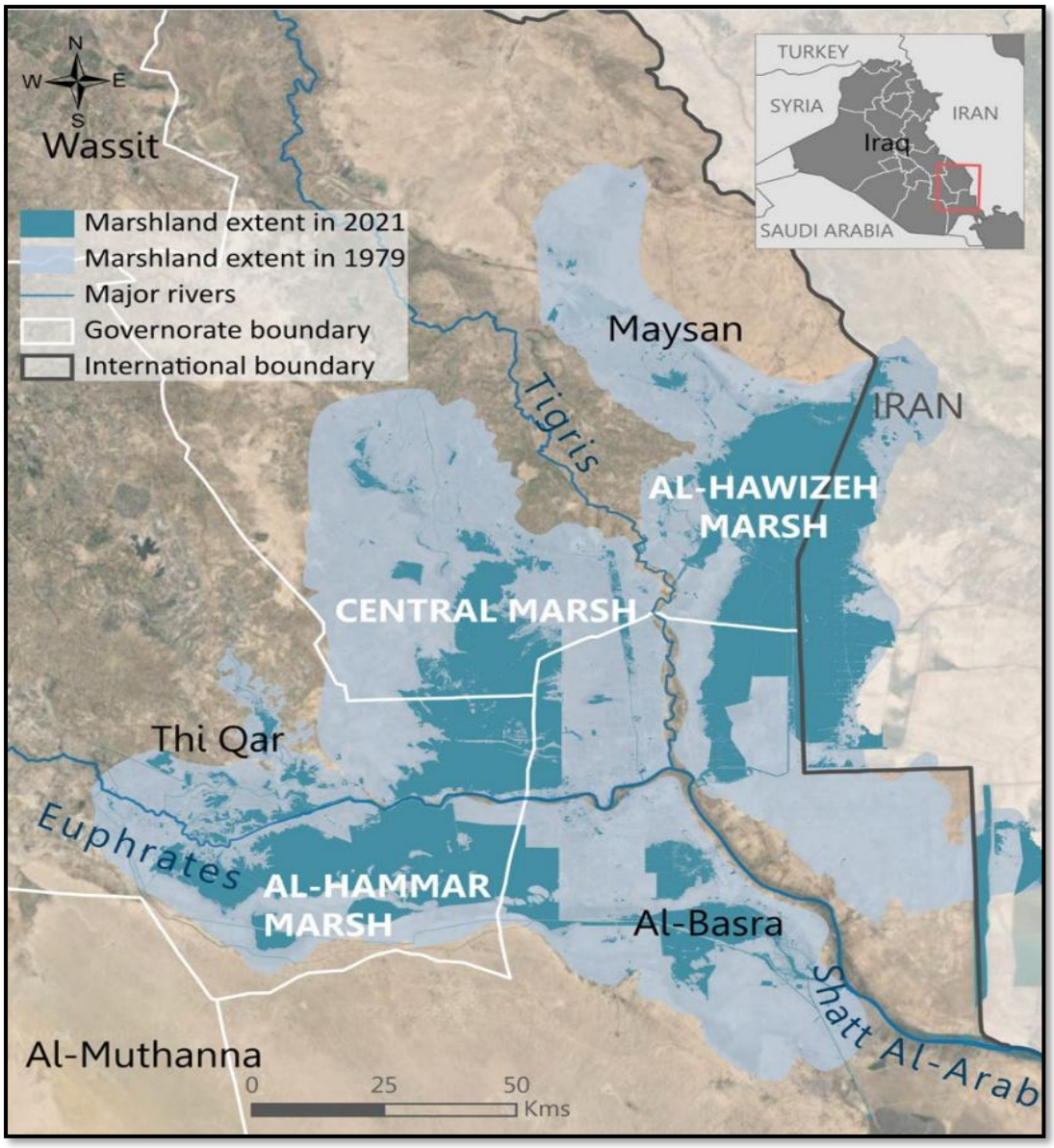


*Figure 2.* Map of the distribution of the marshes between the three governorates (IOM, 2022b, p. 11)

**Data Source**

This paper utilises two sources of data: primary and secondary. Primary data included statements made by government officials to the media and the official newspaper, government documents and documents issued by international organisations. Secondary data included various sources, including books, articles, studies, reports issued by international organisations, and official and local media in Iraq.

