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Globalization and Marsh's Environment-Population in Iraq using GIS Analysis

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Abstract

Iraq's Hammar marsh was a key region for food production economically. The Hammar marsh's ecosystem had started to deteriorate by 1980 because of the war. Ever since then it has had serious issues brought on by both natural and human causes. We highlight these issues, their links, and how social and economic forces led to environmental deterioration in this essay by focusing on globalization. We measured changes in ecological, economic, and social systems using a variety of metrics during the last 20 years in order to quantify the issues and chronicle the changes. Significant climatological changes, including decreases in precipitation and humidity as well as temperature rises, have influenced environmental deterioration in the Hammar marsh. The Hammar marsh's social structures were also subjected to a great deal of stress, including as conflict and sanctions. To determine how the environment has changed across three periods between 2002, 2012, and 2022, we computed and examined categorization changes in Landsat images. Throughout the research region, changes in climatological variables were linked to changes in the vegetation and water.

Keywords: Globalization, Marsh's Environment in Iraq, Geospatial Analysis, Social and Economic Factors.

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1. Introduction

Globalization is a concept that aims to integrate economic, commercial, financial, and communication systems in order to increase interconnectedness by facilitating the exchange of goods, information, and services across national boundaries and fostering the growth of a world economy that is integrated. This movement is exemplified by free trade in particular, as well as the movement of capital, and it also seeks to take advantage of foreign labor markets that are less expensive. Additionally, it is concerned with reducing barriers to international trade (Turner,2009). According to a different definition, globalization is a condition in which all products, services, and social and cultural consequences are increasingly shared by all nations in the world. One of the major topics to be investigated in globalization is global warming. Environmental deterioration and global climate change are the results of the rapid, carbon-intensive economic growth that has fueled globalization. Indicators of socio-economic development, such as GDP growth and urbanization, have increased rapidly since the 1950s as a result of a trend known as the "Great Acceleration," which is directly related to growing CO2 emissions and environmental degradation (Maoliang and et al,2016; Mirheydar and et al,2014).

This study constitutes a relatively new area that has emerged from the globalization effect on the marsh environment, especially in Iraq. The marshes are the greatest wetland environment, and herbaceous vegetation predominates there. In between aquatic habitats, marshes serve as an area. Vegetation, grasses, or reeds frequently take over the marshlands. The marsh is a valuable tourist attraction that has helped draw visitors to Iraq from both inside and outside the country. Additionally, the soil is rich, which facilitates the production of a variety of crops. The cultivation of rice is the most significant. The wetlands, where reeds and papyrus flourish, offer a haven for uncommon migratory bird species. The marshes are home to marsh people as well as significant animal habitats. One of the world's biggest and most harmonious natural systems, the Hammar Marsh connects the Iraqi governorates of Basra and Dhi Qar. 2411 km2 make up its land (Hussain and et al,2009; Al-Gburi,2017).

In particular, no study, to our knowledge, has specifically looked at how globalization and the degradation of the marshes are related. Moreover, some studies have focused on the environmental management of the Hammar marsh, water management in the Hammar marsh, restoration

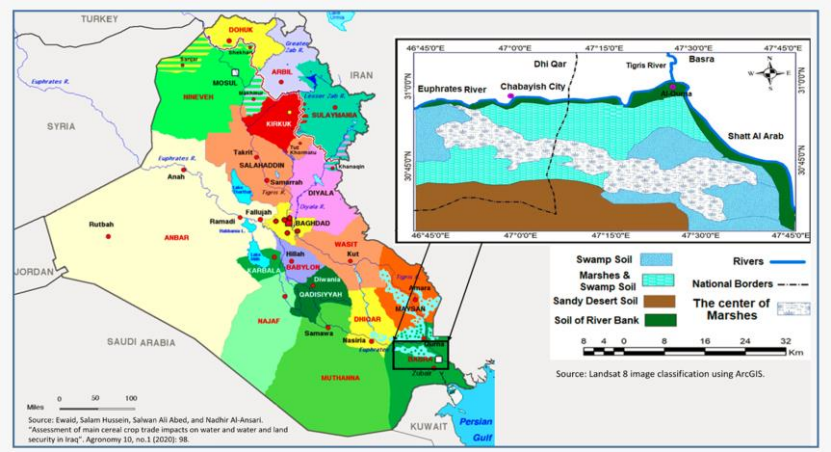
environment in the Hammar marsh, assessment of marsh sediments, and water quality index of the Hammar marsh. Also, land cover changes by using the GIS technique in the Hammar marsh.

