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The Role of Urban Sustainability Mechanisms in Raising the Efficiency and Organization of Urban Management in Egyptian Cities, A Case Study (El-Salam District, Port Said)

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ABSTRACT

The rapid changes that our world witnessed had an impact on controlling the Egyptian planning and urbanization system, and we also do not overlook the shortcomings of some legislation, which resulted in a distortion in the urban environment with the absence of oversight and awareness of society, and because Egypt is a pivotal country in the world It was necessary to reconsider its urban future, so there was a need to develop many legislations and building and planning laws and activate the mechanisms of urban sustainability in cities. A strategy : this study focuses on the role of urban sustainability mechanisms in raising the efficiency of urban management in Egyptian cities by studying and analyzing successful local and international case studies of sustainable cities applying the laws of organizing and managing architecture and urbanism to come up with the elements of its success and some strategies for the possibility of applying them to Egyptian case (El-Salam area in Port Said)and then evaluated to show their success rate . A Study result is performing a statistical analysis for all study cases for Inferring equations of the evaluation of other cities and reaching to the most important standards for the mechanisms of achieving urban sustainability to raise the efficiency of organizing and managing urbanization in Egyptian cities.

Keywords: Urban Management, Buildings Regulations, Urban Legislation, Urban Sustainability Mechanisms, Sustainable Cities, Urban Distortion.

1 INTRODUCTION

Immigration has led to an increase in construction projects to fill the deficit in housing units. Despite this, urbanization in Egypt has suffered in recent years from urban deterioration and has not had a sustainable urban structure commensurate with the requirements of citizens, as the building standards that existed and some provisions of planning laws were unified in all regions. This is the situation that made the government face a major challenge to solve and control the building and planning system, demanding the activation of urban sustainability mechanisms to raise the efficiency of organizing and managing urbanization in Egyptian cities[1,2].

As urbanization in Egypt encounters many problems, for many reasons, including:

1. Unbalanced population density with land uses and distribution of services.
2. A defect in the high building density and the reduction of the per capita share of green spaces and the emergence of traffic densities.
3. The emergence of random construction and the emergence of many architectural and construction violations at the state level
4. Non-compliance with the regulations and laws that preserve the urban fabric.

1.1 Research Objectives

This study aims to activate the mechanisms of urban sustainability to raise the efficiency and organization of urban management in Egyptian cities, the study was carried out on one of the vital areas in the city of Port Said, which has undergone urban deterioration (El-Salam area) because of considered one of the important cities in Egypt, and it is a city has a local and global importance due to the presence of the Mediterranean Sea and the Suez Canal in it, and also connects the continents of Asia and Africa, which makes it play an important role in the economy in addition to Considered an important tourist attraction.

In order to reach the main goal, several secondary goals must be deal with:

1. Linking the urban sustainability system with the developed and regulating laws for architecture and urbanism.
2. Applying the mechanism of urban environmental sustainability on the plan, where (preserving the environment while respecting the topography of the site, sustainable planning for land uses, infrastructure, housing as population density and building proportions).
3. Applying the mechanism of social sustainability on the plan (upgrading the urban environment, future identification of empty and desert lands).
4. Applying the mechanism of economic sustainability on the plan (increasing job opportunities, investing with the participation of the private sector).
5. Applying the mechanism of the administrative sustainability on the plan (development of government agencies, activating monitoring with periodic follow-up, seeking help from specialists, popular participation)

1.2 Research Methodology

The research relied on study structure as shown in Figure 1.

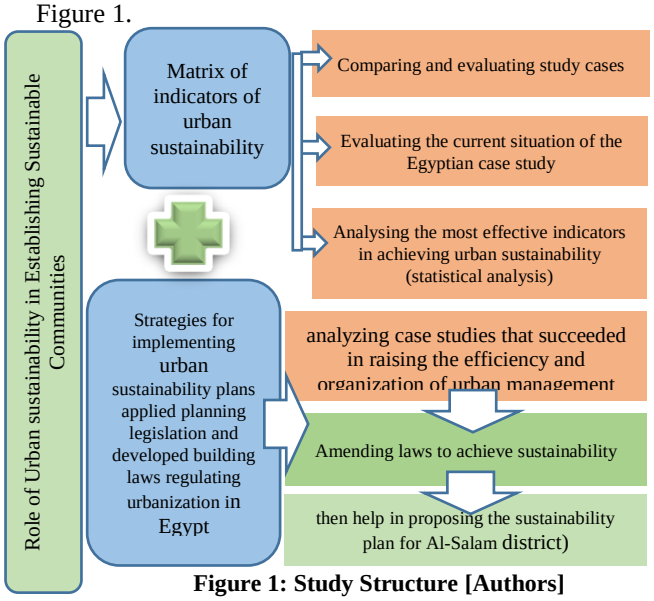


Figure 1: Study Structure [Authors]

2. SUSTAINABLE URBAN ENVIRONMENT SYSTEM

There is a reciprocal relationship between urbanization, environment and sustainability, and it is a triangular relationship [1] that specialists are always interested in in order to reach success in achieving urban sustainability in the Arab region through the integration of the formation of the urban with the architectural, taking into account the environmental, social, economic and administrative conditions. This system is shown in Figure 2 .

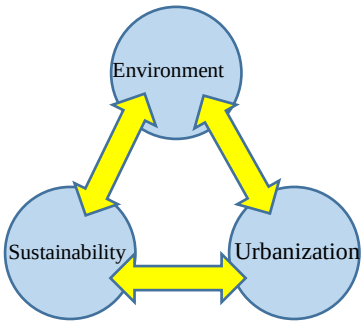


Figure 2: The sustainable urban environment system

Source: Authors based on [1]

Each system has its definition, as shown in Table 1.

Table 1: The classification of the sustainable urban environment system. Source: Authors based on [2-5].

The classification		Definition
The Sustainable Urban Environment System	Urbanism	It is the construction of the land and the outcome of the human interaction with the place and mostly construction is formed within a framework that is called the environment, taking into account that this environment varies in its forms between natural and constructive [2].
The Sustainable Urban Environment System	The Environment	The place that meets the needs of humans, therefore it must be sustainable , integration the architectural and urban productthe most important considerations for the completion of the concept of the environment is by the inclusion of Urbanism [3].
The Sustainable Urban Environment System	Urban Environment Construction	It is the upgrading of the urban status of the region at the three normal, manufactured and human levels, and for the success of the urban design of the region, the planning of external voids and the open areas in the city and the designs of buildings must be combined, and the design of the urban environment may differ depending on the nature of the project [4].
The Sustainable Urban Environment System	Urban Sustainability	It is to meet the needs of society environmentally, economically and socially to preserve the rights of future generations [5].

2.1 Factors affecting The Urban Environment

There are three factors affecting urban environment [6], as shown in Figure 3.

