



The Influence of Urbanization on Social Dynamics in Yemen: Insights from Environmental and Climate Data

Nihro Nouh Ibrahim Abdalla ^{a*}
and Saleem Elzein Alhassan ^b

^a Omdurman Ahlia University, Sudan.

^b Sudan University of Science & Technology, Sudan.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: <https://doi.org/10.9734/jerr/2024/v26i61178>

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/117181>

Review Article

Received: 19/03/2024

Accepted: 23/05/2024

Published: 25/05/2024

ABSTRACT

Introduction: Environmental data play a crucial role in social change, especially in ancient Yemen, where the natural environment is closely linked to ancient civilizations. The development of tribal areas in Yemen, such as Saba and Hamir, has been affected by the growth of trade, handicrafts and traditional industries. The integration of the natural environment has led to the growth of maritime navigation and the establishment of modern industrial and administrative units. Urbanization in these areas has diversified the components of tribal populations, requiring new social, political, economic and legal regulation. The population also had to adapt to modern standards and regulations, such as monetary handling in the labour market and production. The geographical and environmental dimension plays a significant role in the emergence and expansion of cities, which are often found in fertile and resource-abundant locations. Urban development in the Arabian Peninsula has a long history dating back to ancient times. The region has witnessed the

*Corresponding author: Email: Nihro_ibrahim@hotmail.com;

first civilization in history and has witnessed significant urbanization. The middle Ages experienced significant urban development, with cities reaching unprecedented sizes. The nineteenth century saw a new phase of urban development, with urban land subject to economic processes, including competition. The discovery and extraction of oil in the twentieth century led to the emergence of new cities, highlighting the current urban landscape. The Arab population has grown rapidly, rising from 13% in 1900 to 49% in 2005 (according to the Central Bureau of Statistics). Today, the Arab city community is a mix of cultures and nationalities, with institutions replacing the family, the warmer and the tribe in different societies. Aspects of life and social systems. It is estimated that half of the Arab population inhabits urban areas because of urban growth and urbanization, a health phenomenon that is indicative of civilized development and economic and social growth.

Methodology: The physical changes in the Republic of Yemen and the identification of the city of Aden were studied by reviewing the studies that monitored these changes and their social, economic and population effects. The study relied on secondary data in the first place.

Results: this research was conducted to study The Influence of Urbanization on Social Dynamics in Yemen: Insights from Environmental and Climate Data, we find that urban society's relationship with the natural environment influences its social and cultural environment, influenced by collective and individual traditions and economic habits. Rural societies are more connected to the natural environment, while urban communities live in relative isolation, resulting in a dominant social and human environment.

Discussion: Urban growth refers to the physical framework for society's stability and existence, indicating social well-being and basic needs such as housing, water security, energy, and transportation. In the Arab world, urbanization dates back to ancient times, with cities growing up in the Arabian Peninsula. The Middle Ages saw major urban development, while the 19th century saw rapid urban population growth. Today, half of the Arab population is urban, reflecting civilization's development and economic and social growth. Yemen is experiencing significant urbanization, transforming from an urban environment to a diverse, modern society, influenced by social construction and cultural values. The natural environment influences social and cultural environments, with rural societies being more connected to it. Urbanization requires preserving rural social characteristics, strengthening inhabitants' sense of belonging, and promoting participation in community development plans. Spatial justice and regional balance are crucial in developing world urban environments, as they help overcome alienation and promote collective affiliation.

Keywords: Climate; environment; social relations; urbanization.

1. INTRODUCTION

Environmental data are one of the factors of social change, which affects the natural environment (location, terrain, climate diversity, water sources) by harnessing the extent to which such harnessing is reflected in social and economic activities and social phenomena. This applies to environmental change in Yemen's tribal areas adjacent to the capital, Sana'a, its centre and other urban centres [1]. Yemen's geography has imposed a position that in the past, as in the present, allowed Yemen to establish close links with many of the world's ancient nations. Ancient Yemen - certain kingdoms, Saba, Hamir and others - have been closely linked to ancient civilizations such as the Rafidain country in the East and the Levant in the North and Egypt in the West [2]. As many sources point out in the distant past, after Yemenis realized and understood the movement of the wind and established "fleets, boats and ships, which helped to grow in the field of trade,

handicrafts and traditional industries. This growth and integration have affected the development of the social environment of the Yemeni city. They have moved towards maritime navigation and become the pioneers in this area without short notice [3].

1.1 Ecological Interaction

The natural environment has been associated with other fields of creating a social and cultural environment that is connected to the medicine of the habits, the interaction of the collective and individual traditions, and what follows them from economic habits. The degree of urbanization is demonstrated by man's control over the natural environment (place) and its harnessing of his well-being. Urbanization in any city or urban gathering clearly reflects the stages of the cultural development of these gatherings [1]. Urban development in these areas, such as the construction of new housing units, the construction of roads and the construction of

public parks, as well as the establishment of some modern industrial and administrative units, have resulted in the varying and diverse components of tribal populations in these areas. Thus, tribal, political and economic relations, which depended primarily on tribal regulation and division, were subject in some of those regions to new social, political, economic and legal regulation. The responsibility for security and protection of all its employees has shifted from that of the tribal political units in those areas to that of the State itself. In addition, the conditions of the new environment have forced the population to adapt to modern norms and systems, which are different in nature from those that prevailed before, for example, critical handling in the labour market and production has become the only approach by which services, including the labour force, are exchanged. It is the result of the population's various activities and reflects the culture and cultural capacities of the population. The geographical and environmental dimension plays an important role in the emergence and development of cities, as well as the expansion of cities, which are usually found in locations characterized by the fertility of their lands and the abundance of their waters [1,3].

1.2 Environmental Data and their Impact on Populations

1.2.1 Yemen's natural geography

- **Location:**

The Republic of Yemen is located in the southwestern corner of the Arabian Peninsula at the southern entrance of the Red Sea in my latitude (20-12 °) north and longitude (54-5 ° 42 °) east. This means that Yemen's climate is distinct, both in terms of temperature and rain, given the climate in the vicinity of Yemen. This is naturally reflected in the activity and effectiveness of Yemen's population, particularly agricultural production, for which Yemen may have been known as a happy Yemen, due to the impact of its location [2]. Yemen's current location is all the more important as it lies on a water surface more than 2200km long. Located on the Red Sea, Gulf of Aden and Arab Sea, this site has earned Yemen a strategic value of international weight, Its geographical location has given it full control and control over the Bab al-Mandeb Strait, one of the most important waterways for international trade linking the Red Sea and the Indian Ocean on the one hand, and the Red Sea and the Mediterranean on the other

hand, the extension of Yemen's coastline to the total area of the Republic of Yemen is approximately 211km² below the Yemeni islands, which are one of the possibilities available to Yemen and which are not available to many countries in the world [2]. The importance of the site also comes through its supervision of the Bab al-Mandeb Strait and its possession of many islands scattered along its coasts and perhaps the most important of them is Myon Island, Hanish Archipelago Island, Zagar Island, The Kamran archipelago, the island of Socotra, and all these islands are economically important with their natural diversity that makes them a kiss for tourists Yemen in general, with its topographic diversity and spectacular landscapes, makes Yemen a tourist attraction with many tourist potential, with many historic shrines in Yemen. Yemen has borders only with Saudi Arabia to the north. In other words, Yemen's borders are a positive element in the development process. (Urbanization) is not the same in some countries with problems of increasing the number of neighboring States. Nevertheless, Yemen is closely linked to the world through [2]:

1. Air: (Sana'a International Airport-Aden International Airport-Ta' izz International Airport-Hodeidah International Airport-Mukalla International Airport-Sayoun Airport).
2. Land: (Incitement Port-Spot Port-Two Ports-Charging Port-Cash Port-Deposit Port).
3. Sea: (Port of Aden, Port of El Kheh, Port of Al Hadida, Port of Mekla, Port of QashenSiyough, Port of Dab, Port of Ba 'r Al Ali, Port of Belhaf, Port of Ridhum, Port of Zabab, Port of Khukhah, port Al Salif, Port ifa port).