We investigated whether the Hammar marsh's environmental degradation can be partly explained by the classification of satellite images for different periods of 2002, 2012, and 2022 based on the Geographic Information System (GIS). The aims of this paper are twofold: First does Hammar Marsh have an influence on the globalization process? If so, exactly what is influence? Second, how can GIS discover the detrimental effects of globalization by spatial and temporal analysis in the Hammar marsh?

2. Study Area

The Hammar Marsh is located in southern Iraq and extends from the Dhi Qar Governorate in the west to Basra Governorate to the west of Shatt Al-Arab. The study area has an estimated length of (90 km) and width of (25-30 km 2). The area falls under latitude (00'N °31- 35' °30) and longitude (46° 45'- 47° 45'E). The total study area is 7138 km 2 Look at Figure (1), .The word "marsh" refers to the inundated depressions of the floodplain where reeds, sedge, and other water plants (hydrophytes) thrive in relatively shallow water depths, while in other areas it is barren of such plant life. Open water is the most noticeable site, and the locals call it "Baraka" because it is profoundly exposed and seems dazzling when the sun's rays reflect off of it during the day or the moonlight reflects off of it at night, whereas the other spots around appear gloomy because of sedge and reed dense foliage cover. All year round, water covers the marshes; occasionally, it can be differentiated from what is still submerged and is known as a lake (Al-Malahweesh and Al-Hashemi,2012).

Figure (1): Study Area (the Hammar Marsh)



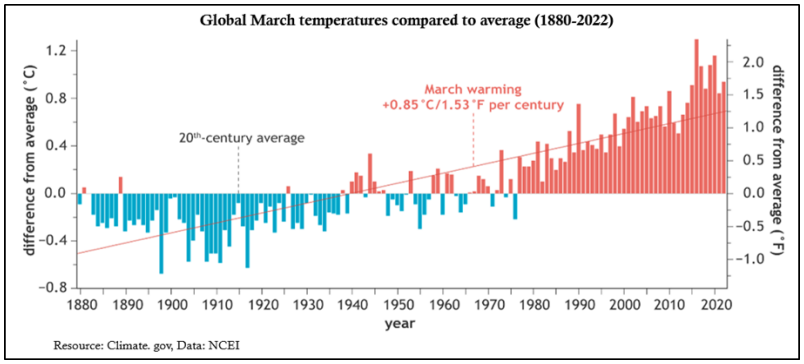
3. Methodology

3-1. Effects of Globalization on the Hammar Marsh Environment

Under certain assumptions, globalization and the causes and consequences of environmental degradation in the Hammar marsh can be construed as a detrimental influence and vice versa. The wider Anthropocene syndrome of human-induced environmental changes throughout the world includes global climate change. These include ecosystem functioning, soil fertility, freshwater resources, biodiversity stocks, ocean acidification, land degradation, disturbance of the global nitrogen and phosphorus cycles, and stratospheric ozone concentration. Global warming is brought on by greenhouse gasses from the use of fossil fuels in transportation, electricity generation, agriculture, and the mining industry. Deforestation and ocean saturation have also contributed to greenhouse warming by decreasing the ability of terrestrial and marine ecosystems to absorb more carbon dioxide from the atmosphere. Any continuous natural climatic fluctuations brought on by cosmological and geological factors also contribute to this warming (McMichael,2013; Kadhim and et al,2021). As in (Figure 2) the worldwide surface temperature was compared to the average for the 20th century every March from 1880 through 2022. Cooler-than-average marches are seen in blue, while warmer-than-average marches are depicted in red. Over the past 100 years, the average temperature in March has increased by 0.85 degrees

Celsius (1.53 degrees Fahrenheit). In 1976, Earth had a colder-than-normal March (Climate.Gov,2022).

