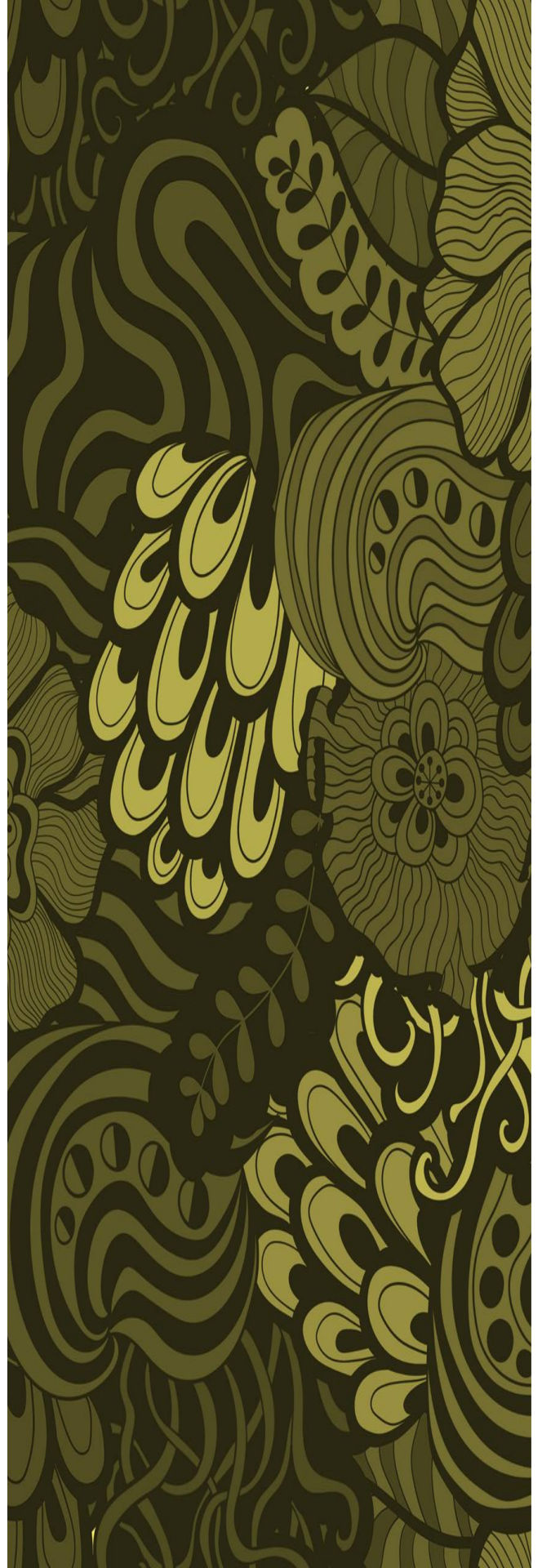


الانتاج العلمي
الابحاث العلمية المنشورة



دكتور / سعيد حسانين السيد
مدرس بقسم العمارة
معهد طيبة العالي للهندسة

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
الْحَمْدُ لِلَّهِ الَّذِي
خَلَقَ السَّمَوَاتِ وَالْأَرْضَ
وَالَّذِي يُضَوِّبُ الْمَوْتَى
إِنَّ رَبَّهُ لَسَدِيدٌ
إِلَىٰ عَرْشِهِ الرَّحِيمُ
الَّذِي يُرْسِلُ الرِّيَّاحَ
تُحْمَلُهُ الْمَوَاقِدُ
فَيُخْرِجُ السَّحَابَ مُغْتَبِطًا
وَيُنزِلُ مِنْ سَّمَاءٍ مَطَرًا
مَبْرُورًا فَسَيُخْرِجُهُ
مِنْ بَيْنِ يَدَيْهِ جِبَالًا
مُتَوَالِيَةً قَدِيمًا





السيد الاستاذ الدكتور / محمد مصطفى لطيف

امين المجلس الاعلى للجامعات

تحية طيبة وبعد ،،،

اتشرف بارسال الانتاج العلمى المقدم من السيد الدكتور/ سعيد حسنين السيد ابراهيم المدرس بقسم الهندسة المعماريه بالمعهد لإحالة للجنة العلمية الدائمة للعمارة والتخطيط العمراني للترقية لوظيفة استاذ مساعد فى تخصص عام التخطيط الاقليمي والعمراني حيث ان سيادته استوفى الشروط اللازمة. وقد سبق وان حصل على درجة مدرس بقرار وزاري رقم ٣٥٢٢ بتاريخ ١٨/٨/٢٠١٦ وحصل على درجة الدكتوراه فى الهندسة المعمارية، وتخصص دقيق (التخطيط العمراني) بتاريخ ١٦ نوفمبر ٢٠١٥ من قسم العمارة بكلية الهندسة بشبرا- جامعة بنها.

ولسيادتكم جزيل الشكر،،،

عميد المعهد

أ.د/ عبد الغني احمد عبد الغني





السيد الاستاذ الدكتور / احمد منير محمود سليمان

مقرر اللجنة العلمية الدائمة للعمارة والتخطيط العمراني

تحية طيبة وبعد ،،،

اتشرف بإرسال الانتاج العلمى المقدم من السيد الدكتور/ سعيد حسنين السيد ابراهيم المدرس بقسم الهندسة المعماريه بالمعهد لإحالة للجنة العلمية الدائمة للعمارة والتخطيط العمراني للترقية لوظيفة استاذ مساعد فى تخصص عام التخطيط الاقليمي والعمراني حيث ان سيادته استوفى الشروط اللازمة. وقد سبق وان حصل على درجة مدرس بقرار وزاري رقم ٣٥٢٢ بتاريخ ١٨/٨/٢٠١٦ وحصل على درجة الدكتوراه فى الهندسة المعمارية، وتخصص دقيق (التخطيط العمراني) بتاريخ ١٦ نوفمبر ٢٠١٥ من قسم العمارة بكلية الهندسة بشبرا- جامعة بنها.

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الانتاج العلمي الابحاث العلمية المنشورة

دكتور/ سعيد حساتين السيد
مدرس بقسم العمارة
معهد طبية العالي للهندسة

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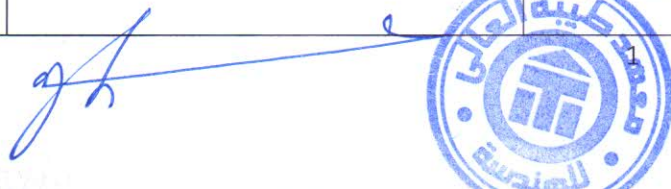
السيد الاستاذ الدكتور/ احمد نبيه المنشاوي

رئيس قسم العمارة بمعهد طيبة العالي للهندسة

...تحية طيبة وبعد...

مرفق طيه قائمة بالابحاث العلمية المنشورة والتي قمت بها منفردا او بالاشتراك مع آخرين، والتي انوي ان اتقدم بها الى اللجنة العلمية الدائمة للحصول على اللقب العلمي (استاذ مساعد) في تخصص التخطيط العمراني، وذلك لاحاطة مجلس قسم العمارة الموقر بها، وبياناتها كالتالي:

| No | عنوان البحث Title | جهة النشر والمشاركين في البحث Publisher and Authors | لتاريخ Date | ISSN/ISBN |
|----|---|--|----------------|---|
| 1 | نحو توجه بيئي للتحكم في التجمعات العمرانية في المناطق المدارية الحارة. توجيه التنمية بالعناصر الخضراء Towards an environmental approach to control urban community in the arid region. Green Elements Oriented Development | The 1st International Conference: Towards A Better Quality of Life 24 - 26 November 2017 Technische Universität Berlin Campus El Gouna, Egypt Paper No. 173 ثم نشر بواسطة المؤتمر على الموقع https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3162351 (فردى) | Nov. 2017 | |
| 2 | نحو نموذج نظري لاستخدام المناطق والمساحات الخضراء لتكوين البنية العمرانية للمدينة المصرية الجديدة Towards a theoretical model to use green Zones and areas for urban structure formation of the new Egyptian city | A Smart Outlook. 3rd International Conference Architecture and Urbanism (pp. 1-840). Cairo: Ain Shams University. From 433-442 (فردى) | Nov. 2019 | ISBN: 978-977-237-415-1 |
| 3 | تطبيق مفاهيم التخطيط المرن كأداة لتقييم وتقويم المجتمعات العمرانية المصرية بعد الكوارث The application of resilience planning concepts as a tool for Assessment and evaluating Egyptian urban communities to achieve resilience after disasters | ISOCARP the 56th ISOCARP World Planning Congress Proceedings of the 56th ISOCARP World Planning Congress - ©ISOCARP 2020 (مشترك) | Dec. 2020 | ISBN/EAN 978-90-75524-67-3 |
| 4 | العاصمة الادارية العالمية وتناغم مع القاهرة (العاصمة الابدية) لادارة جمهورية مصرية جديدة The global administrative capital and harmony with Cairo (the eternal capital) to administer a new Egyptian Republic | المجلة الدولية للتنمية المجلد العاشر - العدد الاول (2021) International Journal of Development Vol.10, No. (1) (2021): 155-162 (فردى) | Sep. 2021 | ISSN: 2314-5560 (Online) ISSN: 2314-5552 |
| 5 | أثر النقل الحديثة الذكية على الهياكل العمرانية للمدن | Springer Book, Advanced Studies in Efficient Environmental Design and City Planning | Oct. 2021 | ISSN 2522-8714 ISSN 2522-8722 (electronic) ISBN 978-3-030-65180-0 |



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| | The Impact of the Smart Modern Transportation on Urban Structure of the Cities | https://link.springer.com/book/10.1007%2F978-3-030-65181-7 https://doi.org/10.1007/978-3-030-65181-7 (مشترك) | ISBN 978-3-030-65181-7 (eBook) |
| 6 | تحول الهيكل العمراني لمدن الألفية الجديدة المصرية بين أساليب التخطيط العمراني وقوة السوق العقاري Urban structure transformation of Egyptian new millennial cities between Urban planning methods and real estate market force | مجلة العلوم الهندسية – كلية الهندسة – جامعة اسيوط Journal of Engineering Sciences (JES) Faculty of Engineering - Assiut University Volume 49, Issue 6 (مشترك) | Nov.2021 |
| 7 | دور التخطيط الاستراتيجي في التنافس العمراني المكاني ما بين المناطق المخططة والمناطق الغير مخططة داخل المناطق الحضرية من اقليم القاهرة الكبرى). The role of strategic planning in Spatial Competing between planned and unplanned urban areas of Greater Cairo | مجلة العلوم الهندسية – كلية الهندسة – جامعة اسيوط Journal of Engineering Sciences (JES) Faculty of Engineering - Assiut University Volume 49, Issue 6 (فردى) | Nov.2021 |

