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Research Article

The Water Scarcity and Its Impact on Environmental Displacement in Dhi-Qar Governorate

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Abstract

Dhi Qar Governorate has recently begun to suffer from the consequences of climate change, especially the water deficit, the effects of which have appeared clearly on the various aspects of life in maintaining the economic, social and even cultural levels, because water enters into the various details and details of human life on the surface of the Earth, and Iraq is one of Within the global system affected by climate change, especially water scarcity, the volume of water imported into Iraq decreased, recording (31.24 billion/m3) during the year 2021 after it was (49.67 billion/m3) in the year 2020, which led to forced migration. To move large numbers of the population from their areas to other new areas, especially from agricultural areas and marshland areas, and cities are one of the targeted areas for displacement, the Ministry of Immigration and Displacement in Iraq / Dhi Qar Branch recorded the displacement of (8,498 families) due to the crisis of desertification and drought, and this portends an environmental and humanitarian catastrophe for the people. Both the lack of a safe environment and sufficient sources of livelihood for the population results in a group of other problems associated with it, including the spread of diseases, epidemics, and tribal conflicts, as is happening now in the marshland areas, the conflict over environmental resources.

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1. Introduction

Continuity of water supply is avital element for daily life and sustainable communities. Human civilizations have arisen in various parts of the world near the banks of rivers, and civilizations have ended or vanished in the cases of water depletion or changing the paths of river streams in a region. Water scarcity has contributed to the occurrence of conflicts, disputes and issues in different regions throughout human history, and the current time is witnessing many conflicts and disputes at the level of countries or even within one country itself. Nowadays due to environmental pollution and climatic change many countries throughout the world suffer from water supplication problems. Iraq has highlighted as one of the most vulnerable places that affected by water scarcity (Ethaib et al. 2022). Historically, this country has many sources for water surfaces such rivers of Tigress and Euphrates, lakes, and the marshes and wetlands in the south part. Besides the environmental pollution and climatic change, the policies of upstream countries and the dramatic rise of population have worsened the problems of water sector in this country especially in southern Iraq. In addition to the fact that water has become a political pressure card by upstream countries on downstream countries and began to pose a political, economic and social danger that can contribute to the destabilization of the national security of the state.

Dhi-Qar governorate (alternatively spelled Dhi-Qar) is one of the 18th administrative units of Iraqi governorate that located in the south. This governorate encompasses large areas of Iraqi Marshes (Mesopotamian Marshes). Steams of the Tigris River pass through northern cities of this governorate and supply them by freshwater. Meanwhile Euphrates River passes through southern cities of Thi-Qar governorate. Thus, this governorate takes advantage of these two rivers; both rivers feeding the marshlands. Dhi-Qar Governorate witnessed a series water lack issues, which is affected the ecosystem and tiger tribal conflicts that contributed to the occurrence of environmental displacement of the population. The worse the water scarcity contributes to the increase in displacement people from their homes. Thousands of people displaced internally (inside the governorate) or externally (eternally) from multiple areas especially marshland areas. Therefore, this study aims to highlight the humanitarian aspects such as the environmental displacement of the population and the impacts on living organisms in Dhi Qar Governorate that resulted from water scarcity.

2. Methodology

The study area was Thi Qar Governorate in the southern part of Iraq, between two circles of latitude (33°, 30°-32°) and two longitude lines (30°, 45°-12°, 47°) bordered by Wasit Governorate from the north and northeast, Maysan Governorate from the east, Basra and Muthanna Governorates from the south, Muthanna Governorate from the west, and Qadisiyah Governorate from the northwest Map No. (1)

