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## **Environmental changes in arab cities: multiple factors and varied implications**

### **Case study: annaba, alexandria, aqaba, and basra.**

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### **Abstract:**

*Wide-ranging environmental changes have emerged in Arab cities due to excessive and irrational consumption of natural resources in response to economic, social, and increasing urban development trends. Urban policies adopted in each city have exacerbated environmental degradation, evident through water scarcity, energy shortages, limited arable land, declining biodiversity, and food security issues. These changes have been accompanied by shifts in lifestyles and a deterioration in their quality, intensifying in the face of climate change.*

*In this context, this research aims to diagnose the various factors influencing environmental changes in several Arab cities from a geographic perspective, with a focus on specific cities: Annaba (Algeria), Alexandria (Egypt), Aqaba (Jordan), and Basra (Iraq). The goal is to uncover the resulting implications and analyze the disparities in urban planning policies and environmental empowerment measures.*

**Keywords:** *Environmental changes, factors, implications, geographic perspective, Arab cities.*

### **Introduction:**

Many researchers agree that the city is a sensitive ecosystem and an urban area where various social, economic, cultural, and environmental factors intersect as a result of the convergence of industrial, service, and population concentration components (He et al., 2022). This has made cities significant contributors to environmental degradation due to their continuous production of urban waste of various types (Gutberlet, 2017), traffic congestion, sewage problems, and the emergence of pollution in various urban areas.

All imbalances in environmental system equilibrium result in environmental changes, which have implications for the health of populations, various elements of the urban environmental system, and the overall quality of life (Chu, Karr, 2017). This necessitates the need to consider how to formulate appropriate solutions to the environmental problems faced by most cities in the world, through conceptualizing models that can enhance urban sustainability and mitigate and control environmental degradation.

Coastal cities are particularly susceptible to environmental change, as they have complex environmental relationships with their shores and the sea. They provide easy

access as maritime gateways for significant economic activities (industry, trade, exchanges, fishing, etc.). Additionally, they host stunning natural landscapes, offering tourism and recreational opportunities. Coastal cities are also vulnerable to natural hazards such as hurricanes, floods, and strong winds, while simultaneously accommodating large population sizes (Mosley, 2014).

With the growing rates of urbanization, coastal cities have faced multiple environmental problems, particularly in terms of the degradation of their environmental systems under the influence of pollution that has directly impacted the sustainability of urban environmental systems (Jin et al., 2018).

Arab coastal cities face numerous challenges, suffering from increasing pressures on their environmental systems due to uncontrolled and irrational consumption of various non-renewable resources (water, energy resources, agricultural land, etc.). This has had repercussions on their urban economies, which are no longer able to adapt to modern developments in terms of their capacity to accommodate young labor forces. Meanwhile, many gains have been made, especially in improving healthcare, resulting in increased life expectancy and longer lifespans. Additionally, there has been a rise in literacy rates among the elderly, a commitment to women's participation, and the enhancement of their economic and social roles. Moreover, efforts have been made in exploring energy resources and alternative energy sources (UNHABITAT, 1995), along with the use of modern technologies and advancements, in the backdrop of continued growth in urbanization rates.

This has led Arab coastal cities to face multiple challenges, which extend beyond demographic changes resulting from natural population growth and incoming migration (Fargues, 2017). These challenges delve deep into investments in economic, political, social, and cultural aspects. This allows for broad opportunities to enhance urban living quality and improve environmental well-being in coastal cities. It grants individuals the right to aspire for their urban environment to meet their ambitions for living, working, commuting, and leisure (Verdeil, Nasr, 2017).

Each of the cities: Annaba (Algeria), Alexandria (Egypt), Aqaba (Jordan), and Basra (Iraq) presents a model for understanding and grasping the reality of environmental changes in terms of their factors and aspects. These cities vary in geographical characteristics and planning policies aimed at addressing the various problems arising from these environmental changes and achieving urban sustainability.

### **Research Objectives:**

The research aims to achieve the following objectives:

- Diagnose the major factors causing environmental changes in the studied Arab cities.
- Analyze the role of different planning policies aimed at enhancing community participation to achieve sustainable urban governance.
- Clarify the deterioration in the quality of life in the studied Arab cities and the variations in its types.