**Limitations**

Despite the seriousness of climate-related internal displacement, the threat of climate change-induced drought as a driver of internal displacement in Iraq and its implications on the Human Security of the population. However, this field suffers from a severe shortage of studies and data. Also, there is a lack of data and statistics about the weather patterns. However, if data and statistics are available, they may be inaccurate due to discrepancies between data sources.

## RESULT

Initially, reports show that Iraq is one of the countries most affected by climate change very rapidly, which has led to extreme weather patterns in Iraq, which have adverse effects that can be described as disastrous. The United Nations has ranked Iraq fifth among the countries most affected by climate change, water

and food shortages, and a severe rise in temperatures, rising nearly seven times faster than the global average (United Nations International Children's Emergency Fund [UNICEF], 2024, p. 18).

At the forefront of what has been found is the lack of studies on climate change and its effects in Iraq, despite the seriousness of the issue and its catastrophic implications, which threaten the lives of individuals and various areas of life. However, few studies address climate change and its effects. In contrast, most of these studies were about climate change in Iraq in general and its impact on weather patterns, and they did not focus on a specific region.

This paper focuses on climate change-induced drought as a driver of internal displacement in southern Iraq. Hence, a method was followed to clarify the results for southern Iraq by classifying them into sections to be better understood, condensed, and comprehensive and focusing on several aspects of each separately.

**Rise in Temperature**

Southern Iraq is witnessing high temperatures, reaching very high levels, which is a risk factor contributing to drought. The higher the temperature, the greater the amount and speed of water evaporation. Based on the recorded data on the Visual Crossing website, which provides weather data, the temperature has reached record and hazardous levels, exceeding 50 degrees Celsius in southern Iraq. The table below shows the highest temperatures recorded in southern Iraq over the last five years, from 2019 to 2023.

Table 1

*The highest temperatures recorded in southern Iraq, from 2019 to 2023*

| Governorates | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **Basra** | 51°C | 53°C | 52°C | 53°C | 52°C |
| **Maysan** | 50°C | 53°C | 51°C | 52°C | 51°C |
| **Dhi Qar** | 50°C | 53°C | 52°C | 51°C | 51°C |

The table presents the highest recorded temperatures in southern Iraq for three governorates (Basra, Maysan, and Dhi Qar). It shows an increase with the passage of years, crossing 50°C. However, there has been a slight fluctuation over the years. However, the range of temperatures is still high, and the danger lies in the amount of rise, which is not limited to segments or a small amount of the temperature scale, but rather its rise is a complete temperature degree scale. In connection with this aspect, the representative of the United Nations Development Programme [UNDP] in Iraq, Auke Lootsma, stated:

*"The marshland areas in recent years have witnessed an increase in temperatures of more than 55 degrees Celsius".* (Lootsma, 2023, p. 1)

Consequently, the characteristics of the Basra, Muthanna, and Dhi Qar governorates in southern Iraq are incredibly high temperatures that often exceed 50°C during the summer months. These extreme weather conditions are also prevalent in other regions of southern Iraq. Consequently, the accelerated and intensified effects of these conditions will exacerbate the speed and severity of the drought disaster in the area.

**Water Scarcity**

Iraq suffers from a severe water crisis that has reached record levels over the past few years. Iraq depends for its water security on the water of the Tigris and Euphrates rivers at a rate of up to 98% (Ali et al., 2024, p. 6), which contributes more than 90% of its freshwater sources (Burson, 2021, p. 35). However, Iraq suffers from water scarcity, which worsens over time, accompanied by the construction of dams in Turkey and Iran and the rise in domestic consumption. Therefore, this will significantly affect the quantity and availability of water in southern Iraq after Turkey reduces Iraq's water share.

According to the Iraqi Minister of Water Resources, Mr. Aoun Dhiyab (2023), Turkey has reduced water releases to the Euphrates River, which depends on 90% of Turkish water releases. He added:

*"The quantities of water released by Türkiye are limited and much less than the agreement concluded between Turkey and Syria in 1987"* (Rudaw, 2023)

In addition, this percentage is only for the Euphrates River. Still, the amount of water flowing to both rivers has decreased significantly, as the water flow rate at the beginning of the current century was 1,350 cubic meters per second, decreasing to 149 cubic meters per second at present (Lukas, 2023). Accordingly, the amount of water in the two rivers has significantly reduced to approximately 90%, threatening water

security and indicating widespread disasters that expand over time, resulting in water insecurity in different areas of Iraq.

