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Studying the Possibility of Moving Towards a Blue Economy to Achieve Environmental and Economic Sustainability in Iraq

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ABSTRACT
Due to the many economic crises that emerged as a result of the traditional patterns adopted in the field of production and consumption that lack the necessary environmental and economic sustainability, which led to the depletion of the earth's natural resources, the need has arisen to move towards the exploitation of marine resources that provide important possibilities that would stimulate economic growth and achieve Social welfare, while ensuring the continuity of resources and environmental protection for the oil-producing countries, and this led to the emergence of the blue economy. It can also contribute as a new path and act in the use of coastal tourism and marine activities in the Iraqi economy, as Iraq is one of the countries that owns many water resources, which represent one of the alternatives for sustainable development.

KEYWORDS: Blue Economy, Sustainable development, Water Resources and Bodies, Oil and coastal countries.

INTRODUCTION

The global economic crises and the inability of the traditional economy to solve them and meet the growing needs prompted attention to finding paths for sustainable development to reduce poverty and increase well-being. The emergence of the concept of the blue economy as a complementary concept to economic growth by exploiting natural resources in the oceans and seas efficiently with the exploitation of fisheries, marine and mining in order to achieve the best return enabled from these economic activities, since economic activity in them depends on rapidly expanding marine industries along with large industries such as marine and coastal tourism, oil and marine gas, shipbuilding and marine equipment, and thus the international community has moved in recent years to enact laws and regulations and conclude agreements between countries, especially coastal ones, to enhance the role of the blue economy as an alternative to the oil resource in developing countries, whereas environmental groups and international institutions have been demanding to dispense with traditional economic development that relies on fossil fuels and move to a green, less carbon-based growth model, so that Iraq can activate the coastal tourism and fishing sector in the future, it must be a future outlook that enables us to develop a new and effective strategy and path (such as the strategy of the blue economy) and thus we tried in this study to find out whether it is possible to direct Iraq towards maximizing the benefit and benefit from the blue economy due to its marine resources and large water bodies that can be exploited. From this standpoint, the following problem has been developed: What is the blue economy? Is it a new path for new global growth in oil-coastal developing countries and Iraq?

1.2 The Importance of the Study

The research derives its importance from knowing the extent to which the blue economy can succeed as a strategy for the sustainable development of the coastal tourism sector, fishing and fisheries in Iraq through activating and developing coastal tourism activity while valuing the marine wealth that Iraq abounds in. It can become an important economic alternative that will contribute to income growth in addition to its advantages at the environmental, cultural and social levels.

1.3 The Problem of the Study

The problem of the research lies in the obstacles that will face the transition to a blue economy in a country like Iraq, as it will adhere to many fundamental changes in the framework of policies, organization, management, governance and the development of maritime economic functions.

1.4 The Hypothesis of the Study

The research is based on the hypothesis that the blue economy experience is a new and different experience according to the local conditions of the countries that can contribute to supporting the path of sustainable development in Iraq.

1.5 The Aims of the Study

I. Shedding light on the concept of the blue economy and its importance and knowing its main pillars to draw new paths to achieve sustainable development using water resources.
II. Reaching a number of recommendations that can contribute to paying attention to the concept of the blue economy as a catalyst for the development of investment and innovation in support of food security.
III. Knowing the role of the blue economy in promoting coastal tourism and sustainable management in the seas and oceans to generate fish and water wealth without depleting it in Iraq.

2. Conceptual Framework of the Blue Economy

The origin of the word blue economy goes back to the Belgian economist Gotter Pauli, who wrote his book entitled "The Blue Economy Ten Years,