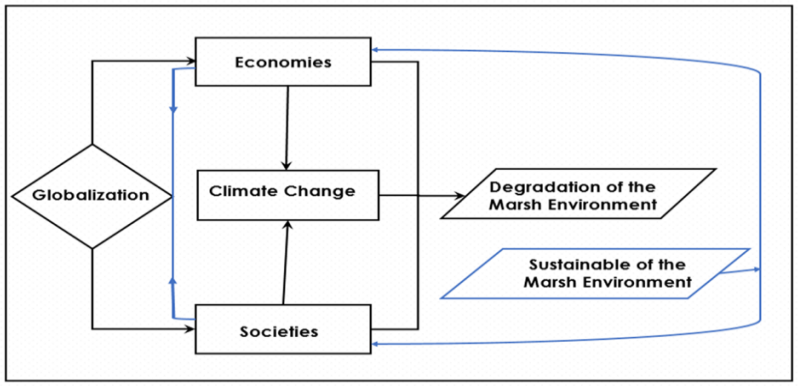
Figure (2): Average Global Temperature Trend for March (1880–2022)



(**Source:** Climate.gov,2022).

There is in fact sufficient information present on the environmental consequences of globalization on the Hammar marsh ecosystem or vice versa as in (Figure 3). Although factors from different economies and societies, such as war and environmental pollution, have direct local effects on the Hammar marsh, and although factors, such as upstream dams, are a regional source of challenges in the marsh, climate change is the main global challenge the Hammar marsh is currently facing. Climate change influences the meteorological conditions that cause the regional drought, which has a negative effect on the vegetation, agricultural output, and way of life of those who live in the Hammar marsh.On the other hand, if the marsh environment can be sustained, it will have a good impact on globalization by bolstering its social and economic as well as environmental facets, This concept was represented in the diagram in (Figure 3).

Figure (3): Diagram for a Cycle Illustrating the Consequences of Globalization on the Hammar Marsh Environment or Vice Versa



3-2. Geospatial Analysis

Geospatial is a broad term that encompasses numerous forms of geographic imaging and mapping technologies, of which GIS is one. The availability of geospatial data is currently growing due to developments in remote sensing, monitoring technologies, and geographic information systems (GIS) (Al-Nasrawi and et al,2018; Kadhim and Shortridge,2021; Al-Nasrawi and et al, 2021). In this study, we used image classification (supervised classification). The whole Signature editor was chosen to be employed in the classification process during the supervised classification procedure. The image was divided into four categories:(water, marshes, salty soil and barren land) for Hammar marsh classification. For this study, we analyzed the data collected from satellite images (Landsat: 5,8 and 9). For this study, we analyzed the data collected from satellite images (Landsat: 5,8 and 9).

4. The Results

1.To address the study's first aim, Yes, a lot of studies and observations show that marshes affect stability (diversity of ecological processes over spatial and temporal) and provide areas where humans may live or work. We will specifically talk about the economic and social conditions in the Hammar marsh and how they influence the process of globalization:

4-1. Economic

Although it is distinguished by extreme temperatures and rain between summer and winter, despite the varying amount of both. The Hammar Marsh has several natural components that helped, in one way or another, to make this region a distinguished vital ecosystem that contributes to achieving ecological balance (Alwash and et al,2004; Al-Malahweesh and Al-Hashemi,2012). The Hammar Marsh is distinguished by a distinctive biological variety since it is inhabited by numerous living things (plants and animals), as well as submerged and floating vegetation. Due to the Hammar Marsh's abundance of water and availability of proper natural circumstances, there are numerous aquatic creatures there, including fish and birds (See table (1)). On the other hand, because it is distinguished by fields appropriate for the development of summer and winter crops as well as rice, particularly amber, maize, and wheat, it is regarded as one of the regions of natural richness. Since the Hammar Marsh contains (49283) buffalo heads in the Dhi Qar Governorate and (57704) buffalo heads in the Basra Governorate, which add to the Hammar Marsh's natural suitability for the life of buffaloes, sheep, and cows. The existence of reeds and sedges,

which is one of the most significant characteristics of the marsh, was made possible by the presence of marshlands and swamps. Reeds encroach densely and rise seven meters above the water's surface. Reed species with lengths of 6 to 9 meters above the water's surface can be found in some marshy areas. Reeds and papyrus are utilized in a variety of industries, such as the production of trees and the provision of animal feed. constructing homes surrounded by lush landscaping, a valuable resource on which many families rely for their livelihood (Salim,1970; Alwash and et al,2004), Table (1) provides supplementary economic statement on the marshes in Iraq and the study area in particular.

