

THE ROLE OF URBAN SUSTAINABILITY IN THE GROWTH OF NEW CITIES

Amna Taha Mohammed ^{1*}, Prof. Dr. Nada Khaleefah Alrikabi ²

¹² Urban and Regional Planning Center, University of Baghdad, Iraq

Aamna.Taha2100m@iurp.uobaghdad.edu.iq

dr.n.khalifa@iurp.uobaghdad.edu.iq

Abstract

Cities can be defined as human creations that are operated in accordance with the principles and approaches on which societies are based. The experience of new cities is one of the policies that many countries follow to solve their urban problems which is considered a pattern of organization and planning of the regional sphere that leads to the balance of the urban system network for the purpose of absorbing the excess population and activities and inspiring urban growth. Because cities are environmental, social, and economic systems, the role of sustainability comes in building cities that are more efficient in using resources, improving services, ensuring a better quality of life now and for future generations, and create balanced, self-renewing human systems that integrate with each other to form one basic system that leads to sustainable growth for these cities. So, the **research problem** in the absence of the role of sustainability in its dimensions (environmental, social, and economic) in establishing new cities. **The research aims** to activate the role of the concept of sustainability (environmental, social, and economic) in planning and establishing new cities, by focusing on issues (environmental, social, and economic) and integrating them equally with each other when implementing new cities, according to a **hypothesis** that activating the role of the concept of sustainability in planning and implementing new cities leads to ensuring their continued growth and expansion. The research will address two main axes, the first one deals with the policy of new cities, the principles of their establishment and classification, the concept of urban growth in them ,the standards of sustainable cities , while the second presenting the concept of urban sustainability and its dimensions, and analysis of the experience of growing up a new global city, **reaching** the most important effective indicators that can be applied in the implementation of new Iraqi cities.

Keywords New cities, Urban growth ,Concept of sustainability ,Sustainable cities ,modern trends in sustainability

1. Introduction

Sustainability has settled a large part of contemporary global trends at the level of theoretical propositions and practical applications. It seeks to design an integrated and balanced analysis of the capabilities available in an environment and direct them within specific strategies that operate within the ecosystem and its related systems (economic, social, cultural, and administrative). Moreover, it is

essential to maintain a balance of natural resources through the principle of rationalization and efficient use of resources in their various applications within the process stages of designing the sustainability structure.

In recent literature, sustainability has become one of the most critical problems to consider in urban planning and the key to its planning and design success. Quality of life must be directly linked and integrated with sustainability, meaning that failure to follow sustainability policies and strategies implies the deterioration of people's and cities' lives.

The city is not a monolithic building block within the public concept, but an integrated organic entity created to serve humanity. It stems from deep planning and thought based on essential components, and its goal is to provide a sound environmental framework for humans. Therefore, urban planning is considered one of the most critical keys to sustainable development, and the city's complex and interconnected system of buildings and movement corridors is suitable for accommodating many activities related to various aspects of development.

Related works

1. **Nidaa Hussein Abdel Aoun, 2023, "The Importance of Promoting Sustainability Standards When Planning New Cities", the 1st International Scientific Conference entitled: The Role of Civil Society Organizations in Achieving Sustainable Development Goals/Dar Al-Hekma Foundation:** This work addresses the significance and role of new cities policy in Solving the economic, social and environmental problems of existing cities, and the necessity of involving sustainable urban planning standards to prepare these cities and achieve sustainable development in performing successful urban settlements. Likewise, the quality of the built urban environment to meet the needs of residents in terms of diverse urban equipment and integrated functions to reach a balanced and harmonious urban network, as the decision to establish new cities is a political planning decision that seeks to achieve a specific goal, which is the successful growth and sustainable expansion of these cities [1].
2. **Islam Ghoneimi, 2017, "New Sustainable Settlements in Egypt", research published in the Sustainable Development Journal/September:** The researcher deals with the radical social and economic change in Egypt in recent decades and the change in the approved growth patterns that transformed the different patterns of new residential neighborhoods from the western world to Egyptian context: The purpose of this work is to develop solutions to the issues of the ancient city, taking into account that traditional compact, multi-use and high-density urban forms are essential for achieving sustainability goals (environmental, economic and social). This work studies and examines the sustainability of new Egyptian settlements through spatial analysis and observation to assess the extent of sustainability of the transition from the traditional urban form to the modern form in new cities and extract development standards and principles and thus set applicable development standards in accordance with the principles of sustainability to prepare new plans for new settlements and provide repair tools for existing new settlements.[2]
3. **Duany-et al, 2008 "How to make a Town- From Suburban Nation, The Rise of Sprawl and the Decline of the American Dream":** The analysis addresses regional concerns and design principles to ensure the development of new residential neighborhoods that are socially,

economically and environmentally sound, and the importance of organizing them according to the principles of clear center and edges, mixed-use, and connectivity, emphasizing the public realm of the pedestrian-oriented neighborhood, the concentration of activities and densities when neighborhoods meet each other at the edges. It integrates with the public transportation network and develops neighborhoods according to the geographical logic that organizes them according to development considerations .[3]