- **Environment and Climate Yemen:**

Environment in Yemen: Yemen has an area of approximately 555 thousand square kilometres, with a population density of 28 persons/km². The diversity of the natural terrain has coastal plains with mountain ranges that fall between 450 m and 3600 m from sea level and are housed among valleys characterized by the specificity of their soil, the diversity of their plant life and the presence of water, as well as large deserts in the east and north of the country. In terms of natural formations, Yemen is divided into five regions (mountainous, plateau, coastal, Sahili, empty quarter desert and Yemen's islands) [1].



Fig. 1. Yemen map [3]

- **Mountain regions:**

Yemen's mountains were formed as a result of the African fracture created by the groove and led to the formation of the Red Sea and Gulf of Aden. Its geological components are transformed pyrotechnic rocks and are gradually elevated from 1000 to 3,600 m from sea level. The highest peak of Mount Shuaib is 3666 m from sea level and is the highest peak of the Arab islands and the Levant. On these mountains, the valleys descend east and west, north, south. The mountain range along its stretch is punctuated by flat bottoms and basins, the most important of which (the bottom of its base, the bottom of the bonn, the bottom of its slavery, the bottom of the sheith and the valley of Bihan) [1].

- **Plateaux:**

It lies east and north of the mountainous highlands towards the empty quarter and rises to 1000 m from the surface of the sea (Sa 'ada, Al-Jawf, Shabwah, Hadramawt and Al-Mehreh).

- **Coastal areas:**

The coastal plains overlooking the Red Sea, Gulf of Aden and Arabian Sea, an area connected to each other, consist of a coastal strip stretching from the Omani border east to Bab Amendeb west, changing direction north to the Saudi border with a length of 2000 km and a width of 30 to 60 km. Important cultural centres based mainly on agricultural production have been set up in the regions (mountain, plateau, coastal and

El Sahili), including Sana 'a (study status), Amran, Sa' dah, Dhamar, Rada 'a, WareemWab and Ta' izz. Because of this, the use of modern transport has been instrumental in linking these gatherings with each other so that Yemen can emerge from its long isolation. This coastal area has cane as one of the most important building materials [4].

- **Desert area (vacant quarter)**

A desert area dotted with apartments such as the Map Apartment and the Ma 'atif Apartment. Seasonal valleys constitute large grazable oases inhabited by nomads and interspersed with wild plants such as Azouq al-Thabb, Ziza and Maadir [4].

- **Yemen Islands Group:**

Most of them are concentrated in the Red Sea and spread along the right beach with more than 113 islands, the most important of which is the inhabited island of Kamran. Prem's strategic position has given it special importance to its controlling position in the Bab Al-Mandeb Strait. The Arabian Sea Islands are close to each other, the largest being the island of Socotra, which is known for its rare trees and plants. (Exhaustion and exhaustion of the brothers with therapeutic characteristics) followed by the island of Abdulkuri and the island of the brothers Samah and Darrah are inhabited islands (the island of Socotra and Abdulkoury is the largest island on the Arabian Sea) [4].

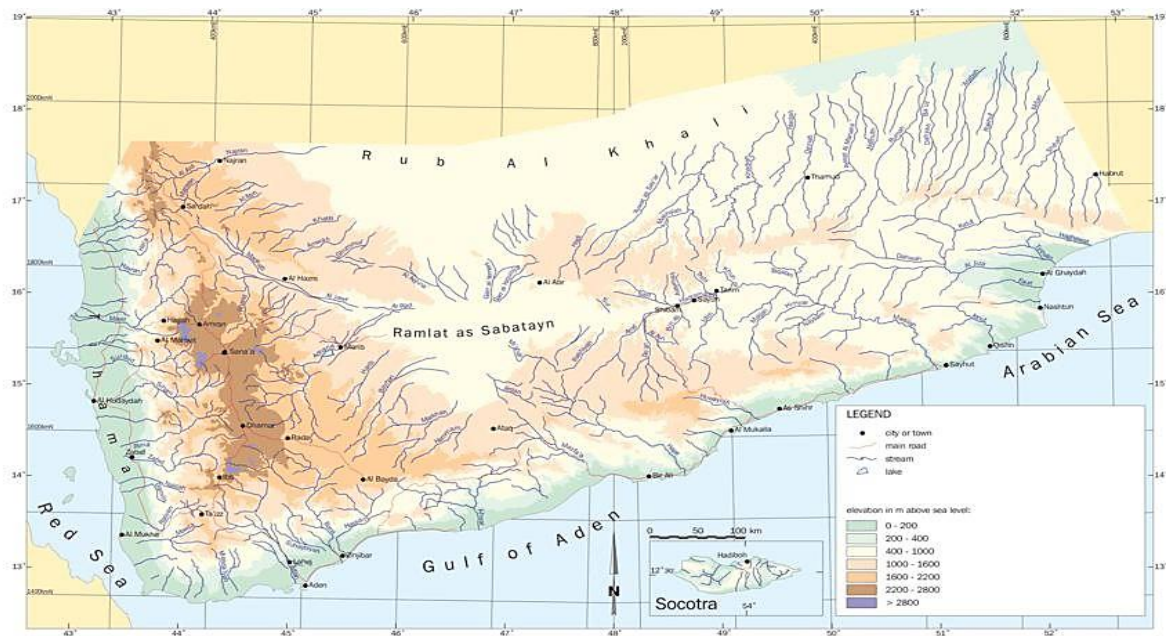


Fig. 2. Effect of Yemen's terrain and climate diversity on population distribution

- Climate in Yemen: The Republic of Yemen is one of the countries that is warm throughout the year in general. Without its conditionality nature, Yemen is experiencing a very high temperature in all seasons of the year, as is the case in neighbouring areas. However, the annual average temperature in the whole of Yemen is limited to approximately 30:15 degrees. This is due to the varying terrain of Yemen, yet we can distinguish a range of thermal bands in Yemen, as follows [1,4]:

Very Hot Range 2-Hot Range 3-Bow Range 4-Moderate Range 5-Cold Range, Cold Range is Very Weak and Occupies High Mountain Peaks Over 3200 m. The overall climate in Yemen is moderate in the mountainous highlands; desert in the parallel plateaus of the Sahara and in the Empty Quarter is hot and humid on the coastal strip and islands due to the country's changing topography, which has played a role in the diversity of climate conditions. Yemen is generally located in the heavily decertified region and climatically classified within the semi-arid region. Most of its coastal lands are prone to sand creep by wind; the rest of the lands are prone to erosion and water deviation. Rainfall rates range from less than 100mm per year in the coastal plains and desert region and from 100mm to 1000mm per year in the plateau and highlands and more than 1000mm per year in

mountain regions [4]. Yemen's water sources are:

- Rain.
- water springs (natural eyes).
- Groundwater.