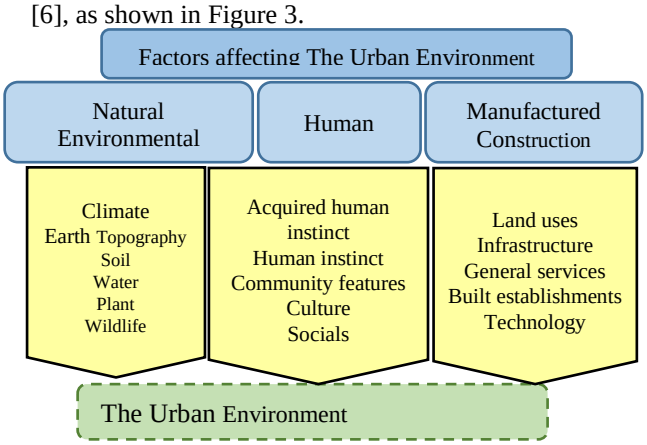


Figure 3: Factors affecting the urban environment

Source: Authors based on [6]

2.2 The Dimensions of Urban Sustainability

There are four main dimensions of sustainability, which are the environmental dimension, the social dimension ,the economic dimension and Administrative dimension, and these dimensions cannot be separated for the success of the urban sustainability process and the preservation of the quality of life[7].

2.3 Strategies for Urban Sustainability

Urban sustainability focuses on a number of criteria, the most important of which are [8]:

1. Importance of preserving the environment such as soil geology, torrential wastewaters, natural reserves and forests during planning.
2. Studying the land use plan and distribution of infrastructure and services, and strengthening the link between that and land uses.
3. Urban plans conform to the needs of the community and Studying population growth rates and future supplies In addition to improving the built environment.
4. Achieving the economic structure and the availability of job opportunities.

2.4 The Role of Urban Sustainability in Establishing Sustainable Communities

Sustainable Societies possess the following important elements [9], as shown in Table 2.

Table 2:The role of urban sustainability in establishing sustainable communities. Source: Authors based on [9].

	The Dimension	The Elements
The Role	The Environment	Respecting the topography of the land , afforestation to reduce carbon dioxide emissions and the dependence of vehicles on alternative energy such as electricity and natural gas.
	Land Uses	Good distribution of land uses for ease of access, appropriate population density , following a long-term strategy and taking into account the increase in population growth rates and future supplies, improving the standard of living and providing opportunities work and popular participation.
	Transportation	distribution of infrastructure and services and being environmentally friendly.
	Housing	Follow the mixed pattern of land uses, where each area includes balanced proportions of residential uses, social and recreational services, open green spaces , taking into account the building ratio and building heights.
	Culture and Society	Preserving places of historical and religious value, taking into account the architectural design style in their surroundings and respect the social classes and people with special needs.
	Sustainable Architectural Design	the urban formation is suitable for environmental conditions through building materials, the use of water bodies, trees, in addition to planting roofs and placing solar cells on the facades of buildings to improve climatic and aesthetic conditions.
	Energy	Rationalizing energy and water consumption (rain water - gray water) , trying to reduce and recycle waste and use of renewable energy sources such as solar energy and wind [9].
	Economy	providing job opportunities.
	Governance System	Implementation of laws and regulations that regulate urbanization, such as sustainable planning and building management.

3. THE EFFECTIVENESS OF LAWS REGULATING EGYPTIAN URBAN FOR APPLICATION OF URBAN SUSTAINABILITY

Legislation and laws regulate the relationship between us and the surrounding environment as human interaction needs to laws to regulate it [10]. The legislative approach was one of the most important entrances to influence the shape of the architectural and urban environment, It was necessary Studying gaps in laws and legislations to try to develop them and link them to urban sustainability. Accordingly, the steps of the study were determined:

1. Finding a system that collects the laws of buildings and urbanism to achieve urban sustainability .
2. Addressing deficiencies in laws and trying to fill the gaps .
3. setting up mechanism for Activating these laws.

3.1 Building Laws and Planning Legislation Regulating Urbanization

Urban planning legislation includes all planning dimensions at all structural and detailed levels, starting with choosing the sites of new cities or urban settlements, and classifying land uses and infrastructure , but building laws aim to ensure that buildings meet the necessary standards for security, safety, public health and privacy such as building heights and determinants on plots of land and their relationship to their surroundings.

These laws are implemented taking into account environmental, social and economic conditions, in addition to administrative sustainability [11] .

These legislations have been developed throughout the ages and until now, and despite that, they did not achieve of urban sustainability due to their shortcomings, which resulted in an increase in irregularities, and the deterioration of the urban environment, and this was for several reasons[12], as shown in Figure 4.

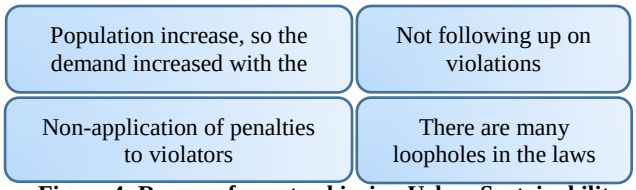


Figure 4: Reasons for not achieving Urban Sustainability Source: Authors based on [12]

3.2 Insufficiency of Planning Legislation and Building Laws Regulating Architecture and Urbanism Currently

The current legislation in Egypt is always subject to change and amendments while keeping the same name for the law , which led to distortion of the image of the Egyptian city and many negatives and shortcomings[13], as shown in Table 3.

Table 3: Insufficiency of planning legislation and building laws. Source: Authors based on [13].

	Direction	Insufficiency
Insufficiency of planning legislation and building laws	Conflict between the Building Law and the Urban Planning Law	The discrepancy appeared in the heights of buildings and the minimum road widths and the repetition of the same requirements of the two laws.
	Uniform application of the law	applying the law to all Egyptian cities despite the different environmental conditions surrounding each region , In addition to a difference in social conditions.
	Administrative shortcomings of the law	Slowness in implementing business violations, and difficulty in obtaining a building permit due to the lack of awareness of the planning engineers of the law and the lack of clarity in some provisions of the law.
	Technical shortcomings of the law	Urban features :The law did not take into account the control of the population to match the size of the services , where the law allows The heights of mega buildings that result in very high population densities. Traffic: The law did not estimate the volume of traffic resulting from this large number of residents, we find that most of the roads in Egypt cannot accommodate pedestrian traffic.
	Deficiencies of the law in terms of the environment (the entry of sunlight)	The law did not care to sunlight entering all the floors of the building, especially the lower ones. Where the law ignored the angle of inclination of the sun in winter, by applying the rule of building height .
	Deficiencies of the law in terms of functionality	The law did not care f the privacy of the population, as it did not regulated the places of the openings , but only exposed the minimum area of openings.

4. THE PROPOSED MECHANISM FOR DEVELOPING LAWS REGULATING URBAN FOR APPLYING URBAN SUSTAINABILITY

4.1 Strategies for Implementing Urban Sustainability Plans Applied Planning Legislation and Developed Building Laws Regulating Urbanization in Egypt

The process of preparing urban sustainability plans goes through three basic stages, each of which has secondary stages[14]:

• The stage of studying the current situation to develop the urban sustainability plan, which includes:

A- The comprehensive survey stage.

b- The stage of data analysis and studies.