2.The Concept of New Cities

There have been many descriptions of new cities depending on their economic, social, and urban dimensions, time, and place. They can be defined as cities that are established by directed government decisions and not as a result of development over time. Their purpose is to absorb the population increase of existing cities and create new opportunities in order to reduce population pressure on existing significant cities and drive social and economic development. It is a center in which a group of integrated factors interact. It must have the social benefits of housing, work, and entertainment and the economic base to achieve a balanced distribution of industry and open the door to investment. It is a triangle with sides: housing, work, and services [4].

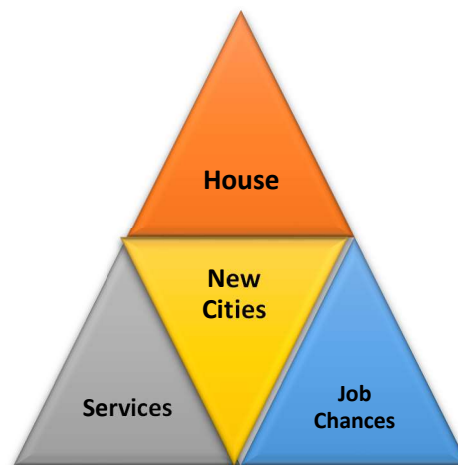


Figure 1. Shows foundations for building new cities

Source: The researcher's work based on: [4]

2.1 The New Cities Objectives

These objectives can be classified as follows [5, 6, 7]:

- Political objectives.
- Economic objectives.
- Social objectives.
- Urban objectives.
- Environmental objectives.
- Development objectives.

2.2. Elements of New Cities

It is a group of common factors that are linked and interact with each other to form a new city [8, 4]:

- Human gathering.
- Urban character.
- The location.
- For functional balance.

The last three elements depend on the first element

2.3. Positioning of New Cities

Picking a location is considered the first step in planning new cities, which is always a concern for the new city, as the following locations can be distinguished [8]

1. Cities located outside urban sites.
2. Cities located within the urban territory of the parent city (suburbs).
3. Cities located within the non-contiguous region

2.4. Classification of New Cities According to their Relationship to the Original City

New cities are classified according to their location, placement, method of connection to the original cities, the extent of their economic independence (geographical and functional diversity), and the ideas, plans, and motives for which they were established, which are [9, 10]:

1. New independent cities.
2. New dependent cities.
3. New Twin Cities.
4. New cities and suburbs.

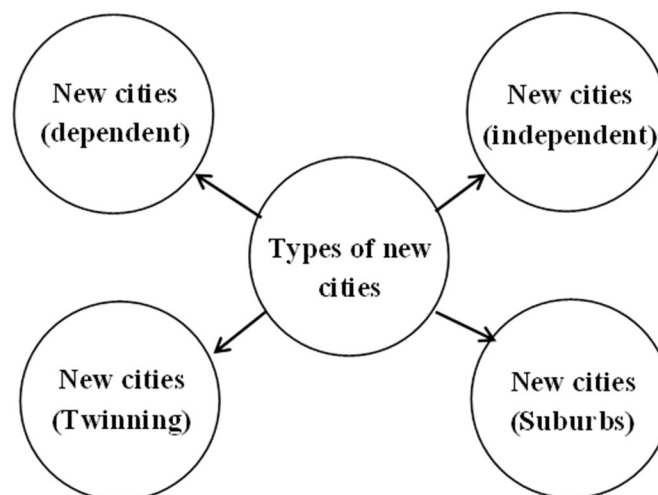


Figure 2. Classification of new cities according to their relationship to the original city.

Source: The researcher's work.

2.5. Determine the most Suitable Location for the New City (The Appropriate Location)

Four basic steps include detailed studies and economic approaches to the site selection process:

1. Determine strategic goals.
2. Determine technical standards.
3. Determine functions for the city.
4. Evaluating civil jobs according to their importance: This will be by a mechanism employed in classifying proposed sites. [11].

3. Urban Growth

Urban growth, in its demographic sense, is the increase in the population of urban areas relative to the total population within a specific period. Its speed depends on the natural population increase and the migration of rural inhabitants to these areas. [12]. Urban growth, in its urban meaning, is related to urban development and consists of physical expansion and functional changes. It denotes the extension or expansion of urban sectors in general and cities in particular and a change in the primary activities of land use, so it acquires another meaning: spread Urban sprawl or urban sprawl. [13], It is closely related to industrialization in industrialized countries and increases with the increase in factories, literary products, and administrative and artistic works [14]. Thus, the growth of new cities represents urban growth in its demographic and urban sense. Demographic urban growth is linked to an increase in the population (naturally or due to migration from nearby areas), and urban growth is related to the expansion of urban sectors and changes occurring in land benefits, so it acquires the meaning of urban expansion or spread.