Tabel (1): The Hammar Marsh provides Commodities, Services, Products and Ecosystem Control to Provide Economic and Social Support for Globalization

Service	Sub-category	Examples
Provision services -goods/products obtained from Marshlands' ecosystems		
Food	Crops	Paddy rice, great millet, dates, vegetables, and fruits
	Livestock	Asian water buffalo, cattle, sheep, water-buffalo milk, and yogurt
	fisheries	Shrimp, yellowfin seabream, khishni, Malabar trevally Dorab
	Aquaculture	Cyprinids, grass carp, shellfish, Fourfinger threadfin
	Wild foods	Waterfowl (coot, teal)
Freshwater		Freshwater for drinking, cleaning, cooling, and transportation
Fibre and Fuel	Fibre	Reeds for housing and mats; date palm wood
	Fuels	Crude oil, cattle dung
Biochemical		Potential use of wetland flora extracts, native herbs for pharmaceuticals and pest control
Genetic materials		Resistance and breeding of native plant and animal species
Service Regulation- advantages derived from marsh ecosystem regulation of natural process processes		
Climate Regulation		Moderating rainfall patterns and preventing desertification and dust storms
Water Treatment	Hydrological flows	Tidal flow and water retention from the Euphrates/Tigris upstream; replenishment of the alluvium aquifer is facilitated by permeable clay and silt.
	Water filtration treatment of waste	Removing harmful pollutants from water by capturing metals and organic materials. Organic waste is reduced in harmfulness by soil bacteria.

Erosion regulation		Reeds, grasses, and estuarine vegetation retain soils and sediments
Protection function		Estuaries protect coastal areas from flows, hurricanes, and river/stream coastal erosion
Natural hazard regulation		Marsh areas naturally absorb seasonal floods and tidal surges; moderation of drought at a local scale
Pollination		Habitat for bees and birds, the key pollinators of economically important crops
Cultural services-non-material benefits that Iraqis obtain from wetland ecosystems		
Ethical values		Customs, oral traditions, knowledge, and rituals attached to the use of the land and rivers; Iraqi tangible and intangible cultural heritage
Recreation & Tourism		Canoeing, bird and wildlife watching, recreational fishing, archaeological site visitation, Arab Marsh communities culture and values
Aesthetics		Globally significant natural beauty.
Education		Science, cultural awareness, specialized vocational training, public awareness of national, regional, and global importance
Supporting services-underlying processes that are necessary for the production of all other ecosystems services		
Soil formation		Retention of sediment, recycling and supporting the health of the ecosystems
Nutrient cycling		Returning phosphorus, sulphur and nitrogen to Iraq's atmosphere, water, soils

(**Source:** UNEP 2001; Al-Lami and et al,2014)

4-2.Social

The population of the marshes in the study area is more than 161,1209, according to official estimates. The Marsh people created a distinctive style of life that bonded them closely to their surroundings. Resource management in the past has included (reeds, fish, waterfowl, bird eggs, and rice). These management techniques improved the diversity of microhabitats and preserved different patch dynamics (Darvishi and Vatankhah,2018), (Abdi,2016). categorized the residents' occupations as farmers, reed gatherers, and buffalo breeders (82% of families worked in fishing, 49% in hunting, 66% in farming, 58% in crop cultivation for food, 75% in using reeds, 78% in keeping animals or birds, and 2% in pay labor) (Al-Mudaffar and et al,2016). See table (1) has a supplemental sociological statement on the marshes in Iraq, namely the research region.

2- Divergent Dynamics in Land Cover the Hammar Marsh: The Hammar Marsh in 2002 has a diverse ecosystem, as shown in figure (4) and Tables

(2). The area of barren land makes up the greatest portion of the study area, accounting for (2245 km2) 53.1% of the total area covered by land, which explains the size of desertified areas there. The study area's high proportion of salty soils, which is (1198) (28.2%), is caused by a shortage of water, high temperatures, and a high rate of evaporation. By observing figure (4), it is clear that the area of water is 135 km2 with a percentage of (3.2 %). The marsh area is 651 km and the percentage is15.4 %.