• The stage of developing a plan for urban sustainability by applying the planning legislation and developed building codes that regulate urbanization:

A - Applying the developed planning legislation and building codes, and then developing alternatives and choosing one of them.

B - Approval of the solution that was chosen and approved.

• The stage of Management, implementation, follow-up and evaluation phase :

To take and implement planning and development decisions and follow up on their implementation, some administrative and executive basics must be integrated and available to follow up and evaluate plans in the future, as shown in Figure 5.

Figure 5: Management, implementation and evaluation

Source: Authors based on [14]

These strategies will be used in analyzing case studies that succeeded in raising the efficiency and organization of urban management, improving the environment and achieving urban sustainability.

4.2 Matrix of indicators of urban sustainability management and implementation mechanisms (the researchers' vision and analysis of all previous data)

After analyzing the case studies, these indicators will be used in their evaluation to derive the strategies proposed to be applied in the local experience, The matrix was derived from researchers' analysis for previous studies and data and especially in (table 2) in paper as shown in Table 4.

Table4:Matrix of indicators of urban sustainability[Authors]

Urban Sustainability Framework		
Dimension	Cursor	Features
Environmental and Urban	Environmental field	Respect the site as a topography (a1)
		Preserving natural resources (a2)
		Balancing evolution with the expectations of environmental resources(a3)
	urban structure	Sustainable planning of land uses (a4)
		The future extension in the long term
		Respect for laws and legislation (a6)
		Efficiency of civil coordination(a7)
	Infrastructure and infrastructure	Efficiency of road planning (a8)
		Developing pedestrian walkways (a9)
		Efficient land and air
		Drainage, electricity supplies (a11)
		Opportunities toestablish agglomerations(a12)
	Housing	Respect for laws and legislation(a13)
		The structural ratio and taking into account the presence of green spaces and pedestrian(a14)
		Number of housing units and population (a15)
		Taking into account the environment as building materials the condition of buildings (a16)
		Efficiency of delivery services facilities (a17)
Humanly and Socially	Upgrading the built environment	Establishing new urban communities(a18)
		Determine the ownership of the land(a19)
		Developing slums(a20)
		Preserving the legacy of history(a21)
		Improving connectivity between the developed area and the existing surrounding (a22)
		Providing an element of security and safety by making a campus for highways or factories(a23)
		Acquisition of desert lands (white lands) (a24)
		Reclaiming Agricultural Land (a25)
		Preserving the rights of future generations(a26)
	residential buildings	Diversity in housing levels(a27)
		Observe the visual formation(a28)
		Respect the privacy of the community(a29)
		Respect for people with special needs(a30)
		Respect parking rates(a31)
		Using moder n technological methods(a32)
Economically	employ ment	Opening horizons for new job opportunities(a33)
		Reducing the unemployment rate (a34)
		Increase trained workers(a35)
	Return on invest	Increase exports and reduce imports(a36)
		Increase yield and sources of income(a37)
		Private sector participation(a38)
Administratively		Establishing an urban database(a39)
		Enacting the necessary laws and imposing taxes(a40)
		Preparing and developing administrative and(a41)
		Private sector participation(a42)
		Encourage popular participation(a43)

5.CASE STUDIES

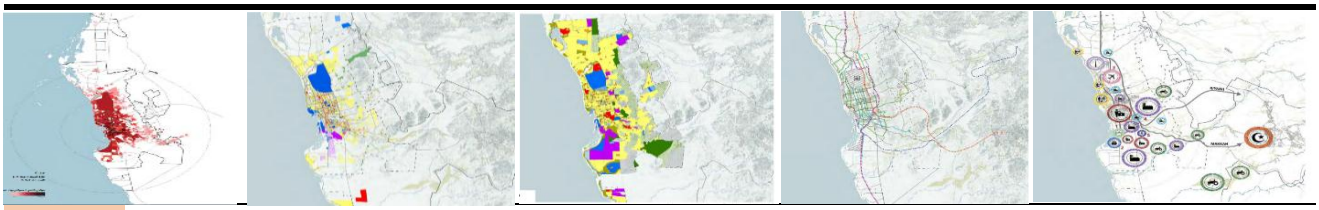
These cities succeeded in Raising the Efficiency and Organization of Urban Management, improving the environment and achieving Urban Sustainability(environmental sustainability, social and economic sustainability, and administrative sustainability),And they are as follows: Jeddah, Saudi Arabia , Al Wehdat Camp, Jordan , Dongtan City, China ,Putrajaya, Malaysia .

The methodology in this research is to measure the extent of their urban sustainability and whether the legislation and laws regulating urbanization had an effective role or not? With analysis of the results and coming out a combined strategy for the most important mechanisms of urban sustainability to raise the efficiency of urban management for its application on the Egyptian study .

The case studies will be analyzed through the following tables, and they are 5.6.7.8, then they will be evaluated The Current Situation after applying the urban sustainability plan to them .

5.1 Case One by (Jeddah, Saudi Arabia)

Table 5: Case One Source: [13,15,16]

	
Reasons for choosing the study case	• High population growth rate due to industrial migration in order to work with it and because of its relative proximity to Mecca and the Sacred Site. • The emergence of the phenomenon of irregular urban growth, which violates the laws largely due to immigration and the different level and social classes • Jeddah is one of the leading cities that has great economic, industrial, tourism and logistical importance to its waterfront • Implementation and representation on the ground of urban sustainability and development, and not only in a theoretical way, and consider it one of the most prominent examples of the relatively successful development study in developing cities and controlling urbanization and its sustainability in the Arab countries.
The Current Situation	environmental and urban dimension: Environmental: It was found that the city is surrounded by a series of steep mountains that define the eastern borders of the city and limit urban expansion to the east. Urban: The residential area constitutes 46% of the area, The presence of space by 53.7% of the city of Jeddah, Lands with mixed uses, their rate does not exceed 0.3% of the total built-up areas. The social dimension: Because of the illegal immigration in search of job opportunities in Jeddah, which led to the emergence of unplanned growth . The built environment is in an unsatisfactory condition in general, as 66% of the buildings are In poor condition as the owners built it with the worst building materials with no good infrastructure. Economic dimension: Jeddah is considered a tourist and economic center, and the results of the studies showed that more than 95% of the workers did not receive vocational training.
Applying an urban sustainability plan	Environmental: The city's development plan was prepared on the north-south axis, with the exception of small extensions of slum areas on the outskirts of the eastern hills. Small basins were established to collect water in the valleys located in this area. Urban: Allocating 58% of the land for housing purposes, 3.2% of the land for mixed uses, 10.1% for industrial purposes, 2.4% for commercial use, 2% for government use, 8.1% for public utilities and services, and 16.1% of vacant land is within the environmental protection zones and 0.08% that is not They are used they will be taxed. Infrastructure: Developing road networks and their diversity for easy access to services, and their number reached 12 lines, developing pedestrian paths, strengthening supplies for sanitation, water and electricity, and developing air and land transport by making a proposal for new metro lines and passenger trains, and making a land bridge and circular roads for ease of movement. Housing: The building percentage in the city of Jeddah ranged from 40% to 50% of the land area of the residential stations, and the height does not exceed 2-6 floors, depending on the width of the street. About 33% of the land for residential plans is left as the percentage of services, facilities and streets, and 30-40% for open areas and the division of plots. Lands are of varying sizes (300-900 square meters). The social dimension (improving the built environment): Not allowing the exploitation of ground floors for non-residential use, defining land ownership , preserving the historical heritage to take into account the visual formation in addition to developing the entrance to the city and control of population density through heights, where villas were built with two floors and multi-storey residential units with a height of two or three floors by (4-6 housing units) Economic dimension : Opening new horizons for job opportunities and reducing unemployment rates, executing expansion works at the airport. Management, implementation, follow-up and evaluation phase: Imposing taxes on vacant lands at a rate of 5.2% annually, issuing land licenses and determining ownership, facilitating the technical process, financing local projects with the participation of the private sector, training and developing engineering and administrative cadres.