4. Sustainability Concept

Sustainability is a famous, multifaceted concept that emerged deeply during the second half of the twentieth century with the emergence of the environmental movement. The United Nations Conference Earth Summit in 1992 reached the view that "sustainability equals the integration or balance of environmental, social, and economic issues, or the achievement of simultaneous progress in the environmental, social, and economic fields in the context of strong programs of consultation and participation" Sutton [15]. To face the challenges confronting the human race and execute sustainable development. The word "sustainability" has become a global word and is a potential solution to many international, regional, and local issues facing humanity, such as overpopulation, infrastructure deterioration, pollution, and unlimited urban expansion with limited resources [16]. It also means preserving something and providing it with the reasons for life and continuity. Economist Herman Daly presented a model to describe sustainability using a triangular pyramid of sustainability elements: environment, economy, and equity (see Figure 3). The triangle's base is represented by the environment (the final means), natural resources are defined because they are essential for a decent human life, and the middle class represents the economic aspect using technology and policies. To enhance the standard of living and material life to achieve the ultimate goals at the top of the pyramid: conducting human well-being through a sustainable economy that succeeds in preserving

and restoring the environment (the final means) and reaching equality and justice.

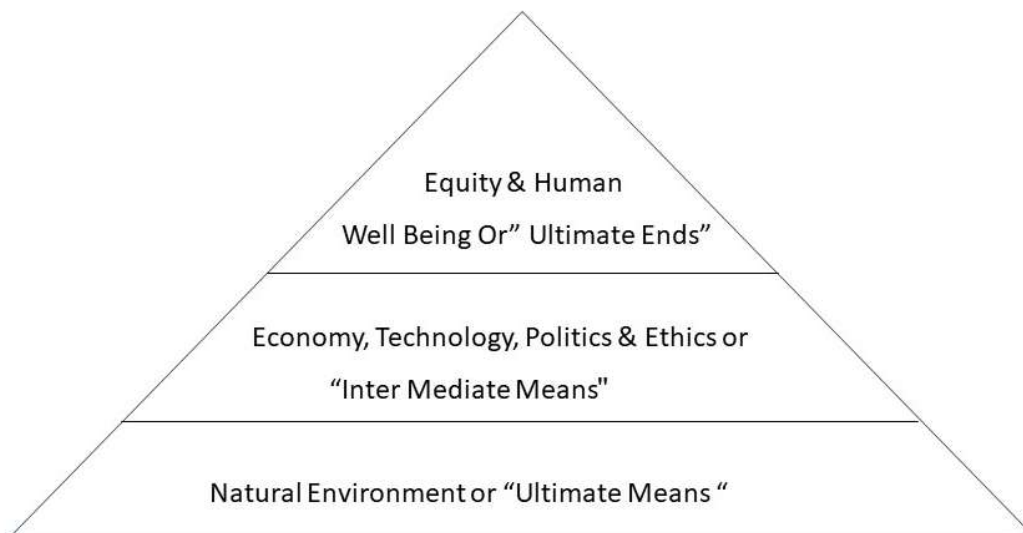


Figure 3. Dali's triangle of justice, economy and environment
Source: [16].

4.1. Sustainability Dimensions

Sustainability includes multiple dimensions that interact with each other. There are three basic, decisive, and interacting dimensions that work from an integrative perspective, meaning they can only be achieved separately [17]. The document emanating from the World Conference on Environment and Development (Our Common Future) and according to the researchers' classification is (Dally and Goodlan):

- Environmental dimension.
- Economic dimension.
- Social dimension.

In 1997 [20], an economist specializing in the environment, used the term "Triple Bottom Line" to describe the extent of the interrelation of these dimensions. He stressed that environmental, social, or economic goals cannot be achieved separately; rather, the three aspects must be considered simultaneously—improving environmental quality and economic prosperity while achieving social justice.[18].