1.2.2 The impact of the environment and climate on population groups before urban growth (urbanization)

The different environment and climate play a significant role in determining economic activities and population distribution and thus the diversity of social, economic, political and cultural life. The population distribution of the Yemeni Republic before urbanization is characterized by scattering and dispersion, Yemen's geographical reach varies between deserts, plateaus and mountains. s population ", which had a significant and direct impact on the population distribution in Yemen, Yemen's terrain and climate diversity have also affected the distribution of population in the governorates of the Republic and their whereabouts, between large and small cities and many villages throughout Yemen, this distribution has had a profound impact on the country's political stability, as the State faces difficulty in controlling fabricated areas and the inability to deliver services to this vast population of dispersed populations [3]. For Yemen's rural (tribal) community, we note that despite the different ecological areas and climatic conditions

of rural areas, (Tribal) This difference may require the retention of both the agricultural tribes established in the plateau and high mountains. and the Bedouin and Bedouin tribes who graze sheep and barrage and move their tents from one region to another with some semblance of their own life and much of the systems and ties necessitated by the ecological conditions in which these stable and mobile tribes live, note that the general nature of their relations and tribal systems is almost one and common, especially with regard to the participation of all these tribes in the strict adherence of many tribal systems. (Rural) and Bedouin, which did not move away from their ancient original roots, which were characterized by the life and culture of the tribal and Bedouin community in the north of the Arabian island before Islam After wards, a manifestation of the Bedouin cultural unity involving tribal groups affected by environmental and climate conditions Including but not limited to [4]:

- Sovereignty of kinship systems.
- Tribal nervous.
- Adherence to tribal concepts, values and customs emanating from Bedouin life, which is predominantly war and conflict.
- Acts of robbery and looting among different tribal units
- Also characterized by values of courage
- Generosity and alien protection.
- Respect the weak,
- And love independence.
- Refuse to submit to any external or internal authority or influence.

This is in addition to the consolidation and strength of some other systems such as:

- Introduction (retaliation)
- Marriage systems
- Women's freedom
- Property and tenure systems
- Contempt of professional and professional work
- As well as care for possession of the weapon and training in its use.

Among the most important characteristics and qualities that demonstrate the impact of environmental and climatic life on the behaviour, concepts and values of the population in those regions are [4]:

1. Control of the desire of the individual and the group to move from one region to

another freely and without any sense of impediments or a sense of need to have a State that protects him from his enemy.

2. The process of transition and roaming - as a lifestyle - enabled the individual and the group to choose from the Earth to have water and both - and if they feel that it has become unfit to reside in it, God's land before them is vast.
3. The conditions of Bedouin life were instilled in the Bedouin's conscience, such as generosity, honor, neighbour protection, fearful rent, courage, conviction, love of fighting, taking revenge, nose from shame, protection of property.
4. On the basis of previous qualities, the Bedouin is keen to possess the weapon and the ability to use it skillfully in combat and defense.
5. Bedouin life influenced the Bedouin's perception, concepts and social and cultural values.

- View the acts of invasion and move freely across the plains and desert as a kind of courage and nose.
- To consider residency and housing in cities and residences built on the basis that there is inactivity and relaxation in the life of the individual and the community, and reduces the life of activity and movement, causing damage to health and inheriting illnesses and disease.
- The Bedouin tribesman considers that the tent dwelling in Al-Bawadi helps the movement, activity, safety of mind, body, purity of thought, serenity of spirit and temperament.

Notably, most of these characteristics and qualities are somewhat consistent with what I refer to as (Masaudi) is a characteristic and values of ancient Arab beginnings in the famous author Gold meadows, many of which are still held by Yemeni tribes [5]. This is notwithstanding the fact that most of these tribes have shifted from Bedouin and herding life to life of stability and agriculture within established and defined areas, as well as the new patterns of social and productive relations followed by these tribes, which correspond to the requirements of rural life in which agricultural village communities are known. Whether it was commercial relations or cultural interaction with the Arab Bedouin tribes in the Arabian Peninsula, which helped to create

a kind of convergence between the agricultural and land-related tribal life of the Yemeni tribes and the mobile Bedouin pastoral life that was and continues to be lived by the Hajjazi and Najda tribes in Saudi Arabia. We are here to mean spatial convergence, but in some cultural features and economic relations, together with spatial neighborliness itself, by virtue of the geographical extension that connects them.

1.2.3 Ecological and social interaction (After urbanization)

We're going to be in the process of being civilized. It's going to increase the city population. It's not living in the countryside. It's a country tribute to an urban life or on the road to the village's migration of the city. We can clearly recognize the relationship between natural ecology and the rest of the social structure of the tribal community in Yemen by looking at the process of regional distributions of villages and shops consisting of communal and basic units in different tribal divisions in the form of adjacent village settlements and so that the engineering construction is subject to houses (Housing) consisting of them and the village (shops) in terms of the construction pattern, components, facilities, space, location and geometric forms that are different or similar in the basic social

organizational foundations stemming from the concept of patriarchal relationships [4,5].

- Area and Administrative Division

The area of the Republic of Yemen (without the empty quarter) is 555.000 square kilometers. Yemen is administratively divided into 21 governorates, including the Capital Secretariat. The governorates are divided into 333 directorates, with 2200 districts and isolation, 36,986 villages and 91,489 shops and quarters. See Figs 3, 2. There has been an Israeli definition of the City of Urban for the purposes of population statistics in 2004. This definition, according to its specific purpose, focuses on the size of the population, the administrative function, without mentioning other basic factors in the preparation of economic functions for the city, occupation differentiation and urban behaviour. Yemen's governorates are the source of natural, human and economic wealth and the field of all activities and projects. Although there is a great deal of uniformity and similarity among all Yemeni governorates in terms of available resources and capacities, all public features and characteristics are socially and demographically regularized, they also possess economic potential and different geographical locations, indicators and services that create a space for diversity and diversity in which economic and social integration can take place [6].

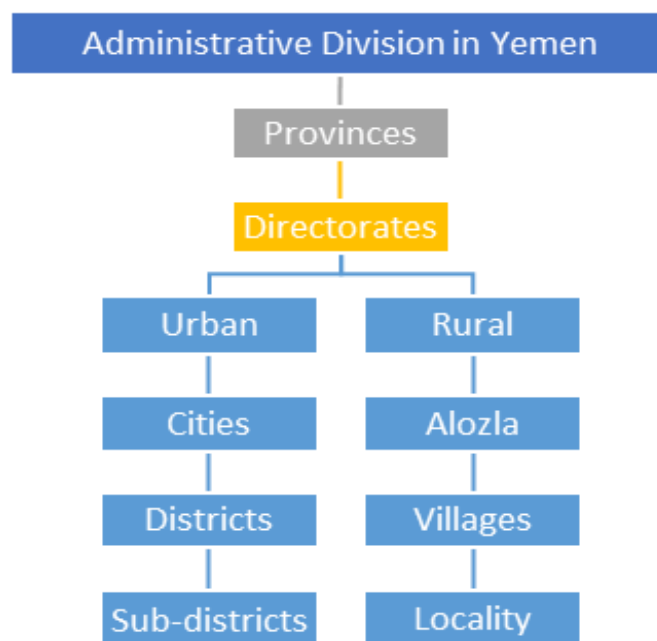


Fig. 3. Administrative division in Yemen (Exporter Central Device)

- **Population and housing:**

According to the final results of the 2004 General Population, Housing and Establishments Census, Yemen's population is 19,685,161 inhabitants, divided into 20 governorates and the Capital Secretariat. The population intensity rate was 53.4 per person per km² in 2004. Population Size and Population Density in Yemen by Governorate (Urban and Rural) Showing Unequal Population. The population of the Republic of Yemen is also distributed in the governorates of the Republic in an unbalanced manner for natural and economic reasons. In terms of population, the governorate of Ta'izz, where according to the latest population census in 2004, has a population of about 2,393,425, followed by the governorate of Hodeidah, with a population of about 2,157,552, and the capital secretariat as a governorate with a population of 1,747,834 respectively [7]. The skilled awakening, with a population of 88,594, 238,522 and 495,045, is the smallest governorate in terms of population, accounting for 0.45%, 1.2% and 2%, respectively, of the overall total population. The large dispersion in the distribution of the country's population to those populations, especially the rural population, is greater in governorates of a mainly mountainous nature. The dispersal of villages and populations on difficult mountain terrain has made it difficult to reach basic services of the population and the high cost thereof. These natural phenomena have contributed to the isolation of the population for many years [6].

