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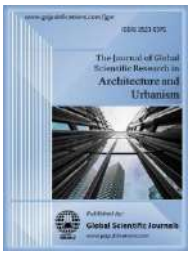

New Urbanism: Reshaping Cities and Adapting to Global Change In the City of Nasiriyah, a Case Study

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ABSTRACT

Modern cities are undergoing major changes due to rapid urbanization and environmental and social challenges, which calls for adopting new strategies to ensure sustainability and quality of life. This paper aims to provide a practical framework for implementing the principles of new urbanism in the city of Nasiriyah, with a focus on improving infrastructure, managing resources, and enhancing the local economy. This includes developing sustainable transportation systems, modernizing public facilities, and enhancing the efficiency of natural resource use. Small and medium enterprises are also supported and local tourism is promoted. The results indicate that implementing these principles can contribute to improving quality of life and sustainability, and requires effective cooperation between the government, the local community, and the private sector.

1. Introduction

With the accelerating rates of urbanization and global changes resulting from climate change, globalization, and the digital revolution, there is an urgent need to reconsider how cities are built and managed. The concept of new urbanization refers to a comprehensive approach that responds to these challenges and works to reshape cities to be more sustainable, resilient, and livable.

In this research, we review the concept of new urbanization, its drivers, the challenges it faces, and the most prominent strategies used to reshape the city of Nasiriyah in line with global variables and climate change.

The city of Nasiriyah is one of the Iraqi cities that face development challenges due to rapid population growth, environmental degradation, and weak infrastructure. This research paper examines how to apply new urbanization to meet the needs of the city, taking into account climate change and limited resources, to become a sustainable and resilient city.

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2. Methodology

The research paper is based on a descriptive and analytical approach by analyzing the current situation in Nasiriyah (environment, infrastructure, local economy), and studying successful international experiences in new urbanization, in addition to designing a practical framework that suits the city's specificities.

3. The concept of new urbanization

New urbanization refers to a pattern of urban development that focuses on creating more balanced and sustainable cities in terms of environment, society and economy. This concept seeks to improve the quality of life for residents while reducing the environmental impact and using resources efficiently**(Carmona,2021,p: 17)**.

3.1. Main features of new urbanization:(Yu and Reviews,2021,p: 110)

1. Focus on environmental sustainability.

2. Enhancing urban resilience to crises such as natural disasters and health crises.

3. Providing smart infrastructure supported by technology.

4. Supporting the local and creative economy.

5. Designing cities with balanced population density and large green spaces.

3.2. Drivers of New Urbanism:(Feng, Liu et al.,2022,p: 112)

• **Climate change:** Climate phenomena such as sea level rise and drought affect the stability of cities, requiring urgent interventions to adapt to these changes**(Bibri,2020,p: 104)**.

• **Population growth:** With the world's population expected to reach more than 9 billion by 2050, cities face significant challenges in meeting housing and infrastructure needs**(Bibri,2020,p: 104)**.

• **Digital technology:** Technology provides opportunities to develop smarter management systems, such as smart cities that use data to improve service efficiency**(Masik, Sagan et al.,2021,p: 102)**.

• **Health crises:** The COVID-19 pandemic has highlighted the importance of urban planning that takes into account public health and provides flexible facilities.

3.3. Challenges facing New Urbanism:(Nieuwenhuijsen,2021,p: 106)

• **Financing:** New urbanization projects require significant investments, which is a challenge for developing countries with limited resources.

• **Social inequality:** Rapid urbanization can exacerbate the gap between rich and poor, if social justice is not taken into account in planning.

• **Resistance to change:** New urbanization initiatives face resistance from local residents or parties affected by land use change.

• **Environmental impact:** Although new urbanization aims to reduce carbon emissions, the implementation of projects may lead to unintended environmental impacts. As in Figure (1)

Figure No. (1) Challenges facing New Urbanism

Source: Author

4. Strategies for reshaping cities(Eltarabily and Elghezanwy,2020,p: 75):

1. Sustainable urban planning: Incorporating green spaces such as parks and planted roofs. Promoting public transportation, walking and cycling to reduce carbon emissions**(Castán Broto and Robin,2021,p: 715)**.