Invention and Discovery, and One Hundred Million Working Groups" published in 2010, a businessman who ended his fortune in the operations of the blue economy. It emphasizes the importance of sustainable management of water resources based on the premise that healthy ocean ecosystems are more productive and are its duty to sustain economies produced on the oceans, and the blue economy includes many things, including fishing, mobility for passengers and goods. Extraction of oil and gas from the deep oceans and seas [1]. There are many definitions of the blue economy that do not correspond significantly to the traditional definitions of economics that focus on production and specialization, but rather correspond to the concept of environmental economics in which the human economy is propelled. Thus, a series of links between ecosystems and human economies are formed, so the blue economy focuses on the interdependence between sustainability, food security and economic development. Among these definitions is what we defined as local (Economist), specifically in 2015. It has achieved by entering the blue economy: (growth, opportunity and a sustainable ocean economy) [2] while the World Bank has defined it as (the sustainable use of ocean resources to achieve economic growth, improve livelihoods and jobs, while preserving the ocean ecosystem) [3]. FAO defined it as (the economy based on marine activities in water bodies of oceans, seas, lakes and bays, and the investment of their resources in order to achieve the best possible return from the ability of economic activities, such as fishing, maritime mobility, logistics, tourism and mining) [4]. The blue economy is also defined as (marine economic development that leads to improving people's lives on the one hand, and contributes to the preservation and development of the environment on the other hand) [5] and based on the above, it must be noted the difference between the blue economy and the green economy. Based on the above, it must be noted the difference between the blue economy and the green economy, although the blue economy was born from the womb of the green economy, so as not to confuse the two concepts, the green economy is to reduce the percentage of carbon and increase the efficiency of resources and workforce, as it makes high investments to clean the environment with low carbon and low waste between them. The blue economy is the principles of sustainable management of natural resources and supports efficient and clean production systems without harming the environment. While giving an advantage to organizations in conjunction with a clean environment effective use of work [6]. Based on the above, it can be said that the blue economy is a new and effective strategy used to sustain water resources and transform them into services that increase growth rates and well-being.

2.1 The Importance of the Blue Economy.

The importance of the blue economy is evident through the economic activities associated with it and the development it achieves, where the value of the economic activity of the oceans and seas globally ranges between (3-5) trillion dollars and can be detailed as follows [7]:

I. Shipping and Port Facilities,

As about 80% of the volume of global trade passes through the seas and global ports.

II. Fisheries and Aquaculture

Between 10 and 12 percent of the world's population depends on fisheries and aquaculture for gain, and the potential economic gains from restoring fish stocks are estimated at $50 billion annually.

III. Beach or Coastal Tourism,

Which is linked to global coastal activities and is concentrated in coastal areas, and has reached a remarkable growth after 2011.

IV. Energy

More than 30% of the oil and gas produced globally is used from the sea and the oceans can provide a renewable source of energy through the use of modern technology to generate energy from wind and waves, contributing to the generation of energy estimated at 175 megawatts by 2035.

V. Marine Biotechnology

Marine biotechnology products contribute an estimated $208 billion to global markets. Offshore mining activities are available on the seabed and ocean floor important minerals used in the renewable energy technology industry.

The sectors concerned with the blue economy are directly or indirectly linked to the resources

2.2 The Sectors Concerned with the Blue Economy

of the oceans and seas, and these sectors are divided into donor sectors that already exist, but they lack new strategies that keep pace with the changes taking place in the field of new maritime investments and emerging sectors due to the application of the blue Economy Strategies. And its role in improving existing sectors and finding many alternatives to enhance services in the field of food or welfare and others, these services would increase growth rates and provide new sources of nutrition, this in turn made the international community fully convinced of the importance of the blue economy and its role in its various forms, whether as an economy that solves the global water crisis or the development and development of the marine and coastal economy.

2.3 Blue Economy as an Engine of Growth

The blue economy has been known globally as a real engine of social and economic development, and in this regard, the seas and oceans, as an engine of economic growth, are one of the main factors that determine the strength of countries and the level of their development. As the seas and oceans provide (54 million jobs, and create a total added value of about 500 billion euros annually, and in this regard the engines of growth are divided into two categories according to their nature, either as productive activities or commercial or non-commercial activities, as we will explain as follows:

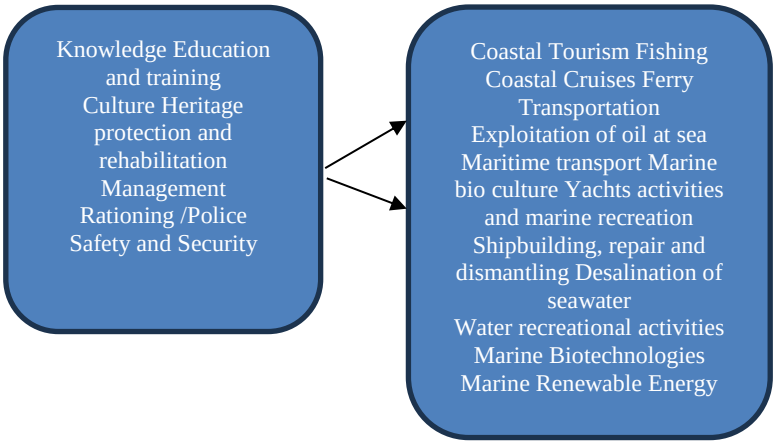


Figure 1: Growth Drivers in the Blue Economy (8)

2.4 The Role of the Blue Economy in Achieving Sustainable Development

Sustainable use of oceans, seas and marine resources for sustainable development" is one of the goals adopted by the United Nations for Sustainable Development, which indicates that by 2030 the economic returns of island and developing countries as well as least developed countries will be increased. Through the sustainable management of marine resources such as fisheries, aquaculture, marine and coastal tourism, marine and coastal tourism, marine tourism has environmental, economic and social dimensions through the sustainable use of marine resources.