مقدمه لسيادتكم

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يعتد سعيد بله

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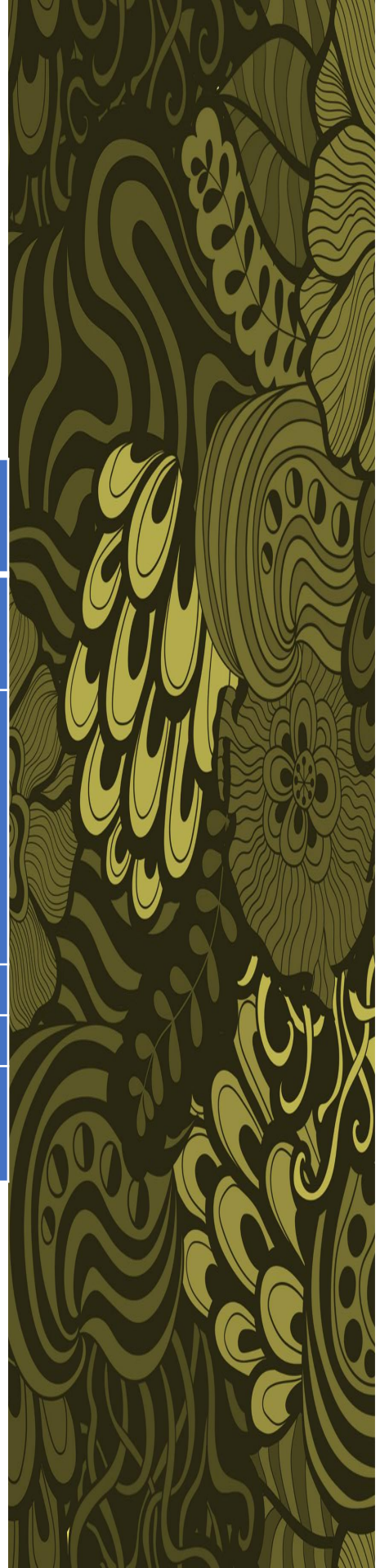


الدكتور/ سعيد حساين السيد ابراهيم
المدرس بقسم الهندسة المعمارية بمعهد
طيبة العالي للهندسة

البحث رقم (1)

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| عنوان البحث باللغة التي نشر بها | نحو توجه بيئي للتحكم في التجمعات العمرانية في المناطق المدرية الحارة. توجيه التنمية بالعناصر الخضراء |
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| مكان النشر: | تم عرضه في (The 1st International Conference: Towards A Better Quality of Life 24 - 26 November 2017 Technische Universität Berlin Campus El Gouna, Egypt) ثم نشر بواسطة المؤتمر على الموقع https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3162351 وموقع https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3162351 |
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CERTIFICATE

OF PRESENTATION

THIS CERTIFICATE IS PROUDLY PRESENTED TO

Dr. Said Hassamien Al-Sayed

In gratitude for an outstanding presentation entitled

**TOWARDS AN ENVIRONMENTAL APPROACH TO CONTROL URBAN COMMUNITIES IN ARID
ZONE GREEN ELEMENTS ORIENTED DEVELOPMENT**

at

The 1st International Conference:

Towards A Better Quality of Life

24 - 26 November 2017

Technische Universität Berlin Campus El Gouna, Egypt

Khalid El-Zahaby

Prof. Dr. Khalid El-Zahaby

Matthias Barjenbruch

Prof-Dr./Ing. Matthias Barjenbruch





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TOWARDS AN ENVIRONMENTAL APPROACH TO CONTROL URBAN COMMUNITIES IN ARID ZONE. GREEN ELEMENTS ORIENTED DEVELOPMENT

Dr. Said Hassanien Al-Sayed

Lecturer at Thebes Academy

Email – siag_gis@yahoo.com

Paper No. 173

Abstract:

Green Cities is an idea that should be applied to our Urban Communities as soon as Possible to reduce carbon dioxide, and to provide city inhabitants with good and clean environment.

The reduce of the Traffic which depend on the non-clean energy, and increase pedestrian movements is one of the important methods to achieve this goal and principals of the green, add to that the exploit of clean renewable energy, and the use of materials which reduce Carbon Dioxide emissions.

To achieve the goals of the Green City it should be linked to the urban development by providing the natural oxygen generators include Green covers and trees which must be counted to determine the population, densities as well as the planning units in relation to green elements within the city in order to compensate produced oxygen equivalent of the city population.

The search aims to provide an environmental approach through which can control the city elements in terms of density, number of population and planning Hierarchal zones, based on the principle of compensating emissions of CO₂ with Oxygen by greenery.

Keywords:

Green Elements, Green House effect, Green index, Oxygen and Urban Oriented development

Introduction:

There are basic needs for the continuation of life, and the most important element is the natural environment, which contains most the main elements that provide life and comfort to the mankind, the air gases especially oxygen, which cannot be dispensed for more than a few minutes, then cause death of human. The air forms the outer envelope around the earth (Stratosphere) and is used by the creatures specially mankind.

The mankind needs oxygen to inhales and he exhales out CO₂ and water vapor through his nostril, this gas rises up to form with some other gases a kind of shelter, causing an increase in heat in an operation called (Green House effect), which causes several damages to the living organisms on earth, and affect Human

In general, at recent times, the environment has been taken care by thinking for eliminating or minimizing the damage caused by global warming.

There have been many attempts deal with environmental deterioration including, reduce the temperature of the earth and reduce the impact of environmental problems on the glop by reducing CO₂ emission resulted by Industry and Transportation and other Man-made activities.

This research will concentrate in reducing CO₂ emissions come from human breathing by applying new trend titled as Green Area Oriented Development (GEOD). The trend will control the Urban Settlements to be self-producer for what citizens need from Oxygen, using the green elements.

1- The environment - its problems - and its main issues

1-1 Environment and Environmental Definitions

- The environmental science occupies an important place between the basic and applied sciences. Perhaps the most important thing make the man look at environmental science this seriousness are the interactions between development and environment activities, which cause, regional and global as: -
- These problems can't be solved without problems states combined to put frameworks and find appropriate. Solutions.
- Many Ecologist takes care of studying the interaction between life and the environment, and they care about application of information in different areas of knowledge in the study to control the environment for protection and safety of communities from harmful influences, and improving the quality of the environment to suit human life. Representing environmental destruction by applying large system of many complicated elements, and through this the overall concept of the broad environment in which man lives influential and influenced into two distinct divisions (nature - and man-made).
- Natural resources are the environmental material which is so important to humans and can be extracted from nature, and resources can be classified depending on how the continued availability (natural resources, environmental permanent - natural environmental renewable resources - non-renewable natural resources). [8]

1-2 Environmental Problems

The interaction between man-made activities and the environment caused some environmental changes and many problems and Horrible cases as:

- A- Green House Gases (GHG):** are gases exist in the atmosphere characterized by their ability to absorb solar radiation heat a long-wave (infrared) and thus remain trapped on the ground, raising the temperature of the universe, in a phenomenon called " Green House Effect" (GHE). [18]
- B- Global Warming(GW):** is to increase the Average world's surface temperature due to increased amount of CO₂, and some other gases in the atmosphere which contribute to increase in average air temperature since mid-twentieth century due to human activities. There are several theories expected that increasing the degree of the world's surface temperature by 1.4 ° to 5.8 ° Celsius from 1990 to 2100.which will be the cause of droughts and desertification of large tracts of land and occurrence of the next problems:
- agricultural disasters and the loss of some crops, increasing likelihood of the occurrence of extreme weather bad events, and increased forest fires
 - Increased flooding (large parts of the ice melt and lead to rising sea levels), which make the low level islands and coastal cities Sinking
 - Increase the number and intensity of storms and hurricanes
 - Broad infectious diseases in the world, and the extinction of many organisms. [12]
- C- Rising Sea Level:** Many scientists have recorded an increase in the average rate of sea-level rise up to 1.8 mm level of a year, in the past one hundred years, this figure had risen to 3.1 mm / year. in the period between 1993 and 2003.Rising sea level is a real problem of life on the Earth's surface, this increase leads to flooding a large number of seaside towns. [18]
- D- Ozone Layer damage:** Measurements are made by satellites showed that the amount of ozone in the atmosphere has decreased by 5% in 1978 **from** what it was previously, and the percentage of the shortfall of 2.5% in the period from 1979 to 1985 in the area between latitudes 53 north and south have discovered a hole ozone over the South pole in 1985, a large mass of air is relatively isolated over Antarctica during the polar winter

and spring, It has estimated by European experiments project scientists in 1992 that the depletion of the ozone layer has become by 10-15%.

Ozone leads to the exposure of the Earth UV Radiations where this will lead to an imbalance in the human immune system which cause many health problems and genetic changes that occur several mutations. [12]

- E- **Disappearing of living organisms:** the change of physical and biological systems resulting in cases of floods and droughts and sea level rise, and some countries as Egypt is considered the most vulnerable countries to the risks of climate change in the African continent. [18]

2- Methods of Treatment of Environmental Problems and Issues.

2-1 World Environmental Conferences and Earth Summits.

Many conferences are held for environment since the United Nations Conference on the human environment in Stockholm in 1972, which gave the word "environment" a broad understanding, indicate that environment more than just the natural elements (water, air, soil, metals, energy sources, plants, animals), but it's a balance of physical and social resources available sometime and somewhere to satisfy human needs and aspirations of the time.

This conference followed by many conferences including World Commission on Environment and Development (WCED, 1987) and Environment and Development Conference held at Rio de Janeiro, Brazil, 1992. AGENDA 21, The focus of this conference was the state of the global environment and the relationship between economics, science and the environment in a political context, which explore Sustainable development concept and principals.

This is followed by many conferences by United Nations and other Bodies Until the last International Conference on Green Energy & Expo which held at Orlando, FL, USA, 2015

They found that the available options are mitigation of emissions, adaptation to reduce the damage caused for warming, and the use of climate engineering to counteract the global warming, it has responded to most of the national governments and ratified the Kyoto Protocol aimed to stop (GW) and reducing greenhouse gas emissions. [17]

These conferences explore many solutions and methods to improve the quality of earth environment or at least to stop the deterioration of it.

The most effective methodology which have been used to face the main environmental problems is the concept of sustainability and its principles and also Green City index (GCI) which is so important for urban planning of the city.

2-2 Sustainable Development (SD)

Environmental definition of (SD) is known as the development of three-dimensional environmental, economic and social interconnected and interdependent in the framework of interaction is exactly and rationalization of resources, environmental, economic and social as well as fourth dimension which is helps in decision-making (municipal and local policies). [4]

The term (SD) acquired significant worldwide attention after the emergence of the report prepared by the World Commission on Environment and Development (WCED, 1987), where the first definition of sustainable development in this report was drafted as: (Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs). [2]

At the World Federation of preservation (environmental program of the United Nations) in 1991, they define sustainable development as: (The maintenance and improvement of the

quality of human life from the social, economic and environmental perspective and help existing resources).