4.2. Sustainability Pillars

There are three major pillars upon which sustainability is based in achieving an authentic, interactive

partnership relationship [19]:

1. Government.
2. Citizens.
3. Researchers, specialists, and specialized institutions.

5. Sustainable City

The concept of "sustainable cities" emerged, and a new form of city was found after adopting the idea of sustainable development and its effects on the physical and social environment. This would achieve economic growth through a financial base and the rational use of natural resources, not polluting or depleting them, and recycling the product



Figure 4. sustainability dimensions ,Source: [19]

process to recover the invested energy. Moreover, performing social justice for the residents of these cities by promoting the concepts of democracy, participation in decision-making, and self-reliance by meeting the basic needs of its members, reducing the gap in different income levels, ensuring the minimum acceptable quality of life for members of society and using artistic techniques compatible with local conditions [11]. Sustainable cities can be described as “those cities that seek to maintain the health status of their citizens over a long period through the combined struggles of parties involved in decision-making processes and development policies to improve the quality of life of individuals and their right to a safe living and to achieve the preservation of existing ecological patterns and protect them from destruction and pollution, without prejudice to the rights and needs of future generations.” In the future, the concept of “adequate governance” will be consolidated and the democratic climate will be spread [20, 21].

Table 1: Pillars for achieving city sustainability

Sustainable cities			
Urban government	Urban management	economic development	Social development
- Planning and decentralization - Reducing inequities - Promoting civil and political rights - Supporting local, national, regional and global relations	- Environmental management - Forest and soil management - Waste management, recycling and energy efficiency - Water management (including fresh water) - Maintaining air quality - Adapting to climate change and mitigating its severity	- Growth and improved production in the green economy - Creating decent job opportunities - Production and distribution of renewable energy - Technology and innovation	- Education and health - Food and nutrition - Green housing and buildings - Water and hygiene - Green public transportation - green energy - Recreation and community support areas

Source: [22]

There are three trends for sustainable future cities:

- The first is the natural environmental trend (the green, ecological, dispersed, car-free, healthy, flexible city).
- The second is technological trends (integrated and informational cities).
- The third is the geographical trend (the regional and network city) [23].

6. Principles of Modern Trends in Sustainability

- Increase housing density.
- Encouraging pedestrian movement.
- Multiple transportation options.
- Mixed-use.
- Multiple housing options.
- Sense of place.
- Social empowerment. [24]

7. International Experiences in Developing New Cities:

The pioneering British experience (New Town) always remains the reference model in the eyes of designers of new cities to solve urban concerns and enhance urban housing conditions. In general,

achieving demographic, economic, and social goals is important. The idea behind the Garden City was to absorb the population increase from major cities, especially London, the capital that suffers from industrial expansion and problems. Many, the most important of which are:

- The population doubled without doubling job opportunities.
- High population density.
- High land costs.
- The multiplication of poor residential buildings and the deterioration of housing.
- Lack of open spaces and green natural spaces. [10]

7.1. An Instance of the British Experience of “Stevenage” and Activating Sustainable Development in it Until 2024 Through the Supplementary Planning Document (SPD) Town of the Stevenage Euro Council

- The location of the new city is “Stevenage”.

It is one of the new cities in the general plan of Greater London and within the urban policy in preparing the comprehensive development plan for the capital. It was established in 1946 adjacent to the old city of Stevenage, whose population was at most 6,700 people. It is 50 km from London, and to enhance the city's prestige and attract residents, its location was selected near the vital transportation network and railway lines leading to the capital.