1.2.3.1 Patterns and size of Yemen's population groups

The results of the 1994 census indicate that the proportion of the urban population was (23.5%). The population of the Republic of Yemen under the 1994 Population Census was (14,587,807) 1 million inhabitants of the Central Statistical Authority (CSO), spread over a total area of approximately 000 and 527 square kilometers, "dispatching 1992", with a population growth rate of 3.7%. As of 2004, this percentage rose to about 28.6% of the population of Dahr, compared to 71.4% of the countryside. The urbanization rate in Yemen is very low and at the bottom of the urban peace of Arab States, for example, in Saudi Arabia, where urbanization stood at 77.2%, Egypt 48, 8% and Syria 51, 8%, where the average levels of urbanization in other Arab States at 56.4% in 1990 and now the figure is greater. Yemen has seen more urban population

growth in major cities than in other cities, as evidenced by population growth in the capital Sana'a and the city of Aden and Hudaydah, where urban areas in the capital Sana'a represent 97.7%, while rural areas account for 3.3% and 100% in Aden. Since the population of governorate capitals varies from governorate to governorate, the population of the capital cities of three governorates in Sana'a, Aden, is 66.2% of the total population residing in governorate capitals, with a distribution of 33.8% over other governorate capitals. The absence of cities with large volumes of governorates, confined to cities with a maximum of 50-450,000 inhabitants (mostly Governorate capitals do not exceed 17 cities (21 cities) to their inability to compete with both Sana'a City (Case of study), Aden, Ta'izz City and Hodeidah City in attracting immigrants from the countryside, but also becoming a source of mobilization for the population. The remaining cities are the majority and are out of competition, owing to the fact that a significant portion of the State's investments in the areas of urban development are directed at Sana'a, Aden, Ta'izz and Hudaydah at the expense of the cities in the rest of the governorates [8]. According to the 2004 census, Fig. 3 shows a marked variation in the pattern of urban settlement at the State level. There is a high concentration of approximately 68.3% of the total number of villages in the 129,299 villages and Mahalla (rural areas). The geographical distribution of urban agglomerations and 3,642 lakh (urban areas). 133 A pool, If population growth trends continue to double to about 33 million people in 19 years, the Human Development Report 2020 confirmed this as one of Yemen's major human development challenges. One of the external factors of social change. The geographical distribution of urban agglomerations, which are mostly the capital cities of the governorates, is mixed. The capital's security has been characterized by a large size of about 1.7 million, followed by the city of Aden, which has a population of about 600 thousand. Cities ranging in size from 400 thousand to 500 thousand are Ta'izz, Hudaydah and Mukalla, and one city (Father City) is confined to 300 thousand to 400 thousand people. The cities, each with a population of 100,000 to 200,000, are Dhamar, Hajjah, Amran and cities ranging from 50,000 to 100,000. These are the capital cities of the governorates of Hajj, Abyan, Beida, Sa'dah, Jawf, Shabwah and cities ranging from 25,000 to 50,000. There are also 333 cities and communities (other than provincial capitals) formally classified as urban groupings regardless

of the standard of size or urban function, but because of their administrative role as district centres and equal to the number of State directorates. However, the spread of cities of different sizes over the country's urban space confirms that there are opportunities to select these cities as growth centres and target them through various investments for the purpose of achieving the overall development goals [9]. For urban centres, nearly five million people live in major urban centres, including the country's capital, the economic and commercial capital, Aden. The majority of these urban centres are spread throughout open areas, located between mountain ranges. "Sana'a, Ta'izz, Dhamar, AB,

Sa'dah, etc." or in the plains adjacent to the coasts "In another way, we note that the Arab Sea region, which is in practice an extension of the vast Arab Sahara known as the densely populated quarter, is concentrated along the Wadi Hadramawt region and in sharp divergence from the Arab Sea region, has a much higher population density in the Red Sea region, where approximately 90% of the population resides. Rural Yemen "World Bank 1996", or approximately 10 million people, most of which are divided into isolated villages and isolated small towns spread along the rugged and deep-sloping mountain range, the most prominent features of the region [10].

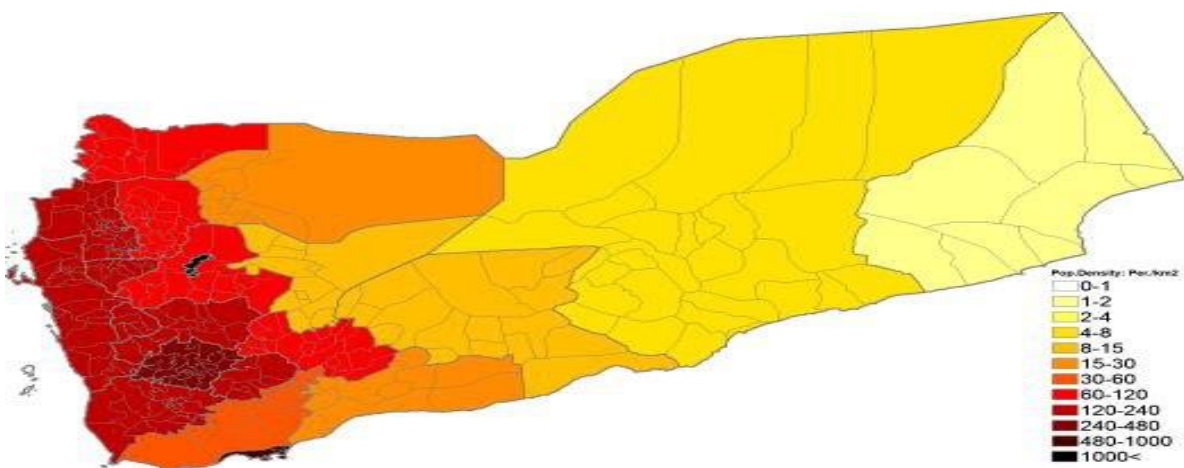


Fig. 4. Population distribution in Yemen's governorates
(Source Central Bureau of Statistics)