In general, these definitions explore the general framework for sustainable development, which calls for equality between the generations in terms of achieving the main needs, and this is called a lot of researchers to attempt to provide definitions and explanations which contribute to sustainable development in different areas such as: (Sustainable growth- Sustainable income- Sustainable Economy- carrying capacity -Ecologically sustainable - economic development - Sustainable resource use- Regional sustainable development- Sustainable society). [8]

Principles of sustainable development

- **Environmental aspects:** work within the framework of carrying environmental capacity of the system by ensuring that the volume of development activities are within the eco-system of human activity capability, so as not to lead to the destruction of the environmental resource base or blunted. [11]
- **Social and cultural aspects:** through alignment with the culture and values of those affected, and the preservation of community character and distinctiveness with the benefit of present and future generations.
- **Economic aspects** through the effectiveness and feasibility of development, and management of resources that it may support the current and future generations, taking into account the economic value of environmental resources.
- **Balance between economic activity and environmental regulations,**

By defining the concept and principles of sustainable development accessible to the application of this concept the idea may be contained in these principles that determine whether development within the limits of three primary areas:

- a- The environmental,
- b- Human well-being and
- c- Economic targets by exploiting resources and meet the needs of the present generation without compromising the needs of future generations. [13]

Many cities are appeared since following the sustainable developments as Sustainable city, Green city and green ways city, Environmental City, Cities with the lowest carbon emission, Smart city and Pedestrian and compact City. [1]

2-3 Sustainable City

- A- With the adoption of the concept of sustainable development, and the growing interest in the effects of development on the physical, socio-economic and cultural environment, it appeared the concept of "Sustainable Cities", which called for the creation of a new form of cities, achieve economic growth and does not destroy the natural resources, use of non-rational nor contaminated, and adopts the principle of re use of deplete the product, (recycled as input in other production process), energy recovery or invested in this product.
- Sustainable cities are cities that achieve social justice for its people, and to ensure the minimum of acceptable quality of life for all members of society, and also participation and accountability, with the use of suitable techniques compatible with local conditions.
 - The city is sustainable when the balance capacity of local resources and ecosystems, by increasing the efficiency of resource use, and achieve a minimum of pollutant output.
 - In the context of the global response to environmental and climate changes and sustainable city the distinction of being the city of low or zero carbon emission, and thus contribute to reducing CO₂ and other organic compounds that lead to increased unit production climate change.
 - This requires reducing the use of fossil fuels to a minimum, and greater reliance on renewable energy such as solar and wind power.
 - Such structural transformations require not only an ecological industrial system, and integrated systems for the management of solid waste, liquid and gas, recycling, but also

requires - basically - cultural shifts in consumption, entertainment and moving patterns and involve the usage of mankind Oxygen in this sustainable system.

- Sustainable City is traditional compact fabric, reduce transport distances between housing and services, and reduce energy use in the transition, which requires land use planning manner that enhances these perceptions are different between them also to make control of city density and number of citizens by making enough greens to compensate the exhausted Oxygen.
- Accordingly sustainable environmental The city is constructed and managed to satisfy the living needs daily to its residents, it is the civilian infrastructure and social services and transport, and is achieved through the entrances and new methods of development, and integrated urban for planning, embody the principles of environmental, economic, social and architectural frameworks in an integrated sustainable system, governed by a symbiotic relationship, and growth in a manner different from the traditional process of growth of the city, in terms of planning for the development, design, construction, marketing, management, and resistance to environmental deterioration. [18]

2-4 Sustainable Cities Standards

- **Environmental field:** preserving local natural resources through the use of resources in a rational achieved spangle not depleted for future generations, and to achieve a minimum of pollutant output and recycling of waste and the use of renewable energy in buildings and services. [9]
- **Urban and Architectural field:** the provision of good urban environment, and to find a local unique urban city character through providing open areas of the city's population, and determine the density structural rates appropriate, diversification of land use and the provision of public transport. Also designing intelligent buildings based on the technology for the comfort and well-being of its users, so-called Green Architecture, in line with their requirements, using local building materials, while maintaining the heritage buildings and buildings of value.
- **Social Characteristics:** the achievement of reasonable population density rates appropriate, provide varied and appropriate services and employment opportunities, and support the spirit of belonging to the city while maintaining social characteristics and cultural traditions of the city's population.
- **Economic field:** the city's reliance on subjective economic base, and provide job opportunities for selecting suitable wages and attract capital investments in line with environmental standards.
- **Administrative Field:** providing independence and good governance of the city in order to achieve transparency, accountability and social justice, popular participation and anti-corruption standards, to achieve integrated environmental management.

2-5 Sustainable planning of cities and towns relationship with eco-friendly

Global Report on Human Settlements in 2009 titled "Planning Sustainable Cities" includes an evaluation of the effectiveness of urban planning and environmental-friendly environment as a tool to meet the unprecedented challenges faced by cities in the atheist and the twentieth century, and to promote sustainable planning processes should be a focus on eco-friendly environmental planning tools to achieve sustainable environmental development.

2-6 Green City and (GCI)

Green City Index (GCI) was developed by the Economist Intelligence Unit (EIU) in cooperation with Siemens. It has about 30 indicators in eight to nine categories depending on the region. It covers CO₂ emissions, air quality and other elements affecting city environment, energy, air quality, many indicators are quantitative (numbers) came from official sources, for example, CO₂ emissions, water, and consumption per capita, recycling rates and air pollutant concentrations, other indicators are qualitative assessments of the city's environmental policies – as, the city's commitment to sourcing more renewable energy, traffic-congestion-reduction policies (Figure 1).

(GCI) helped cities stakeholders to better understand their specific challenges, provides them insights into effective policies and supports their decision making to build a greener city and now applied in many regions as USA and Canada and, latten America, Europe and far east, lately it applies in some Arabic countries which lies in Arid zone [4].

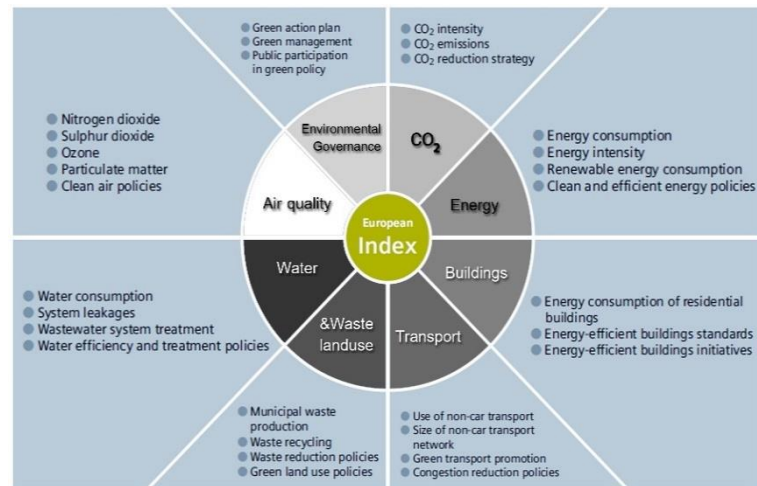


Figure (1) the European (GCI) [10]

3- World Efforts and Activities to Improve the Cities Environment.

Here are some experiences of some regions to improve the city environment.

3-1 European Experiences:

- Most of European countries used (GCI) indicators for their cities which are related to energy saving [10], availability of living environment, proper use of water, management and handling of waste and emissions by reuse or disposal in a manner that does not adversely affect the environment. In addition, green spaces and green elements are added to increase environmental efficiency. Dublin, Ireland, was one of the selected cities that met the criteria especially for environmental management, (EGCI) achieving environmental sustainability - reducing air pollution and CO₂ emissions- economic dealings with infrastructure investments, securing jobs Local and improved security). [5]

3-2 Asian Experiences:

- The city of Singapore has become a green city aimed at preserving the environment and achieving sustainable development in a long-term plan until 2050. Utilization of new and clean energy to reduce pollution resulting from conventional energy, Optimal exploitation of natural resources available locally, and recycling for all that can be recycled, especially solid waste. The study found that about 42.6% was added to the green and recreational areas of the city using green walls and integrate the city's natural environment. [6]

3-3 Experiences of Countries in the Arid zone.

Many arid zone countries applied the principals of sustainable development at many fields by achieving the following [18]: -

- Increase agriculture output to provide adequate food quality and quantity through increased efficiency in the use of water and relieve pressure on the resources of the environment.
- Contribute actively to the sectors of tourism, transport and other economic sectors in driving the national economy while reducing its negative effects on the environment.
- Reduction of pollutants (air - water resources) and The protection of nature and the ecosystem for future generations.
- Adoption of power generation on renewable resources, especially water management in a sustainable manner.
- Availability of quality education and health care, social services and other government services to all citizens in order to achieve satisfaction.
- The existence of a strong and efficient administrative apparatus is able to improves the management of State resources and provide quality services to citizens.
- Build a functioning market economy based on information technology services sector.
- The link between economic growth and industrial inputs of energy and raw materials.

But all these visions did not come out to where the implementation of the presence of some of the challenges that impede its implementation as in the field of Urban planning, environment and natural resources management:

- The non-inclusion of environmental considerations effectively into sectoral policies, and the lack of projects related to the environment credits.
- Steady population growth increases the pressure on the environment and natural resources and increasing population density in urban and rural areas.
- Deficiencies in the provision of an integrated management system, particularly in rural areas and informal settlements waste.
- Air and water pollution, soil degradation resulting from industry, energy and transport sectors and the disposal of solid waste.
- Loss of biological diversity (biodiversity) as a result of the evolution of development and reconstruction activities.
- Lack of coordination and the weakness of effective communication between the competent authorities in the field of environmental protection and the lack of data available and the lack of correlation between environmental information centers.
- Low environmental awareness and poor practices that adversely affect the efficiency of integrated environmental management systems.
- Multiple-related environmental protection legislation.
- Random creeping urbanization of agricultural land to be preserved.
- The high costs of Using the renewable energy and also development for populated areas and the need to stimulate the non-governmental sectors.
- Limited resources are available for water projects and sanitation funds.
- Overcrowded population.
- The imbalance in the distribution of housing and utility services in all areas.
- Increasing transportation and traffic problems. [18]

Arab region Cities: in Arab zone have used the concepts of sustainability and the principles of green cities, including Abu Dhabi, Masdar City in the UAE.

- **Abu Dhabi City:** represent the capital of the UAE and estimated the total population is for about 900 thousand people, and it was planned in 2007. The city aimed to achieve environmental sustainability by creating green parks and Gradient green ways that constitute a clear network of green areas and open spaces for About 18% of the total area add to that the dictions, that can decrease CO2 emission from transportation and infra structure networks. [16]

- **Masdar (Zero Carbon City):** is a sustainable residential community aimed to find appropriate solutions to some of the most pressing issues affecting human life in general, as transportation, recycling and the quality of the water. The city has a planned population of about 40000 citizens and 50000 commuters in an area of about 600 hectares [7]. And it applies the concept of zero carbon emission, and the concept of the green axes [24].

4- Why Urban Communities

4-1 Human - Oxygen and Role of Man-Kind in the Problem.