Southern Iraq depends on water availability, which reaches it from the Tigris and Euphrates rivers, which form bodies of water known as marshes and the Shatt al-Arab at the confluence of the two rivers. Nevertheless, the decrease in water quantities and levels in the two rivers due to the construction of dams in neighbouring countries and the decline in rainfall water amounts contributed to the rise in the levels of the two rivers (Aziz, 2023), indeed led to a significant decrease in water in southern Iraq, as it suffers from severe water scarcity (Guiu, 2020, p. 6).

Every day, southern Iraq faces an increasingly severe water crisis, leading to water scarcity and increased critical challenges that have spread in those areas (Ben Aicha, 2023). Also, the population's suffering in the Dhi Qar Governorate increased due to water scarcity and increased water insecurity, which prompted the population to protest. Then, this led to clashes between them and the security forces (Hall & Harper, 2023). In addition, water scarcity is not limited to one governorate in southern Iraq, but it varies in degree of severity and impact; however, Basra Governorate in southern Iraq is the most affected by the water crisis in Iraq (Abdul-Zahra, 2023).

Ultimately, Iraq generally witnessed a sharp decline in water quantities, especially in the Tigris and Euphrates rivers. However, Southern Iraq is the region most affected by water scarcity, which has led to a new water scarcity crisis which has begun to expand and multiply there, as it is the last area to which the waters of the two rivers reach. Hence, it will contribute significantly to threatening the water security of individuals there, with threats that are broad and not limited to a specific area; it will even expand to constitute a severe catastrophe in the future.

**Pollution And Deterioration of Water Quality**

Iraq suffers from water pollution and the deterioration of its water quality. This water pollution is due to two factors: external and internal. Regarding the first factor, the water of the Tigris and Euphrates rivers enters Iraq, and the upstream countries are essentially polluting them (Iran and Turkey). According to water policy and strategy expert Ramadan Hamza (2023):

*"It is originally contaminated, and the water flowing into Iraq from these two states is scarce. It carries sewage line wastewater and chemical fertilisers used for farming and irrigation projects in Iranian and Turkish cities. These waters enter Iraq while they are non-potable."* (Hamza, 2023).

The second is the internal factor, which is based mainly on sources of pollution within Iraqi territory, where the waters of the Tigris and Euphrates rivers are polluted due to the leakage and disposal of most of the sewage without treating it into the rivers in addition to the lack of a correct strategy for water treatment. The Director General of the Technical Department at the Ministry of Environment, Mr. Issa Al-Fayad, stated:

"*The rate of river pollution has reached 90% due to sewage discharge without treating it, and all rain stations have turned into sewage stations and throw water into the rivers. Sometimes the rain stations are close to drinking water intakes*". (Al-Fayad, 2023)

In addition, unfortunately, hospitals play a role in water pollution. Their contribution is throwing their waste into the rivers. The spokesman for the Ministry of Water Resources, Khaled Shamal, confirmed that when he said:

*"Most hospitals near a river dump their medical waste and sewage straight into it".* (Shamal, 2024)

Moreover, millions of cubic meters of industrial waste are disposed of as they are thrown into the waterways and rivers that feed the marshes in southern Iraq (United Nations [UN], 2023). Consequently, the water concentration and pollution level in southern Iraq will increase significantly, and its quality will deteriorate because of the area located at the end of the course of the two rivers. Hence, human consumption of the rivers before they reach them leads to a decrease in their quantity and an increase in polluting materials along their flow until it reaches the areas of southern Iraq.

Furthermore, it is not only dangerous, it is catastrophic, as government institutions have become a source that increases pollution rather than combating and treating it. Suppose there are no necessary measures to reduce the pollution. In that case, the situation will become more dangerous due to the accumulations resulting from pollution, which will eventually end up in southern Iraq and increase the suffering of its regions and its citizens, with the water crisis, which is suffering from it.

In addition, the deterioration of water quality was not limited to pollution, but salinity constituted another source of its deterioration in southern Iraq. The percentage of salinity in the water has risen to a very high level, reaching dangerous levels. The rate of salinity in the Shatt al-Arab, located in southern Iraq, has tripled in the last five years (IOM, 2023, p. 15). Thus, this dangerous indicator warns that the water's salinity will increase very quickly. In addition, the problem has increased in size and danger because it expands as salinity moves to new areas and creeps towards water sources (Islam & Wilson, 2023, p. 16). Therefore, it will increase the risk of rising salinity in new areas that did not previously suffer from water salinity.