5.2 Case Two by (Al Wehdat Camp, Jordan)

Table 6:Case two source: [13,17,18]

Reasons for choosing the study case	• High population growth rate due to forced migration as a result of wars through neighboring countries (Palestine). • Jordan is one of the examples in which the phenomenon of unplanned urban growth emerges and leads to irregularities due to political immigration and the socially heterogeneous mixture, where villagers coming from various places without any family ties • In view of the camp's proximity to the capital, Amman, and the negatives that the camp's tragic situation may leave on the neighboring city, and because of that, the Jordanian government took steps to improve the camp's environment. • Finding and studying a strategy to solve the problem of violations through urban development and sustainability.
The Current Situation	<u>environmental and urban dimension:</u> Random construction began, so the houses were closely intertwined and the houses inhabited by the residents were expanded at the expense of the neighboring streets. This led to a lack of sanitary ventilation for the emerging houses, and even the street that separates one row of houses from another is sometimes not more than one meter wide. At that time, areas for selling drugs appeared in the camp as a result of the deterioration. The social and economic situation of some camp residents, while others did not find any choice but to live in overcrowded apartments or attack the lands of others and the surrounding areas of the camp. The infrastructure is insufficient in the camp, as it has only one source that all refugees use to obtain water from it for their homes, which leads to health and environmental problems. <u>The social dimension</u>: The displacement led to a heterogeneous mixture of refugees, and their social and cultural difference emerged, which led to an increase in divorce cases, and because of the closeness of the houses and the narrow streets, which prevents the sun from reaching the inside of the houses, and the absence of green spaces and open play areas, which resulted in health problems and diseases. Some people feel insecure about their children as a result of the deteriorating conditions prevailing in the camp, such as quarrels and drug abuse, which led to the deterioration of the psychological state and the emergence of suicides, and living in simple dwellings built of scrap, tin and other materials that are not suitable for housing from the environmental, health and construction points of view, and the municipality did not give building permits Inside the camp, regulations and legislation did not interfere. <u>Economic dimension</u> : It cannot be separated from the political influence, as the immigrants left their money and property, and their poverty was reflected in their buildings and in their poor health conditions. Without social security programs or health insurance, poverty and unemployment have reached to the point that the unemployment rate reached 24.8% and the poverty rate is 39% of the population, so many of them tend to work in the field of selling drugs, which leaves fear and lack of confidence in the population.
Applying an urban sustainability plan	<u>Environmental:</u> Divide the residential areas into 4 categories according to the densities, quality and building area, and they are A - B - C - D and their areas are 1000, 750, 500 and 250 square meters, and the building percentages in them must not exceed 36%, 40%, 50%, 52%, respectively. Provided that the height does not exceed four floors, planning the site in a way that is consistent with the corridors and green spaces, providing water networks and building a bathroom site in each house to determine the places of drainage and providing electricity networks, restoring the corridors and internal roads of the commercial market, paving and lighting streets and extending water and electricity networks and drainage projects Healthcare, educational buildings, services, and maintenance of civil defense and public security centers. <u>The social dimension (improving the built environment):</u> The diversity of housing levels and the increase in the percentage of privacy that every refugee has his own house that contains his own pigeon and a supply of water and electricity and the improvement of the health and psychological condition of the residents and their sense of privacy and allowing sunlight to enter the residential homes and not sticking together and a sense of belonging to the camp where a diwan was built for the camp to allow the refugees the right to express and address the authorities in their matters personality, and that they are like Jordanians, and that they are equal without discrimination in rights and duties, and that they are in their homeland, and this is in addition to their rights to work, employment, and public office. <u>Economic dimension :</u> Restoration of Al Wehdat Camp Club to enter into competition between other clubs to encourage players and motivate them to join the club and find job opportunities for them, providing job opportunities for the age group between 18-35 in trade and agriculture. <u>Management, implementation, follow-up and evaluation phase:</u> The government issued laws to regulate construction, but it did not impose taxes or penalties on those who violated those laws. It encouraged various parties, such as investors and cooperative societies, to participate in the camp improvement project, and encouraged public participation, as well as issuing licenses for land ownership.

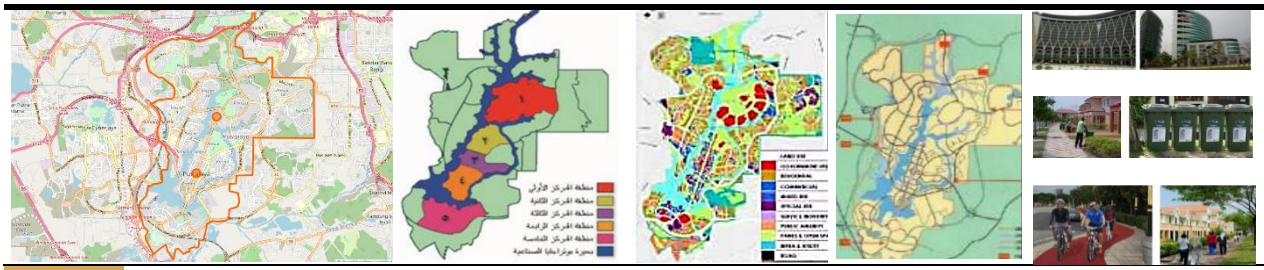
5.3 Case Three by (Dongtan City, China)

Table 7. Case three . source: [4,7,19-20]