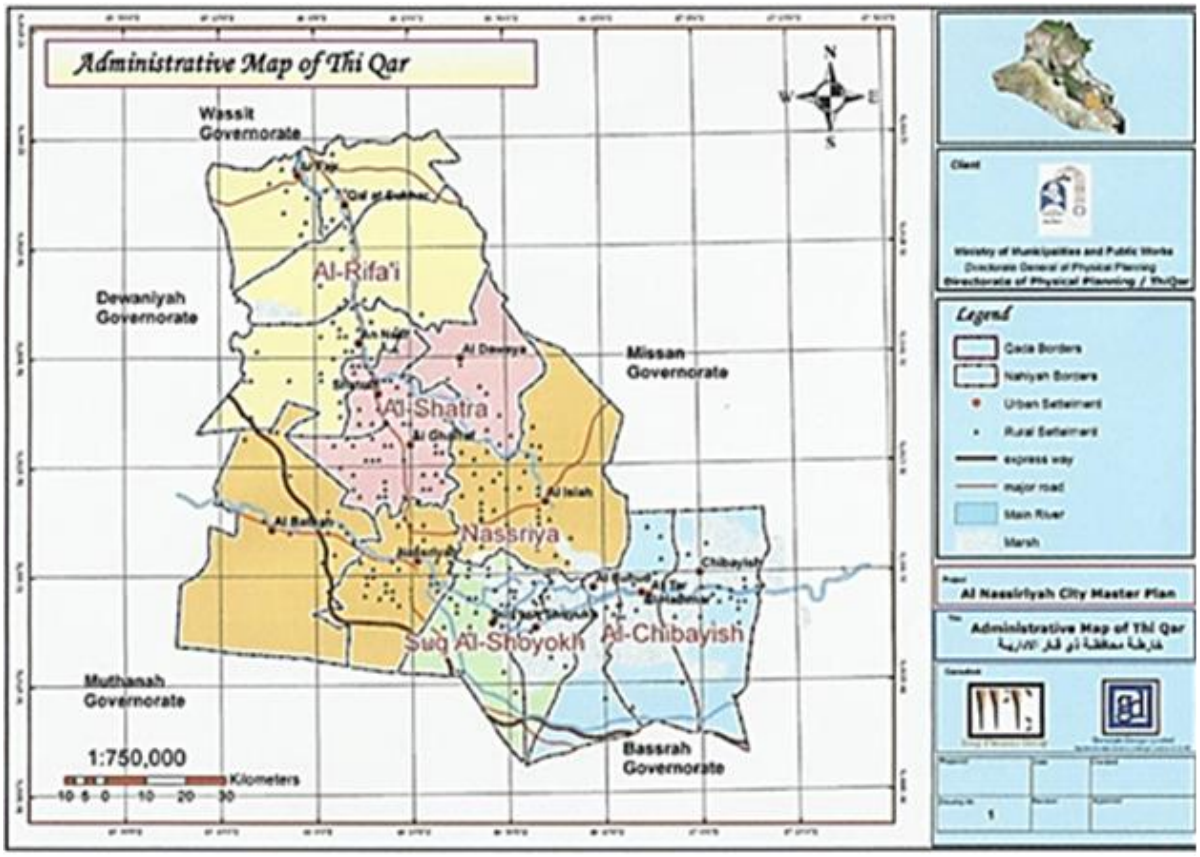

Figure 1: Map of the study area (Ethaib, S. (2019, August). Solid waste situation in Thi-Qar governorate.

2.1 Water resources

Water resources are defined as valleys, torrents, rivers and streams that transport surface water resulting from the difference in soil absorption, increased rainfall, infiltration and evaporation rates (Abu Samour, 1999, p. 301) and this is related to soil waterlogging and runoff occurs according to the nature of the slope of the surface. Water resources represent the controlling factor in the continuity of life on earth, water is of great importance to living organisms of all kinds and different places, and the matter was not limited to this limit only, but exceeded it to human activities and activities practiced by humans such as domestic activities, agriculture and industry, as well as trade, and water needs vary according to the activity, region, climate, customs and traditions and vary according to the seasons of the year within one region. In Iraq, there are various water sources, such as lakes and rivers represented by the Euphrates and Tigris rivers and their tributaries, marshes that spread in the southern parts of Iraq, as well as groundwater that spread in several parts of Iraq, while springs and springs are in the northern and western parts of Iraq. There are two primary freshwater resources in Thi-Qar governorate (Figure 1). The northern and eastern part of the governorate depends on the Gharaf River, while the western and southern part of the governoratedepends on the waters of the Euphrates River and the marshes, which form a triangle with the governorates of Maysan and Basra. By the same token, a downstream public project (Al Massab AlAm) passes through this governorate. This project considers the main drainage project in Iraq for saline water.

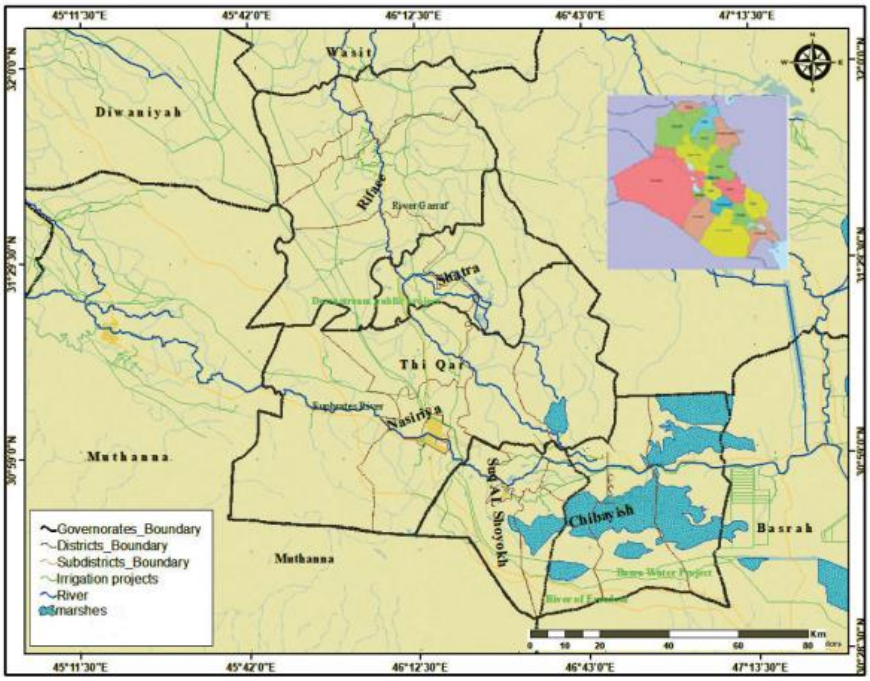

Figure 2: Water resource map for the study area (Ethaib, S., Zubaidi, S. L., & Al-Ansari, N. 2022)

3. Results and discussion

The crises drivers of the environmental displacement can be related to several factors such as water scarcity, and Water stresses .Water has been facing a real crisis for quite some time, and this is a result of the irregularity in the distribution of water, which is a natural matter related to the conditions of the local environment, including climatic conditions and the nature of the surface (shape and structure), accompanied by the misallocation of water shares from upstream to downstream countries and the increase in the amount of human consumption of water that results from the increase in population numbers, as well as the lack of sufficient sources of water to cover the needs of the population, which contributed to creating various issues and crises on the economic, agricultural and social level in different parts of the world and Iraq is one of the systems affected by the issue of water. This stems from a set of reasons that vary between natural and human, which will be mentioned successively in the research

3.1. Climate Change

The issue of climate change is one of the most prominent issues that affected water resources (freshwater), which was not in Iraq alone but on the level of water on the surface of the earth in various parts of the world, and climate change is defined as the change in climatic characteristics in periods of time whose duration varies between decades and centuries, which contributes to the change in the general rate and becomes fluctuating and has different new rates, thus climate change has a significant impact on water resources as well as its impact on aquatic ecosystems and their production (Al-Samaani, 2012, p. 111). (Al-Samaani, 2012, p. 114) Dhi Qar governorate depends on its water from the Tigris and Euphrates rivers, where the northern and eastern parts of the governorate depend on the Tigris River through the Gharaf stream, which supplies water to the areas it passes through, while the southern and western parts depend on the waters of the Euphrates River, both rivers originating from Turkey.