2. Adapting to climate change: By building resilient infrastructure such as flood-resistant drainage systems. Using sustainable and climate-resilient building materials**(Zhang, Chung et al.,2020,p: 508)**.

3. Smart cities: Including the use of the Internet of Things (IoT) to improve water, energy and transportation management. Applying environmental monitoring systems to monitor air and water quality**(Barton, Grant et al.,2021,p)**.

4. Community engagement: Encouraging residents' participation in neighborhood design and infrastructure decision-making. Promoting the concept of "the city for all" to ensure inclusive urban planning**(Pozoukidou and Chatziyiannaki,2021,p: 928)**. As in Figure (2)

Figure No. (2) Cycle of Urban Resilience and Sustainability

Source: Author

5. Analysis of the current situation in the city of Nasiriyah

The city of Nasiriyah, the center of Dhi Qar Governorate in southern Iraq, is one of the cities of great historical and cultural importance, as it hosts the archaeological site of Ur, the cradle of the Sumerian civilization. Its population is about one million people, and it faces multiple development challenges, including poor urban planning, lack of infrastructure, and scarcity of green spaces, in addition to high unemployment rates and disparity in social services. However, the city has promising potential, including its strategic location, agricultural resources, and cultural heritage, which makes it qualified to transform into a sustainable development center if these potentials are properly invested and a balance is achieved between the needs of the environment, economy, and society. It was divided into the following axes As in Table No. (1).

Table No. (1) Indicators and Challenges

Indicators and Challenges	Aspects
- The city has a population of about one million - Increasing population density. - Lack of basic services (housing, health, education).	**Social and Demographic Aspects**
- Air pollution problems due to vehicle and industrial emissions. - Climate change and drought affecting water resources.	**Environmental Situation**
- The road network suffers from congestion and poor planning. - Lack of developed public transport. - High reliance on private vehicles.	**Infrastructure and Transport**
- The economy relies on agriculture and traditional crafts. - Untapped tourism potential.	**Local Economy**

Source: Author

5.1 Sustainable Urban Planning for Nasiriyah City

Nasiriyah City seeks to redistribute residential areas by designing integrated service communities, including affordable housing and large green spaces. This project includes the establishment of public parks and recreational areas, with the aim of improving the local environment and enhancing the quality of life for residents. These initiatives aim to provide a sustainable urban environment that meets the needs of citizens and contributes to enhancing their well-being, with a focus on providing open spaces that contribute to improving public health and supporting social interaction between individuals. As in Table No. (2).

Table No. (2) Indicators and Challenges

Target	Value	Indicator
Provide affordable housing and green spaces	60%	Percentage of population benefiting from residential area redistribution
Establish public parks and recreational areas	30%	Increase in green spaces

Source: Author

There are two types of housing patterns in the study area, which are connected housing for single families, and the low-rise residential apartment pattern, as the horizontal pattern is the dominant one that causes the phenomenon of urban sprawl in the city. The diversity of housing can be measured in detail as follows:

1- The percentage of connected housing out of the total number of housing: Through the field study and data from the Directorate of Nasiriyah Municipality, as shown in Map No. (1) below, it was found that housing with a connected horizontal pattern is the largest percentage in the city, where it constituted 97%. As for vertical housing, it is limited to two neighborhoods, which confirms the existence of the phenomenon of sprawl and land consumption to meet the housing need in the city as a whole.

2- The percentage of the number of buildings that include residential apartments of 8 floors or less out of the total number of housing units: Through the field study and data from the Nasiriyah Municipality Directorate, the total number of horizontal and vertical housing units reached 10,189 buildings, and the number of buildings (less than 8 floors) that include residential apartments was 96 buildings and its percentage was 0.94, and through the Simpson index we find that the value of the index reached 0.008, which expresses the dominance of the horizontal pattern over the vertical pattern in the study area.