The blue economy model provides scope for reinvestment in human development, diversification of sources of income, creation of new jobs, poverty reduction and alleviation of national debt burdens hindering development. It also improves human well-being and achieves social justice, while significantly reducing environmental and environmental risks and ecological scarcity. It endorses the same principles of low carbon (green economy), resource efficiency, and improving the economic and social returns of coastal developing and least developed countries through the development of their marine environment such as fisheries and bio prospecting. transport, shipping, oil extraction, minerals, marine and coastal tourism and other marine resources. [9] This strategy also allows for international and national equity for developing countries to generate greater revenues from marine resources and reinvest them in populations. Contribute to the eradication of poverty and hunger,

which are important and essential goals to achieve sustainable development.

2.5 Water Resources in Iraq

Due to the large number of water resources in Iraq, it has been divided into three sections: rain, snow, surface water (rivers, streams and lakes) and groundwater, and we will come to clarify each of them briefly as follows [10]:

i. Rain and Snow

Rainfall represents the main resource on which agriculture depends in Iraq, which is responsible for supplying groundwater and directly affects the volume of water discharge in the country's rivers, and the rainfall increases over the slopes of the mountains located in the north and northeast of Iraq and the amount decreases away from the mountains. The rain system is characterized by irregularity, seasonality and rarity, and the amount of rain in Iraq ranges between 50 and 100 mm, and may sometimes rise to 120 mm [11] either snow, the Tigris and Euphrates basin and its tributaries receive a quantity of precipitation in the form of snow in cases where the temperature drops below zero degrees Celsius, Snow provides groundwater and surface water with a large part of its water, and the importance of snow increases with rain, as snow remains for two months over the mountains at an altitude of (1000) m, because the height factor has a major role in the fall of snow. Thus, the accumulated snow is a source that feeds both groundwater (springs and wells) and surface water (rivers and lakes)[12]

ii. Water Surface

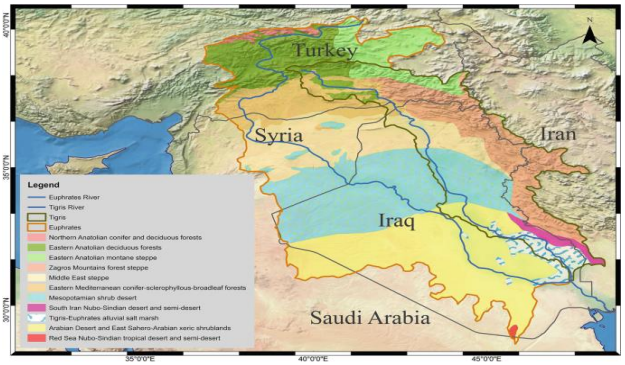
It is one of the most important water resources of the country and is represented by the water that flows in the Tigris, Euphrates and Shatt al-Arab rivers and their various tributaries and is largely related to the amount of rain and snow that falls in the main river basins (Tigris, Euphrates and their tributaries). It is also linked to the operating policies of dams and reservoirs established in the countries of the upper rivers common in Turkey, Syria and Iran [13], and the amount of water in the river basins varies according to the wet and dry years. The Euphrates River, which is one of the important rivers in the Arab world, is considered the second longest Arab river after the Nile River, and has a great economic and political weight, as the Euphrates River originates from the eastern sections in Turkey and the upper sources can be determined between about 37-43 degrees east longitude and between latitudes 5,38- 40 degrees north. The area between these lines includes two high mountain ranges confined between them by deep valleys, the eastern Taurus and the outer Taurus range. It consists of several sources located in eastern Turkey, the most important of which are: Furat So, whose sources are located in Mount Dumlu running in the plain of Erzurum - Erzincan and its length is 510 km and Murad Su: whose sources are located in Mount Sanji runs in the Armenian plateau and meets Furat Su near the village of Kharbout and is 600 km long, forming the Euphrates River, and the length of the Euphrates River from the meeting point of its tributaries Murad Su and Euphrates Su until its estuary in the Shatt al-Arab at Karma on 2330 km of which (1200 km) within the Iraqi borders. The remaining part of the Euphrates River (1100 km) is located outside the borders of Iraq (455 km) Turkey (and 675 km) in Syria and the area of the Euphrates basin 289,300 km [14]. As for the Tigris, the Tigris River is the most important source of water in Iraq, due to the magnitude of its annual revenue, as well as the fact that 5.33% of its annual revenue comes from inside Iraq, which is about 16 billion annually.