### **Research Methodology:**

The research aims to elucidate the set of factors influencing environmental changes in the studied Arab cities, utilizing a descriptive-analytical methodology. This approach allows for the highlighting of various trends in planning policies aimed at promoting community participation to achieve urban sustainability. Additionally, a comparative methodology was employed to highlight all the differences between the cities.

Furthermore, a range of sources and references including books, articles, and studies were consulted. These sources aided in gathering a wealth of data and information related to the research topic and the geography of the studied cities. This was essential for identifying the fundamental concepts of the research, diagnosing environmental change factors, and understanding environmental capacities in each city. Specific methodological techniques were employed to obtain clear and precise results.

### **Distinctive Geographic Features Influenced by Environmental Changes:**

Annaba is located on the eastern coast of Algeria, approximately 600 km east of the capital, Algiers. It lies at the intersection of longitude  $7.77^{\circ}$  east and latitude  $36.90^{\circ}$  north. The urban fabric extends from the coast to the eastern foothills of the Edough Mountains within the coastal plain of Annaba. Several valleys traverse its territory, including the “El Dahab” river and “Kouba” river, which have been modified and turned into underground channels during urban expansion (Benghadbane, 2017).

To the southeast, it is crossed by the Seybouse River, the second-largest river in Algeria, which flows into the Mediterranean Sea. Annaba is the fourth-largest Algerian city in terms of population size, with approximately 450,000 inhabitants as of 2017, following Algiers, Oran, and Constantine (Benghadbane, 2017).

Alexandria is situated on the Mediterranean coast at the intersection of longitude  $17.54^{\circ}$  east and latitude  $34.6^{\circ}$  north. It extends longitudinally along a coastal strip that stretches for 55 km northwest of the Nile Delta, starting from “Abu Qir” in the east and ending at “Sidi Kerir” in the west. The city is located on a flat plain at an elevation of 1 meter above sea level.

Alexandria is the second-largest city in Egypt, following Cairo, with a population of approximately 4,110,985 people as of 2022. It is characterized by a significant industrial conglomerate, hosting around 40% of the national industries. Additionally, it serves as the primary summer resort on the Mediterranean Sea (Hussein Ali, 2015).

Regarding Aqaba, it is located in the southernmost part of Jordan, at longitude  $35^{\circ}$  east and latitude  $29.31^{\circ}$  north, approximately 330 km away from the capital “Amman”, and 80 km from “Petra”. Its population was around 148,398 people in 2015 (Hashemite Kingdom of Jordan, 2016), making it the fifth-largest city in the Hashemite Kingdom of Jordan.

Aqaba occupies a strategic location on the Red Sea, at the intersection of routes connecting Asia, Africa, and Europe. It gained increasing importance through its port, which played a crucial role after the establishment of the Hashemite Kingdom of Jordan in 1946, particularly in transit trade to Iraq and northern Saudi Arabia, as well as in oil transportation.

The city boasts diverse tourist areas, significant industrial facilities, and free trade zones. It also serves as an important administrative center in the southernmost region of Jordan, especially with the presence of King Hussein International Airport and the Port of Aqaba (Al Fanatseh, 2022).

As for Basra, it is situated in the southeastern region of Iraq, between longitudes  $46.60^{\circ}$  and  $48.60^{\circ}$  east and latitudes  $29.13^{\circ}$  and  $31.29^{\circ}$  (Jabbar, Zhou, 2013). It is located on the western bank of the “Shatt al-Arab” River, formed by the confluence of the “Tigris” and “Euphrates” rivers, which flows into the Arabian Gulf. Basra is approximately 110 km away from this estuary and 449 km from the capital

“Baghdad”. It is bordered by several cities, including “Qurna”, “Nabeel”, “Abu al-Khasib”, “Al-Dair”, and “Faw” (Map: 01).

Its strategic geographic location overlooking the “Shatt al-Arab” and the Arabian Gulf has earned it the status of Iraq's main port, despite the absence of a deep-water outlet. The handling of deep-water traffic is carried out at “Umm Qasr” Port. There is ongoing construction of the “Grand Faw Port” on the coast of Basra, which is considered a national project for Iraq and is expected to become one of the largest ports in the world and the largest in the Middle East.