Reasons for choosing the study case	• To absorb overcrowding in China and reduce the high population density, as China is the most populous country in the world, with a population of more than 1.403 billion people. • To establish a modern sustainable city that contributes to the development of urbanization. • To open new areas and horizons that attract the population to it and create new job opportunities. • The efficiency of the political administration and the introduction of an ambitious vision and an integrated strategy for the implementation of urban sustainability.
The Current Situation	A new city with no current situation
Applying an urban sustainability plan	Environmental: The city was divided into three neighborhoods interspersed with water channels due to the respect of the site as a topography in favor of planning and achieving integration between the natural ingredients (the water surrounding the site and the green city) and surrounding the city with a tree vegetation strip, as it is located near agricultural lands due to the protection of the distinctive biodiversity between plants and living organisms (Birds and aquatic organisms (in addition to the need to introduce new technologies in the use of clean energy in means of transport to reduce carbon emissions or re-consume water. Urban: Allocating 28% of the land for housing purposes, 17% of the land for open spaces and green areas, 2% of which are for agricultural land, 15% for utilities and infrastructure, and 40% for industrial, commercial, and various services, cultural and recreational purposes in the city. Infrastructure: Development and diversification of road networks through the design of a water network parallel to the main road network for vehicles, where a water road network was designed by digging main channels with a width of 75 m and secondary channels with a width of 20-40 m to be used in public transport through boats and ships and to connect residential neighborhoods to each other and form a proportion Public transportation is 67% and the percentage of private cars is 33%, providing a network of pedestrian paths for movement and easy access to services, and encouraging cycling by allocating a special lane for it. Housing: The construction rate in Dong Tan City ranged from 28% to 30% of the total area of the plan, the height of buildings within residential neighborhoods ranged from 3-6 floors and up to 7 floors in buildings overlooking the main streets, providing multiple urban spaces for human and social interactions, improving The efficiency and quality of the distribution of public services and utilities, as they are gathered in the center of each neighborhood. The scope of service for each center is a circle with a diameter of not more than 800 m. The social dimension (improving the built environment): Controlling the population density and paying attention to the urban coordination of the region and building residential units characterized by not allowing the activity of the housing units to be changed for non-residential use. All services are gathered in the centers of the three neighborhoods. To rationalize energy consumption inside residential buildings, reduce consumption to 70%, rely on renewable energy sources using solar cells, encourage the use of cars and electric public transport, and rely on renewable energy (hydrogen fuel). Economic dimension : Opening new horizons for job opportunities by providing economic centers and activities, increasing the local and global material return from exports, reducing the proportion of imports and self-sufficiency in local food, as the use of organic farming methods to grow plants, reducing energy consumption and recycling waste achieves a great economic benefit for the city in addition to protection from the effects of emissions . Management, implementation, follow-up and evaluation phase: Encouraging the government on the principle of community participation in decision-making and decision-making to create desirable lifestyles. There is a negative gap in the institutional framework, as no penalties or taxes have been imposed on those who violate these laws, and no licenses are issued and specified for land ownership, as it is possible to encroach on lands from By Chinese citizens who move from rural to urban areas annually.

5.4 Case Four by (Putrajaya, Malaysia)

Table 8. Case four . source: [4,7,21-22]

	
Reasons for choosing the study case	• To reduce urban congestion in the old capital, Kuala Lumpur, as it is the capital and largest city in Malaysia in terms of population, with a population of 1.4 million in 2010. • To establish a sustainable modern city that contributes to the development of urbanization without wasting the natural resources of the environment within the framework of the state's interest in applying sustainability in accordance with urban requirements and laws and improving the quality of life. • The geographical suitability of the site, where the nature of the land is suitable for cultivating green surfaces and the extent of ease of integration into the transportation network, in addition to opening new areas and horizons that attract residents to it and create new job opportunities. • The efficiency of the political administration and the introduction of an ambitious vision and an integrated strategy for the implementation of urban sustainability.
The Current Situation	A new city with no current situation
Applying an urban sustainability plan	Environmental: The city was planned as a model for a garden city in which open green areas, water bodies and botanical gardens are spread due to its unique location and its respect for the benefit of planning and achieving integration between the natural ingredients, as it covers nearly 40% of its area with natural elements and green spaces, and the adoption of a system to rationalize water consumption and the adoption of a system to rationalize water consumption. Urban: Allocating 23.8% of the land for housing purposes, 37% of the land for open public spaces, green areas and water bodies, 15% of the land for basic facilities and infrastructure, 15.6% of the land for public services, regulating land uses for industrial and commercial purposes by 2.8% and various services (government administrative) by 5.8% to provide multiple job opportunities. Infrastructure: Establishing a network of electric train lines in the city center to connect the five regions, in addition to encouraging the use of low-carbon vehicles and providing environmentally friendly buses. Public transport accounts for 57% and private cars 43%, designing a network of pedestrian paths, and encouraging cycling. Essentially communications, as a network of optical fibers and wireless means of communication is designed to connect the city electronically with comfort. From the world. Housing: The construction rate in the city of Putrajia has been determined between 21% to 23.8% of the total area of the plan, and the height of the buildings is between 2-4 floors. The service area for each center is a circle with a diameter of not more than 600 m, and attention is paid to designing public spaces, squares and parks for human interactions, and the use of building and finishing materials that preserve the environment (steel, wood, and concrete) and reduce the temperature through green spaces around the residential building. The residential building can be designed from composite structures for ease of installation and demolition and recycling. The social dimension (improving the built environment): Controlling population density Paying attention to urban coordination and visual formation of the city, achieving gradient in building heights and merging the water element with the vegetation cover of the city, using the best design standards in buildings, especially administrative and commercial ones, to assess their environmental impact and requiring them to obtain a LEED certificate, reusing local resources during the construction phase The city applied systems to rationalize water consumption, the city adopted a waste management system, the city relied on renewable energy by encouraging the use of electric cars, in addition to the use of photovoltaic solar panels on the roofs of buildings to generate electricity. Economic dimension : • Providing approximately 75,000 different job opportunities and up to 135,000 job opportunities with the participation of the private sector, motivating the private sector to participate in projects, increasing the local and global financial return from exports, reducing the proportion of imports and self-sufficiency in local food, using organic farming methods. Management, implementation, follow-up and evaluation phase: Stimulating financing and the participation of the private sector. There is a negative gap in the institutional framework, as no penalties or taxes were imposed on those who violate these laws, and licenses for land ownership were not issued and specified, encouraging the government to adopt the principle of community participation.