Consequently, the water is no longer suitable for use in various areas of life. At the agricultural level, farmers were unable to use the existing water for irrigation of agricultural lands (Ali et al., 2024, p. 7). Also, because of the severe deterioration of water quality in the outskirts of the marshes of Dhi Qar Governorate, even animals refuse to drink this water (Guiu, 2020, p. 6). Further, many people in several areas in southern Iraq were unable to obtain drinking water as a result of the deterioration of the quality of water and the significant decrease in its quantity, whether that water was drinking water or water used for domestic purposes (REACH, 2022, p. 7).

Accordingly, the water problems in southern Iraq are expanding and increasing in severity and threats, and they are no less dangerous than the other. Water pollution and the deterioration of its quality, parallel with the spread of salinity, will lead to catastrophic results. Most notably, these threats are expanding and increasing over time. Also, their sources are increasing with the rising pollution and the high salinity rate, further deteriorating water quality. Therefore, there is no doubt that the water will lack quality, and its effects will be broad, starting from a direct threat to the survival and health of individuals and reaching all other areas of life.

**Drought**

Iraq is one of the countries most exposed to drought in recent decades. Its area is expanding, and its severity is increasing over time. Also, drought is expected to become more severe and extreme (Adamo et al., 2022, pp. 242–243). The drought problem has been the most severe in recent decades. In 2022, the advisor to the Iraqi Ministry of Water Resources stated:

*"The current year is one of the most drought years that Iraq has experienced since 1930"* (Dheab, 2022)

Also, the problem of drought level in Iraq has not decreased. On the contrary, it is increasing and expanding over time, and its threat is becoming more severe as Iraq continues to suffer from recurring seasons and waves of drought. In 2023, Minister of Water Resources Aoun Diab stated

*"Iraq is going through the most difficult stage of drought for the fourth consecutive season"* (Dheab, 2023, p. 2)

However, Southern Iraq is considered the most affected by drought, as it witnesses the loss and transformation of water sources into barren lands. The severity of the drought in southern Iraq, the most severe in the past four decades, underscores the need for collective action. The area of water bodies has decreased to a quarter of its original location (UNICEF, 2024, p. 20), and many irrigation canals have dried up. They are no longer a source of water provision (Guiu, 2020, p. 6), and parts of the marshes within the Dhi Qar Governorate have been subjected to drought (IOM, 2023b).

Indeed, the drought of irrigation channels is not the most significant or dangerous. Instead, the drought of the marshes in southern Iraq is a severe environmental disaster. The marshes are the largest bodies of water in the Middle East, with an area equivalent to twice the area of Lebanon (Fartm, 2020, p. 6), and in 2016, UNESCO registered them on the World Heritage List. However, the disaster lies in the drought of large areas of them and turning them into barren land, as the total area of the marshes decreased to less than 10% of their original location (Sissakian et al., 2023, p. 253).

In addition, the main factor in the expansion of drought in southern Iraq is the decline in the levels of the Tigris and Euphrates rivers, which have primarily attributed to the diminishing levels because south Iraq, especially the marshes, do not have multiple water sources, but rather their primary dependence on quantities of water provided by the two rivers. Hence, the decrease in the river level has a critical impact on the water quantities in southern Iraq. Therefore, the lack of water supply from the two rivers will significantly increase the severity and the geographical extent of the drought in southern Iraq.

Accordingly, this indicates a significant decrease in water to critical levels in Basra, Maysan, and Dhi Qar, the three governorates in southern Iraq. Instead, this indicates the transformation of lands previously submerged in water into dry land. Therefore, this constitutes a threat that ends in a genuinely unprecedented humanitarian and environmental catastrophe. Therefore, this disaster requires more cooperative measures and efforts between the government and local and international organisations to confront this NTS threat, which has been expanding significantly and rapidly over a very short period.

**Internal Displacement Movements**

The most significant result found in the paper is the existence of mass internal displacement movements in Dhi Qar, Maysan, and Basra governorates over the past few years. The factor behind internal displacement is an NTS threat represented by climate change-induced drought. The problem is not limited to the existence of internal displacement movements only. However, the number of IDPs due to drought and water crises has increased significantly over the years, especially in the last two years, leading to repeated internal displacement waves parallel with huge IDP numbers.