Basra is one of the major cities in southern Iraq, with an estimated population of around 1,193,071 people in 2014 (Abood, Jasim, 2016).

The city of Basra boasts vast natural wealth, foremost among them being oil reserves (Rumaila Field, Majnoon Field, Ibn Umar Field, Zubair Field, and more). Additionally, it has extensive arable land and abundant water resources. Basra also possesses a significant industrial fabric, particularly in petrochemicals, fertilizer production, iron and steel, and paper manufacturing. This is a result of its availability of a skilled and trained workforce.

Moreover, Basra is considered an important tourist destination, as it offers various unique attractions, including the marshes, Sinbad Island, Basra Civilization Museum, National Street, and the new Al-Tannuma Bridge (Italian Bridge). These attractions have the potential to enhance tourism development, given the favorable climatic conditions in the desert environment and the seasonal climate (Jassem Mohammed et al., 2023).



Map (01): Geographic Locations of the Cities: Annaba, Alexandria, Aqaba, and Basra.

Source: [www.mapsofworld.com](http://www.mapsofworld.com), 2018 + Personal processing by the researcher, 2023.

These distinctive geographic characteristics that define the four studied cities (Annaba, Alexandria, Aqaba, and Basra) simultaneously constitute elements and components of their urban environment. This environment undergoes changes influenced by a range of economic and social factors, which, in turn, have repercussions on the quality of life due to the deterioration affecting some components of their urban ecosystem. This necessitates the presence of an urban planning policy that takes into account the roles of various stakeholders to actualize

wise governance and ensure urban sustainability in the face of climate change, which has impacted many Arab coastal cities.

### **Diverse Environmental Changes and Limited Planning Policies:**

The city of Annaba has been a center for clustering, population concentration, and economic focus since it was chosen in the 1970s to be a national hub for the iron, steel, and mining industries. This was achieved through the establishment of the "El-Hadjar-SNS" complex for iron and steel production and the "ASMIDAL" complex for nitrogen and phosphate fertilizers. Additionally, there are four industrial zones and activity areas (Map: 02) within the city, housing numerous industrial units specializing in various industries (Salhi, Dönmez, 2021).



Map (02): Distribution of Industrial Zones and Activity Areas in the city of Annaba.  
Source : Mebirouk et al., 2005, p.07.

Considering the geographical, economic, and social specificities of the city of Annaba, it has become susceptible to multiple and clearly identifiable environmental changes (Salhi, Dönmez, 2021). Annaba is prone to numerous floods, especially during rainy periods, which result in road closures and traffic congestion due to blockages in the drainage systems caused by flash floods coming from the slopes of Mount Edough.

Additionally, the city of Annaba suffers from widespread solid urban waste due to the disruptions in its management system (Medjahed, Brahamia, 2019), despite the availability of collection equipment, especially automated collection trucks in sufficient numbers (Cheniti et al., 2013).

Furthermore, pollution in the city of Annaba has manifested in various forms due to heavy gas emissions (Photo: 01) from the "El Hadjar-SNS" iron and steel industry complex and the "ASMIDAL" complex for the manufacture of nitrogenous and phosphate fertilizers (Dahech, Saihia, 2019). There is also widespread disposal of liquid and solid industrial waste on the banks of important rivers (Oued Mebaoudja, Oued Edhabab, Oued Sibous), which flow directly into the sea, in addition to the disposal of industrial and domestic wastewater in the same manner. This has had

detrimental effects on environmental systems, especially air and water pollution (Kharytonov et al., 2016).



Photo (01): Intense gaseous emissions from the complex “ASMIDAL” of the city of Annaba.

Source: Authors, 2020.

To address these situations and mitigate environmental changes, local authorities in Annaba have implemented urban policies (Kebir, Zeghiche, 2022). These policies involve establishing a network for the supply of drinking water, especially in low-lying areas at risk of flooding. They also include the cleaning and maintenance of riverbeds and rainwater collection and drainage basins (Mebirouk et al., 2005). Furthermore, a project called “Annaba, the Bicycle City” was initiated to promote bicycle use with the aim of preserving the environment and alleviating traffic congestion. This project is led by the “Green Bike” association in the Annaba province, which reflects the role of community participation in urban management and environmental conservation.