- 1) The number of world population reach 3.04 Billion inhabitants at 1960, it increased to 7.35 Billion inhabitants at 2015, and it's expected to reach 8.5 Billion inhabitants at 2030 and will be reach 9.7 at 2050 and 11.2 at the year 2100.
- 2) The average adult man at rest inhales and exhales about 7 or 8 liters of air per minute. That totals something like 11,000 liters of air in a day. [3]
The air that is inhaled is about 20 % oxygen, and the air that is exhaled is about 15-17% oxygen, so about 3 to 5 % of the volume of air is consumed in each breath and converted to CO₂. Therefore, a human being uses about 350 liters/day in relaxation, and about **550 liters of pure oxygen** per active day. [11] The quantity (432 liters /day) is a suitable average value which can be used here for research (about 226kg/year) as average usage, He exhale CO₂ [3].

- Means that CO₂ emission from mankind is:

$$= 225.3 \times 7350000000 / 1000 = 16559550$$
 tons = 16560000 tones /year

$$= 16.56 \text{ Giga tones of CO}_2 \text{ /year (6 Giga tones in some researches)}$$

- 3) That is mean about extra 48.56 Giga tons/year of CO₂ emission raised to the sky cause of human being every year (16.56 Giga tons by breathing, and also about 31 Giga tons cause of our activities (about 29Gt at 1992) [22].

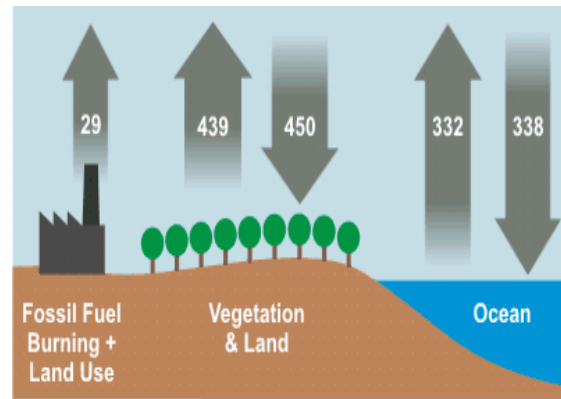


Figure (2) Global CO₂ emission (1992). [19]

In fact, this figure and number neglect the CO₂ emission form mankind breathing which is almost third of the yearly CO₂ emission.

4-2 Changing Urbanization Rates Worldwide.

The urban population was 33.56 % at 1960 and reach 53.86% at 2015 it's also expected to reach 66% of total population at 2050. these activities are also responsible about the majority of CO₂ emission cause of man-kind activities as industry and transport. [2]

5- (GEOD) Concept

The oxygen exhausted by mankind must be compensate naturally by greens and the manmade CO₂ emission (from Industry, transport and infra structure needs) must be treated industrially and it's not computed here at this research.

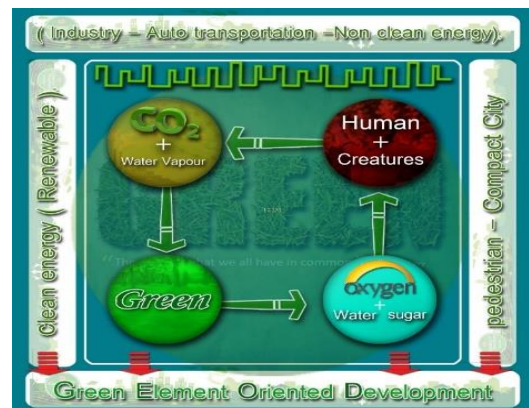


Figure (3) GEOD city life circle

5-1 Important Basics for Establishing (GEOD)

GEOD is depend on number of basics as follows:

- Greens produce oxygen and sugar by using CO₂ and sun light as shown in table. [3]
- GEOD is an approach to control the new cities planning and work as evaluating tool for the existing settlement to measure its sustainability.
- GEOD also can be used for evaluating country's natural participation of CO₂ emission.
- GEOD can be develop to involve all elements that can produce co₂ and all oxygen producers as chemical reaction in oceans & seas, Olga and industrial Oxygen producer.
- The GEOD equation can be modified to a more detailed one to take into account the variation in co₂ emission and oxygen production rates in each environmental region or if any further research gets any other accurate rates population.

5-2 Green Elements and Oxygen (O₂).

During the research about the Oxygen emission from green elements as a result of (Photosynthesis) Operation which follow the next equation [20]



To know about the quantity of Oxygen can be produced from any green element.

Many numbers have been found for the same rate, the next rates at table (1) were selected for the research purpose.

Table (1) Oxygen Production per year from Green elements (American Standard) [3]

| Kind | Diameter of tree(m) | Oxygen per tree/day (Gram) | Oxygen produced per tree/year |
|-----------------------|------------------------------|----------------------------|-------------------------------|
| Shrubs | 1-2 | 89m/day | 2.9kg |
| Shrubs | 3-4 | 62 gm/day | 22.6 kg |
| Trees | 5-6 | 125 gm/day | 45.6 kg |
| Trees and palms | 8-9 | 250 gm/day | 91.1 kg |
| Trees and palms | More than 9m | 302 g | 110.3 kg |
| Hectare of green area | Consider as 290 (8-9m) trees | 36 kg/ day | 13.14 ton |

5-3 Required Calculations and Rates.

Human of oxygen needed at relax time is about 353 liters/day =353x1.43gm x365/1000 =184.12 Kg /year

Average needs human per day is about 432 liters/day =432x1.43gm x365/1000 =225.3Kg/year

- Trees & green area needed for human Oxygen inhales = 365x0.617=226 kg/year.
- Every 1000 inhabitants in the city need 226 tons of oxygen/year
- They need about 2481 tree (H=8-9m), or about 17.2 Hectare of greenery.
 - In general Roads area represent from 25%-30% of urban area of the city which means every one square km has a min. area about 25 hectare of roads.
 - This means about 16.7 km length of roads is 15-meter-wide (in Average).
 - every road can have about two rows of trees at spacing about 8M.

- So every square Km Can have about 4175 trees (8-9m) in the roads. which is enough to save the required oxygen for 1680 adults to inhales.
- Every one square km can have about 25 hectare of greens areas represents 25 % of the total area which is enough for the total inhales of oxygen for 1450 adults
- Add to that the green belt (about 100 m wide) outside the city (consists of 12 rows of trees) can have about 6600 trees which can provide oxygen for 2660 adults to breath.
- Simply we can control the green element in public areas to provide oxygen for 5800 persons (1680+1450+2660) in one square km, and we can add more inhabitants by increasing the green elements in public areas, or green elements in private lands and use the green roofs, green walls and green buildings.
- We have to put the right laws and legislations directly to provide the green elements in our city and also think about the tools to monitoring and control the city for applying them.
- Accommodate about 10000 citizens in each one km² (100 inhabitants. /hectare), this density is socially suitable and also economically for upper or upper mid housing classes.
- The main idea is to create a city that compensate human consumption from oxygen, and prevent CO₂ emission from the mankind (about 35% of the total emission).
- It will depend on the using the natural way of producing Oxygen from the green elements Inside or around the city.