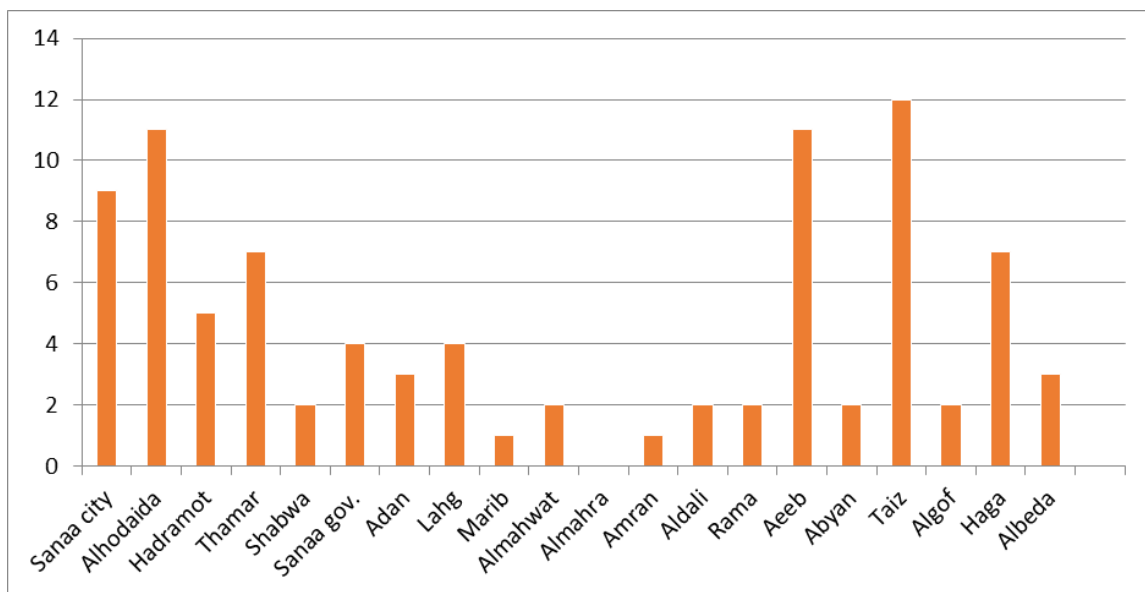


Fig. 5. Population distribution
(Source Central Bureau of Statistics)

This shows that the State's urban settlement pattern is currently biased in favor of one city, the city of Sana 'a (the political capital). So it was chosen to be a theoretically and applied vivid example of the rest of Yemen's similarly styled cities. Central and Southern Highlands with an area of 68.3%.

1.2.3.2 Geographical distribution of resident population by governorate

The final results of the 2004 General Population and Housing Census, show that the total population resident in the Republic of Yemen (19685,161) is divided among the governorates in varying proportions. Ta'izz governorate is ranked first in size, where the proportion of the population to the total population of the Republic is about 12%. It is followed by the governorate of Hodeida by 11.0% and the governorate of Ibb by 10.8%. The proportion of the population in these three governorates to the total population of the Republic constitutes about 34.00%, slightly more than one third. This is followed by the Capital Secretariat (the case of the study) at 8.9%, the governorate of Hajjah at 7.5%, the governorate of Dhamar at 6.8%, and the governorate of Hadramawt at 5.2%. Both Ma 'rib governorates are 1.2% skilled at 0.5% of the smallest in the population.

If we look at the level of changes in the relative weight (level of urbanization) of the population of the governorates during the period between the 1994-2004 enumerations as follows [11]:

- There are governorates whose population's relative weight (level of urbanization) increased during the period between the two censuses: Al-Hadida, Al-Za 'mar, Al-Sa' da, Al-Dahra, Al-Dahra and Amana Al-Dayr.

- There are governorates where the relative weight (level of urbanization) of their inhabitants has been constant during the period between the two censuses.
- The other governorates have seen a decrease in the relative weight (level of urbanization) of their population during the period between the two censuses, namely the governorates of Ta 'izz, Ibn, Sanaa, Amran, Hajj, El-Bayda, Shabouh, Al-Jawf and Abyan.

We can distinguish between three types of human gatherings in Yemen:

- a. Concentrated agglomerations: They are located in the mountainous highlands region, which occupies more than 3/4 of Yemen's population (68.3%), including the city of Sana 'a (state of study). The population is high because of the availability of rain, climate moderation and soil fertility, as well as in urban areas.
- b. Dispersed agglomerations: - It is located in the Eastern Plateau and the Sahara region, where 5.6% of the population is concentrated and density decreases due to low soil fertility, high temperature, low rainfall and limited agricultural resources.
- c. Strip linear groupings: South Coast is located about 13.4% of the population and East (Tahama Plain) 12.7%. of the population. Ports and fishermen's villages. In general, all the Republic's governorates have been divided into three levels of density:
 - High-density governorates: (Ibb, Ta 'izz, Amana al-Madiya (Sana' a city), Aden)
 - Medium-density governorates: (Hajjah, Shabwa, Imran, Dali 'a)
 - Low-density governorates: Al-Bayda, Al-Jawf, Hodeida, Hadramut, Dhamar, Sa 'ada, Marb and Al-Mehreh. Alhawi)

Table 1. Population clusters

Statement	Governorates	population	percentage
Central and southern highlands	Capital Sana 'a -Sana'a Governorate-Taiz-Dhamar-Reema-Haja-Saada-Omran- Albyda'a -Al Mahwit And some districts in Taiz Governorate-Some didtricts in Al Dhali Governorate	13,470,061	68,3
The southern and eastern coasts	Aden--Lahj-Abin-Shabwa- districts ofHadhramaut Governorate-Al-Mahra	2,647,190	13,4
Tihama plain	Hodeidah- districts of Haja Governorate-And Taiz	2,50383	12,7
Desert plateau	Algof-Marib- districts fromAl-Mahra-And districts of Hadhramaut Alwadi Governorate	1,100,579	5,6

Source: -Final results of the General Census of Population, Housing and Establishments, December 2004

Table.2. Population and population density in Yemen by governorate (urban and rural) Enumeration2004 AD

No.	Governorate name	Population breeze	Governorate area km2	Urban proportion %	Rural ratio %	Total urban percentage and rural percentage %	Population density: people/km2
1	Ebb	2,131,861	5.552 km2	6.6	12.5	10.8	384 people
2	Abyan	433.819	16,943 km2	2.0	2.3	2.2	26 people
3	Capital Sana 'a	1,747,834	390 km2	30.3	0.3	8.9	4482 people
4	Albyda'a	577.369	9.314 km2	1.9	3.3	2.9	62 people
5	Ta 'iz	2,393,429	10,008 km2	9.5	13.2	12.2	239 people
6	Algouf	443.797	36,492 km2	1.0	2.7	2.3	12.2 people
7	Haja	1,479,568	8.228 km2	2.5	9.5	7.5	180 people
8	Hodeida	2,157,552	117.145 km2	13.5	9.9	11.0	18.4 people
9	Hadramawt	1,028,556	167.378 km2	8.4	3.9	5.2	0.57 people
10	Dhamar	1,330,108	7.586 km2	3.3	8.1	6.8	6 people
11	Shabowa	470.440	42,584 km2	1.3	2.8	2.4	175 people
12	Sa 'ada	695.033	11,372 km2	1.9	4.2	3.5	61 people
13	Sana 'a	919.215	11,877 km2	0.5	6.4	4.7	77.3 people
14	Aden	589.419	750 km2	10.5	-	3.0	786 people
15	Lahg	722.694	12,648 km2	1.1	4.7	3.7	57 people
16	Marib	238.522	14,000 km2	0.6	1.5	1.2	17 people
17	Almhawit	494.557	2.328 km2	0.6	3.3	2.5	21.2 people
18	Almohra	88.594	67,297 km2	0.7	0.4	0.5	1.3 people
19	Imran	877.786	7.971 km2	2.7	5.2	4.5	111 people
20	Al-Dhali	470.564	4.099 km2	1.1	2.9	2.4	115 people
21	Rimah	394.448	1.912 km2	0.1	2.8	2.0	206.3 people
Total		19,685,161	527,000 km2	5,637,756	14,047,405	100%	53.4breeze

Final results of the General Census of Population, Housing, and Establishments, December 2004, second report (pp. 98-99), Central Bureau of Statistics. Survey: National Information Centre.