7.2. New City Job "Stevenage"

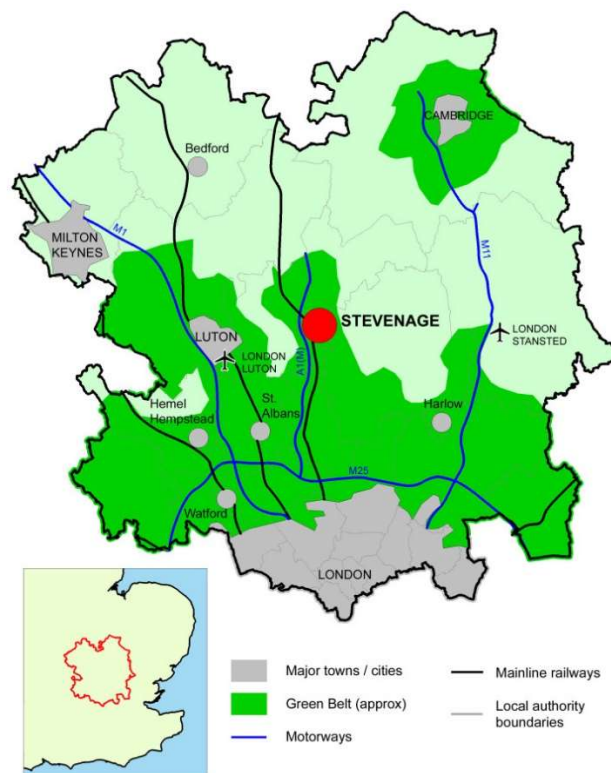


Figure 5. Location of Stevenage and its distance from London

Source: Prepared by the researcher based on Google Earth

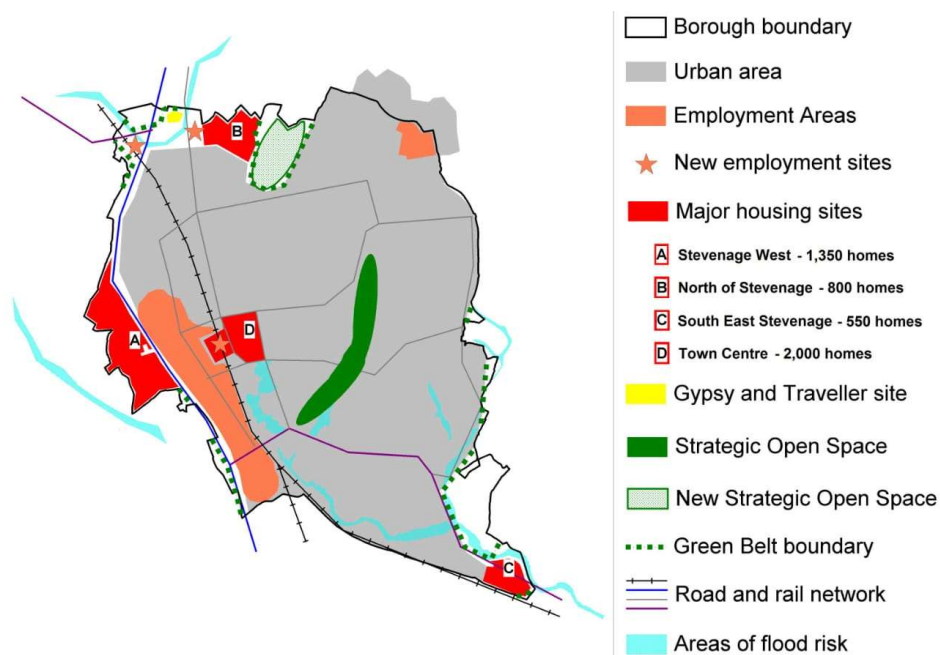


Figure 6 key diagram of Stevenage [27]

The economic base of Stevenage is the industrial function of providing a group of diverse industries and thus providing diverse job opportunities for its residents, which is the most substantial reason for its population attraction. The city's general plan intended to provide means of transportation and internal communications that support it. Therefore, it is considered one of the new independent cities that reduces the burden on the capital. To confirm the city's independent character, it was optional to provide means of access to London, which led to a small number of flights heading outside it, which meant that many of the city's residents worked within it.[25]

7.3. The Population

The city was designed so that the population would be (105) thousand people at the beginning of its construction. Then it began to increase to reach (84.65) thousand people in 2007, with a population density that reached (3260 people/km²).[10]

7.4. The General shape of the City

It comprises six residential neighborhoods, including commercial, educational, administrative, and recreational services. The per capita share of recreational areas in the city reached (42m²) and is considered a relatively high rate. In addition to the industrial areas along the railway to the west and east. The city developed around the old Stevenage and included small pockets of rural settlements. The original plan was inspired by the garden city movement and incorporated several distinctive urban design features, making its development a revolution in planning history. It consists of several distinct residential neighborhoods in that they are individual and separate from industrial areas. In the city, some neighborhoods contain old historical centers and, as it is an important starting point, some hotels provide their services to travelers heading to and from London. Many of the new city's principles helped create a thriving city [26,27].

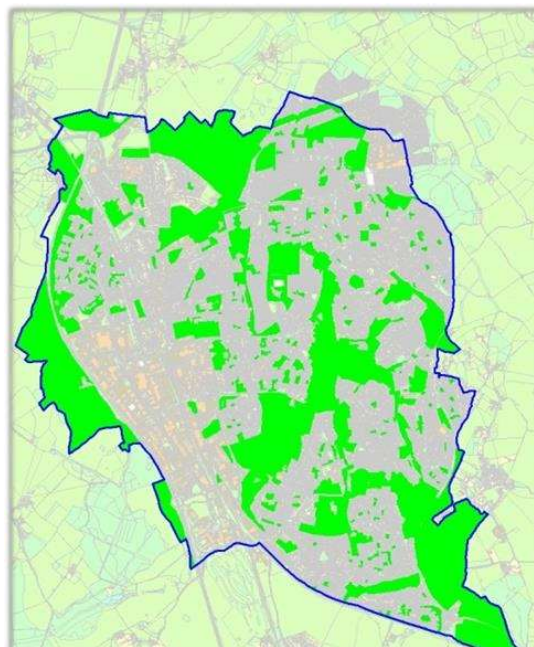


Figure 7. The open spaces between the urban complexes in Stevenage [25]**Figure 8.** Adhere to reasonable urban design principles in all improvements and new developments [25]