Figure (4), Green areas and Green element needed for City Inhabitants

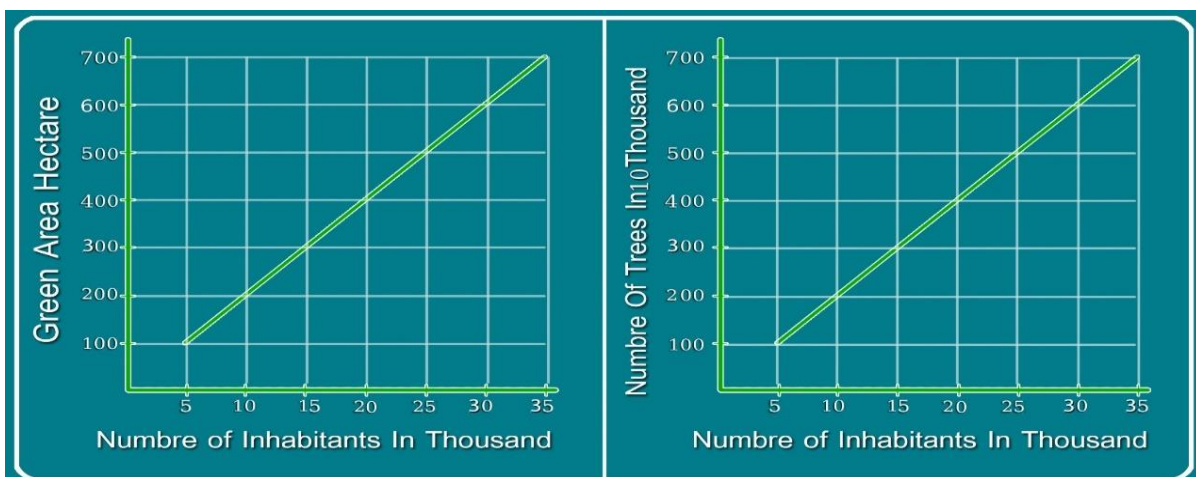


Figure (5), Street soft scape for City Inhabitants

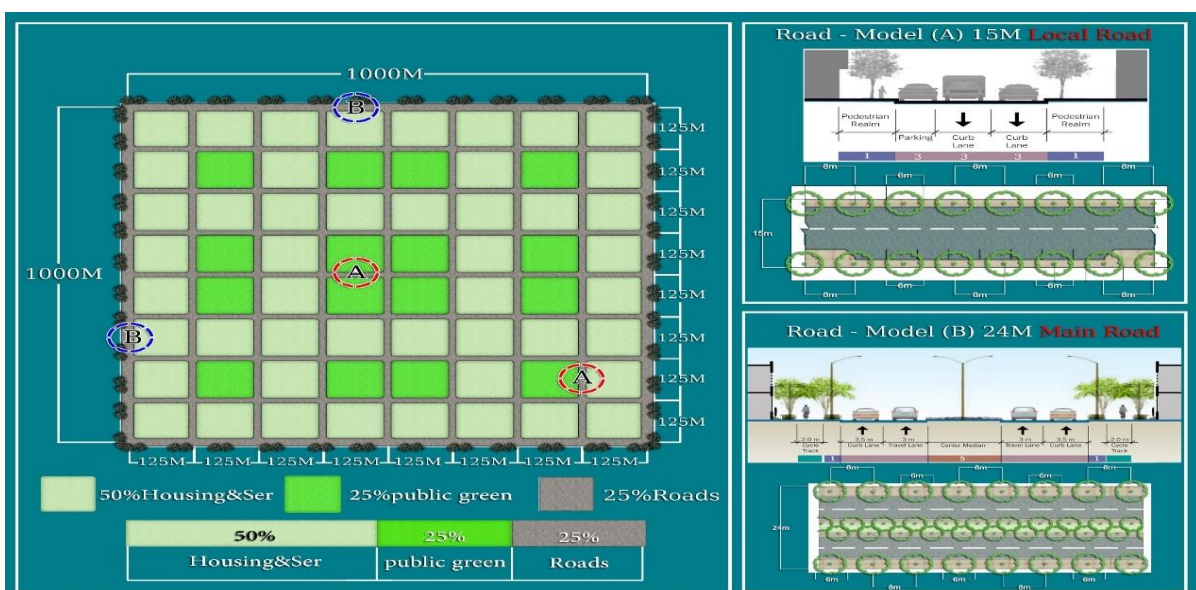
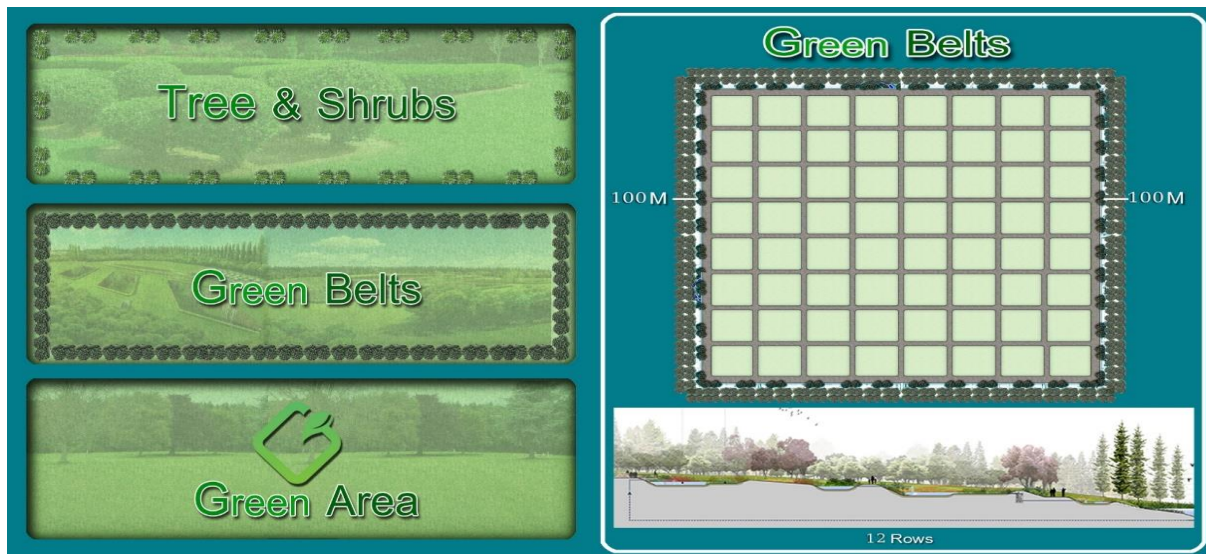


Figure (6), Green Buffer belt needed for City Inhabitants



5-4 How (GEOD) Concept Can Be Applied

To apply (GEOD) Concept, many questions must be answered as:

- How much areas we need for applying (GEOC City)?
- How many Green Elements Required to Accommodate peoples?
- Can we use both Green areas and elements (Numbers & quantity)?

Considering that we have an area for the city or urban settlement:

- (GA)-Green area in Hectares that can be provided inside the city.
- (GB)-Green belt in Hectares which can be provided for environmental protection.
- (RL)-The City Roads total length in Km.
- (Ro)-Number of trees rows in the city roads.
- (Nt)-Number of Trees can this area have, or equivalent green covers (it considered about 290 trees/Hectares in USA).
- (Ct1+2+..n)-Oxygen production coefficient in Kilo Grams/year from each Greenery element.
- (Nk)-Number of Kinds of Green elements as trees and shrubs.
- (O2/Y)-The Yearly Oxygen needed for Adult/year, (it considered about 226kg/year for each adult at USA and Canada).
- (Nh)-Number of Inhabitants in **GEOD** sustainable city.
- (O2-CO2 Coefficient)-City Oxygen – CO2 Evaluation Factor Coefficient.
- Next (GEOD) Equation (1) can determine the Maximum numbers of inhabitants in the city Guided by Green Elements O2 Production.

$$\frac{[(GA+GB) \times (Nt \times Ct_{1+2+..n}/Nk)] + (RL \times Ro \times Ct_{1+2+..n}/Nk)}{O_2/Y} = Nh$$

- Or it can be use next Equation (2) to evaluate the existing cities if its Zero CO2 emission or not

$$\frac{[(GA+GB) \times (Nt \times Ct_{1+2+..n}/Nk)] + (RL \times Ro \times Ct_{1+2+..n}/Nk)}{Nh \times O_2/y} = O_2-CO_2 \text{ Coefficient}$$

If (O2-CO2 Coefficient) = 1 or more, then city is good qualified by (GEOD).

From these 2 equations every urban settlement can be environmentally planned or evaluated.

6- Results and recommendations:

- To insure that the city is Zero CO2 emission it must take into account the man breathing emission plus man-made emission.
- The density and the number of citizen at any urban settlement must be determined from The Oxygen natural produced from its green elements.
- Even that the CO2 emission is an environmental problem for all the earth but every settlement (especially urban settlements) participate in that problem.
- GEOD concept is to treat the causes of CO2 emission Naturally, and the man-made emission must be treated with industrial way or by reducing the man-made activities.

7- References and web sites

- 1- Bilel Jamoussi (2016) " Study Groups Shaping tomorrow's smart sustainable cities today" ITU.
- 2- AGENDA 21- UN (1992) "Conference on Environment & Development" Rio de Janeiro, Brazil.
- 3- David J. Nowak, Robert Hoehn, and Daniel E. Crane (2007) "Oxygen Production by urban trees in the United States" international society of ARBORCULTURE.
- 4- Eurostat, (2012) "Figures for Futures: 20 Years of Sustainable Development in Europe? A Guide for Citizens" Belgium: Eurostat-European Commission.
- 5- Dublin City Council (2017) "Dublin City Development Plan 2011 – 2017" Dublin.
- 6- IATA (2011) "Vision 2050- International Air Transport Association".
- 7- Gaurish Wagle (2014)" Building a Sustainable City- Urban Planning, Masdar City Global Sustainable Cities Network" Masdar -UAE.
- 8- Saffron Woodcraft with Nicola Bacon, Lucia Caistor-Arendar & Tricia Hackett. Foreword by Sir Peter Hall (2012) "Design for Social Sustainability- A framework for creating thriving new communities Social Life" USA.
- 9- Marie Lundqvist (2007 "Sustainable Cities in Theory and Practice "A Comparative Study of Curitiba and Portland" Fakulteten för samhälls- och livsvetenskaper.
- 10- Siemens team -Economist Intelligence Unit, -The Green City Index- A summary of the Green City Index research series- Munich, Germany, 2012.
- 11- Varun Dutt, Cleotilde Gonzalez (2008) "Human Perceptions of Climate Change" Carnegie Mellon University- Carnegie Mellon University.
- 12- INTRASOFT International (2015) "Indicators for Sustainable Cities-European Commission- Science for Environment Policy.
- 13- United Nations, Bureau international des Expositions (2010) "Shanghai Manual for peter city life- A Guide for Sustainable Urban Development in the 21st Century" World Expo, China.
- 14- Olga Kordas, David Lazarevic and Gunnar Linn, (2015) "Strategic Innovation Agenda for Smart Sustainable Cities" KTH Royal Institute of Technology.
- 15- Richard J.Ingerbresten M.D., Ph.D. (2012) "The physics of the human body" Companion Manual physics 3110.
- 16- Krichkov A., Shnaybel O. (2015) "Physics of the human breathing" article 2015.
- 17- مهندس سعيد حسنين(2015) "مستقبل الهيكل العمراني للمدينة العربية في القرن الواحد والعشرين" دكتوراه – جامعة بنها.
- 18- شكراني الحسين (2013) "من مؤتمر استوكهولم ١٩٧٢ إلى ريو + ٢٠ لعام ٢٠١٢- مدخل إلى تقييم السياسات البيئية العالمية" بحوث اقتصادية عربية – العدد 63 و64- مركز دراسات الوحدة العربية.
- 19- مهندس يوسف عبد الحكيم السمالوطي(2015) "نحو منهج التحول للمدينة الصديقة للبيئة كأحد متطلبات التنمية المستدامة في ضوء المتغيرات البيئية" رسالة دكتوراه – جامعة الأزهر.
- 20- <https://www.skepticalscience.com/human-co2-smaller-than-natural-emissions.htm>
- 21- <https://en.wikipedia.org/wiki/Photosynthesis>
- 22- <https://www.reference.com/science/much-oxygen-inhale-exhale-b763252ad5727e56>
- 23- (3) http://www.thaqafaonline.com/2011/10/blog-post_2771.html
- 24- <https://www3.nd.edu/~nsl/Lectures/mphysics/Medical%20Physics/Part%20I.%20Physics%20of%20the%20Body/Chapter%203.%20Pressure%20System%20of%20the%20Body/3.1%20Physics%20of%20breathing/Physics%20of%20breathing.pdf>
- 25- <https://www.slideshare.net/JattinGarg/masdar-city-33257093>

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طيبة العالي للهندسة

البحث رقم (2)

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| نحو نموذج نظري لاستخدام المناطق والمساحات الخضراء لتكوين البنية العمرانية للمدينة المصرية الجديدة | عنوان البحث باللغة التي نشر بها |
| Towards a theoretical model to use green Zones and areas for urban structure formation of the new Egyptian city | عنوان البحث باللغة الانجليزية: |
| Third International Conference of Architecture and Urban Planning - Cairo, Egypt - 14-16 October 2019 | مكان النشر: |
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26th of August, 2019

Ref: Paper 42

Subject: **Letter of Acceptance**

Dear Said Hassanien,

This letter is to confirm that the research paper authored by Said Hassanien, titled:

“Towards a theoretical model for green areas in new Egyptian city”

has been refereed and accepted for publication and presentation in the Third International Conference of Architecture and Urban Planning, ***“Architecture & Urbanism... A Smart Outlook”***.

The conference is hosted by the Faculty of Engineering, Ain Shams University from the 14th till the 16th of October, 2019 at Hilton Heliopolis, Cairo, Egypt.

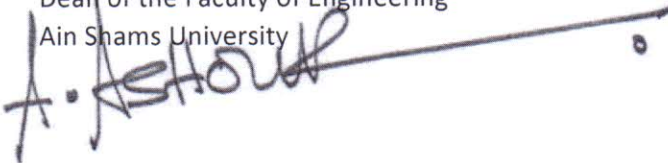
Looking forward to welcoming you at the conference.