5.5 Comparing and Evaluating Study Cases Through the Standard Indicators of Urban Sustainability

We will express the indicators of the matrix with symbols to facilitate the process of statistical analysis for them later, and enter them into the program "spss version 15-20" to come out with the most important mechanisms of urban sustainability from those indicators to apply them in the Egyptian study and raise the efficiency of organizing urbanization in all Egyptian cities. The case studies were evaluated based on the matrix indicators ,as

Table 9. Evaluation study cases [Authors]

Urban Sustainability Framework			Evaluation			
Dimens	Cursor	Features	Jeddah	Wehdat	Dongtan	Putrajaya
Environmental and Urban	Environmental field	a_1	5	0	5	5
		a_2	4	0	4	4
		a_3	5	0	5	4
	urban structure	a_4	4	3	3	4
		a_5	4	0	4	4
		a_6	5	5	4	5
		a_7	4	3	3	4
	Infrastructure infrastructure	a_8	5	4	4	4
		a_9	5	4	3	5
		a_{10}	4	0	3	4
		a_{11}	5	4	3	4
		a_{12}	4	2	5	5
	Housing	a_{13}	5	5	4	5
		a_{14}	4	4	3	4
		a_{15}	4	4	3	4
		a_{16}	2	0	2	5
		a_{17}	5	4	3	4
Humanly and Socially	Upgrading the built environment	a_{18}	5	0	5	5
		a_{19}	5	4	0	0
		a_{20}	5	4	0	0
		a_{21}	5	3	0	0
		a_{22}	5	4	3	4
		a_{23}	5	4	4	4
		a_{24}	4	0	2	4
		a_{25}	4	0	3	5
		a_{26}	5	0	4	4
	residential buildings	a_{27}	4	4	0	0
		a_{28}	5	3	3	5
		a_{29}	4	4	3	5
		a_{30}	3	0	3	3
		a_{31}	4	0	3	5
		a_{32}	5	0	4	5
Economically	employment	a_{33}	5	3	5	4
		a_{34}	5	4	4	4
		a_{35}	4	3	3	5
	Return on invest	a_{36}	5	0	4	4
		a_{37}	5	3	4	5
		a_{38}	5	4	5	5
Administrativel y	a_{39}		4	0	3	3
	a_{40}		5	0	0	0
	a_{41}		4	0	2	3
	a_{42}		5	4	4	4
	a_{43}		3	5	4	4
Ranking of cities			89.3%	45.58%	63.2%	76.27%

5.6 Amending Laws to Achieve Sustainability

Some of the Egyptian laws will be amended based on the comparative analytical part of the current situation of the four case studies to facilitate achieving urban sustainability,as shown in Table 10.

These laws will be then help in proposing the sustainability plan for Al-Salam district) , This is shown in results and discussion.

Table 10. Amending laws to achieve sustainability [Authors]

The problem of urbanization	Amending the legal system
The height is one and a half times the width of the road, which leads to high-rise residential buildings, and the population density increases, which leads to the incompatibility of services and the failure lighting for the ground floor.	If the width of the street is 6-8 m, then the maximum height is 10 m. If the width of the street is 8-10 m, then the maximum height is 13 m . If the width of the street is 10-12 m, then the maximum height is 16 m . And the maximum height is not more than (ground + 6 floors)
Residential buildings are stacked opposite each other and the lack of space between them leads to a lack of privacy for the residents of the buildings.	Providing area of not less than 2 m between residential buildings and used as green spaces or pedestrian walkways. If it is more than that, it is used as places to garages.
Non-compliance with providing places to shelter cars despite the text of the law.	Adhering to the Egyptian code for garages and calculating the degree of inclination of garage 15%.
The urban environment has become a compact block that is not distinguished by any architectural identity.	The percentage of building on the land should not exceed 50-60%, and the visual formation should be taken into account.
The law did not include the use of technological development.	The law provided for the use of technology such as generating electricity from solar , wind energy, and recycling water and waste.
Overlapping land uses, with activities occupying the residential buildings.	It is not allowed to change the activity of residential units other than for residential use.
The law did not deal in any clauses with defining the environmental characteristics of each governorate separately, because there are coastal, desert and agricultural governorates. It must specify building requirements commensurate with environmental conditions and with the general urban character, cultural identity and visual formation of each governorate, which affects the uses of buildings and design, especially for coastal areas, and this is what makes it a point of attraction.	There should be special materials for the governorates that have a distinctive character, such as coastal areas, and dividing the regions into urban, rural, and desert. M. There are 6 sectors to determine the planning, design and environmental requirements that are commensurate with their characteristics. They must be grouped in the law for ease of dealing with them. Therefore, every governor must issue a decision pertaining to his governorate as decided by law.
Work on building construction has been disrupted due to the slow issuance of permits, the increase in their cost, and the lack of follow-up after implementation.	Licensing procedures must be simplified, licenses issued quickly by the responsible authorities such as the technology center in the governorate, and the planning and building requirements issued by them must not be violated. An e-government application is required to allow the submission of licenses online.
With regard to development projects, future expansion and implementation, they are followed up by the local administrations in each governorate, so the problems that confront them are not identified due to the incompetence of the competent authority. Also, there are many problems facing the urban planning and design of the area because the obligated party is not qualified or it is not within its jurisdiction.	Planning and design projects and future projects should be assigned to specialists with experience in architecture and planning, and not only the role of the Urban Communities Authority or the Supreme Council for Planning, but in participation with them in decision-making and the governor issuing executive decisions for that, and this is to determine a timetable for projects to implement, follow-up and study any developments.

6.RESULTS and DISCUSSION

The research discussion can be divided into five parts, the theoretical approach (Sustainable Urban Environment System), the descriptive inductive approach (the effectiveness of developing a system of laws regulating Egyptian urban planning for the application of urban sustainability), the comparative analytical approach (case studies) and the applied approach (El-Salam area in Port Said) and the deductive approach.

After applying the first three approaches, The application is made on the case of the Egyptian study(Al-Salam district), amended laws will be then help in proposing the sustainability plan for Al-Salam district) ,as shown in Table 11.

6.1 Egyptian Case Study by (El-Salam area in Port Said)

Table 11. Analysis of the Egyptian case study [Authors]