Figure (4). Changes in Land Cover (Water, Marshes, Salty Soil, and Barren Land) for Hammar Marsh Classification in 2002

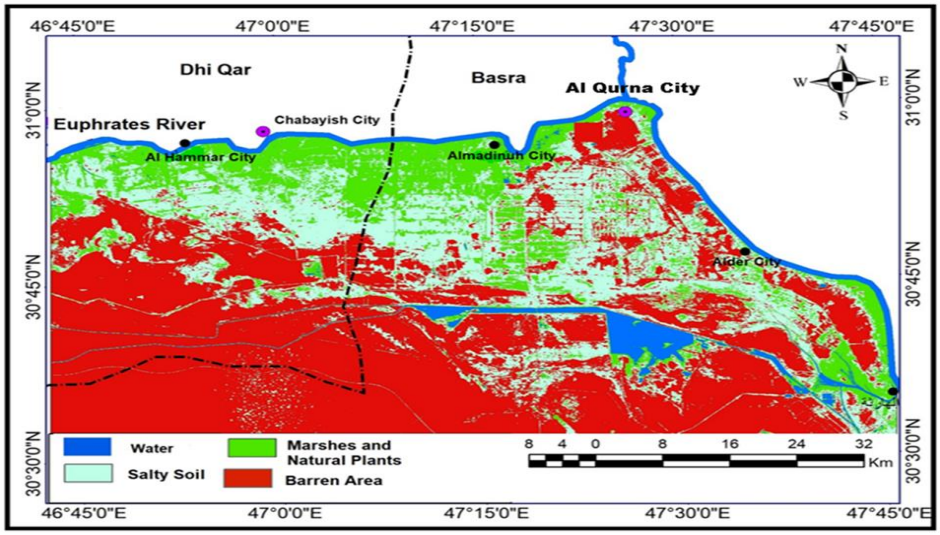


Table 2 and Figure (5) indicate that the Hammar Marsh has witnessed the highest percentage of water cover(673 km)and (15.9) and the lowest percentage of marshes and natural plants compared to 2002, where the percentage of it in 2012 reached (417) and (9.9%) which indicates that the study area witnessed the lowest percentage of marshes and natural plants. While the area of salty lands occupies (806 km) and (19.1%) of the area, and barren land was (2332 km) and (55.2 %).

Figure (5): Changes in Land Cover (Water, Marshes, Salty Soil and Barren Land) for Hammar Marsh Classification in 2012

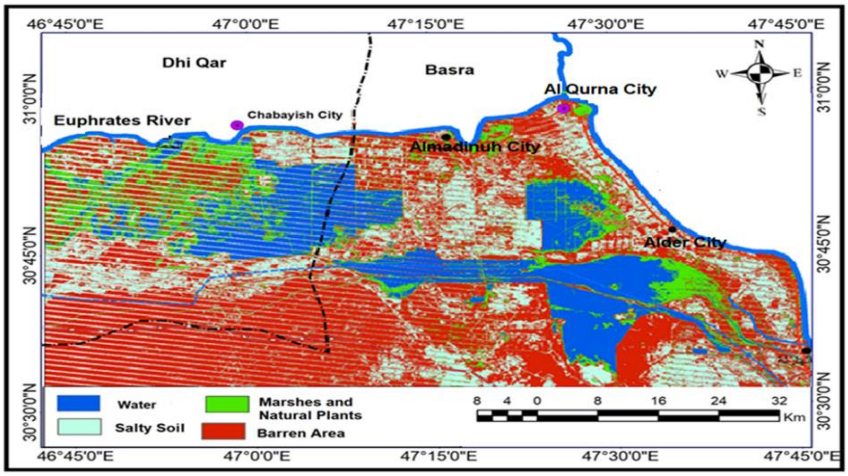


Figure (6) and Table 2 demonstrate the rich ecology of the Hammar Marsh in 2022.

The largest component of the research region is made up of barren land, which comprises (1489 km2) 35.2 % of the total area covered by land and a high percentage of salty soils (24.6 %) area (1038 km). Figure (6) makes it obvious that the water covered 802 km2 and had a proportion of 19.0 %. The marsh area is 899 km and the proportion is 21.3 %.