The following characteristics distinguish society after urbanization (urban) from society before urbanization (rural):

1. Occupation: The majority of urban inhabitants occupy industry, commerce, management functions and services, as opposed to rural populations, mostly in agriculture.
2. Environment: Dependent human beings encroach on the natural environment and try to adapt to it, unlike rural men, who dominate the natural environment and control its social environment.
3. Size of society: The community has the advantage of attending relatively well, as opposed to the rural community, which has the advantage of the door.
4. Densely populated: High population density in urban areas, unlike in rural areas characterized by low population density.
5. Homogenization and heterosexuality: From the names of the urban community, there is no spin. This is all about the whole of the community.
6. Social differentiation and graduation of my class: To show the differentiation of grades in the country community.
7. -Social mobility: Except for the upward rise of migration from rural to city, the picture of social mobility is reduced in different places, professionalism and social society in the country community.
8. Interaction: In the countryside community, the scope of the interaction is for individuals or groups who are more satisfactory, So there's the first relationship, it's simple, it's permanent, it's trusting, it's the most personal relationship between the urban community, it's broadening the scope of interaction for individual individuals, and it's busy changing their personal and utility relationships in the public sphere.

1.2.4 Housing between environmental constraints and Yemen's cultural choices [11]

Housing or Habitation, which is a relatively small location built or arranged for human residence (or for the protection of animals or crops). By its very nature, it attests to the constraints and possibilities of the natural environment. Thus, we find its forms, models and materials that are built with diversity and multiplicity. It is not only an expression of physical geographical needs but

also a sociocultural and symbolic achievement. Subject to physical and functional pressures, as well as earning and manufacturing techniques. Consequently, many intertwined factors (land, climate, history, economy, meeting, symbol system...) appear in reality. Overwhelming in his study on the ecology of the dwelling, Abu Ghalnam favoured cultural factors in determining the form of the dwelling and its vulnerability. Hassan Fathi also supports him in his famous experience in building the village of Qurnah in Upper Egypt. Most research has concluded that physical constraints and potential provide several options [6].

Defined by cultural stereotypes " Aboganem's preference. The study of housing and home is sociological in order to highlight the impact of age growth on social relations, one of the pillars of which is the area, range or space defined by the family for living as a basic social building. Several key issues must be taken into account:

- Constraints and potential of the natural environment and local engineering responses to them as engineering solutions, such as climate, land and other.
- Technical means used for construction durability.
- Housing's place in the overall production and economic system.
- Symbolism of social organization through the forms and organization of housing.
- Methods of housing, living and the use of elements of housing space, which reflect the values and customs of society.
- The symbolic links produced by societies between architecture, field, beliefs and social representations.
- Aesthetic rules that control the geometric shape.

It is all these factors that give us as a necessary theoretical anchor to understand the social and spatial changes in Yemen's cities today. Thus, the kinship relationship has made the house or home inhabited by the patriarchal family the most common form in the tribal community in Yemen. Professor has tried To link this pattern of housing and villages with the organizational principle of all tribes living in the South Arabian Peninsula: The principle stemming from the concept of patriarchal dynasty, which is based on ideology, of the persistence of descendants from father to son, but associated with the legitimate and political economic rights, hence the functional interactions between natural social and

ecological systems can be clearly observed through materials used by the population when constructing housing, as well as taken into account [12]. The internal structure and structural composition of housing and spatial space, as well as the process of merging certain housing units and separating other units, all take into account the nature of behavioural patterns, traditions, customs and cultural norms in tribal areas. Hospitality habits, for example, have led to the allocation of a large room for meeting, sitting and guest reception called Dewan.

It is also surrounded by all protections aimed at protecting them and socially isolating them from strangers, since it is one of their most important duties. The places where women are located are separated from those that can be entered by strangers. The necessary responses resulting from the construction and choice of the residential home take into account the children's accession after marriage to the large parental family [13].

In order to maintain parental unity on the one hand and productive economic unity on the other hand, the necessity of expanding the space in the housing establishment. The married son's residence may also be located in close proximity to the father's residence when the spatial conditions do not permit the construction of subsidiary housing accessories to the original residence. This does not mean the family separation of the son's family, as he remains integrated into the parental family despite the spatial separation from them. Therefore, the pattern of construction characterized by the original family housing and the residential branches attached to it is often multi-room to be sufficient to accommodate members of the large extended or complex family. It also highlights the nature of the collective and cooperative work and effort of members of the family community and their relatives, in accordance with the principles of cooperation, mutual support and solidarity that underpin the system of parental descent [14,15].

In addition, the nature of the system and economic activity have influenced the form of the construction of the house and its internal composition so that it can perform a certain function in preserving the amount of grain and feed that was kept throughout the year for daily consumption of family members. Therefore, family housing in the tribal community prior to the process of social and economic change in tribal life in the past years, to which we will refer later,

represents a complex that occupies the largest part of which is not a large crop stock. (Extended) or a small marital family that occupies almost only the smaller section [16].

On the other hand, conditions of unstable tribal life in terms of security have had a significant impact on the choice of village and shop locations, which often appear in the form of castles or defensive forts. The security and defence factor in tribal life is important, as this is reflected in the small and few windows in the old buildings, especially in the lower rounds of the building. And the upper roles and the roofs are very similar to the defensive war positions in terms of the strength of the construction in them and the work of small openings at different angles through which a person can see or see other people outside the residence while they can't watch it through them, and those openings are called "masks". Finally, it can be said that the lack of living or class differentiation (Heterogeneity) among the population and thus the prevalence of interaction relationships. Contiguity and social participation all led to the existing similarity in external manifestations and internal formations of housing and villages. Its (and shops) are almost one-size-fits-all, although there are differences, they do not exceed the size of some of the homes of tribal elders, conscious of them and large agricultural families imposed by their social tasks and functions. The Yemeni residence characterizes buildings in the Yemen region with a distinct and unique character with clear local features, although they are regarded as local formulation of Islamic architecture and at the same time are not similar to the models of Islamic architecture in the rest of the other Islamic country [17].