8. Evaluation of the Stevenage experience

The city has gained many successes that have had a positive impact on London, the most important of which are:

- It succeeded in absorbing the targeted population size because of increased job opportunities and services, with approximately (84.65) thousand people in 2007, equivalent to (80.6%) of the targeted population after (50) years of its establishment.
- Adopting industry as an element of attraction and provision: infrastructure, services, and transportation that connect it with neighboring cities.
- Achieving the purposes of the city plan with the success of planners and the government in performing economic, service and legal conditions.
- Continuous monitoring by the responsible bodies of the city plan and the possibility of amending it according to developments and temporal changes.
- The new city will receive the first batch of essential services and environment by selecting its location close to an existing city.
- The city is (50) km away from London. This led to respecting the importance of the Green Belt around London because it is located after this belt at a distance starting from (32) km, meaning it is (8) km away from the Green Belt.

9. Conclusion

9.1. The First Part: New Cities:

- Indicators: They are every word or concept that contributes to reaching the growth of new cities

NO .	Key indicator s	Other indicators	success reasons
1	Human assembly	<ul style="list-style-type: none"> - Supplying new housing opportunities - Reducing population pressure on the capital - Enhancing belonging to the city by supplying comfortable housing opportunities 	<ul style="list-style-type: none"> - The city contains six residential neighborhoods, individual residential neighborhoods, rural settlements in the old part inspired by the garden city movement, residential neighborhoods in the historical center, and hotels. These achieved the integration of urban design features, which made the development of the city a revolution in the history of urban planning. - Providing diverse employment opportunities for residents with a diverse industrial economic base is the most substantial reason for attracting residents and enhancing their sense of belonging. - It succeeded in absorbing the target population of approximately 84.65 thousand people in 2007, which is equivalent to 80.6% of the target population 50 years after its establishment.
2	Urban nature	<ul style="list-style-type: none"> - Creating a multifunctional urban center. - Creating a cultural identity with a renewed character. - Providing balanced modern capabilities on the social, economic and human levels. 	<ul style="list-style-type: none"> - The city's residential neighborhoods include services (commercial, educational, administrative, and recreational), as the per capita share of recreational areas reached 42m2, which is a relatively high rate. - Gaining cultural essence from the historical core of Old Stevenage
3	Balance	<ul style="list-style-type: none"> - Performing social balance at the level of housing, work, and entertainment. - Creating an economic base that guarantees self-sufficiency, the use of land, and services that suit the 	<ul style="list-style-type: none"> - Reaching diversity in housing by executing modern residential neighborhoods equipped with all public services. Establishing rural settlements and residential communities in the old historical center, as it is an important starting point where hotels were established for travelers to and from London, and individual residential neighborhoods separated from the city's industrial areas.

		nature of society and provide adequate living conditions.	
4	location	<ul style="list-style-type: none"> -Selecting a thoughtful location enables support of regions and areas on the one hand and determines the growth of other cities on the other hand. -Confirming no encroachment or damage to agricultural lands and providing green areas within the new cities. - The optimal location for the city is determined based on defining the strategic objectives and technical and artistic standards, describing the city's functions, and dividing them according to their prestige. 	<ul style="list-style-type: none"> - The Garden Cities movement inspired the original plan, which aimed to absorb the population increase in major cities and the comprehensive development plan for the capital. -Creating individual residential neighborhoods separate from industrial areas and annexing small pockets of rural settlements led to an increase in green and open natural spaces. - Choosing an essential location near the transportation network and railway lines leads to the capital while supporting the industrial base there with an internal transportation network and infrastructure that supports the economic base. This makes it an independent city that reduces the burden on the capital and connects it to neighboring cities to support spatial interaction.
5	Linkage to existing cities	<ul style="list-style-type: none"> -Determining the type of city according to its location, location, and the way it is connected to the parent cities. - Determining the possibility of its economic independence according to its geographical and functional diversity and based on the ideas and goals for which it was established. 	<ul style="list-style-type: none"> - The city is considered part of the comprehensive development plan for the capital (London), as it is 50 km away from it and close to the important transportation network, adopting diverse industry, including old historical centers, providing infrastructure, services, and an integrated transportation network with neighboring cities, which made it a new city. Independent from its home city

9.2. The second Part: Sustainability:

- Indicators: Every word or concept that contributes to achieving the principles of sustainability for new cities.