The Tigris River originates from the highlands located in southeastern Turkey, and meets the Euphrates River at the Karma Ali area, north of the city of Basra, and it consists of a union of multiple tributaries, the largest of which is (Tigris Su), which originates from the highlands located south of the basin of the (Murad Su) River passing through Lake Koljak .Then it heads towards the east after passing through Diyarbakir and during its flow towards the east it meets the Tigris River Su from its left side, the third main tributary is [15]:

1. Batan Su, which originates from the Hikari Mountains,
2. Kazarn Jay, which also originates from the Hikari Mountains.
3. (3) As for the third tributary, it originates from the mountains located in the southern

parts of Lake Van, heading towards the south and southeast until it meets the Tigris River at the Iraqi-Turkish border, and enters the Iraqi border at Fish Khabur, and its course is in a rugged terrain. The length of the Tigris River from its source in Turkey to its estuary (1718 km), of which (1418 km) 82% of its total length inside Iraqi territory. The total area of the basin is (28900 km2) and the area of the basin in Iraq is 2.64%. The map shows Figure (2) of the Tigris and Euphrates rivers from source to estuary.

Map Geographical Location of Iraq River Basins [16]



The Shatt al-Arab is called the river extending between Quran and the Gulf of Basra, southeast of Few, and the Shatt al-Arab consists of the confluence of the Tigris and Euphrates rivers at Karma Ali and the length between the vine and the mouth in the Arabian Gulf (110 km) and is exposed at the mouth of more than two kilometers. While it narrows at Basra to about one kilometer or less and flows into the Shatt al-Arab to the south of the Iranian city of Muhammara, its only tributary is the Karun River, which flows entirely in Iranian territory, and the Shatt al-Arab is affected by the conditions of tides in the Gulf, which are repeated twice daily. The depth of the Shatt al-Arab is not less than 8 m and ships go to Almakil, and the water carried by the Shatt al-Arab to the Arabian Gulf was estimated at about 82 billion m3 [16].

Finally, the main lakes in Iraq, including: [17]

A. Al-Habbaniyah Lake, which is located a lake on the right bank of the Euphrates River in the southeast of the city of Ramadi and is (25 km) long and exposed (12 km) and has a capacity when full in the flood season about (2.3 billion m3). It is linked to Lake Al-Habbaniyah depression Abi Debs (Lake Al-Razzaza) located to the south of the lake by about (70 km) by a table called the table (Takhliat Al-majarra), which can accommodate an estimated amount of about 21 billion m3) and can be used for irrigation purposes in the future.

B. Lake Sawa Lake is located (25 km) to the southwest of the city of Samawah, the center of Muthanna Governorate, the area of the lake (12.5) km, length (4.75 km), width (75.1 km) and depth between (5.2 – 5.5 m).

C. Dukan Lake The lake extends for a distance of (40 km) from the front of the dam to the site of Al-Darband and the total storage capacity is (8.6 billion m3) and the surface area of the reservoir at a level of (511 m) about (270 km 2) and the project aims to achieve flood control and equip agricultural land with irrigation water and achieve fish wealth, picnic and tourism.

D. Al-Razaza Lake is located (70km) south of Al-Habbaniyah Lake and(15km) west of the city of Karbala, and itis located east of the city of Ain Al-Tamr with a length of (60 km) and a width of (30km).

2.6 Marshes

It covers large areas that vary in area from one season to another. It is at its capacity in the flood season in the spring and in early summer and the lowest in the drought season in late summer and autumn. It extends in the governorates of Basra, Maysan and Dhi Qar, including:

i. Hawiza marsh: Hawiza moor is a water body shared between Iraq and Iran in terms of location and sources of nutrition. Hawiza marsh includes many water bodies, the most prominent of which are Sanaf, Umm al-Naj, Abu Athba, Al-Azim, Al-Safi, Al-Khabta, Al-

Doub, and Al-Jikka. Its average area is about (2400) km^2 .