Figure (6).Changes in Land Cover (Water, Marshes, Salty Soil and Barren Land) for Hammar Marsh Classification in 2022

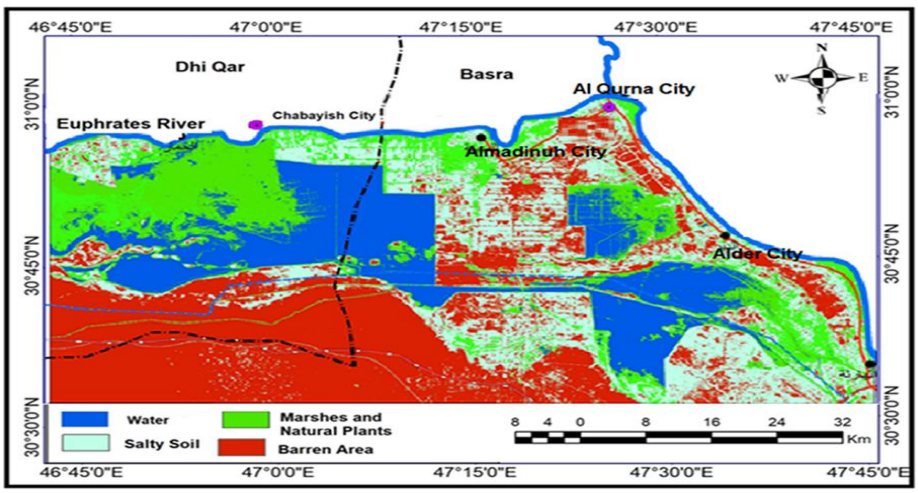


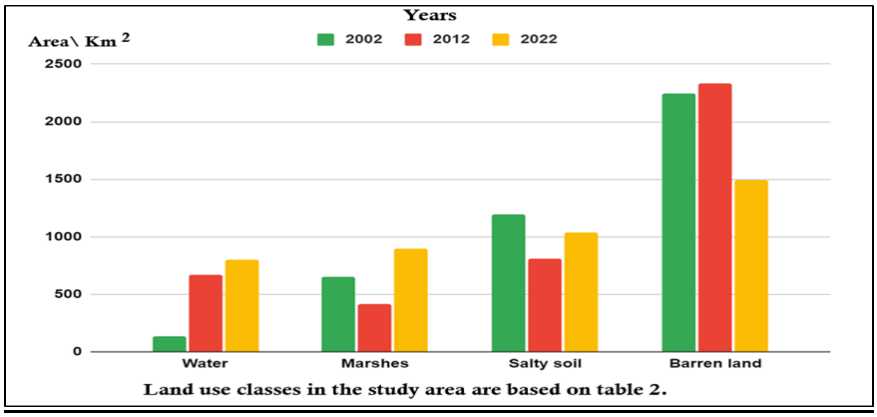
Table (2): Change in the Hammar Marsh Land Cover between 2002, 2012, and 2022 in km2 (%)

	Years	Water		Marshes		Salty Soil		Barren Land	
		km²	%	km²	%	km²	%	km²	%
1	2002	135	3.2	651	15.4	1198	28.3	2245	53.1
2	2012	673	15.9	417	9.9	806	19.1	2332	55.2
3	2022	802	19.0	899	21.3	1038	24.6	1489	35.2

From the short review above, key findings emerge: the changes in Hammar marsh's water and marsh cover between 2002 and 2012 and 2022 are most obvious in the dominant cover types (water, marshes, salty soil, and barren land) as in the figure (7). We demonstrated that the amount of water had obviously increased: (135 km and 3.2% in 2002, 673 km and 15.9 % in 2012, and 802 km and 19.0%). The increase in water level occurred during the reflooding of drained marshes after 2008. Which had been drained, the marshes were deliberately drained by Saddam's regime in order to defeat the revolutionaries who sought refuge in the marshes between (1991 t0 2003) (Richardson and Hussain2006; Haghi and et al,2021; Javdani,2012). From the results, the marshes and natural plants cover expanded steadily and noticeably in 2002, 2012, and 2022 which is (651km and 15.4% in 2002, 417 km 9.9 % in 2012, and 899 km and 21.3% in 2022). There is a natural linkage between the increase in water due to the restoration process after 2008 and the expansion in the area of the marshes and natural plants, where the existence of marshes is connected to the presence of water (Richardson and Hussain,2006).