No.	Key indicators	Other indicators	success reasons
1	The economic	- Achieving elevated economic growth, efficiently reducing energy inputs and reducing damage to natural resources.	- Despite industry's adoption as a strong economic base with 222 factories, the industrial areas in the northern and western parts of the city have now been separated from the city.

	o m i c System (dimension)	<ul style="list-style-type: none"> - The city should consider the social, natural, administrative, and spatial aspects to increase profits. 	<ul style="list-style-type: none"> -Long-term sustainability through the use of durable, low-maintenance materials. - Reducing greenhouse gas emissions, reducing energy use, and employing environmentally friendly materials.
2	The social system (dimension)	<ul style="list-style-type: none"> - Providing job opportunities, reducing poverty, and enhancing social interaction. -Achieving social empowerment, stability, belonging, justice, and equity. - Greater interest in the human, psychological and cultural aspects. 	<ul style="list-style-type: none"> - Achieving self-sufficiency in job opportunities and thus increasing the population's standard of living. -A mix of housing types and sizes. - The recreational area per person reached 42m2, which is a relatively high rate. - Providing public spaces to support social interaction. -Well-designed neighborhoods build communities and give them a sense of belonging and security.
3	The Environment system (dimension)	<ul style="list-style-type: none"> - Achieving an ecological balance between the natural environment and the constructed environment. - Preserving energy and natural resources and ensuring their sustainability through premeditated management. - Maintaining the quality of water, air, and climate, as well as ensuring waste recycling. 	<ul style="list-style-type: none"> -Providing transportation and internal public transportation such as buses, railways, bicycles, and pedestrian streets. Also, reducing the number of national flights heading to the capital city, which reduces crowding and pollution. -Separating residential neighborhoods from industrial areas, integrating rural settlements into the city, increasing green and open natural spaces, and reducing overcrowding. -Improving and enhancing water management.
4	Interactive company	<ul style="list-style-type: none"> -Activating the role of decision-makers and public authorities through legislation that helps the concept of sustainability. -Citizens' participation in the decision-making 	<ul style="list-style-type: none"> -The success of planners and the government in achieving the city plan's goals, as well as the city's economic, service, and legal conditions. -Continuous monitoring of the bodies responsible for the city plan and the possibility of amending it according to developments and temporal changes.

		<p>process as a society that is aware of the importance of and supports the concept of sustainability, represented by the private sector and civil society organizations.</p> <p>- It focuses on analysis and means of supporting sustainability, as represented by researchers, specialists, and specialized institutions.</p>	<p>-The Stevenage Design Strategies in the City Supplementary Planning Document (2020-2024) sets clear design principles to guide future development.</p>
5	Good governance	<p>- Without prejudice to the rights of future generations and their future requirements.</p> <p>- Preserving existing ecological patterns and protecting them from pollution and destruction.</p>	<p>-Respecting the green belt around London as it is 8 km away from it, and protecting wildlife and conservation areas.</p> <p>- Do not encroach on rural settlements and develop them in the tourism domain.</p> <p>- Supporting rich and various biodiversity.</p> <p>-Providing parking, bicycle storage, and built-in garbage and recycling bins to reduce waste.</p>

REFERENCES

- [1] N. H. Abd Aoun. "The Importance of Promoting Sustainability Standards When Planning New Cities," Unpublished research, The First International Scientific Conference entitled "The Role of Civil Society Organizations in Achieving Sustainable Development Goals," Baghdad, Dar Al-HekmaFoundation.,15-16,July,2023. https://baytalthikma.iq/News_Details.php?ID=1799 Unpublished research.
- [2] I. Ghoneimi. "Towards new sustainable settlements in Egypt",published in Canadian Center of Science and Education, Sustainable Development Journal ,Vol. 10, No. 5, 2017. doi:10.5539/jsd.v10n5p1
- [3] A.Duany. et al. " How to make a town – from suburban Nation : the Rise of sprawl and the Decline of the American Dream",paperresearch,2008,pp.324-333
<http://innovationecosystem.pbworks.com/w/file/63349255/HowtoMakeaTown.pdf>
- [4] K. Karima. "The Concept of New Cities through Law 02/08", Algeria, Constantine University, Master's Thesis, 2013, p. 27.