Meteorological studies show that there are climate changes in the two rivers basin region, and this is related to the temperatures that began to rise and fluctuate and the decrease in rainfall

rates, all of this is related to the effects of the North Atlantic climate, as (27%) of the water in the two rivers depends on rainfall due to the North Atlantic climate and temperature fluctuations. The climate of the Tigris and Euphrates is linked to the changes in the climate of the Middle East and the North Atlantic climate and the changes in the globe and the climate variability resulting from El Niño and its manifestations, which greatly affected the climate patterns in the Mediterranean region and the piezometric systems and thus the water in the two rivers became sensitive to the changes (Al-Waeli, 2012, p. 200). Precipitation rates decreased by large percentages up to 3%, which contributed to the decrease in water levels in the Tigris and Euphrates rivers to the level of 50%, as the low levels of rainfall in the winter season (1998-1999) had a low level of productivity for wheat and barley crops by 63%, while losses for demi-culture amounted to 70% of total productivity. (Abdulwahab, 2011, p. 267).

Indicators of climate change in Dhi Qar governorate show that there is a change in temperature, as the highest annual average in the governorate was recorded in 2000 (27.3 m) and the lowest was in 1984 (22.9 m) and the variation amounted to (4.5 m). As for the relative humidity rates, they indicate decreasing rather than fluctuating, as the lowest level of humidity was recorded for the period (1941-1950) at a rate of (45.3%). While the lowest level was recorded during the period (2001-2010) at a rate of (40%) and it is expected that the humidity levels in the year 2080 will reach (30%) and this is of course reflected on the rate of rain, as there is a direct relationship between humidity and the level of rain, as the rain rates for the period (1941-1950) ranged from (161.5 mm) while the lowest annual rate was recorded for the period (2001-2010) (132.4 mm) (Al-Kanani, 2012, pp. 274-278). From this, we find that the climate of Dhi Qar Governorate is characterized by change rather than fluctuation through the continuous rise in temperatures accompanied by low levels of humidity, which in turn contributed to the prevalence of dryness in the climate and thus increased the decrease in rainfall rates in the governorate.

3.2. Evaporation

It is defined as the transfer of water molecules from bodies of water, soil and bodies to the atmosphere (Al-Turkmani, p. 129). The level of evaporation is directly related to the depth of water, the breadth of water bodies, the location of the water body from the degree of latitude and wind speed, and an inverse relationship with the degree of salinity of water and the amount of rainfall, as the higher the level of salinity, the lower the level of evaporation, and the higher the level of rainfall, the lower the evaporation. High temperatures, low levels of humidity and increased wind speed in the summer help in the high levels of evaporation from surface water in Dhi Qar Governorate, which varies between rivers, streams and marshes, as the amount of water lost through evaporation is estimated at (2608.4 billion m3 per year) (Al-Rikabi, 2018, p. 132).

3.3. Salinity

Saline concentrations in river water in Iraq are related to the sources of nutrition, as they decrease with high rates of water discharge, which are with increased rainfall and snowmelt season and rise when the discharge rate decreases, and the waters of the Euphrates River in Dhi Qar Governorate are characterized by high concentrations of salts and this is due to the large number of landfills on the river and the passage of the river near the Sumbawa salt mine southwest of Dhi Qar Governorate and the lack of water releases and the quota allocated to the governorate due to the excess of the Middle Euphrates governorates over the allocated quotas. As for the Gharaf River, the salinity of the water in it is related to the drainage system and the quality of the water to the hydrological characteristics of the Tigris River, especially in the Kut Dam, which is affected by the volume of water received, which is characterized by low and prevailing drought, high temperature, increased evaporation and lack of processing

from the upstream countries of the river and its tributaries. The percentage of salts (T.D.S) in the Tigris River water at the city of Al-Nasr for the year 2022 reached an average of (663.6 mg / liter) (H Majid, 2023, pp. 96-97).

3.4. The seasonal variation of water

The lack of rainfall in the summer in Dhi Qar Governorate in the long summer season and its quantity fluctuates in the winter season, and this matter requires the adoption of accurate water management that ensures the balance between the existing use without disrupting the ecosystem. The variation of the water level in the governorate is related to the water situation in the Euphrates and Gharaf rivers. In 1966, the water discharge rate reached (433 m3 /s), while in 2016 it decreased significantly to reach an average of (119.3 m3 /s) (Ministry of Water Resources, 2016) (Ministry of Water Resources, 2016).

4. Human Problems

4.1. Dam and storage projects:

The projects that were built on the Tigris and Euphrates rivers varied between irrigation and storage dams, and the construction of these projects began in the 1970s and did not take into account the effects of these projects and the amount of shortages and poor quality, and the number of completed projects (22 dams) only (13) of them for irrigation and electricity generation, and the Turkish Ilisu Dam is one of the largest, with a reservoir capacity of (11. 40 billion m3), and its area is estimated at (300 km2), which contributed to the decrease in water imports coming to Iraq, 40 billion m3, and its area is estimated at 300 km2, which contributed to the decrease in water imports coming to Iraq, and this contributed to Turkey's control of (80%) of the Tigris and Euphrates waters (Ramadan, 2013, pp. 200-210), which caused multiple issues and impacts on life in Iraq in general, which will be addressed.