From the results, the marshes and natural plants cover expanded steadily and noticeably in 2002, 2012, and 2022 which are (651km and 15.4% in 2002, 417 km 9.9 % in 2012, and 899 km and 21.3% in 2022). There is a natural linkage between the increase in water due to the restoration process after 2008 and the expansion in the area of the marshes, where the existence of marshes is connected to the presence of water (Hamdan and et al,2010).This obvious decline in barren land acreage (1198 km and 28.3% in 2002, 806km 19.1 % in 2012, and 1038 km and 24.6 % in 2022) and salty soil (2245 km and 53.1% in 2002, 2332 km 55.2 % in 2012, and 1489 km and 35.2 % in 2022) were balanced by a consistent rise in water cover and marshland regions. Naturally, the soil's saltiness will vanish if it is completely covered by marshes and water see figure (7).

Figure (7): Changes in Land Cover Metrics for (Water, Marshes, Salty Soil and Barren Land) derived 2002, 2012 and 2022 Landsat Images derived Hammar Marsh Classification



5. Discussion and Conclusion

The study explored the effects of globalization on environmental degradation in the Hammar Marsh by using the GIS techniques over the periods 2002, 2012 and 2022. Rapid globalization has had a significant impact on the study area's marsh ecology. Al Hammar marsh is associated with a number of large-scale changes, including social, demographics, economic, and environmental (especially climatic) issues as in :

1. Globalization has an impact on the marshes through climate change, which results in less precipitation and higher temperatures, which causes the marshes to dry out. This, of course, will result in the extinction of biological diversity, including plants, birds, animals, and fish, which provide a living for thousands of people.
2. The marshes area works on carbon sequestration and carbon storage. The dried-up marshlands pose a serious threat. When these marshes are affected or damaged, more than only their ability to store carbon is lost. Additionally, marsh-stored carbon may be released, increasing the amount of greenhouse gasses in the atmosphere (Kayranli and et al, 2010). Unfortunately, the study area, one of the largest marshlands in the world, is facing drought, which will be a significant issue worldwide.
3. The study area is clearly affected by human activity, especially given that the marshes are supplied by water from the Tigris and Euphrates rivers, two international rivers that depend on water from surrounding

countries (Turkey, Syria, and Iran). As a result, the water crisis in Iraq is a global issue.

To reduce greenhouse gasses in general, the marsh habitat must be preserved, which will be supporting globalization. As a result, it must be remembered that protecting the study area might be seen as one of the adoptions of globalization, so it must be considered:

1. Restoring the local economy in the study area. By building factories to produce food and agricultural products, utilizing local natural resources, and promoting sustainable development in the study area, it will become a resource for agriculture and industry, a civilized society, and a cornerstone of globalization.
2. The issue of global warming will be lessened if marshlands are given serious consideration in environmental planning for carbon sequestration and storage. On the other hand, the United Nations and the Iraqi government are responsible for boosting the water quota of the Hammar marsh through activities to re-feed it from (the Tigris and Euphrates rivers).