- [5] A. Alexander . " Britain New Towns", simultaneously published in the U.S.A. &Canada , June 29 by Routledge, 2009,p(62-67) <https://www.routledge.com/Britains-New-Towns-Garden-Cities-to-Sustainable-Communities/Alexander/p/book/9780415475136>
- [6] M.O. Hamada. "Population and Development of New Societies," University Knowledge House, Alexandria, 1998, p. 46. <https://2u.pw/PU4IFEVU>
- [7] Soria . W. Bouzaida . Latrash. "New Cities between Visualization and Embodiment", Algeria, Larbi Ben M'hidi University (Oum El Bouaghi), Master's Thesis, 2015, p. 35
- [8] K. Boudjemaa,"New Cities", "City Planning and Urban Theories," Dar Al-Huda Printing, Publishing and Distribution Company, Algeria, Ain Melilla, 2005, pp. (125-127)
- [9] S. A. Ali. "Strategies and mechanisms for developing new cities in Egypt," , Egypt, Research article, Assiut University, College of Engineering , 2007.p244
- [10] B. S. Ahmed. "New Cities Policy between Planning Requirements and Its Reality," Algeria, Mohamed Bou Diaf University in M'sila, Master's Thesis, 2020, pp. (30-34,16)
- [11] N. R. Al-Lahham. "Towards Creating Excellence Areas and New Sustainable Cities in Egypt," Egyptian Council of Ministers, Research Paper Series, Center for Information and Decision Support, Research Paper No. 24, 2011, pp. 3-7. nisreenlahamm@idsc.net.eg
- [12] M. S. Kamel. "An approach to the influence of regional elements in medium-sized cities on directing urban growth," Cairo University, doctoral thesis on regional and urban planning, 2001, p. 10
- [13] S. S. Abbas. "The Dynamics of Urban Growth in Iraq," research published in the Journal of Planning and Development, Vol. 17, No. 26, p. 242. 2012.
<https://jpd.uobaghdad.edu.iq/index.php/jpd/article/view/127/105>
- [14] H. F. Qabbani. "The City (Definition, Concept, Characteristics) Study of Urban Clusters in Syria," published research, Damascus University, Faculty of Architecture, 2007, p. 12
- [15] P. Sutton. "A perspective on environmental sustainability" ; paper for the Victorian Commissioner for Environmental sustainability , Green.Leap strategicinstitute. , Version 2.b 12-April-2004,p.5. <https://www.donboscogozo.org/images/pdfs/energy/A-Perspective-on-Environmental-Sustainability.pdf>
- [16] A. M. Mensah & L. C. Castro," Sustainable Resource Use and Sustainable Development ; A contradiction?!", center of Development research , paper research ,University of Bonn , Germany,Nov. 2004, pp. 6-3.
[url={https://api.semanticscholar.org/CorpusID:16908932}](https://api.semanticscholar.org/CorpusID:16908932)
- [17] S. Al-kindy. "The Impact of Sustainability and Spatial Organization of Neighborhood Units in the Residential Environment",Engineering Journal ,Baghdad University ,Vol. 18, No. 2, February, 2012, p. 20. <https://doi.org/10.31026/j.eng.2012.02.10>
- [18] J. Elkington. " Triple Bottom Line Revolution" :Reporting for the Third Millennium , Australian CPA, Melbourne vol. 69, Iss. 101999,p.75. <https://www.proquest.com/trade-journals/triple-bottom-line-revolution-reporting-third/docview/211310601/se-2>
- [19] M. Al-Khatib. "Enhancing the societal role in the sustainable environment strategy in Iraq," Planning and Development Magazine, Issue 21, 2009, p. 133.
<https://jpd.uobaghdad.edu.iq/index.php/jpd/article/view/174/136>

- [20] A. A. F. Nagy. 'Cities and sustainable development in third world countries' "Planning for sustainable urban development towards sustainable cities in third world countries in light of contemporary changes," Alexandria, National Library and Archives, Modern University Office, 2015, p. 41
- [21] M. Al-Quraishi . S. Al-Jowari. " Indicators for measuring the compact city model", Journal of Geographical Reserch, Vol. 2, No. 28, 2018, p.26. <https://iasj.net/iasj?func=issues&jld=>"
- [22] UN/ United Nations Development of Economic and Social Affairs(DESA) , world Economic and Social Survey ed3,sustainable Development challenges, New York, 2 July 2013. <https://www.un.org/en/development/desa/publications/world-economic-and-social-survey-2013-sustainable-development-challenges.html>
- [23] S. K. A . Al-Mousawi. "Urban problems and their impact on planning future cities," published research, Wasit Journal of Engineering Sciences, Vol. 4, No. 2, p. 90, 2016. <https://doi.org/10.31185/ejuow.Vol4.Iss2.85>
- [24] J. Mutlaq. Z. Shamma. "Indicators of Sustainable Housing," The Second International Conference on Sustainable Engineering Technologies s (ICSET 2019), 2019, p. 2, doi:10.1088/1757-899X/518/2/022009
- [25] Stevenage Brough Local plan (2011-2030), publication draft – January 2016 , version 5 , [www. Stevenage . gov. uk](http://www.stevenage.gov.uk)
- [26] Wikipedia,"Stevenage", Wikipedia,arz.Wikipedia.org/wiki/Stevenage <a href <https://en.wikipedia.org/wiki/Stevenage>
- [27] Stevenage Design Guidance , supplementary planning Document "making life better by design view our strategy2020-2024 " , 2021,[www.design council . org .uk](http://www.designcouncil.org.uk)