Reasons for choosing the study case	• The fact that this area is a subject of study within the framework of the comprehensive development plan that Port Said Governorate is currently carrying out and within the program for the development of urban underdeveloped areas, therefore it is considered a matter of interest. Being one of the vital areas in Port Said, as it is considered an economic and industrial center due to the presence of factories, commercial service areas and residential buildings. • The high rate of overpopulation and poverty growth due to its unique location for work and its relative proximity to the General Authority for Investment and Free Zones. • The emergence of the phenomenon of irregular urban growth, which violates the laws in a large way. • Implementation and representation on the ground of urban sustainability in order to develop a strategy in developing cities and controlling urbanization and its sustainability in Egyptian cities.
The Current Situation	environmental and urban dimension: Environmental: The region is surrounded from the southern side by factories, without a tree precinct separating it from the residential areas, as this constitutes a threat to the environment. Urban: • The percentage of open green areas is 0.621%, the percentage of lands with mixed uses is 16.318%, the commercial and industrial uses in the southern area are 31.87%, and undeveloped vacant lands are 2.711% of the total area of the region. The social dimension The unplanned and illegal areas represent 11% of the urban area, the lack of diversity in housing levels, the increase in population density in the area by 1.3% from what is permitted, the transformation of balconies from the residential ground floors into commercial stores, and the built environment is in an unsatisfactory condition, as it turned into slums due to the deterioration of its buildings by 40% encroachment and seizure of open green areas and distortion of the visual formation of the region Economic dimension: The area is considered an industrial and economic center , and the results of the studies showed that The unemployment rate in the region is 25% of the region's population.
Proposing urban sustainability plan	Environmental: Separate the residential space from the industrial space with a tree space of not less than 2 m in height, allocate places for burning waste resulting from factory violations at a distance of not less than 1.5-3 km from the residential area, and provide sufficient garbage containers. Urban: Allocating 51% of the land for housing purposes, 7.461% for open green areas, 31.87% for industrial purposes, 2.99% for commercial use,2.06% for government use, 4.409% for public utilities and services and 0.03% for The lands that will be taxed. Infrastructure:The efficiency of the road networks has been raised, where the hierarchy of the road network is hierarchical, so that the minimum width of the road is 10 m. The internal roads have been developed with the development of pedestrian paths, car shelters have been provided, private transport has been reduced, and the use of bicycles has been encouraged. Sanitary supplies, water and electricity lines have been strengthened and maintained. Housing: About 33% of the new residential plots were left as services, utilities, and streets, and 30-40% for open areas. The building percentage is allocated 30%. The height of the buildings is determined by (5-6) floors. Housing: The scope of service is (300-400 m) and green areas to improve the psychological state of the population. The penalty has been enacted for the use of verandahs and ground floors as shops. The social dimension (improving the built environment): Not allowing the exploitation of ground floors for non-residential use, defining land ownership, and controlling population density through heights, where multi-storey residential units are two or three floors high by (4-6 housing units), maintaining visual formation and using the best architectural design standards Restoration and introduction of technological methods. Economic dimension : Opening new horizons for job opportunities and reducing unemployment rates, Training centers were built in the radio building and the transmission station, and expansion works were carried out in factories to increase job opportunities, Developing domestic tourism by making factories tourist attractions . Management, implementation, follow-up and evaluation phase: Imposing taxes on vacant lands at a rate of 4% annually, issuing land licenses and determining ownership, facilitating the technical process, financing local projects with the participation of the private sector, training and developing engineering and administrative cadres.

6.2 Evaluating The Current Situation of Egyptian Case Study

An attempt is made to apply 43 indicators on it, as shown in table 12.

Table 12. Evaluation The Current Situation of Egyptian case study [Authors]

Urban Sustainability Framework			El-Salam area
Dir	Cu	Features	
Environmental and Urban	Environmental	a_1	0
		a_2	0
		a_3	1
	urban structure	a_4	0
		a_5	1
		a_6	0
		a_7	0
	Infrastructure	a_8	2
		a_9	0
		a_{10}	0
		a_{11}	2
		a_{12}	0
	Housing	a_{13}	0
		a_{14}	1
		a_{15}	2
		a_{16}	0
		a_{17}	2
Humanly and Socially	Upgrading the built environment residential	a_{18}	0
		a_{19}	0
		a_{20}	0
		a_{21}	0
		a_{22}	0
		a_{23}	0
		a_{24}	2
		a_{25}	0
		a_{26}	1
		a_{27}	0
		a_{28}	1
		a_{29}	3
		a_{30}	0
		a_{31}	2
		a_{32}	0
Economically	employment	a_{33}	3
		a_{34}	3
		a_{35}	2
	Return on	a_{36}	0
		a_{37}	3
		a_{38}	0
Administratively		a_{39}	0
		a_{40}	0
		a_{41}	0
		a_{42}	0
		a_{43}	2
Total			15.34%

6.3 Comparing Between Previous Studies and Egyptian Case Study

Table 13. Comparing between previous studies and Egyptian Case study [Authors]

Case Studies	Jeddah	Al Wehdat	Dongtan	Putrajaya	El-Salam area
Total	89.3%	45.58%	63.2 %	76.27 %	15.34%

7. ANALYZING the MOST EFFECTIVE INDICATORS in ACHIEVING URBAN SUSTAINABILITY (STATISTICAL ANALYSIS)

Statistical analysis will be performed on previous studies, and the Egyptian study (Al-Salam area in Port Said), the Egyptian study was included in the analysis to add analytical credibility to the program and then give it the opportunity to try. After applying the program "spss version 15-20" ,it was fed with a matrix that includes analytical dimensions (urban environmental - social - economic - administrative)

The program produced a group of graduated analytical tables as follows in order to reach the best results of the research (deduce the most important mechanisms of urban sustainability to raise the efficiency of managing the organization of architecture and urbanism in Egyptian cities), it turns out that:

1- By observing the matrix of correlation coefficients common to all matrix indicators, that is, the elements (Factors), it became clear that there is a complete correlation between some elements, as well as the presence of very strong correlations between most of the elements, and by deleting the elements with correlation coefficients more than 0.8, the elements (a1-a4 – a19 – a24- a29- a40- a43) were retained and then perform the tests for factor validity and stability , as shown in Table 14

Table 14. Coefficients for measuring the global validity and stability of the factors

	Component Matrix
	1
a_4	0.913
a_1	0.790
a_{29}	0.696
a_{24}	0.695
a_{40}	0.662
a_{19}	
a_{43}	

Stability Statistics	
Cranach's Alpha	No. of Items
96.7	5

Item –Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Total Correlation	Cranach's Alpha if Item Deleted
a_1	**10.00**	**24.00**	**0.745**	**0.771**
a_4	**10.20**	**35.20**	**0.698**	**0.727**
a_{24}	**10.60**	**34.30**	**0.735**	**0.715**
a_{29}	**9.20**	**45.70**	**0.451**	**0.808**
a_{40}	**12.00**	**34.00**	**0.479**	**0.769**

2- And by conducting the previous tests for factor validity and stability, the items (a19 – a29 – a40 – a43) were deleted so that the stability coefficient of the items after deletion (Cronbach's alpha coefficient 0.821) where the accepted coefficient is always (greater than 0.7) , as shown in Table 15 .

Table 15: Cronbach's alpha factor to measure stability of factors[Spss Version 15-20]

Reliability Statistics	
Cronbachs Alpha	N of Items
0.821	3

Item –Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item – Total Correlation	Cronbach Alpha if Item Deleted
a_1	5.20	7.700	0.888	0.571
a_4	5.40	17.300	0.636	0.809
a_{24}	5.80	16.700	0.673	0.778

3-Byconducting the factorial analysis of the remaining elements (a1- a4 - a24), it became clear that the ratio of explaining the explained variance between the variables for evaluating the selected performance is close to 76%, and the statistical significance of the above has been proven through the ratio of the KMO test = 0.519, and it was a saturation ratio items high ,as shown in table 16.