In 2019, the number of displaced families was only 2,064 (The Displacement Tracking Matrix [DTM], 2019), then it gradually increased until it reached 5,355 internally displaced families in 2022 (DTM, 2022, p. 2). However, despite the increase in the number, the peak was in 2023, when approximately 17,284 families were displaced (DTM, 2024, p. 1). Therefore, this indicates the scale of the disaster that the southern Iraq governorates suffered. Also, it shows the extent of the deterioration and expansion of climate change-induced drought, resulting in a severe water crisis that formed an NTS threat to the Human Security of individuals in southern Iraq. Hence, it forced thousands of families to leave their homes and areas of origin and move to new areas due to drought and water scarcity.

## DISCUSSION

Iraq, particularly its southern area, suffers from climate change-induced drought. The phenomenon is complex and intertwined in the elements that make up the causes of drought and its comprehensive effects on the fields of life. Essentially, it is, and its causes are an NTS threat; its effects are comprehensive, and it plays a role in the lack of Human Security in various aspects, leading families to leave their areas and internal displacement to new areas.

Initially, the causes of drought were intertwined, and all of them were NTS challenges as they resulted from climate change, which has led to extreme weather patterns. The extreme rise in temperatures in southern Iraq, exceeding half the boiling point and reaching 53 degrees Celsius, will increase the speed and amount of water evaporation, which Iraq suffers from a shortage. Neighbouring countries (Iran and Turkey) have reduced water flow and are repeatedly closing their dams to store water. The low rainfall rate, accompanied by water consumption in Iraq's northern and central regions before reaching the south, has decreased water levels.

In addition, the waters of the Tigris and Euphrates rivers are significantly polluted, even before they enter Iraqi territory, as they arrive polluted from the source countries. However, pollution is rising sharply within Iraqi territory due to the dumping of sewage waste, the disposal of oil industry waste, and the dumping of hospital waste into the rivers. Consequently, the rate of pollution of running water has increased. As a result, the rise in temperatures will have a faster and stronger impact because the water has become less, and the evaporation rate will be faster, leading to drought and a water crisis.

The effects and risks of drought are no less complex and intertwined than their causes. On the contrary, they pose a direct threat to Human Security in all aspects and overlap to threaten more than one aspect, making the interconnectedness of the resulting threats and risks extremely complex. At the forefront of the risks are those related to human health, survival, and Health Security. Drought and water problems pose a threat to the lives and health of individuals. Although water may be available, its poor quality will turn it into a source of danger to the health and safety of individuals due to the spread of diseases through it.Indeed, the waters of the two rivers have become a source of diseases because of pollution, and the seriousness of the matter has reached the point of recording cases of patients with cancer due to the water. According to the Iraqi Human Rights Source, which published an interview with a doctor in a government hospital whose identity was not disclosed, the doctor said:

*"The waters of the Euphrates and Tigris rivers are not suitable for drinking and are a key source of cancerous diseases, especially in the southernmost governorate of Basra. I have examined many cancer patients and found that water contamination has been a root cause behind their sickness was water. Our waters are severely contaminated."* (anonymous, 2023)