4.2. Policies of Water

Turkey is the only country in the Middle East region that enjoys abundant water, and this is due to good management and its use of water as a strategic means of pressure on Syria and Iraq, as well as the Arab Gulf states and Israel within the peace pipeline project, so the political character often became the disposal of water resources, so its water policy is not drawn according to the need for water in generating electric power or in irrigation operations, but rather its realization of the importance of water (Mohammed, 2006, p. 38), and this political use of water resources by Turkey is due to its realization of the development of its political role and interests with the Middle East and not with Western European countries, which reject Turkey's accession to the European Union (Mohammed, 2014, p. 48), so it has established dams and storage projects to tighten its control over water resources and control them.

4.3. Water pollution

Environmental pollution is defined as a change in the natural characteristics of the environment in which humans live and practice their various activities, and this change may be due to natural or human conditions, knowing that the change in characteristics is negative, and pollution is of types, including material and non-material, and water pollution is one of the most prominent forms of material pollution, and water pollution is defined as the introduction of a substance into the water medium that contributes to changing the physical, chemical or biological properties of water and causes a danger to human health, animals, plants and even microorganisms (Ghazali, 2020, p. 223). (Ghazali, 2020, p. 223), and water pollution in Dhi Qar Governorate varies according to the source, it may be industrial, caused

by the group of waste industries distributed in the governorate, and the city of Nasiriyah is the center of the governorate, so most industries are based there, and industrial activities are mostly on riverbeds and from (electric power plants, cement products, leather and dyeing, spinning and weaving, as well as plastic products and food industries) (Al-Rifai, 2009, p. 124). Water in Dhi Qar governorate is polluted by sewage wastes, which are thrown directly into the river without any treatment, as there are wastewater treatment plants in the city of Nasiriyah, but the plants no longer work because they are old and dilapidated in addition to lack of maintenance, and the wastewater differs in its danger as the water discharged from hospitals and various health institutions is dangerous, and the water of electric stations, however, goes directly to the rivers without any treatment. We find that water pollutants in the governorate were not limited to liquid wastes, but exceeded them to solid wastes that drain into the water and leave serious effects on humans and living organisms that live in the water. The matter did not stop at this in the pollution of water inside the rivers only, but exceeded it to the pollution of drinking water reaching the cities, and this is due to the high pollutants in water resources and the inadequacy of liquefaction plants with the type of water pollutants.

4.4. Irrigation

The agricultural areas in the governorate depend on the method of irrigation by means of irrigation or irrigation without means of water, and the latter is often used in the areas located on the banks of the Gharaf, but in recent years, with the continuing drought, lack of rainfall and low water level, the method of irrigation by means of water has been adopted, and this has contributed to the waste of water significantly and affected the water characteristics due to the frequent washing and washing of agricultural lands and this matter contributed greatly to water pollution. However, the level of pollution increased with the progress in agriculture, the use of industry and the increase in the population of the governorate, which was not matched by any interest in real water treatment, thus contributing to the change in the characteristics of the water and the different pollutants between solid and liquid that are thrown into both the Euphrates and Gharaf rivers.

5. Impacts of the water issue on Dhi Qar Governorate

5.1. The issue of water and food security

Iraq depends on the waters of the Tigris and Euphrates rivers in securing its water needs, the rivers originate from outside Iraq, and the water imports reaching Iraq from the Tigris and Euphrates rivers began to decrease significantly, reaching (49.67 billion m3 per year) in the year (2019-2020) (1575 m3/sa), while in (2020-2021) the annual import decreased significantly, reaching (31.24 billion m3/year) with an annual average of (990 m3/sa) (Central Statistical Organization, 2022). This decrease negatively reflected on the vital ecological systems, as the artificial Lake Hamrin in Diyala Governorate lost nearly 70% of its water, and its water capacity decreased to (350 million m3) after it was estimated at (3 billion m3) during 2018, in addition to the drying up of Lake Sawa in Samawah, which is 4.47 km long and 1.77 km wide (Saleh, 2023, p. 155).

As for the southern regions, they witnessed major changes at the level of the marsh areas due to low water levels, which led to the transformation of large areas of flooded marshes into barren lands despite their importance as the largest ecosystem in West Asia, and as a result, they were added to the World Heritage List in 2016 by UNESCO, and Dhi Qar Governorate lost an important water resource and a distinctive natural system as well as a great economic wealth in the field of breeding and fishing, whether in the course of the two rivers or the marsh areas, as in Al-Jabaish it used to export fish every day, approximately (90-100 tons). A large economic wealth in the field of raising and fishing fish, whether in the course of the two rivers or the marsh areas, as in Al-Jabayish was exported from fish daily approximately (90-100 tons), but after the drought, Al-Jabayish fish exports became (zero) (personal interview, dated 5/3/2024) This indicates a real disaster practiced against the natural environment, noting

that Al-Jabayish currently depends on fish imported from Oman and Iran (field study, 5/3/2024).