1.2.4.1 Multi-storey dwellings in Yemeni cities, especially Sana 'a city (study status) [18]

Sana 'a is located in the middle of the high part of Yemen, located at an altitude of 2350 metres (9,600 feet) from sea level, so the temperature is between 12 ° C at night and 30 ° C by day in summer, while in winter the temperature is between 22 and 25 ° C by day and between 2 and 6 ° C at night.

a. Building materials

The traditional multi-storey house of basalt blockages is built 0.50 metres deep from the Earth's surface and one metre above the Earth's surface and the exterior walls of both ground and

first floors consist of limestone with some black stones in the corners of the building, The exterior of the stone or the internal spaces of the walls is settled by a mixture of mud and stone-breaking and the third to sixth floors are built from burned mud bricks.

b. Free organization of housing

The entrance leads to a large lounge with two dorms that do not contain windows and around them rooms in two levels that use the lower room at the lower level as places of animal husbandry the upper rooms of the first level are used as places for storing flour, grain and dried vegetables. There is a steep ladder with high grades leading to the diwan and the rest of the rooms at level three and up to the surface. The Diwan is a large reception room used in family celebrations and interviews, the Diwan is high in the southern direction of being warm in winter as well as many living rooms (such as sleep and food, which are the most special in the various roles of the dwelling up to the rooftop of the dwelling where the cloakroom is located ", which has an area ranging from 12 to 18 square metres, its use prevails over the owner of the house and its private guests, and the cloakroom is the most affluent and decorative living room. It is noted from the previous division of the multi-storey dwelling that the ground floors of the dwelling were allocated to the public service and as a reception ward the higher the rate of privacy, that is, the designer has provided privacy by differing usage levels rather than by horizontal segregation of uses in the attribution itself. As we see, for example, in the case of the old Cairo dwelling.

c. Facades and openings

Yemen's traditional dwellings are high between five and nine. In their facades, they are less prominent, or perhaps totally non-existent. Buildings along the streets are combined to represent a huge wall. Most of the buildings from their back fronts overlook a large garden or orchard. Common in the houses of Sana 'a al-Hush, which surrounds the house from all sides, especially in the houses of Aayan al-Madina. The lower part of the dwelling, sometimes up to 13 m, is built in white stone and the wall thickness is approximately one metre. This part is invisible and openings except for the entrance door and some of the upper taboos necessary for lighting and ventilation. The upper part of the wall is often built from burnt bricks embellished with your brick or stone blades. These bloodstones or

ornamental elements are painted white. It is noted that the decorations are used as security tapes to determine the proportions of the roles, and the more decorative we wear.

Facade openings have varied and changed in size, and can be divided into [15]:

- The entrance door aperture is between 1.20 and 1.40 metres wide and with a relatively low height of between 1.60 and 1.80 m, with small openings that allow air and light entry, the entrance door has two important elements: the pestle, the galaxy and the pestle is a small iron piece consisting of two parts, one fixed and the other moving. And they're stationed in the middle of the top of the door to knock on next to visit the residence, Hungary is a hole at the top of the door with a sew attached to the door latch and connected to all the roles of the dwelling by tapping anchored in the roofs of the various roles penetrated by Hungary in order to open the door from any home, owing to the large number of floors of the residence, with observer windows in place to identify the roadblock.
- Windows vary in shape, size and embellishment, they are either a semi-circular lunar-topped or rectangular lunar-topped window, or a two-circular-moon-topped window, and the lunar function of plaster or glass is to insert lighting, and a prominent part of wood is called "cane to protect windows from rain and this type is used in overhead roles.
- The drinkers are a prominent window of 0.70 to 0.90 metres from the bottom of Kabuli, often made of municipal wood, ventilation function and can only be seen from the inside out, mainly through an aperture at the base of the lower Masharba
- The water chiller openings are a small window that stands out from the exterior wall and is built in bricks or stone, and are based on a wooden cable, which is stretched to allow for ventilation on three sides (front and side), where it is used to cool the water in porous time, the ventilation helps the evaporation process of porous surfaces and thus leads to the required cooling, and this element is also used to preserve meat, so it is placed on the northern front, i.e. it performs the function of refrigerator in modern homes.

- For rooftop vents, they are complex openings of burned bricks with small openings that can only be seen inside out. These slots reach a height of about 1.50 m to provide privacy for women especially when spreading laundry.
- The chakkus is a small ventilation hatch located in a high level and has an inner cover. The vent becomes wider as we go inside. Its function is to remove the corrupt air and smokes from the rooms, i.e., it acts as a suction fan in the modern house.
- Residential sewage method: For liquid waste, ground streams are provided, through which they go down on an isolated surface greased with lime. (The Nour) often evaporates before it reaches the Earth, and solid waste comes down on an

outward slash where it dries quickly after descending into a dedicated room, and has previously been collecting solid waste and using fuel, especially for public bathrooms, and used as fertilizer in some other areas [19,20].

2. METHODOLOGY

The authors used all available research databases; they downloaded all accessible articles that exhibited significance that were not published in predatory journals. Of importance, the authors excluded all inaccessible data. Next, the authors read each and every one of these papers; skimming them for relevant data. Following the obtaining of the required data; the authors illustrated said data in this paper.



Fig. 6. General Structure of Buildings



Fig. 7. Paradoxical distribution of buildings

3. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

3.1 Discussion

The reality of urban growth is the whole of urban and rural activity, which falls within the framework of construction, stability, relations and interdependence with land and neighbourhood. Thus, urban reality is the physical framework for the stability and existence of society and an indicator of the degree of social well-being and the level of servicing of this society with the basic needs of housing, safe water security, energy and transportation to achieve well-being [13]. Urban urbanization in the Arab world dates back to an ancient history, with some cities growing up several thousand years ago. In the areas of the Arabian Peninsula or the Arabian Peninsula, south-east of Asia, the world's largest peninsula since the mid-fourth millennium B.C., cities have been found and the area has not only witnessed the first civilization in history, but it has had a more urban (urban) society in its time [14]. History has seen the emergence of a large number of cities that have played central roles in the military, commercial and religious spheres, and have seen their growth and deterioration. After the end of the major conquests, a new era of urban stability began. Since the late Umayyad era and all the Abbasid era, large cities have been founded on new urban and urban foundations that are essentially non-military, but mainly social, economic, artistic and urban [12]. The Middle Ages were therefore characterized by a major urban development, with the sizes of some Arab cities, during this period, reaching sizes, perhaps never before. Since the nineteenth century, a new phase of urban development has begun, with urban land in urban centres in general and the President specifically subjected to a range of economic processes, the most important of which is the factor of competition. The potential of invasive urban use to demonstrate its preference in occupying the new urban space comes through the constant demand and urgent need for such use in occupying that space. The economic return of the new use is the basis for resolving the competition battle in its favour. An example of the development of transport, the growth of international trade, industrial activity and the development of per capita income are key factors that have led to the emergence of many new cities [14]. In the twentieth century, new cities emerged, as a result of the discovery and extraction of oil.

These cities highlighted what exists in the Arabian Peninsula, but the phenomenon of urban growth was not limited to the Arab world, as the twentieth century witnessed a rapid growth of the world's urban population. According to the United Nations, the proportion of the urban population in the total population rose from 13% in 1900 to 29% in 1950, reaching 49% in 2005, and is expected to reach 60% in 2030 [14]. The Arab States have witnessed an important historical phase of social change (urbanization), particularly in the area of population mobility (migration) from rural and urban areas. Today's Arab city society has become a heterogeneous mix of cultures and nationalities and institutions are replacing family, lane and tribe in various aspects of life and social systems. Education, family and economic, and in the areas of information, social defence, traffic, health, etc. Today, it can be estimated that half of the Arab population is urban as a result of urban growth and urbanization, since the expansion of cities in parallel borders is a healthy phenomenon and a sign of civilization's development and economic and social growth [16,17]. Yemen, like most developing Arab countries, is at an important historical stage in the development of urban societies, accompanied by changes in social construction and the emergence of new patterns of cultural values reflected in the integration into the traditions, customs and different cultures of commuters to create a new urban society that gives a new dimension to the development of the urban environment that has had the impact of urban growth processes. (Urbanization) The most important dimension if the reality of urban growth is reflected, which would transform the city from an urban environment into an environment of diversity of modern cultures and social values to form a social environment emerging in the form of a new urban society [18,19,20].