Yours sincerely,

Prof. Dr. Ayman Ashour

Conference President

Dean of the Faculty of Engineering
Ain Shams University



CERTIFICATE OF PARTICIPATION

This is to certify that

Said Hassanien

has participated in the

Third International Conference of Architecture and Urban Planning

Architecture & Urbanism... A Smart Outlook

hosted by the Faculty of Engineering, Ain Shams University
from the 14th till the 16th of October 2019 at Hilton Heliopolis, Cairo, Egypt

Date: 14.10.2019

Prof. Dr. Ayman Ashour

Conference President



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Inception and Evolution

Towards a Theoretical Model to Use Green Zones and Areas in New Egyptian Cities

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Abstract:

The new Egyptian city planning were developed by applying some of the theories and of international models that formed their urban structure, some plans influenced by the models of central and linear cities and affected by the application of neighborhood social theory. Other trends were applied on other cities such as green cities and hubs or sustainable cities, some specific trends such as technological cities, environmental cities or Internet cities were applied on Egyptian cities too.

many urban changes have taken place as a direct result of the society change as a result of the tremendous technological development that has taken place in the last four decades, the society demands, desires and behavior were changed and has led to some changes in pattern of uses within the cities, services rates, method of obtaining them have changed, transportation systems have changed too. All of that affect many elements of the city, which led to core changes in city planning and its urban formation.

And through the changes and instability of some of the basic elements of the city, such as services and roads, some planning theories and city models becomes not applicable nor effective for formation of new cities, this increase the necessity of a new theoretical model to guide and controls the Egyptian new cities urban structure formation at all levels and depends on the most constant and important elements in the city (Green elements).

The Aim of the research: The research aims to use green areas and zones that represent the city lungs as a tool to form and Guide city urban areas in at all planning levels.

The research will follow the inductive approach, starting by collecting data that is relevant to research topic of interest. Then looks for patterns in the data by analyzing them, and then working to develop a theory that could explain those patterns.



Keywords: Green cities - Green axes - urban areas and levels - new cities - theories and planning models.

1- Introduction:

Cities have been developed and formed through thousands of years by regulating the relationship between a range of uses to meet the needs of the urban dwellers. Cities are developing every day influenced by technological development and the evolution of human behavior, the city plan affects the environment and human behavior and accordingly changes the human requirements and then the city changes. Several studies have confirmed that cities or urbanism are one of the most important reasons for the environment deterioration that may lead to the collapse of the earth and its destruction. Therefore, the planners were interested in developing theories and models of cities to regulate the relationship between the various basic uses which sometimes involve green areas with them, such as the garden city. With the arrival of environmental problems to a dangerous stage, planners increased the attention to provide green areas in the city and around, not only for recreation or enjoy, but to reduce the environmental damage resulting from the city and its activities such as industry and transport.

Attention has been drawn to the fact that recently, models of cities called Green, Sustainable and the Environment Cities have created to increase green cities that are less harmful to the environment. to

continue this care, the paper focused on making theoretical model that aims to confirm the city's green requirements by directing the city's planning and quality to it, and making it as central element in order to increase attention to green areas during the planning process.

2- Development of Theories and Models

2-1 Theories:

Uses have been localized and arranged in certain locations of the city to serve their purpose and to be in a location suitable to help them function in the best way. Many cases show that residential areas are distributed around or next to the services, followed by the work areas. Sometimes the work areas are adjacent to the housing from one side, separated by green buffer and the other side of the residential areas the services. There is also an Interactive pattern for those uses in the case of a linear city. A number of theories have emerged for the forms and composition of cities, which reflect some of the factors that control land values and prices as follows:

Central Zone: The distribution of uses and population in the city follows a centralized pattern based on separation of classes. This theory states that the urban growth of the city is directed from the centre to outside boundary in circular shape (<https://socialsci.libretexts.org>).

Sector zones Concept by "Homer Hoyt 1939": It has the highest value of land in the heart of the city and gradually decreases in the way to outside boundary. High-level residential areas dominate the growth and direction of other residential sectors (<https://socialsci.libretexts.org>).

Multiple Nuclei Concept: It is based on the existence of major urban centres that differ in their use "Harries & Ullman". For example there will be a centre for wholesale, third educational, a leisure centres and a social centre (<https://socialsci.libretexts.org>).

2-2 City Models

One of the most important goals of the city is to regulate the relationship between housing, work and services spaces, and recently the green areas has been added and come more important for increasing the quality of life in the city.

Through the arrangement and organization of those uses, a set of new city models have been applied at late 19th century to deal with the problems of the cities due to industrial revolution, and thus new theories of urban planning related to many aspects religion, politics and economy has been appeared, as linear city by Soria Matta in 1892, and Garden City by Ebenezer Howard in 1898, City of Tomorrow by le Corbusier in 1922, Net Extension by Ludvig Hilbersimer in 1924, Organic City by Hans Reichowf in 1925, The Federal Town by Eric Golden in 1926. And many other city models appear as Satellite Town by Adolf Rading in 1930, and Broad Acre city, in 1930 by Frank L. Wright (علام، الايباري، عبد الله 1993).

C. perry at 1926 invent The residential neighbourhood, its idea based on creating a healthy environment for an urban area inhabited by a certain population and school centred it (علام 1980). Oscar Niemeyer who suggested Human City Created from small vertical masses for man alone and not for the machine so that he can reach any place in the city walking.

The Dynamic City (by Dioxides in 1968) set theoretical foundations for future city with the single centre which transforms when the city evolves into one direction linear plan. He sees that the city development must pass four Stages include the stage of Dynapolis, stage of dynametropolis, stage of dynamegopolis, a giant city, and finally, the stage of static form, Eicomopolis, where the regular and balanced form of population distribution (Dioxides 1968).

The models of cities are not limited to the cities that have been implemented, but many models and theories of imaginary cities have emerged by that time, based on advanced scientific thought and future expectations of intellectual and material possibilities and technological development. Most of them propose that the urban structure of the city be expanded vertically.

These cities include the Inverted Cone City 100 m height and the upper diameter 200 m by WALTER JONAS, and domes city which consists of 7 domes, on 28 hectares of lands, 300 m height, each of this dome can accommodate 5,000 people. The French architect also put one of the proposals and called Suspended City hanging on ropes tied by two towers by Memnon. Floating city which located on buoys with a diameter of between 300 and 500 meters and connected by bridges, in addition to many cities, including the Tower City by Pgelynikov which based on using urban towers of a total population of 75 to 90 thousand people, and also space city by KENZO TANGE, its idea is based on connect the blocks of space with each other by vertical and horizontal pillars, it has fast transportation as a modern-day city that expresses its enormous technological potential (1980 علام).

3- The main Trends of the city's planning and urban structures:

Since the beginning of the appearance of cities, there has been a change in the uses that dominate the centres over the ages. The city centres contain elements that distinguish it. These elements varied between the governmental palace or commercial market or the religious buildings, as well as the educational services and station which connecting these elements together.

There is also many recent trends make the cities depend on the environmental dimensions and based on concepts of sustainable development, and then arisen cities correspond to the development in the technology of transport and communications and the development of information revolution, which led to the appearance of smart cities and specialized cities such as informatics, sports, Olympic and media cities and silicon valleys, in the following will clarify the evolution of the basic foundations and direction for the formation of the urban structure of the city and its elements associated with it.

There're Cities where centres were linked to the location of the Governor Palace to be key element to represent the heart of the city, and this was clearly represented in the Assyrian cities of Babylon, and the cities of the beginning of the Islamic era such as the city of Al-Mansour in Baghdad. This was reflected in the control of the Governors and their separation from the peoples, with their sense of insecurity so they built thick walls around the palaces and the whole cities (الهزلول 1994).

Cities were associated with the Military squares as the centre of the city. The squares appeared in the middle of the city, as in historical city of Cairo (where the Grand Palace, the main square and the small palace in the centre). As well as the city of Palmenova in Italy which was designed as a fort against military attacks and designed for daily life and military training (<https://en.wikipedia.org/wiki/palmova>).

Cities has religious centre: For example, the city of Najaf and Karbala in Iraq, where a religious building is surrounded by the places of housing and worship. One of these examples in Egypt is the city of Tanta, where the Badawy mosque is located centre of significance in the city. And in Tunisia, Carthage is a historic Roman city where the centre of the city consisted of a Roman temple and theatre linked with arterial roads, and surrounded by housing and commercial areas (1982 علام).

Cities has business services centre: The commercial market has allocated at the centre of many Arab and Western cities, such as historic Cairo city and Aleppo the Syrian city, as well as in some American and European cities such as New York City, which has a shopping centre that is the heart of the city (the world trade centre).

Cities have Educational services in Centre: In addition to the residential neighbourhood (<https://socialsci.libretexts.org>), which was based on central school and the walking distance to it, there are some universities and scientific centres controlled the centre and the heart of the city as in America and some European countries.

Urban planning trend for transport planning: The significance of transportation means has led some planners to consider relying on the main stations as a central element in planning neighbourhoods and cities and distributing land uses. Which form the urban settlements based on it (neighbourhoods – Districts – Cities), These principles deal with the growth of the region and the city in a way that is

directed by transportation systems (Transit Oriented Development – TOD). Two types of urban planning areas have appeared, which is Urban TOD and Neighbourhood TOD (Calthorpe, 1995).

Brisbane City a model of the cities that use the urban development trend towards the transport station, 2012-2014, where the urban area was placed around the transport station to accommodate mixed use housing (Urban TOD), while planned residential areas around substations and next to it the primary school (Neighbourhood TOD) (Newark, 2014). Figure No. 1.

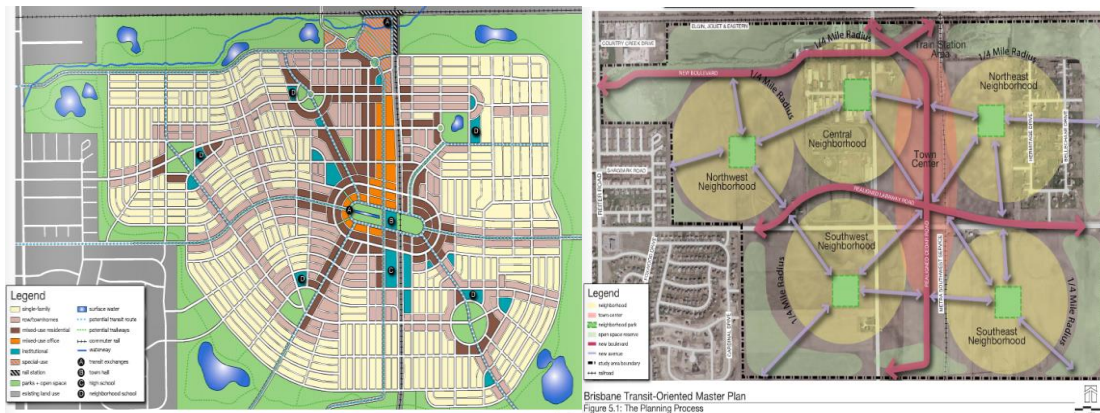


Fig. 1. Brisbane city plan and the concept of Applying Urban and Neighborhood TOD.

Cities with environmental and sustainable orientation: environmental trends and concepts of sustainable development began to be very important because that the world is coming to an imminent environmental collapse as a result of global warming and increase in the emission of carbon dioxide, so the planners have provided innovative solutions to achieve the concepts of sustainability in cities and following some of those solutions: -

- Increasing green areas in cities.
- Reducing carbon emissions from the city's components, especially transportation and industrial factories.
- Waste minimization and recycling, and Using Renewable energy.
- Reducing or minimizing the size of cities and increase their self-sufficiency for services to reduce movement and reduce pollution.