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References

1. Abdi, A; Shirzad, S (2016). The Role of Geographical Spaces in Powers Competition; Case Study: Iraq. Geopolitics Quarterly, 12(43), pp.54-84. **[In Persian]**
2. Al-Lami, A. A; Salim, M. A; Mohammed, M. K; Al-Zubaidi, A. A; Kareem, S. O; Al-Zaidawi, A. H; Hoffman, F (2014). Ahwar of Southern Iraq: refuge of biodiversity and the relict landscape of the Mesopotamian cities. Nomination Dossier for Inscription of the Property on the World Heritage List. The Republic of Iraq. pp. 112-9.
3. Al-Malahweesh, L.T; Al-Hashemi, A, H (2012). Planning and designing a tourist village in the marshes of southern Iraq. Journal of the planner and development, Volume 17, Issue 1, pp. 217-229.
4. Al-Mudaffar Fawzi, N; Goodwin, K.P; Mahdi, B.A; Stevens, M.L (2016). Effects of Mesopotamian Marsh (Iraq) desiccation on the cultural knowledge and livelihood of Marsh Arab women. Ecosystem Health and Sustainability, 2(3), pp. 1207.
5. Alwash, A; Alwash, S; Cattarossi, A (2004). Iraq's Marshlands-Demise and the Impending Rebirth of an Ecosystem. In Critical Transitions in Water and Environmental Resources Management (pp. 1-9).
6. Al-Nasrawi, A.K; Hamylton, S; Jones, B.G; Kadhim, A (2018). Geoinformatic analysis of vegetation and climate change on intertidal sedimentary landforms in southeastern Australian estuaries from, pp. 19-25.
7. Al-Nasrawi, A.K; Kadhim, A. A; Shortridge, A. M; Jones, B. G (2021). Accounting for DEM error in sea level rise assessment within riverine regions; Case study from the Shatt Al-Arab River Region. Environments, 8(5), pp. 46.
8. Al-Gburi, Hind Fadhil Abdullah, Balsam Salim Al-Tawash, and Hadi Salim Al-Lafta (2017). Environmental assessment of Al-Hammar marsh, southern Iraq. Heliyon, 3(2), pp. 256.
9. Bu, M; Lin, C.T; Zhang, B (2016). Globalization and climate change: new empirical panel data evidence. Journal of Economic Surveys, 30(3), pp. 577-595.
10. Darvishi Setalani, F; Vatankhah, Z (2018). A Study of the Islamic Republic of Iran's Policy toward New Iraq (2003-2015). Geopolitics Quarterly, 13 (48), pp. 1-19. **[In Persian]**
11. Climate. Gov (accessed on 2 October 2022).https://www.climate.gov/media/ 14397.
12. Javdani Moqaddam, M (2012). New Geopolitics of Shiism in the Middle East and Foreign Policy of the Islamic Republic of Iran. Geopolitics Quarterly, 8(26), pp. 29-62. **[In Persian]**
13. Haghi, M; Yousefi Jouybari, M; Shakeri Khoee, E (2021). The Impact of

Identity Crisis in Iraq (post-Saddam) on the Islamic Republic of Iran Foreign Policy Orientation. 17(64), pp. 231-262.
14. Hamdan, M. A; Asada, T; Hassan, F. M; Warner, B. G; Douabul, A; Al-Hilli, M. R; Alwan, A.A (2010). Vegetation response to re-flooding in the Mesopotamian Wetlands, Southern Iraq. Wetlands, 30(2), pp. 177-188.
15. Hussain, N; Mohamed, A. R; Al Noor, S; Mutlak, F; Abed, I; Coad, B (2009). Structure and ecological indices of the fish assemblage of the recently restored Al-Hammar Marsh, southern Iraq. Bio Risk, 3, pp. 173.
16. Kadhim, A. A; Shortridge, A.M (2021). Flooded with error: Handling uncertainty in SRTM for the assessment of sea level rise in the Mississippi River delta. The Professional Geographer, 73(3), pp. 404-412.
17. Kadhim, A.A; Shortridge, A; Al-Nasrawi, A.K (2021). Causes and consequences of environmental degradation along the Shatt Al–Arab River: a coupled human and natural systems (CHANS) perspective. GeoJournal, 86(6), pp. 2709-2722.
18. Kayranli, B; Scholz, M; Mustafa, A; Hedmark, Å (2010). Carbon storage and fluxes within freshwater wetlands: a critical review. Wetlands, 30(1), pp.111-124.
19. McMichael, A. J (2013). Globalization, climate change, and human health. New England Journal of Medicine, 368(14), pp. 1335-1343.
20. Mirheydar, D; Peshgahifard, Z; Gholami, B; Azizi, G; Ranjbarian, A. H (2014). Climate Change and the Geopolitical Challenges of the North Pole. Geopolitics Quarterly, 10(35), pp. 20-55.
21. Richardson, C. J; Hussain, N. A (2006). Restoring the Garden of Eden: an ecological assessment of the marshes of Iraq. BioScience, 56(6), pp. 477-489.
22. Salim, S.M (1970). Al-Jabaish, an anthropological study of the village of Ahwar Iraq, 2nd edition, Al-Ani Press, Baghdad, pp. 315.
23. Turner, B.S (2009). Theories of globalization: Issues and origins. In The Routledge, international handbook of globalization studies (pp. 27-46). Routledge.
24. UNEP (2001). Partow, H.The Mesopotamian Marshlands: Demise of an Ecosystem Early Warning and Assessment, Technical Report, UNEP/DEWA/TR.01-3 Rev. 1. , pp.11-203.