Also, due to water pollution in Basra Governorate, 118,000 people were admitted to the hospital between August and November 2018 (IOM, 2023, p. 15). In addition, kidney failure, cholera and some cancer diseases have spread among the residents of some districts of Dhi Qar Governorate due to water scarcity and poor quality (Koli, 2022). Thus, drought and the accompanying water pollution have threatened the Health Security of the population and their lives. It is worth noting that these diseases are related to the NTS threat associated with drought alone in southern Iraq and not to climate change, and Iraq as a whole.Furthermore, the climate change-induced drought in southern Iraq has created threats that have more complex and interconnected effects on both the economic and food security aspects of Human Security. The resulting complexity is shared mutually between Economic and Food Security. The marshes of southern Iraq, distributed between the three governorates (Basra, Dhi Qar, Maysan), are not just famous for their environmental diversity; this diversity is a vital source that must be preserved. This diversity, in addition to serving as a source of freshwater and a source of fresh water, has led to the spread of agriculture, fisheries and livestock. Its preservation is not just important, it's crucial for the region's future.In agriculture, rice and many vegetables are grown, especially tomatoes, sugar cane, dates, millet, wheat and barley. As for livestock, it is famous for raising cattle and buffalo, which are the most famous in Iraq, and it provides dairy products such as milk, butter, cream, and meat. Also, bird hunting is a common practice, as the marshes are rich in vast numbers of waterfowl. It is also a significant source of fishing, contributing 60% of the local fish wealth. In addition, there is the reed, which is used in many ways and provides the raw material for the paper industry. It is also used in the manufacture of housing and the construction of floating islands, as well as in the manufacture of household products (Bedair et al., 2006, pp. 105–106). Thus, this vast diversity, whether in food sources or the various products of those sources, constitutes a primary source that contributes significantly to Food Security, not limited to southern Iraq only, but to the Food Security of all of Iraq. Also, this diversity in southern Iraq provides job opportunities for the population in various fields of work. Accordingly, it supports the Economic Security of the population there.On the other hand, the drought that struck southern Iraq greatly affected and harmed the agricultural and food crops it provides. The water areas of the marshes decreased to 10% of their original area, accompanied by a decrease in the levels of the Tigris and Euphrates rivers. Consequently, green areas, agricultural activities, and livestock and fish wealth decreased. Indeed, this deterioration will lead to a decline in various products and crops. To illustrate, agricultural activities, especially rice cultivation, decreased due to the drought, and the authorities and residents in southern Iraq expect that rice production will disappear if the drought problem continues (Mamshai, 2023, p. 10). Besides, due to the decrease in water levels, the waters of the Shatt al-Arab decreased, leading to the flow of salty seawater from the Arabian Gulf in the opposite direction to the agricultural lands, which destroyed countless citrus and palm groves that produced more than 60 types of the finest dates (Aziz, 2023). Also, due to the high salinity of the Shatt al-Arab waters, the number of fishing boats has decreased significantly from 4,000 to 400 boats only (Sissakian et al., 2023, p. 252). In addition, the drying up of the marshes has led to a decrease in buffaloes. In 2022 alone, 4,500 buffaloes died (Ramadan, 2023).

Accordingly, climate change-induced drought in southern Iraq has become an NTS challenge, threatening the population's access to Food and Economic Security, and their livelihood. The drought led to the loss of agricultural land, livestock, and fishery catches, which are primary sources of Food Security. Previously, southern Iraq provided a food source for its population and contributed to Iraq's Food Security. However, the drought and deterioration led to the loss and disappearance of these sources. In addition, the fragility of Economic Security increased due to the loss of jobs that the population of southern Iraq practices, as they work in agriculture, fishing, and raising livestock, especially buffalo. However, the drought and the damage it caused to those fields that were their source of income forced them to leave their places of origin and internal displacement to new places looking for sources of income to secure their life and livelihood requirements.Under Human Security, Economic Security refers to the existence of productive and profitable work that provides a guaranteed basic income (UNDP, 1994, p. 25). It is access to job

opportunities and securing the requirements to ensure survival (UNDP, 2013, p. 20). However, due to the challenge of drought in southern Iraq, many residents lost their jobs that provided their source of income, left their lands and were internally displaced to find new job opportunities to secure a source of income to ensure their survival.Further, Environmental Security and biodiversity in southern Iraq, especially the marshes, are exposed to a continuous threat, as the characteristics of marshes by their biodiversity, which is the essential element of the ecosystem that in turn provides individuals with means of well-being and various requirements of life, such as food. Also, Human Security emphasises that Environmental Security is an integral part of protecting humanity and refers to preserving biodiversity, respecting the environment, protecting natural resources, early warning mechanisms, and responding to natural disasters (Kumar & Dahiya, 2024, p. 23).Since southern Iraq, especially the marshes, suffers from drought, there is no doubt that this has affected and threatened the biodiversity there. The water is the environment in which fish, buffaloes and water birds live. In addition, water is a source of drinking water, irrigation of agricultural fields and reeds, which cattle and buffaloes feed on, and places where birds settle. The drying up of water means the loss of many of the elements that make up biodiversity. Thus, drought directly threatens Environmental Security and biodiversity in southern Iraq.In addition, the overlap and complexity are not limited to the Environmental Security aspect and biodiversity in southern Iraq. Instead, they extend to include another aspect of Human Security, especially Food and Economic Security, due to the loss of food sources, which at the same time are sources of income for the population. Thus, drought and the resulting Environmental Security issues pushed the population to internal displacement to new areas for a better livelihood.Although drought is an NTS challenge, its implications are broad across various aspects of Human Security. Since Human Security is based on freedom from fear and want and is human-centric to protect individuals, the challenge of drought has become a threat to the Community and Personal Security. It has become more complex due to the significant overlap between them. Personal Security is an essential aspect of Human Security and aims to ensure the security of individuals from physical violence against various threats, including threats from other groups of people (UNDP, 1994, p. 30). As for Community Security, the protection of collective identities, the promotion of inclusiveness, and the importance of establishing strong Community Security are essential to achieving social cohesion (Kumar & Dahiya, 2024, p. 23). Further, the challenge of drought is not limited to being an NTS threat. Instead, it is a source of new NTS threats. The interconnected relationship between the two aspects of Human Security (Community and Personal) with drought and the NTS threats it generates, such as water scarcity, may lead to results beyond internal displacement. Conflicts can explode between regions, tribes, or governorates to obtain more quantities of water as a result of its scarcity in their areas. The southern regions of Iraq are witnessing continuous tensions due to water, some of which have reached conflicts between tribes or governorates. In 2018, the Maysan Governorate was in an ongoing conflict with the authorities of the city of Kut, and the Muthanna Governorate was at odds with the governorates of Qadisiyah and Dhi Qar. Also, the tribes of the Maysan Governorate accuse the tribes in the Wasit Governorate of changing the courses of rivers and restricting their water quotas. Moreover, the matter led to violent armed clashes between the southern and neighbouring governorates due to water quotas (Al-Bayaa & Mashhad, 2023). In recent years, the water crisis in northern Basra has led to many deaths and injuries as a result of the outbreak of armed tribal conflicts there (Mamshai, 2023, p. 10).