The idea behind this project is for each resident of the city to attach a bicycle to a container mounted at the rear of the bicycle. While cycling, individuals can contribute to cleaning the surroundings by collecting items such as cans, bottles, and cups in the container. This initiative has been implemented along the Annaba coast, which serves as the tourist face of the province. It has garnered increasing interest from the city’s youth who take turns motivating volunteers to serve the environment. This project has effectively contributed to cleaning the Annaba coast, especially during the summer season when beaches attract a large number of tourists (<https://annababikecity.com/>).

Additionally, the “Green Bell” project was launched by the “Green Bike” association. This simple project involves a bell that notifies residents of the arrival of a waste collection truck from a certain distance. The bell rings through a mobile phone to alert residents that the truck has arrived, prompting them to dispose of their waste on schedule.

There is also the “Digital Park” project, encouraging residents to purchase shrubs and allocate areas for planting to expand green spaces in the city of Annaba and prioritize urban environmental protection (<https://annababikecity.com/>).

Considering the unique geographical location of Alexandria, which has enabled it to become a hub for industrial, service, and population concentration, excessive pressure has led to environmental changes in the city. These changes are evident in the retreat and loss of beach sands (Al-Ma’moura, Abu Haf, Zahra, Al-Agami) due to unauthorized and illegal sand mining for construction purposes. Additionally, there is a dense accumulation of solid urban waste due to the limited number of collection trucks and their inability to cover the sprawling residential areas (Photo: 02, 03).



Furthermore, the use of traditional and inefficient methods by sanitation workers has contributed to this issue. As a result, various forms of pollution (soil, water, and air) have emerged, leading to the extensive expansion of the industrial fabric and the proliferation of various types of tourist facilities (Elgazzar et al., 2017).



Photo (02): The spread of solid urban waste on a beach in Alexandria.  
Source: Authors, 2023.



Photo (03): Accumulation of urban waste in the “Mansheya” neighborhood in Alexandria.  
Source: Authors, 2023.

It's worth mentioning that the port activity in Alexandria generates waste that affects the delicate balance of sensitive environmental systems, including the coastline, Lake Mariout, and Lake Edku (Frihy et al., 1996).

Alexandria is not immune to the impact of climate change; in fact, it is one of the most vulnerable cities to flooding, with some studies ranking it among the top ten cities at risk of flooding (Fahmy et al., 2022). This vulnerability puts its infrastructure and heritage buildings at risk, especially with changing rainfall patterns, rising sea levels, increased wind speeds, and the significant increase in rainfall volumes. These volumes now exceed the capacity of the sewage network, posing a significant threat and pressure on it.

Addressing these conditions has required the implementation of numerous consecutive urban policies. These policies aim to intervene in historical and heritage buildings to renovate and preserve them (Photo: 04) (El Menshawy et al., 2023). Additionally, they focus on maintaining sewage networks and mobilizing all material

and human resources capable of addressing deficiencies in the field of solid urban waste collection (El-Shazly, 2002). Furthermore, they aim to address environmental imbalances and reduce pollution to create a balanced urban environment conducive to a quality life.



Photo (04): Renewing the historical buildings along the waterfront of the city of Alexandria.

Source: Authors, 2023.

A national climate change strategy for Egypt for the year 2050 has been launched to control all environmental variables. Multiple scientific conferences have been held, drawing from various international experiences to enhance scientific research, knowledge management, technology transfer, and mitigate the effects of climate change (Al-Mailam et al., 2023). One of the most important of these conferences is the “Future of Alexandria and Climate Challenges” conference. Through this conference, the project for the construction of coastal protection works along the Alexandria province coast was launched. These projects aim to protect beaches and areas at risk of sea-level rise. The projects include the marine protection project for Qaitbay Castle, the protection project for the historic corniche wall in the Manshiya area and the Ramleh Station, the construction of wave barriers from Montaza Beach to Miami, the protection project for the Sidi Gaber area in Abu Qir Bay, the protection project for the fish basin wall within the park, and the protection project from Bir Masoud to El Moharrosa. Additionally, a series of submerged barriers were installed to protect the corniche area in front of the Moharrosa Hotel. There is also a strong emphasis on transitioning towards solar and clean energy, which is of utmost importance in addressing climate change issues (Yang et al., 2023).