Map No. (1) shows the distribution of residential areas in the city.

Source: Author based on data from the Nasiriyah Municipality Directorate 2019 and on the GIS10.3 program.

This indicator is described as one of the important things in determining the size of green spaces by allocating 15 m2 per person, and through the field study of the current situation and the aerial image and based on the data of the Central Bureau of Statistics, the size of green spaces in the city was calculated as a total of 122.6 hectares, and by dividing the population of 157,355 people, it was

found that the individual's share of green spaces is 7.7 m2, which is less than the standard by half, and Map No. (2) below shows the green and recreational areas in the city of Nasiriyah. As there are no public parks of sufficient size to accommodate citizens' personal and national occasions, and there are public parks in a good quantity in the city center, but they have not been better utilized.

157,355/122.6 * 10,000 = 7.7 m2, the share of each individual

Map No. (2) shows the distribution of green spaces in the city.

Source: Nassereiah City masterplan Report Phase 4, 2010, p28

5.2 Improving Infrastructure and Transportation

The city of Nasiriyah seeks to improve infrastructure and transportation by developing environmentally friendly public transportation, such as electric buses, with the aim of reducing emissions and improving air quality. The project also includes the creation of dedicated pedestrian and bicycle lanes, to promote sustainable mobility and reduce traffic congestion. The implementation of these initiatives is expected to improve the city's transportation efficiency, reduce pollution, and provide a safer and more pedestrian- and cyclist-friendly urban environment. As in Table No. (3).

Table No. (3) Indicators and Challenges

Target	Value	Indicator
Develop eco-friendly public transport	100 buses	Number of electric buses
Facilitate mobility and improve local environment	50 km	Length of pedestrian and bicycle paths

Source: Author

It is determined by the population density of pedestrian roads, as there is one area designated for pedestrians in the city of Nasiriyah, which is the main old city center with an area of 189 hectares, as shown in Map (3) below, and through conducting a field survey, it was found that the number of pedestrians in it reached about 98,280 people, and then the pedestrian density in it reached 520 people/hectare, which meets the standard of 300-740 people/hectare, and accommodates an additional 220 people/hectare as a maximum for the standard. As for the study area, there is no area designated for pedestrians, as all roads are mixed (pedestrians, cars and bicycles), which is contrary to the standard.

Map No. (3) shows the network of pedestrian and bicycle paths within the city.

Source: Nassereiah City masterplan Report Phase 4, 2010, p28

5.3 Climate Change Adaptation

The city of Nasiriyah aims to adapt to climate change by improving water management systems and building water treatment plants, which contributes to improving the efficiency of water resource use and reducing waste. The project also includes the use of solar energy to provide affordable electricity, which contributes to reducing dependence on traditional energy and enhancing environmental sustainability. Through these initiatives, the city seeks to enhance its resilience to climate change and achieve sustainable development that takes into account environmental and economic aspects. As in Table No. (4).

Table No. (4) Indicators and Challenges

Target	Value	Indicator
Improve water management systems	10 plants	Number of water treatment plants
Provide affordable electricity	40%	Percentage of reliance on solar energy

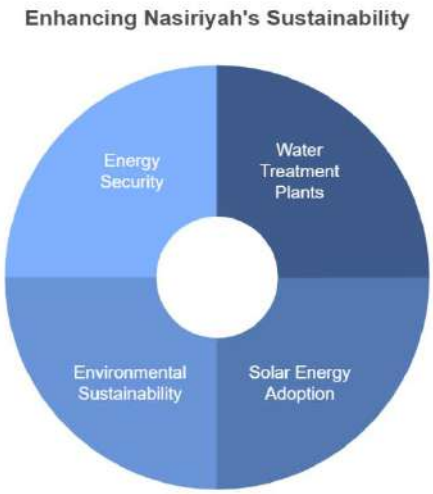
Source: Author

Therefore, Nasiriyah city needs 10 water treatment plants. By improving water management and expanding the scope of treatment plants, pressure on water resources can be reduced, which enhances the sustainability of the city's ecosystem. These plants will also contribute to meeting the growing water needs more efficiently, which benefits the local population in terms of providing clean water.