The natural environment has been associated with other fields of creating a social and cultural environment that is connected to the medicine of the habits, the interaction of the collective and individual traditions, and what follows them from economic habits. The degree of urbanization is demonstrated by man's control over the natural environment (place) and its harnessing of his well-being. quality of relations between rural and urban society and the natural environment varies. By its nature, rural society is more connected or subject to the natural environment.

Thus, the natural environment directly controls the social and human environment of rural society.

First: Since the majority of the population of contemporary cities are immigrants from rural areas, it is necessary to work towards the formation of a homogeneous social fabric of a distinct nature in those new areas, which means that the original social characteristics of the new population must be preserved in the face of the materialism and individuality of the larger urban communities.

Second: Strengthening the spirit of belonging of the city's inhabitants. In that context, many sociologists consider it necessary to create a basic gathering and focus in each of the city's residential locations. These centres not only provide health, education and recreational services but also serve as gathering points that help the residents of the site to familiarize themselves with each other as well as to learn about the distinctive geographical characteristics that live in all these things will help overcome the atmosphere of alienation and isolation prevailing in contemporary cities.

Thirdly: Action to strengthen the spirit of participation in the formulation and implementation of community development plans among citizens This increases the inhabitants' collective affiliation and thus their keenness to develop and maintain them. In the context of these social needs in urban planning, spatial justice and regional balance are particularly important in the developing world's urban environment.

3.2 Conclusion

- The work of the natural environment in connection with the association of other fields on the creation of a social and cultural environment that is connected with the drums of the habits of collective and individual traditions and what follows from economic habits. The degree of urbanization is demonstrated by man's control over the natural environment (place) and its harnessing of his well-being.
- Quality of relations between rural and urban society and the natural environment varies. By its nature, rural society is more connected

or subject to the natural environment. Thus, the natural environment directly controls the social and human environment of rural society.

- Urban community, on the contrary, lives in relative isolation from the natural environment, which makes the social and human environment clearly dominant.

3.3 Recommendations

Firstly: Since the majority of the population of contemporary cities are immigrants from rural areas, it is necessary to work towards the formation of a homogeneous social fabric of a distinct nature in those new areas, which means that the original social characteristics of the new population must be preserved in the face of the materialism and individuality of the larger urban communities.

Secondly: Strengthening the spirit of belonging of the city's inhabitants. In that context, many sociologists consider it necessary to create a basic gathering and focus in each of the city's residential locations. These centres not only provide health, education and recreational services but also serve as gathering points that help the residents of the site to familiarize themselves with each other as well as to learn about the distinctive geographical characteristics that live in all these things will help overcome the atmosphere of alienation and isolation prevailing in contemporary cities.

Thirdly: Action to strengthen the spirit of participation in the formulation and implementation of community development plans among citizens these increases the inhabitants' collective affiliation and thus their keenness to develop and maintain them. In the context of these social needs in urban planning, spatial justice and regional balance are particularly important in the urban environment of the developing world.

ACKNOWLEDGEMENT

I extend my thanks to the family of the Faculty of Architecture and Planning, Sudan University of Science and Technology for their great contribution to the success of the research

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Alatar, MS., Sharif Mohammed Sabri, Moslahi, Mohammed Said, Hassan, LamiaKhamis Mohammed. Proposed model for evaluating commercial centres in new urban communities. *Fayoum University Journal of Engineering*. 2019; 2(2):25-42.
2. Alhazmi AM, Faheem M. A critic appraisal of national centerfor archives In *Yemen-Sana'a*; 2014.
3. Al-Ameri A, Schneider M, Abo-Lohom N, Janetz S. Characteristics of stable isotopes of oxygen-18 and deuterium of groundwater in the Sana'a basin aquifer systems, Yemen. *Arabian Journal for Science and Engineering*. 2014 Jul;39: 5625-36.
4. Abdulsadiq AA. Problems of development planning in the people's democratic republic of Yemen. In *Economy, Society & Culture in Contemporary Yemen*. Routledge. 2021 Nov;30:12-21
5. Gause FG. Yemeni Unity: Past and Future. *Middle East Journal*. 1988;42(1): 33-47.
Available:<http://www.jstor.org/stable/4327684>
6. Fattah K. A political history of civil-military relations in Yemen. *Alternatif Politika*. 2010;2(Special):25-47.
7. López-Andreu M, MiquelVerd J. Employer strategies, capabilities and career development: two case studies of Spanish service firms. *International Journal of Manpower*. 2013 Jul 5;34(4): 345-61.
8. OCHA. Yemen organizations monthly presence. Office of Coordination for Humanitarian Affairs (OCHA) United Nations. Retrieved December 2019 from; October 2018
9. Hadden RL. The geology of Yemen: An annotated bibliography of Yemen's geology, geography and earth science. Alexandria, VA, USA: Army Geospatial Center, US Army Corps of Engineers; 2012 Jan 1.
10. Al-Sallal KA. Sana'a: Transformation of the Old City and the Impacts of the Modern Era. *Planning Middle Eastern Cities: An Urban Kaleidoscope in a Globalizing World*. London: Routledge. 2004 Jul 15:85-113.
11. Al-Dosary AS, Shahid MM. Principles for the rejuvenation of an islamic city in the modern context: The Case of Medina of Tunis. *EDUCatt-Ente per ildirittoallo studio universitariodell'Università Cattolica*; 2014 May 15.
12. Albaroot M, Ahmad AH, Al-Areeq N, Sultan M. Tectonostratigraphy of Yemen and geological evolution: A new prospective. *International Journal of New Technology and Research*. 2016;2(2): 263608.
13. Khalil Nasher. The Role of Secondary Cities in Urban Spatial Development: An Applied Case) *Secondary Cities in Yemen*. *Journal Architecture & Planning*. 2015;27(1).
14. Générales T. PL Cheikho, SJ *Catalogue Raisonné Des Manuscrits de la Bibliothèque Orientale. Mélanges de l'Université Saint-Joseph*. 1929;14:107.
15. Gable RW. Government and administration in the Yemen Arab Republic. *Development Support Bureau, US Agency for International Development*. 1980;167.
16. Hooper A, King A, Patmore JA, Mason CM, Martin D, Dunn R, Owens S. *Reviews: Urban and Regional Planning Series. A Decision-Centred View of Environmental Planning, Architecture of the British Empire, the History and Design of the Australian House, the Railway Station: A Social History, Goodnight Campers! The History of the British Holiday Camp, Innovation, Entrepreneurs and Regional Development, Monographs on Soil and Resources Survey 12. Principles of Geographical Information Systems for Land Resources Assessment, Microcomputer Graphics: Art, Design* 1988;38.
17. Lewcock R. The Campaign to Preserve the Old City of Sana'a. *Architectural Heritage of Yemen: Buildings That Fill My Eye*. 1982;130-139.
18. Lane MB. San'a': pilot restoration projects for the International Campaign to safeguard the Old City of San'a'; 1991.
19. Silk J. *Quantitative Developments in Geography and Planning in a Practical Reasoning Framework*. *Resources and Planning: Pergamon Oxford Geographies*. 2013;139.

20. Alsanea N, Abduljabbar AS, Alhomoud S, Ashari LH, Hibbert D, Bazarbashi S. Colorectal cancer in Saudi Arabia: incidence, survival, demographics and implications for national policies. *Annals of Saudi medicine*. 2015;35(3):196-202.

© Copyright (2024): Author(s). The licensee is the journal publisher. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:

<https://www.sdiarticle5.com/review-history/117181>