As for the city of Aqaba, it forms what is known as the “Jordanian Golden Touristic Triangle” along with the “Wadi Rum” region and the city of “Petra” (Benghadbane, Khries, 2020). This has increased its international tourism significance. The “Aqaba Special Economic Zone Authority” oversees the economic and service aspects of Aqaba. This authority has worked to transform Aqaba into a low-tax and customs-free city, making it an attractive destination for major projects (such as Ayla resorts, Saraya Aqaba, etc.) and the expansion project of Aqaba Port. This has helped attract foreign investment, with many logistics companies establishing themselves to enhance transportation and various services due to the growth of industrial and commercial activities (AlFanatseh, Saqallah, 2021). This has contributed to the city’s urban growth through housing projects and the establishment

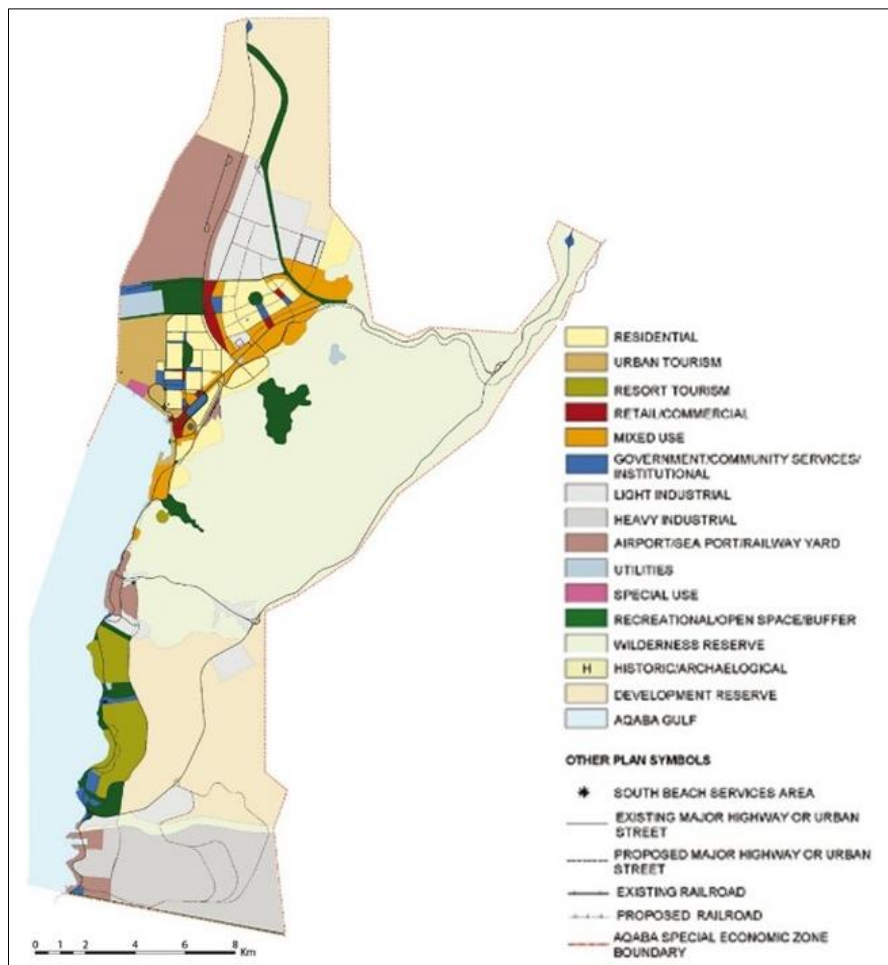


of tourist resorts and hotels. As a result, the city's economy has experienced significant growth due to the concentration of investments (Bazazo et al., 2022).