Nasiriyah city also noticeably lacks the use of solar energy, as the use of solar energy enhances environmental sustainability and reduces harmful emissions resulting from the consumption of traditional fuels. Providing electricity at affordable prices is also an important step to improve the standard of living for citizens in Nasiriyah, especially in areas that suffer from high electricity costs. This shift to solar energy will improve environmental performance and enhance energy security in the city in the long term.

Thus, with the trend towards relying on solar energy at 40% of total electricity consumption, Nasiriyah city will be able to reduce dependence on traditional energy sources (such as fossil fuels) and provide electricity at affordable prices to citizens. As in Figure (3)

Figure No. (3) Enhancing Nasiriyah's Sustainability



Source: Author

5.4 Stimulating the local economy

Nasiriyah aims to stimulate the local economy by promoting cultural tourism through the development of archaeological sites such as Ur, which contributes to attracting local and international visitors and increasing revenues from the tourism sector. Initiatives also include supporting handicrafts and small industries through targeted financing programs to empower local entrepreneurs and stimulate innovation in traditional industries. Through these steps, the city seeks to improve the local economic situation and create sustainable job opportunities for the community. As in Table No. (4).

Table No. (4) Indicators and Challenges

Target	Value	Indicator
Enhance cultural tourism	500,000 visitors	Annual number of visitors
Support handicrafts and small industries	200 projects	Number of supported projects

Source: Author

Initiatives aimed at promoting cultural tourism and developing small industries in Nasiriyah contribute to stimulating the local economy, as the number of annual visitors is expected to increase to 500,000 visitors, which will boost tourism revenues. Supporting 200 projects in handicrafts and small industries will also contribute to stimulating innovation and creating sustainable job opportunities, which supports sustainable economic development and enhances the city's ability to face future challenges.

6. Results and Recommendations

6.1 Conclusions

1. Dominance of the horizontal pattern: The data indicate that the horizontal pattern (connected housing) dominates the study area, constituting 97% of the total housing stock. This reflects the phenomenon of urban sprawl and indicates a high consumption of land.

2. Lack of housing diversity: The percentage of buildings containing residential apartments (less than 8 floors) represents only 0.94%, which reflects the weakness of vertical housing options in the city, and the inability to meet the needs of the growing population.

3. Low Simpson index: The value of the Simpson index (0.008) expresses the lack of diversity of housing patterns, indicating the overwhelming dominance of the horizontal pattern over the vertical, which hinders the achievement of balanced and sustainable urban development.

6.2 Recommendations

1. Encourage vertical planning: Local authorities should adopt policies that encourage the development of vertical housing projects. These projects can contribute to reducing the phenomenon of urban sprawl, in line with the principles of new urbanism that focus on sustainability.

2. Developing appropriate infrastructure: The infrastructure in areas affected by vertical housing should be improved to make them more attractive to residents. This includes improving public services such as transportation, water, and sanitation.

3. Providing incentives for investors: Tax incentives or facilities should be provided to investors in the field of vertical construction, as this can contribute to increasing vertical housing projects and enhancing the diversity of housing types.

4. Raising community awareness: It is important to raise awareness among residents about the benefits of vertical housing, including land use efficiency, reducing pressure on resources, and improving the quality of life.

5. Implementing comprehensive urban planning policies: The relevant authorities should adopt comprehensive urban planning policies that take into account all housing types and distribute them in a balanced manner, which contributes to achieving the sustainability of the city and improving living conditions.

6. Exploiting public spaces: Focus should be placed on developing public spaces in neighborhoods with vertical housing to enhance social interaction and improve the quality of life.

These conclusions and recommendations represent essential steps towards achieving new urbanization in the city of Nasiriyah, which contributes to reshaping the city to be more sustainable and meet the needs of its growing population.

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