The decrease in water imports in Iraq reflected negatively on the agricultural reality, which helped the decrease in productivity, which resulted in a decrease in agricultural areas in Dhi Qar Governorate, Iraq lost millions of hectares of agricultural lands that were dependent on irrigation (Al-Abbasi, Rayan Dhanun,), as the lack of one billion m3 contributes to the loss of (260 thousand dunums) of agricultural lands (Zaher et al., 2012, p. 377). The area proposed for cultivation for this year was (493) thousand dunums due to the lack of water, an area of (135) thousand dunums was approved for all the province for this year, so the plan was reduced by 50% and the area of (219) thousand dunums was implemented, as the province needs (122) cubic meters / second water from the Tigris River to secure agriculture and liquefaction and achieve self-sufficiency in wheat to produce flour (Dhi Qar Agriculture Directorate, 2023). What reaches today (67) cubic meters/second, of which (16) cubic meters for Amara and the rest is not enough for some liquefaction plants. And the death of large numbers of buffaloes in Dhi Qar governorate, the number of dead buffalo reached (4234) head of buffalo, of which the Jabayish took the largest share with (1500) head of dead buffalo, as the percentage of dead buffalo in the marshes (12%) of the total buffalo. As for the dead cows, (434) heads were recorded, while the dead sheep came second after the buffalo with (2062) sheep, outperforming the cows.

Table 1: Type of dead animals in Al-Jabish marshes for the year 2022

Type of animal	number/header
Buffalo	4224
Sheep	2062
Cows	434

Source: Researcher's work based on: - Republic of Iraq, Ministry of Agriculture, Directorate of Dhi Qar Agriculture, unpublished data, 2023

5.2. Environmental Displacement

5.2.1. The concept of environmental displacement:

The environmental scientist (Norman mayers) defined environmental displacement as people who can no longer obtain safe livelihoods within their homelands due to drought, deforestation, soil erosion, desertification and other environmental issues, as well as issues associated with population pressure and poverty, forcing them to migrate permanently (Ben Soueih and Mekki, 2022, p. 441). Or it is a group of people or human groups who have been forced to leave their homes, homes or places of residence to which they are accustomed as a result of armed conflict or situations of violence, as well as violations of their human rights or natural or human disasters that did not result in crossing the international borders of the state to which they belong (United Nations Migration Agency IOM, 2020, p. 39). It was not a concept and environmental displaced people may be in groups or categories. It is understood as individuals who are permanently displaced as a result of economic development projects or who migrate after their excessive consumption of natural resources (Al-Sheikh, 2008, pp. 51-64) Through the above, environmental displacement can be defined as the migration or abandonment of the population to their homes where they grew up or where they work as a result of natural or human environmental changes permanently or temporarily, as well as the depletion of natural resources that can contribute to their displacement in search of new places where natural resources are available for their continued survival. There is a set of terms that are related to environmental displacement that can be used within the research later, including (environmental refugee, environmental migrant, ecological refugee, as well as climate refugee), although there is no clear definition of the features and dimensions of environmental

displacement and even the environmental displaced, noting that the concept appeared in the 1970s by the ecologist (Lester Brown) * He established a number of links between internal and external migration as well as the environment (Bou Nassiar, 2022, p. 387). The United Nations Environment Program (UNEP) defined environmental refugees as "those refugees who were forced to leave their homes in a voluntary or forced manner due to natural or human events related to the environment that threaten their livelihood or existence (Houria, 2014, p. 60), and it should be distinguished between environmental refugees and types of asylum and migration from that we find that The environmental refugee leaves his place of residence due to the occurrence of an environmental disaster or the deterioration of the environment in which he lives and this directly affects his life and is not recognized as an environmental refugee within the international legal system (Habib, 2012, p. 23), and from this, environmental displaced persons can be divided into groups and related to the environmental phenomena that push them to be displaced. - Temporarily displaced people result from a sudden environmental situation such as earthquakes, floods, volcanoes and droughts, although their situation is not easy, but they can return to their place before displacement provided they are able to restore what was destroyed and continue to maintain the type of life before the issue occurred.

- Permanently displaced people are associated with gradual changes in the environment that affect their lives and livelihoods and seek better environmental conditions.
- Permanent displacement is associated with the presence of permanent environmental change outside the will that affects the areas of settlement of the displaced and forced to leave it, such as the establishment of artificial lakes, dams and reservoirs as well as the establishment of economic investment projects that reflect negatively on the population (Bedi, 2022, p. 618).

5.2.2. Causes of environmental displacement:

The environmental considerations that cause displacement vary according to the source, these causes may be natural or human, knowing that the natural causes are beyond the control and will of man, and their occurrence is often sudden, represented by natural disasters (earthquakes, floods and volcanoes), which when they occur in an area, the affected areas need to provide material, social and medical support to the most affected groups, and often the settlement of those in mass camps does not meet the necessary requirements for their existence (Al-Azhar, 2015, p. 138), and these disasters have caused the occurrence of a displacement situation (1. 1) million cases of displacement in the continent of Africa, and the cases are climate-related (Ramadan Faraj, 2021, p. 63). 1. 1 million cases of displacement in Africa, 97% of the cases are climate-related (Ramadan Farag, 2021, p. 63). On the economic side, developing countries (third world countries) lost (401 billion dollars) in their economy, and it was not limited to poor countries, but exceeded it on the member countries of the Organization for Economic Cooperation and Development, as their human losses were estimated at (1918) deaths and (715 billion dollars) (Bacher, 2008, p. 35).

On the other hand, there are human causes in the process of environmental displacement, as happened in Ukraine with the nuclear power plant (Chernobyl) in 1986, which was considered the worst human disaster to leak nuclear radiation and was a nuclear disaster of the seventh degree, as it caused the death of (93 thousand) citizens, while it caused the contamination of (1.4) million hectares of agricultural land, and citizens in Ukraine are still suffering from the disaster that occurred there.

While there is another reason that combines natural and human causes and the natural role is small compared to the human role and is related to the increase in the emission of greenhouse gases towards the atmosphere without any treatments, and this reason is known as climate change, which will be addressed later, which is one of the most prominent causes of

environmental displacement Environmental displacement in the world through the impact of global warming, which in turn is related to multiple human activities, the increase in industries and the abundance of transportation and industrial facilities and the resulting increase in the amount of carbon dioxide and other accompanying gases, including methane, nitrous oxide and hydrocarbons.