This economic development in Aqaba has led to several environmental changes, particularly evident in various areas, especially the beaches that constitute important marine reserves with coral reefs. These areas are affected by ship traffic in the port and the indiscriminate disposal of damaged car and truck tires. Additionally, residential areas in the city have seen an increase in visual pollution due to the accumulation of waste left behind by traders and street vendors, exacerbated by the growth of local and international tourism (Map: 03).

(<https://www.ammonnews.net/article/639014>)

To address these environmental issues, the Environmental Commission in Aqaba aims to restore the city's environmental balance in terms of cleanliness and greenery along the main roads. This involves planting palm trees and various decorative trees to preserve the city's aesthetics. Additionally, the commission is working on allocating disposal sites for waste by placing as many containers and waste bins as possible, whether on the beaches or public streets. The commission's staff is intensifying efforts to educate local residents and visiting tourists about the importance of maintaining the cleanliness of the beaches and city streets (Bazazo et al., 2020).



Map (03): Distribution of land uses in Aqaba city.

Source : <https://books.openedition.org/ifpo/docannexe/image/5049/img-2.jpg>

The Royal Marine Conservation Society of Jordan has also taken steps to combat plastic pollution in Aqaba in collaboration with the Aqaba Special Economic Zone Authority. This project spans three years and involves workshops and awareness sessions for various sectors in Aqaba, highlighting the risks of plastic use and how the local community can reduce its use in aspects related to food storage and presentation. This initiative follows consultations with all stakeholders in the city (<https://petra.gov.jo/Include/InnerPage.jsp?lang=ar&ID=227389&name=news>).

Furthermore, there is an obligation to conduct effective environmental impact assessments for tourism projects while considering the insights of the local community and involving them in all projects (Jawabreh, 2021).

In the city of Basra, particularly known for its petrochemical industries, record levels of pollution have been recorded. Many foreign companies investing in Basra, such as Lukoil, Shell, BP, and the Italian Eni, continuously dispose of their oil waste in vast, oil-contaminated areas. Some ground incinerators further exacerbate air pollution, negatively impacting the environment. Acid rain resulting from this pollution affects water sources and agricultural lands. The residents of the city, especially children and the elderly, have experienced an increase in asthma and respiratory issues (Al-Hassen et al., 2015).

The contamination has also affected the drinking water reservoirs, leading residents to stop using the water for drinking purposes and resort to purchasing desalinated water, often posing a financial burden on those with low incomes (Al-Lami et al., 2020).

Due to the population concentration and industrial clustering in Basra, coupled with its rapid urban dynamics, noise pollution has become prevalent in the city (Photo: 05). This is particularly noticeable during peak traffic times at street intersections, in recreational areas, and even in residential neighborhoods housing some artisanal activities (Douabul et al., 2013).



Photo (05): Wastewater accumulation and the spread of solid urban waste in a neighborhood of Basra city.

Source: UNHABITAT, 2020, p. 53.

Furthermore, household waste accumulates in most neighborhoods of Basra due to its high production, exceeding 900 tons per day. The waste collection system is

inadequate, with insufficient waste bins and a shortage of collection trucks, especially in neighborhoods like Hussein, Rashid, Qaim, Mahlab, etc (Elagroudy et al., 2011). These waste piles are susceptible to climatic factors such as heat and wind, attracting disease-carrying rodents and stray animals, contributing to the spread of visual pollution throughout the city (Abbas et al. 2016).

On the other hand, the waters of the Shatt al-Arab receive saline waves coming from the Arabian Gulf, increasing their salinity levels, which have negative impacts on the surrounding environment. This is particularly concerning because in recent years, the Shatt al-Arab has experienced reduced inflows due to the closure of the “Karkheh” river to its north and the “Karun” river to its south on the Iranian side. This has led to a significant deterioration of its aquatic environment. Additionally, it receives various pollutants from sewage systems and industrial waste, which affect the quality of its water, which has multiple uses (irrigation, supplying the population, industry, etc.) (Rahi, 2018).

In order to address these environmental changes, local authorities have swiftly installed 17 fixed environmental monitoring stations in residential areas of the city to collect and analyze information and data regarding pollution expected to be caused by oil companies and other factories. There have been proposals to establish pollution treatment stations and connect them to an extensive network of pipelines to prevent pollutants from flowing into the river. Furthermore, a “thermal power station” project is being considered in the “Kutiban” area to generate electrical power ranging from 3,000 to 5,000 megawatts for residential use and to provide significant quantities of salt. This project consists of three production lines (<https://www.hrw.org/ar/news/2019/07/23/332099>).