ii. Central marshes: The central marshes are water bodies connected between the southern governorates (Basra, Dhi Qar, Maysan) and include many secondary marshes, the most prominent of which are (Abi Zirk marsh) in Shatra and (the marshes of Chabaish) Aysar Euphrates and the marshes (Odeh, Zajri and Sahin). It is located within Maymouna district and Al-Adl and Al-Salem sub districts, and it represents the northern part of the marshes. The average area of the marshes is about 4,000 km2.

iii. Al-Hammar marsh: It is considered one of the most important marshes, and it extends from Kerma Ali, which is located 20 kilometers north of Basra, to Suq al-Shuyukh, Albu Salih, and Shatra around the end of the shovel (19)km long and (25-30)km wide, and its maximum surface area (3000)km^2

iv. Water eyes and springs: Water originating from the slopes of mountains and highlands. Its distribution depends on the amount of rain and snow water accumulated, the slope of rock layers and the degree of their porosity, and on the erosion factors that affected the bulldozing of the upper layers to the level of groundwater aquifers.

v. Cisterns: They are the oldest means used in northern Iraq to exploit groundwater and were spread in the governorates of Sulaymaniyah, Erbil and Nineveh. The work of cisterns requires drilling a well to the groundwater level in a high ground, and each well is far from the other (15-20 m). The depth of the cistern is (5.1m) and its width is about half a meter.

3. Proposing a Strategy for the Management of the Blue Economy in Iraq

The experiences of countries that have adopted the blue economy as a new path to achieve sustainable development, such as the Mediterranean countries, Bangladesh and others, can be drawn upon and a strategy to support the path of sustainable economic development in Iraq by making the aquatic ecosystem an engine for it.

3.1 Potential Industries with High Economic Potential

This section includes many activities that support the course of the strategy, the most important of which is fish resources, as fisheries and aquatic plants are one of the fastest growing food sectors in the world. As well as fish farming projects, which are one of the most important projects supporting fish wealth and adopted by Iraq, Iraq, as we explained earlier, in addition to coastal and marine tourism, which is a contributing factor to promote economic development in Iraq, especially in northern Iraq. Marine biodiversity research and the introduction of modern technology also help to develop new medical preparations or industrial enzymes that are able to withstand harsh conditions and therefore have a high economic value. As a result, all of this will contribute in the long term to the relative elimination of unemployment. By creating job opportunities with professional skills and therefore is one of the most important sections of the strategy followed for the blue economy.

3.2 Cognitive Awareness

The community culture of the importance of water resources and how to preserve them is one of the most important subcomponents of this section so that we can use rivers and multiple water bodies economically more efficiently and sustainably. In addition to maritime planning, which reduces conflict between different sectors and encourages investment through predictability, transparency and rules that protect the environment through the discovery of impacts and opportunities, in addition to maritime surveillance that achieves coastal security.

3.3 Ocean Governance

Sound maritime rules mean an appropriate environment for managing the maritime strategy of the blue economy in Iraq, in addition to seeking to introduce advanced technology to appreciate its

work. Develop a sustainable and comprehensive action plan in addition to the presence of skilled workers and professional staff. In environmental and marine affairs, it will promote the development of the marine economy and thus the success of the strategy for the blue economy. Thus, we can note that there is direct and indirect interdependence and impact between the components of the three sections of the strategy above, which complement each other in order to develop an appropriate framework in the management of the blue economy.

Conclusions

i. The inability of the traditional economy to meet the requirements of sustainable economic development has led to the search for a new path, the blue economy.
ii. The blue economy is an economy based on the optimal exploitation of water resources.
iii. There are many countries that have worked to implement the blue economy strategy to ensure an economic resource that can be used to achieve sustainable development.
iv. The strategy of the blue economy requires working to develop the means to benefit from the components and resources of the water countries.
v. The Iraqi economy is characterized by its geographical location with many water resources that are a strong basis for establishing a successful development path within the strategy of the blue economy.

Recommendations

1- Each country must find the best ways to achieve a balance between sustainability and economic growth to achieve the best use of water resources, and thus obtain a sustainable blue economy.
2- Iraq needs to develop its capacity to discover and extract resources as well as to expand the comprehensive technical knowledge that is used to explore marine resources effectively.
3- Iraq should benefit from the experiences of other countries applying the blue economy through the development of technology and the exchange of experiences to increase the ability to innovate. This is done in cooperation with these countries to develop the maritime sector in order to continue to pursue blue diplomacy.
4- Holding seminars and economic studies that take it upon themselves to solve the obstacles that may prevent the adoption of this blue economy strategy on the one hand, and on the other hand, expanding experiences and knowledge and finding ways to support all components of the blue economy such as fisheries and coastal tourism.

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