5.2.3. Environmental displacement in Dhi Qar Governorate:

The migration of thousands of Iraqis from their original homeland and leaving their inherited professions such as agriculture and livestock farming towards cities and government jobs, and even appeared when in Iraq, even without authorization from the government or local responsible authorities, what is known as environmental displacement, meaning that most of the displacement movement today across cities, villages and governorates is mainly caused by environmental reasons, and perhaps the continuation of the situation as it is warns of imminent danger and many Iraqi governorates may turn into mere abandoned cities, and we may even witness a situation of refugees to other countries for environmental reasons.

The process of environmental displacement that occurred follows a series of natural and human causes cooperating with each other and thus reflected in a negative way on the survival of the population in their places of settlement in cities or the countryside as well as the marsh areas that began to witness large displacements that amounted to the displacement of thousands of families from their original habitat, as for the rural and agricultural areas and agricultural areas have been abandoned by their residents due to the decline in agricultural operations, which is a result of climatic changes, lack of water, high levels of salinity and pollution, as well as the use of old techniques in agriculture, which contributed to the deterioration of the agricultural reality and the failure to achieve economic feasibility for farmers and farmers, which forced them to leave their homelands. Environmental displacement movements are in the form of groups, as those affected by climatic changes and harsh environmental conditions are forced to move towards new areas or lands and their search for new suitable work, and at other times they are individual, and these environmental changes may be temporary or continuous, and their occurrence is sudden or continuous, as a result of which displacement processes can be local, internal, or even international.

Dhi Qar governorate ranked first among the central and southern governorates in environmental displacement, as the displaced families in Dhi Qar governorate in 2021 reached about (1510 families) (IOM, 2021) and Dhi Qar governorate maintained the leading position in the number of environmentally displaced families, as they reached (3387 families) (IOM, 2022).

Figure 1: Source: Researcher's work based on:

1. United Nations, International Organization for Migration (IOM), Environmental displacement caused by climate change - Southern Iraq Environmental displacement caused by climate change - Southern Iraq 2021.

2. United Nations, International Organization for Migration, Environmental displacement caused by climate change - Southern Iraq 2022.

3. Republic of Iraq, Ministry of Migration and Displacement, Department of Branch Affairs, Southern Governorates Section Dhi Qar Governorate Branch, unpublished data, 2024.

While the number of displaced families in Dhi Qar Governorate for the year (2023-2024) from their places of settlement to other places inside or outside the governorate due to environmental conditions (8489 families) (Ministry of Migration and Displacement, 2024) registered according to the administrative units of the governorate, as in Table (2) distributed according to administrative units. This is a result of water scarcity, which, as mentioned earlier, is due to a combination of natural and human factors that have contributed to the exacerbation of the issue. The phenomenon of environmental displacement is reflected negatively from the displaced areas and the displaced areas and appears in different forms, directly or indirectly.

Table 2: shows the number of successful families in Dhi Qar Governorate and their percentages according to administrative units

Administrative units	Number of families	Percentage Ratio
Al-Chibaish	1442	17
Al-Fuhud	194	2.28
Al-Manr	115	1.35
Al-batha	1531	18,03
Al-Diwaya	1424	16.8
Al-Naseer	2915	34.33
Al-Tar	668	7.86
Karma Bani Saeed	200	2.35
The Total	8489	100

Source: Researcher's work based on: 1- Republic of Iraq, Ministry of Migration and Displacement, Department of Branch Affairs, Southern Governorates Section Dhi Qar Governorate Branch, unpublished data, 2024.

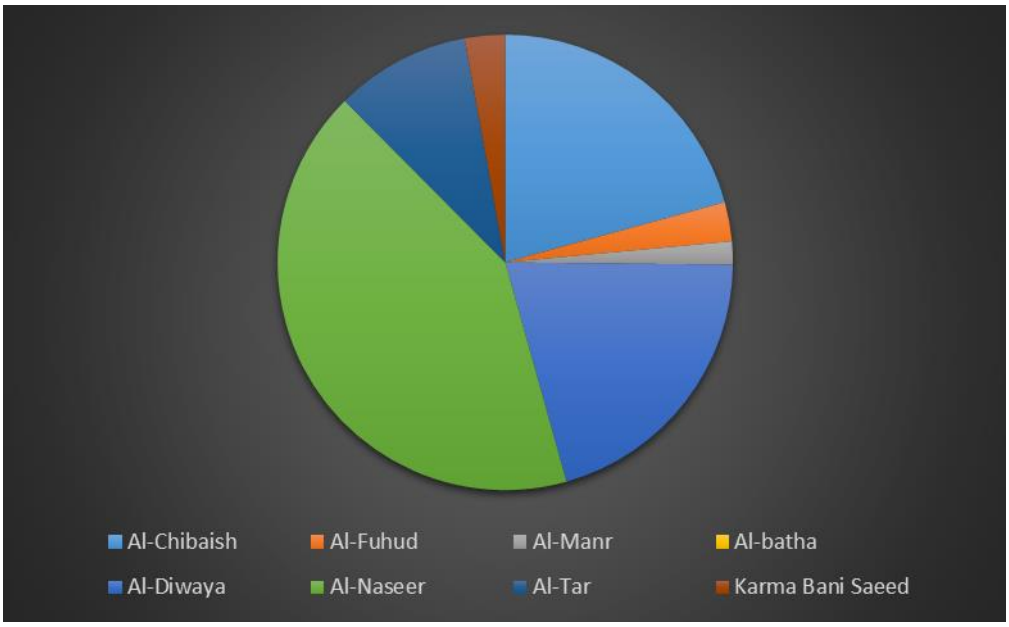

Figure 1: Source: Researcher's work based on, Table (2)

6. **The effects of environmental displacement in Dhi Qar Governorate**:

Environmentally displaced groups affect the places to which they are displaced, and thus there is a great impact on the level of environmental security, which is related to a large group of systems or branches Environmental security is intended to provide protection, tranquility and safety for members of society, from a danger that may occur or is expected to occur. Thus, it means development and development loses its value and cannot be achieved without any security, and development depends on existing natural resources that affect the economic aspects of countries. Failure to achieve environmental security can have a negative impact on various aspects of life, and Dhi Qar Governorate is one of the regions in the world and Iraq affected by the phenomenon of environmental security, both in the displaced areas to the displaced areas.