There is a possibility of the expansion of conflicts between regions or between residents in the same region due to water, which was confirmed and warned of by the Prime Minister's Advisor for Environmental Affairs, Ali Al-Lami:

*"Conflicts may arise between regions or perhaps between some residents about the issue of water sharing because when water is scarce, everyone tries to obtain the amount that will suffice for the cultivation of the area of land that they are responsible for [for their land]. "* (Al-Lami, 2023).

Accordingly, climate change-induced drought has become an NTS challenge threatening southern Iraq's personal and community security. The reason behind this is that people's lives and safety are at risk due to tensions and armed conflicts. In addition, these conflicts occur among individuals of the same community, leading to fighting between them and significantly weakening Community Security. Consequently, this condition threatened their survival, significantly threatening the population's lives. Moreover, there is no doubt that this will drive people to internal displacement to ensure their security.

Finally, climate change-induced drought has led to issues and risks that are complex in their formation and impacts and affect each other significantly. This has led to widespread threats in various aspects of Human Security, which has become fragile as a result. Consequently, the Human Security of the people in southern Iraq has become fragile due to drought, making them exposed to threats that have posed a real danger to their lives, which has forced them to leave their homes and areas of origin and become IDPs.

## CONCLUSION

Iraq is the fifth most affected country in the world by climate change, and the weakest in taking the necessary measures to confront it, leading to extreme weather patterns. The most significant result of this is drought, especially in its southern regions, which are considered the weakest in confronting it and the most affected by it. Besides, Iraq is considered one of the countries that has witnessed repeated waves and large numbers of IDPs over the past two decades. The motive behind internal displacement was various traditional threats, such as violence and armed conflicts, up to the dominance of ISIS, which led to the number exceeding 6 million IDPs.

On the other hand, climate change-induced drought emerged as an NTS threat that generated a factor for the emergence of climate internal displacement. Over time, the phenomenon of climate internal displacement has expanded, as the number of IDPs in southern Iraq has increased due to drought resulting from climate change and has reached record numbers.

The new NTS threat of drought has had severe consequences that have posed widespread threats to Human Security in its various aspects in southern Iraq, weakening and making it fragile, causing people to suffer from a catastrophic humanitarian situation and under various threats that pose a hazard to their lives and safety, affected their lives and well-being. Consequently, this has forced them to displace themselves internally in new areas for a better life and livelihood than their areas of origin.

### Recommendations and Future Work

Weather patterns require extensive studies, especially regarding drought caused by climate change in Iraq. This requires further statistical studies to provide more comprehensive and accurate weather data. In addition, studies should be conducted on the future of internal displacement caused by climate change, and solutions should be proposed to address the growing causes of the internal displacement phenomenon in Iraq. Furthermore, studies should be conducted on the impact of drought caused by internal displacement on the stability of the security situation and how it could become a source of internal conflict and security fragility in the future.

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