With the significance of the implementation of sustainability concepts emerged a new vital model as green cities and cities with paths and green hubs, which contribute to solve the environmental problem,

development of technology, which affected the elements of the city and its uses too, in addition to the impact on human behaviour to the extent that change affects the availability of some services and disappearance of some of them, and also the emergence of new types of services such as distance learning and e-government and spread the phenomenon of work from home. Differences have arisen in dealing with certain types of services, such as e-commerce which becoming an important competitor with traditional trade. The behaviour of people in cities differed with the technological progress. People's trips were diverted from housing trips to services, using traditional transport to reverse trips from services to housing using different kinds of transport suitable for goods.

Due to the development of technology, the existing cities lose some spaces which include recreational and green areas, causing deterioration of the health and social conditions of cities population and increase poor quality of life, as well as the loss of many of the basic services of the city of some areas and sizes and also losing its spatial and functional importance.

there was an increase in interest in green areas, whether by increasing its area or by locating it in central sites, which led to a new dynamic model of city planning depends on the presence of green centres in the various planning units within the city starting from the city centre to Residential cluster.

Several countries have adopted this planning model, including Egypt, where National Organization for Urban Harmony (NOUH) was formed, where urban and environmental experts have joined and carried out many studies recommending to follow the green city model and achieving sustainability concepts, as well as increasing green area per capita in the new cities to reach 12-15 m² / person (التنسيق الحضاري 2014). The study and recommendations aimed to reach the users to a healthy state by dealing with the social and urban problems of cities such as congestion, urban overcrowding, environmental pollution and population increase, and horizontal and vertical expansion in housing, which requires positive reaction to reduce these negative effects on users of open areas.

To achieve the objective, (NOUH) and its experts developed the planning criteria and standards for the open areas, taking local conditions of each city into consideration. However, there are fundamental considerations in the planning and design of open areas to be considered, as:

- a) The areas allocated to open areas should be adequate with its served number of the population.
- b) The location of the open area should be suitable according to the purpose of the use.
- c) Taking into account the topography and preserving the nature of the sites.
- d) considering the provision of recreational elements in gardens and public parks.

Different levels of green area provision and its usage have been identified as:

The National and regional Parks, which have specialized importance, and contain natural elements such as mountainous terrain, natural falls, water springs, and sulphur water. Or an entertainment attraction at the international level, such as the gardens of the Versailles Palace in France, or cultural attraction such as Giza Zoo, and heritage gardens as Montazah Palace Park in Egypt. As well as open areas on a regional level which are often natural areas that are converted into parks for the enjoyment of landscapes and the accompanying passive activities. These spaces connect the network of open areas with the level of the provinces linked to each other. Quantitative and functional requirements have been determined by identifying the minimum areas of these types to serve the population of the region or governorate.

City level and its internal planning units: The recommendations included the open areas at (district- neighbourhood- residential cluster) levels, and determined the minimum areas per person and its proportions, and also determine the distribution rates at the level of the city (60% of the districts and its units (30% of neighbourhood and the residential cluster) And 40% at the city level). The minimum per capita unit in each planning unit has been determined to be no less than one square meter / person, and the uses of each type (parks, playgrounds, clubs, investment parks), As well as the beneficiaries or users, whether children or young people or the whole family and the walking distances of each type.

4- The city shape and composition of its urban mass:

The physical structures have known many different shapes, such as the circular and the rectangular shape, or consisting of complex forms. the urban form has significant importance in the urban planning of cities where many of the planning factors depends on it, these factors include The composition of the city and its land use planning, the hierarchy for city centres, Model of road network and traffic planning in the city, or speeds or the level served by as (international - regional or local). That include The hierarchy in the planning units of various types such as (residential group - neighbourhood - district - city), and green areas distribution and future urban growth. This factors represent the important characteristics of the city structure (عفيفي 1991).

There is a strong relationship between the urban structure and the functional role of the city are affected by many factors as economic, social, cultural and environmental and religious background of the community, in addition to the political decisions. these factors are reflected on the urban form and helps

to form the city's structural layout, which is explained by the distribution of neighbourhoods and the functional composition of the city and its land use set-up, and also the roads network and transport,

many types of urban structures have arisen, where three basic patterns were defined, including the linear pattern by Soria Mata, in which the layout consists of longitudinal axes that residential areas, services and the industrial zone located on aside of these axes (1977 أبو سعدة). And the Concentric Pattern which is a circular city where business, administrative and educational institutes located in its centre, (as example - Garden City by E Howard. Radial City by Sander & Rabuck, Satellite Town by VECTOR GREEN). And Finally, the Grid Iron net pattern where the city is consisting of squares grid separated by streets. The most important examples of these cities are Washington, Chicago and some Arab cities such as Riyadh (Shiber 1967).

5- Factors influencing the urban structures of cities:

There are many factors that affect the urban structure of the city and its development, as well as its effect on its urban form. These factors vary between permanent factors and variable factors. It is the permanent natural factors that determine the shape and form of urbanization, such as topography, climate, location (1977 حمدان), also artificial variable factors created by man and become an important determinant of urbanization (such as regional roads, highways and railways). this leads to the extension of the city mass in the form of points on the axes (the appearance of the star shape or the hand fingers shape). The variable factors are related to human characteristics such as the size and type of population (Aidoo, Unal., Riad,1971), the age Pyramid structure, the educational and cultural situation, which helps raise awareness among people, reduce their consumption and maintain the environment, and the lack of knowledge increases the consumption and fasten the destruction of the environment, this needs to put more effort in development processes and special qualities of services, which affects the development of city urban structures. As well as human behaviour, which indicates how people respond and interact within the community where they live, and based on their actions are formed land uses within the urban context of the city to suit their requirements and desires (1982 علام) .

The technological factors, including transportation and accessibility Which is considered one of the most important factors influencing the city urban structure, most of the theories that dealt with the origin of the city urban and functional structure, which has strong impacts of accessibility to the mass and size and characteristics of urban and land use arrangement in the city and its activities (Lynch 1960), it also affects the rate of development of the city and increase the attraction of the population (1987 بشندي). Also the city is affected by communication technologies that facilitated the process of remote connectivity between family members and society, which shorten distance between cities and countries and continents, especially after the possibility of access to the Internet through Smart phones and Google glasses. And strongly contributed to the field of work and trade, which led to the possibility of work from any place, as home, car or street, as well as shopping, buying and selling.

Communication through the Internet has contributed in Education and academic aspects by making it available through the classes of distance education without the need for the presence of physical bodies as schools, universities or institutes. Finally, in the field of urbanization, the means of communication have led to the reduction of the existence of some important services and reduce the areas allocated to them such as education and trade services.

The regulations and legislations is developed to organize urbanization in the cities and contributes to the formation and development of the city urban environment, In the case of any changes of these regulations and legislations, it will directly affect the urban area and may lead to create new or modern architectural patterns, and control city structure form from the beginning (2004 بريدة).

6- The Theoretical Green Zone Model (TGZM)

to achieve the quality of life for the urban population of Egypt, a theoretical model (TGZM) should be provided to facilitate decision making regarding to the criteria of green cities and help dealing with

green areas network within the city and in their planning units. **(TGZM)** ease and defined the distribution of green network, as quantitative and functional requirements, taking into account the following criteria:

- Take account of the **UNEP** criteria in the city, which pertain to green areas (m² per capita), and the percentage of people who have access to a park (within less than a quarter of an hour by walking), and not less than one hectare (1000 m²). The shortage of value of this indicator is a sign of inequitable distribution, this indicator applied If quantitative standards are available for the city as a whole, or are available in some parts while others are deprived of, in case of shortage of per capita share of the city as a whole, (as the case of Cairo).

- Achieving the minimum standard per capita of green spaces in accordance with the recommendations of (NOUH), specially for increasing the per capita in existing and new Egyptian cities.

- Facilitate functional and spatial planning decisions for cities green areas distribution.

In order to implement **(TGZM)** model, many decisions are made based on how the green areas are distributed and their relation to the different planning units and the road network, in addition to identifying the green areas, their areas and how to use them within the city and among the different planning units. Hence, the research paper will be concerned to create theoretical model of the Green City, which will result in list of decisions that guide the planning of the city as follows:

7- Basic assumptions:

To apply **(TGZM)**, a default model is proposed with the following characteristics:

- The city is mid-size city for of 128 thousand people, divided into four districts and accommodates 32 thousand. Each district has 4 neighbourhoods to accommodates 8,000 people/each. Each neighbourhood has four residential clusters with a population of about 2000 people/each.
- The city planning based on the distribution of green areas within the different centres.
- The green areas size depends on the number of population at the unit to be located at.
- (TGZM)** does not depend or affected by city structure or services network and its areas in the city.
- Roads are planned to serve the distribution of green areas of the chosen model.
- the possibility of applying **(TGZM)** to all cities models, such as linear, central and multi-nuclei as well as on all types as organic cities or mechanic, including cities ring network.
- The distribution of green areas in different planning units within the city shall be related to the population of any unit, (whether in all 4 levels of the city, or three levels, or in two or one level).
- The minimum standard of green areas per capita in city is 8 m² / person.
- The distribution is compatible with the logical hierarchy of planning levels, where the green areas distribution equally on each level of the four-unit levels (2m²/p for each), as shown in Table (1):

Table 1. Model show Case (1) hierarchy distribution of green areas at all 4 levels of city planning.

| Level of the planning | number | The average - m ² / person | area of green zone |
|-----------------------|--------|---------------------------------------|--------------------|
| City | 1 | 2 m ² | 256000 |
| district | 4 | 2 m ² | 64000 |
| neighbourhood | 16 | 2 m ² | 16000 |
| Residential Cluster | 64 | 2 m ² | 4000 |

Also their Homogeneous distribution (social) by distributing Green area only in cluster group or neighbourhood level (8m²/p), Concentric distribution and others 12 cases (as shown at Fig. 2)

| Code | City kind due to Green area Distribution | Green area distribution | | | | Target Groups | Green Function | Number of G.A. units |
|---|--|-------------------------|---------------|----------|------|-----------------------------|---------------------|----------------------|
| | | H. Group | Neighbor hood | District | City | | | |
| 1 | Concentric city | | | | | All groups | All kinds (1,2,3,4) | 85 |
| 2 | Concentric city 2 | | | | | Family, young and Teenagers | kinds (2,3,4) | 21 |
| 3 | Multi Nicolai 3 | | | | | Kids, Teenage and young's | kinds (1,2,3) | 84 |
| 4 | | | | | | Family, Kids and Teenagers | kinds (1,2,4) | 81 |
| 5 | Concentric city 3 | | | | | Kids, Family and young's | kinds (1,3,4) | 69 |
| 6 | Concentric city 3 | | | | | Family and young's | kinds (3,4) | 5 |
| 7 | Multi Nicolai 2 | | | | | Teenage and young's | kinds (2,3) | 20 |
| 8 | Residential city 3 | | | | | Kids and Teenage | kinds (1,2) | 80 |
| 9 | | | | | | Family and Teenagers | kinds (2,4) | 17 |
| 10 | | | | | | Family and Kids | kinds (1,4) | 65 |
| 11 | | | | | | Kids and young's | kinds (1,3) | 48 |
| 12 | Dominant Node | | | | | Family | kinds (4) | 1 |
| 13 | Multi Nicolai 1 | | | | | Young's | kinds (3) | 4 |
| 14 | Residential city 2 | | | | | Kids & teenagers | kinds (2) | 16 |
| 15 | Residential city 1 | | | | | Kids & mothers | kinds (1) | 64 |
| 16 | Green ways City | | | | | All groups | All kinds (1,2,3,4) | 1 |
| 1- Kids playground 2- Residential Park 3- District Public Park 4- Regional Park | | | | | | | | |

Fig. 2. All cases of distributing, Functioning the Green area on city levels and Target groups.