6.1. Impact on food and water environmental security

Which results in a decrease in human food capabilities through the occurrence of food gaps that may contribute to the occurrence of famines, and this results from the loss of large agricultural lands and their lack of reclamation as a result of the low water level and the high levels of salinity of water and soil together, which leads to the unsuccessful cultivation, as well as high temperatures that contributed to the decrease in productivity of cereals in the agricultural season (2023-2024) Many agricultural areas in Dhi Qar Governorate saw the maturity of the wheat crop before its harvest season, which reflects negatively on the quality of wheat production and thus on farmers and its economic losses, which forces them to not cultivate. Dhi Qar Governorate has lost large numbers of buffaloes in the marsh areas due to their death due to drought and the destruction of large quantities of fish, which represent an important food resource for the residents of the marshes and Iraq in general, as 60% of the fish consumed in Iraq are sourced from the marshes of Mesopotamia (Alwash, 2018). It constitutes an important economic source and their livelihoods (Bachmann, Anna &Others, 2019). The loss of the main source of livelihood for these people who depend on raising

buffaloes or fishing will lose their profession and deprive them of providing their daily necessities. This reflects negatively on the nutritional situation in the governorate and puts pressure on the natural, food and economic resources of the population, leading to food insecurity and the destruction of the ecosystem.

Figure 3: dead animals: The photos were taken by the researcher on 12/8/2023

6.2. Impact on societal security:

Community security is one of the fields that are concerned with resource and environmental issues as well as demographic issues, and community security is one of the four sectors according to the British Barry Buzan and is related to sustainable development and traditional templates of language and culture as well as religion, national identity, customs and traditions (Alalaq, 2018, p. 102), as the occurrence of environmental displacement leads to the disruption of the social and health system of the population in Iraq in general and Dhi Qar in particular, as it is the first place in the governorates of environmental displacement. The occurrence of environmental displacement leads to an imbalance in the social and health system of the population in Iraq in general and Dhi Qar in particular, as it occupies the first place among the governorates in the processes of environmental displacement, this can lead to the occurrence of tribal conflicts over water and food resources on the one hand in the affected areas and the continuation of those conflicts and conflicts when the displaced reach the cities, and the governorate has recorded a set of conflicts for the year 2021, and the governorate of Dhi Qar Dhi Qar has recorded a group of conflicts for the year 2023, according to the Directorate of Tribal Affairs, which amounted to (185 conflicts) that occurred in the governorate that were directly or indirectly related to climatic changes and water scarcity, in which a number of individuals were killed, injured or threatened (personal interview with Colonel Qasim Al-Saidi, dated 11/27/2023), and these conflicts and environmental displacement processes can be an incubator for many saboteurs and outlaws as well as contributing to the spread of crime, as happened in the organization of ISIS if many farmers in the Tharthar depression located northwest of Tikrit and northern Anbar Governorate joined the ranks of the organization, especially those farmers affected by the advancement of sand towards their lands compared to those in the river valley basin area (Saleh, 2023, p. 157).

Displacement processes can contribute to the infection of displaced persons with a range of diseases, and this is related to the poor services provided to the displaced in the governorate, including water, which is contaminated and unsuitable for drinking, and thus reflects on the situation of the displaced, which requires special care for infected persons, especially those related to water. The displacement processes contribute to the elimination of many cultural and social phenomena that are associated with the communities of origin when they move to

new places contribute to their gradual elimination, some of which are related to the local dialect of the population and others are related to popular customs and traditions, as well as the loss of many crafts and handicrafts that are always associated with the local environment, as happens in some industries that are based in the marsh areas, including (Sumerian host, brushes) that are made from marsh reeds and many others. On the other hand, after the marshes entered the World Heritage List in 2016, the matter reflected positively on the population in the marshes and the governorate in general, but the impact of the governorate and the marsh area on the water issue and displacement processes negatively affected the economic resource of the governorate and the population directly and indirectly due to the loss of this category working in the field of tourism to the lack of tourists coming here and thus the world heritage and cultural properties are negatively affected. Women and children are often the most prominent victims, especially in agricultural areas or marshes, as they bear the burden of responsibility and the economic and labor burdens fall on them, which makes them the most prominent victims, we conclude that the displacement processes contribute to creating chaos in the societal aspect from the security, health, cultural and social aspects.

7. Conclusion

Many areas in Dhi Qar Governorate have severely affected by the drastic water scarcity which led to several live hood problems for the community.Thousands of families were displaced from original life places due to losing the food security and tribble conflicts. The water scarcity resulted in losing the agriculture, and fishing areas especially in the marshlands. Therefore, it is essential to set urgent measure to tackle the environmental displacement problems such as:

1- Rehabilitation of dams and reservoirs projects in the northern regions of Iraq to maintain water requirements and face the risk of flooding if it occurs, and to maintain the sustainability of the marshlands after their inclusion on the World Heritage List and their tourism and economic importance.