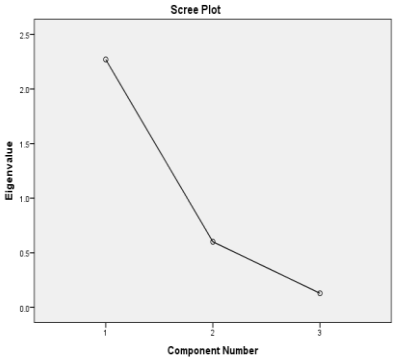
Table 16: Factor analysis of the questionnaire items [Spss Version 15-20]

Correlation Matrix[a]				
		a_1	a_4	a_{24}
Correlation	a_1	1.000	0.722	0.764
	a_4	0.722	1.000	0.400
	a_{24}	0.764	0.400	1.000
Sig.(1-tailed)	a_1			0.066
	a_4	0.084	0.084	0.252
	a_{24}	0.066	0.252	

KMO and Bartlett's Test	
Kaiser-Meyer-Elkin Measure of Sampling Adequacy.	**0.**519
Approx. Chi-Square	3.760
Bartlett's Test of Sphericityzdf	3

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Varia	Cumul ative	Total	% of Varia	Cumula tiv
1	2.27	75.66	75.66	2.27	75.66	75.66
2	0.601	20.02	95.68			
3	0.129	4.31	100.00			

Extraction Method: Principal Component Analysis.



	Component Matrix[a]
	1
a_1	0.961
a_{24}	0.833
a_4	0.809

4-A regression model was made for the efficiency percentages on the explanatory variables Statistically significant, as the probability value of the model quality test statistic was 0.012, and so on The model as a whole is statistically significant at the level of significance 5%, while the significance came The single statistic of the estimated coefficients of the explanatory variables is not statistically significant for paragraphs (a1-a24) ,The sign of paragraph (a1) did not agree with what is expected, while the coefficient of paragraph (a4) was statistically significant at the aforementioned level of significance, it was 5%, where the significance rate was 0.031, and the determination coefficient was reached The model is 0.992 , which indicates the power of the model in prediction and analysis, as shown in table 17.

$$Y = -b_1 a_1 + b_2 a_4 + b_3 a_{24}$$

$$Y = -0.983\, a_1 + 16.704\, a_4 + 6.019\, a_{24} \qquad (1)$$

Y: efficiency and organization of urban management

b_1: Coefficients of urban sustainability Mechanism a_1

a_1: respect the site as a topography in favor of planning

b_2 : Coefficients of urban sustainability Mechanism a_4

a_4: Sustainable planning of land uses and distribution ratios and their relationship to each other

b_3: Coefficients of urban sustainability Mechanism a_{24}

a_{24}: Acquisition of desert lands (white lands)

Table 17:The results of the first regression model [Spss Version 15-20]

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	**0.996a**	**0.992**	**0.979**	**9.27857**

a. Predictors: a24, a4, a1

Anova[a,b]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	**Regression**	**20717.846**	**3**	**6905.9**	**80.1**	**0.012c**
	Residual	**172.184**	**2**	**86.092**		
	Total	**20890.090d**	**5**			

a. Dependent Variable: y

Coefficients[a,b]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	a_1	**-0.983**	**3.191**	**-0.059**	**-0.308**	**0.787**
	a_4	**16.704**	**3.026**	**0.817**	**5.520**	**0.031**
	a_{24}	**6.019**	**3.644**	**0.263**	**1.652**	**0.240**

a. Dependent Variable: y

5-By excluding paragraph (a1) from the model and re-estimating the model from the factors (a4-a24) as study variables, a better statistically significant model can be obtained with a significance ratio of 0.001 and coefficients The explanatory variables are statistically significant individually at the 5% and 10% level of significance for the variables on arrangement, and the sign of the variable agrees with the logic, as shown in table 18.

$$Y = b_2 a_4 + b_3 a_{24}$$

$$Y = 16.174\, a_4 + 5.295\, a_{24} \qquad (2)$$

Y: efficiency and organization of urban management

b_2 : Coefficients of urban sustainability Mechanism a_4

a_4: Sustainable planning of land uses and distribution ratios and their relationship to each other

b_3: Coefficients of urban sustainability Mechanism a_{24}

a_{24}: Acquisition of desert lands (white lands)

Table 18:The results of the second regression model:[Spss Version 15-20]

Model Summary				
Model	R	R Square[b]	Adjusted R square	Std. error of the estimate
1	0.996[a]	0.991	0.986	7.75338

a. Predictors: a24, a4

Anova[a,b]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	**Regression**	**20709.68**	**2**	**10354.8**	**172.2**	**0.001c**
	Residual	**180.345**	**3**	**60.115**		
	Total	**20890.030d**	**5**			

a. Dependent Variable: y

a. Dependent Variable: y

Coefficients[a,b]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	a_4	**16.174**	**2.080**	**0.791**	**7.777**	**0.004**
	a_{24}	**5.295**	**2.325**	**0.232**	**2.277**	**0.107**

8. CONCLUSION

Referring to the target of the research" The role of urban sustainability mechanisms in raising the efficiency and organization of urban management in Egyptian Cities", it is noted that the target of the message is divided into:

1. The role of urban sustainability mechanisms can be expressed through : a_4
2. Raising the efficiency and organization of urban management can be expressed through : a_{24}

This study presents the role of urban sustainability mechanisms in raising the efficiency and organization of urban management in Egyptian Cities. The following points can be concluded:

- Comprehensiveness of the general plan: the necessity of the comprehensiveness of this plan with the reciprocal relationship between the urban environmental aspects, the social aspect, the economic aspect, and the administrative aspect to achieve the objectives of the plan in accordance with the planning and construction laws and regulations.
- Good Planning of Projects:
  - The need to direct urban growth to new areas and establish new urban communities to the outskirts of the city while providing facilities and services to attract residents to them and not to establish them on agricultural lands, in addition to respecting the site as a topographic in favor of planning.
  - Reducing the spread of unregulated areas that violate laws and legislation and working to improve the existing urban environment (re-planning and development of the existing urbanization).
  - Sustainable planning for land uses and distribution ratios, and finding a balance between population density (population number with area) and the distribution of basic services and facilities in each region.

- Reducing poverty by providing lands for low-income people and young people and providing them with services and facilities, while providing them with job opportunities (providing adequate housing and urban
- services for the population).
- Re-drafting laws protecting public hygiene and enacting laws that criminalize distortions and impediments to development.
- Upgrading the built environment and introducing technological methods to reduce environmental degradation and pollution levels.

- The need for a future study of the plan:
  - Acquisition of desert lands (space lands)
  - Limiting the construction of overhead bridges in historical areas, and replacing them with underground tunnels.
  - Legalizing the spread of parking spaces in the outer buildings, and obligating the establishment of garages in the ground floor or basements of residential buildings.
- Good management and implementation of the planned projects:
  - The need to develop technical capacities, raise the efficiency of engineering human resources, and establish a database to identify the capabilities of each region and job opportunities.
  - The importance of long-term financial planning for projects,participation of the private sector, investors and civil society.
- The need for follow-up and evaluation of the plan.
- Flexibility of planning

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this study.

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There is no funding.

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