### **Complex environmental situations require new strategies to achieve urban sustainability.**

The cities of Annaba (Algeria), Alexandria (Egypt), Aqaba (Jordan), and Basra (Iraq) have recorded varying environmental changes, necessitating a reevaluation of urban planning policies aimed at mitigating these environmental shifts. This calls for the adoption of a new strategy based on the principles of urban sustainability to preserve and protect local resources from pollution impacts, ensuring their sustainability and renewal. This involves providing all the necessary regulatory means and community institutions, allowing the integration of sustainability into planning policies. This entails utilizing indicators and standards to assess the ability of urban systems to recover from environmental changes within a legislative framework that assigns roles among various stakeholders and authorities.

These cities, Annaba, Alexandria, Aqaba, and Basra, share similar challenges in terms of deficiencies in their urban waste collection systems, leading to waste accumulation in residential areas, and air pollution due to industrial clustering. Annaba, in particular, distinguishes itself through the active involvement of associations in diagnosing urban problems and offering community-based solutions, promoting community participation in urban management to enhance informed governance in the city.

This necessitates the development of efficient, transparent, and economically viable urban waste management policies to ensure social and environmental integration, as exemplified by Annaba’s urban policy, which fosters community participation and integrates various actors (public sector, private sector, associations, residents) to promote informed governance and social solidarity. Likewise, Aqaba aims to establish a road and street waste collection system to maintain the city’s cleanliness, especially considering the influx of local and foreign tourists, emphasizing the expansion of tree planting initiatives for beautification.

In similar circumstances to the other cities, Alexandria faces the threat of climate change effects. To address this, Alexandria has implemented urban planning policies aimed at protecting the city from flood risks, including preserving beach sands and erecting barriers to

safeguard economically, culturally, and urbanistic ally significant buildings from flooding, aligning with recommendations from various conferences on this matter.

As for the city of Basra, it is experiencing complex environmental conditions due to the convergence of various factors within its boundaries. It has become burdened with various forms of pollution, significantly impacting the quality of life in the city, especially in terms of drinking water pollution and the spread of diseases like asthma. This is exacerbated by the inadequacy of planning policies aimed at addressing these issues and a lack of financial resources, particularly for projects related to dam construction and power generation stations to protect the Shatt al-Arab waterway from salinity and counteract marine currents while providing clean drinking water for various urban and agricultural uses.

Furthermore, there is a lack of legal and legislative frameworks to curb the various violations committed by oil companies, such as the indiscriminate disposal of waste from their activities, in order to protect the ecological systems and maintain their balance.

Despite some advancements in certain urban services, especially in education and healthcare, these four cities have not achieved the same level of quality of life and still rely on traditional methods to address their urban problems. This is evident in their environmental situations, particularly the challenges related to solid urban waste collection, the provision of clean drinking water, and the shortage of energy resources, despite the presence of numerous alternative energy sources. These factors are hindering their progress toward urban sustainability (AL Mhanna, 2022) and exacerbating social disparities among their populations in light of the economic decline recorded in many economic activities.

### **Conclusion:**

The research results have shown that there are significant differences in environmental changes among the studied cities, which have impacted indicators related to the quality of life. These differences are closely related to the level of urban development achieved and the availability of financial resources. Basra stands out for its unique environmental, economic, and social situation compared to the other cities, which share similarities in many environmental indicators.

To control environmental changes and ensure urban sustainability in these Arab cities, it is essential to enhance the legal framework to support urban sustainability within a planning policy that relies on sustainable urbanization. This aims to protect environmental resources, especially in terms of their consumption and urban uses, preserve water resources, and promote the use of alternative energy sources. It is also crucial to allocate financial resources to implement these measures.

Efforts should be made to improve the significantly declined quality of life and prioritize it within the political, economic, and social contexts, fostering comprehensive integration among Arab cities to address environmental challenges in the face of climate change.

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