2- Seeking to use modern irrigation methods such as sprinkler and drip irrigation instead of the old traditional methods of irrigation.

3- Directing farmers to reduce agricultural areas, especially crops that need large quantities of water, including rice, and getting rid of artificial lakes that raise fish, especially those that are not approved.

4- Trying to establish sewage treatment plants for the purpose of utilizing it and not wasting it, as the current water situation in Iraq is critical.

5- Treating water as an economic national wealth by presenting the project to specialized investors from developed countries that collect money from users and this is done by placing electronic meters that determine the amount of water used by the population and on the basis of which deductions are made, which is related to the size of the use.

6- Coordination with the riparian countries in cooperation with the Turkish and Syrian sides, as well as the Iranian side, and commitment to the agreements previously concluded, and it is necessary for Iraq to seek to pressure the Turkish side through the economy, as Turkey makes billions of dollars in profits annually through trade with Iraq.

7- Preventing all sewage plants that pour into the rivers in the basins of the Tigris and Euphrates rivers within the province due to the high levels of water pollution.

8- Seeking to sensitize the population to the issue of climate change through intensive awareness campaigns for the population, especially those affected by environmental conditions, and trying to adapt them to these changes and finding alternatives for them in their homelands and not displacing them to new homelands.

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کێشەی ئاو و کاریگەری لەسەر ئاوارەبوونی ژینگەیی لە پارێزگای ذی قار

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پوختە

لە ساڵی ٢٠٢٣ پارێزگاری ذی قر دەستی کرد بە ئازاردان بە دەرئەنجامەکانی گۆڕانی کەشوهەوا بەتایبەت کەمیی ئاو، کە کاریگەرییەکانی بە ڕوونی لەسەر لایەنە جیاوازەکانی ژیان دەرکەوت لە پاراستنی ئاستی ئابووری و کۆمەڵایەتی و تەنانەت کولتووریشدا، چونکە ئاو دەچێتە ناو... وردەکاری و وردەکاری جۆراوجۆری ژیانی مرۆڤ لەسەر ڕووی زەوی، و عێراق بەشێکە لەو سیستەمە لەسەر ئاستی جیهان، کە کاریگەری گۆڕانی کەشوهەوای لەسەر بووە، بەتایبەتی کەمی ئاو قەبارەی هاتنی ئاو بۆ ناو عێراق کەمیکردووە و (31.24 ملیار)ی تۆمارکردووە /م3) لە ماوەی ساڵی 2021 دوای ئەوەی لە ساڵی 2020دا (49.67 ملیار/م3) بوو، ئەمەش بووە هۆی کۆچی زۆرەملێ (ئاوارەبوون) بۆ گواستنەوەی ژمارەیەکی زۆر لە دانیشتوانەکەی لە ناوچەکانیانەوە بۆ ناوچە نوێیەکانی تر، بەتایبەتی لە کشتوکاڵەوە ناوچە و ناوچە تاڵاوەکان خێزانەکان) بەهۆی قەیرانی بیابانبوون و وشکەساڵییەوە ئەمەش هەم نیشانەی کارەساتێکی ژینگەیی و مرۆییە، هەروەها نەبوونی ژینگەیەکی سەلامەت و سەرچاوەی بژێوی بەس بۆ دانیشتووان دەبێتە هۆی کۆمەڵێک کێشەی دیکەی پەیوەست بەوەوە، لەوانەش بڵاوبوونەوەی... نەخۆشی و پەتا و ململانێی خێڵەکی، وەک ئەوەی ئێستا لە ناوچە تاڵاوەکاندا ڕووەدات، ململانێ لەسەر سەرچاوە ژینگەییەکان.

وشە سەرەکییەکان: ذی قار - ئاوارەبوونی ژینگەیی - تاڵاوەکان - سەرچاوەکانی ئاو - گۆڕانی کەشوهەوا - پیسبوون

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الملخص

بدأت تعاني محافظة ذي قار عام 2023 من نتائج التغير المُناخي ولا سيما العجز المائي الذي ظهرت آثاره بصورة واضحة على جوانب الحياة المختلفة في المحافظة على المستويات الاقتصادية والاجتماعية وحتى الثقافية ، لكون الماء يدخل في تفاصيل وجزئيات الحياة المختلفة للإنسان على سطح الأرض ، والعراق من ضمن المنظومة العالمية التي تأثرت بالتغيرات المناخية ولا سيما شحة المياه لقد تناقص حجم المياه الواردة الى العراق مسجلاً (31,24مليار/م3) خلال عام 2021 بعد ان كان (49,67 مليار/م3) في سنة 2020 مما ادى ذلك إلى حدوث هجرة قسرية (نزوح) لإعداد كبيرة من السكان من مناطقهم الى مناطق اخرى جديدة ولا سيما من المناطق الزراعية ومناطق الاهوار ، ويُعد مركز مدينة الناصرية ومراكز اقضيتها ونواحيها من اهم المناطق المستهدفة للنازحين سجلت وزارة الهجرة والمهجرين في العراق/فرع ذي قار نزوح (8498 عائلة) بسبب ازمة التصحر والجفاف وهذا ينذر بكارثة بيئية وإنسانية على حدٍ سواء وعدم وجود بيئة آمنة ومصادر كافية لعيش السكان ينتج عنه مجموعة من المشكلات الاخرى المرتبطة به ومنها انتشار الامراض والاوبئة والنزاعات العشائرية كما يحدث الآن في مناطق الاهوار النزاع على المصادر البيئية.

الكلمات المفتاحية: ذي قار – النزوح البيئي – الاهوار – الموارد المائية – التغيرات المناخية – التلوث