8- Description of the form and the objectives of its components:

7-1 The model form consists of three main sectors:

- 1st sector includes general description about the city and its geographical and climatic region including natural and climatic characteristics, and other information to identify the location of the city (urban-regional framework ...), also its area and the number required to be established in the city and activity, As well as social Characteristics and housing levels.
- 2nd sector will include the basic decisions regarding the green areas and their distribution, where the following decisions will be determined:
 - green space for each individual in the city.
 - of green space Distribution as percentage allocated to each individual at the different city levels (city, district, neighbourhood, residential group)
 - The arrangement chosen model of green areas on the city and its different levels.
 - Expected uses for each type of green areas (by planning level).
 - Target population groups.
 - the urban relationship of green and urban mass.
- 3rd sector determines the results and actions due to distribution of the green areas on the city's planning units where the following actions are carried out:
 - Clarification of the green spaces areas for each planning unit, with an explanation of their relation to the number of residents who will live in that planning unit.
 - The green areas activities that will be carried out in each planning unit.
 - Prospects of green areas distribution according to green area decisions.
 - Any other additions that may be added to the model form (as Fig. 3).

7-2 Basic Concepts for Application of Model Form.

- The consultant who applies this model should be fully aware of the purpose of applying it is to facilitate the decision-making process for the allocate and arranging of green areas in the city that is planned, and must also take into account the following statements:
- This model helps city planners to lay the general basics for green areas distribution in the city, it must be done at analysis stage and should be shortened and presented to the coordinators from GOPP and/or others.

- This model does not interfere in the urban configuration of the city nor planning urban fabric including the distribution of uses or road network, but allows sufficient flexibility for consultants and planners to bring out their creations planning.
- This model is suitable for application on all types of planning models and forms of cities and patterns.
- There should be sufficient flexibility in dealing with this proposed theoretical model between the consultants and the participating bodies or coordinators.
- This model does not interfere with the followed planning approach or methodology, although it will be more positive if applied to the Master Plan.

| | | | |
|-----------------------------------|----------------------|------------------------------|-----------------------|
| City Name: | | City region: | |
| City total area: | | Main Economic base: | |
| Social levels: | Low income: % | Mid income: % | High income: % |
| Housing classes: | Low class: % | Mid class: % | High class: % |
| Total expected population: | | Green Area/person: m2 | |

Select Green Area distribution Model

| Population for Each Planning level- Person Per unit | | | |
|--|----------------------|----------------------|----------------------|
| LEVEL 1 (H.G) | LEVEL 2 (N) | LEVEL 3 (D) | LEVEL 4 (C) |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | | | | |
|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Target groups: | Kids: | Teenagers: | Youth: | Family: |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | | | | |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| Green Area usage: | Recreational: | Sports: | Greens: | Invest: |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | | | | | | |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Green Area specific usage: | GARDEN | PARK | PLAYGROUND | REGIONAL PARK | SPORT | OTHER |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| Green Area Ratio for each planning level: | | | |
|--|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| Green Area, Roads and housing relationship: Urban Arrangement | | | | | |
|--|--|--|--|--|--|
| | | | | | |

| Green Area/P at Each Planning level | | | |
|--|----------------------|----------------------|----------------------|
| LEVEL 1 (H.G) | LEVEL 2 (N) | LEVEL 3 (D) | LEVEL 4 (C) |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Fig. 3. The (TGZM) Application Form

7-3 Methodology of application of the model

- After Data collecting the city location and its requirements and during analysis stage, the consultant fill out the required data in the first sector of the Model Form including data about geographical and climatic region of the city, and also site area in addition to the expected population and basic economic activity for the city.
- The consultant shall donate the decisions concerning the green areas of each individual and determine their ratios at all planning levels.
- Through the third part of the Model form, the consultant accounts to show the impact of the decisions that were made in the second sector of the Model Form on the city and its units, as well as how to exploit those green areas.

- The consultant shall explain in a brief report what is the decisions, their reasons and results, the report also will be submitted with the Model Form and shall be presented to the coordinators of the concerned authorities to advise on guide decisions and adopt them before starting to propose ideas and elaborate alternatives.
- The Model Form and the attached report must be considering as a basic delivery of the study and planning of the city.

9- Results and recommendations:

- The importance of green areas has increased recently after the dangerous environmental problems which reached the stage of destroying the earth and the collapse of the environmental system.
- The study emphasizes the importance of the inclusion the green areas as a key element within the city and not a sub-component within the group of service elements.
- The planning of the city and its planning units should be linked to the centrality of the green areas and the increase of its area within the city in order to increase the interest in green areas at the planning stage.
- Proposed planning model Resulting from this research will help speed and accuracy of decisions that will transform our cities into green cities in a simplified and useful way.

10-References:

- 1-Newark city municipality. (2014)..*Newark Zoning & Land Use Regulations* . City of Newark.
- 2-Dioxides, Konstantinos, A. (1968). *Ekistics: An introduction to science of Human settlements* London: Hutchinson Press.
- 3-Shiber, Saba George. (1967). *Recent Arab City Growth*. Kuwait: Kuwait Government Printing Press.
- 4-Lynch, K. (1961). *The Image of the City*. Massachusetts: M.I.T. Press.
- 5-Aidoo, Isacc., Unal, Tunkut., & Riad, Kamal. (1971). *Report on a New Town at Hammersholt, North Zealand*. New Zealand: Royal Academy of Fine Art.
- 6-Calthorpe, Peter. (1995). *The Next American Metropolis: Ecology, Community, and the American Dream*. Princeton: Architectural Press.
- 7-Robert D. Atkinson. (1998). *Technological Change and Cities*. Progressive Policy Institute, Cityscape: A Journal of Policy Development and Research • Volume 3, Number 3. U.S.
- 8-<https://planningtank.com/settlement-geography/hoyt-model-sector-model-land-use-1939-homer-hoyt> - Retrieved (Feb 22, 2019)
- 9-[https://socialsci.libretexts.org/Bookshelves/Sociology/Book%3A_Sociology_\(Boundless\)/17%3A_Population_and_Urbanization/17.3%3A_Urbanization_and_the_Development_of_Cities/17.3D%3A_The_Structure_of_Cities](https://socialsci.libretexts.org/Bookshelves/Sociology/Book%3A_Sociology_(Boundless)/17%3A_Population_and_Urbanization/17.3%3A_Urbanization_and_the_Development_of_Cities/17.3D%3A_The_Structure_of_Cities) . Retrieved (June 1, 2019)
- 10- VIAF.GND. Palmova. Wikipedia. 27 August 2015.[Online].Available from: <https://en.wikipedia.org/wiki/palmova>. Retrieved July 2016.

- 11- د. الهدلول، صالح على. (1994) *المدينة العربية والتشريع الاسلامي* . السعودية: نهال للتصميم والطباعة.
- 12- د. علام، احمد خالد. (1980) *تاريخ تخطيط المدن*. القاهرة: مطبعة الانجلو المصرية.
- 13- *أسس ومعايير التنسيق الحضاري للمناطق المفتوحة والمساحات الخضراء المعتمدة من المجلس الأعلى للتخطيط والتنمية العمرانية طبقاً للقانون رقم ١١٩ لسنة ٢٠٠٨ ولائحة التنفيذية* (2014). الهيئة العامة للتنسيق الحضاري- القاهرة.
- 14- د.ابو سعدة، هشام. (1977) *الكفاءة والتشكيل العمراني*. القاهرة: المكتبة الأكاديمية بالقاهرة.
- 15- د.برادة، عبد المحسن. (2004) *التخطيط والتصميم العمراني لمينا جاردن سيتي*، 6 أكتوبر- الجيزة.
- 16- د.حمدان، جمال. (1977) *جغرافية المدن*. الطبعة الثانية . القاهرة: دار العلاء للكتب.
- 17- م.بشندي، سعاد يوسف حسنين. (1987)، *تأثير تكنولوجيا النقل على تشكيل المدينة* . رسالة دكتوراه.هندسة،جامعة القاهرة.
- 18- د. عفيفي، أحمد كمال الدين. (1991). *دراسات في التخطيط العمراني*. الطبعة الثانية. القاهرة: مركز الدراسات التخطيطية والمعمارية.

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البحث رقم (3)

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56th ISOCARP
Virtual World Planning Congress
Post-Oil City
PLANNING FOR URBAN GREEN DEALS
November 2020 - February 2021

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The International Society of City and Regional Planners (ISOCARP), together with UN-Habitat and Urban Economy Forum, herewith certifies that

Said H. Al-Sayed

participated in the 56th ISOCARP World Planning Congress ‘Post-Oil City: Planning for Urban Green Deals’ held online within the period of 8 November 2020 and 4 February 2021.

Said H. Al-Sayed presented the case study titled:

“The application of resilience planning concepts as a tool for Assessment and evaluating Egyptian urban communities to achieve resilience after disasters”
in Track 4: Safeguarding the Urban Resilience.


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56th ISOCARP

Virtual World Planning Congress

Post-Oil City

PLANNING FOR URBAN GREEN DEALS

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Proceedings

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56th ISOCARP World Planning Congress
'Post-Oil City: Planning for Urban Green Deals'
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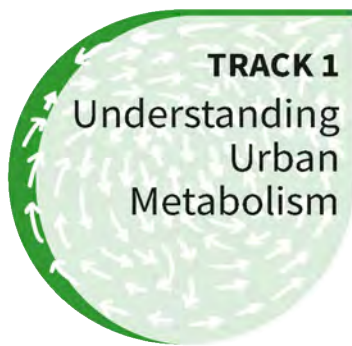


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An aerial photograph of a river valley, likely the Colorado River, with a semi-transparent green overlay. The river flows from the top center towards the bottom left, curving through a valley. The surrounding land is a mix of agricultural fields and some urban or industrial areas. The text '4. Safeguarding the Urban Resilience' is overlaid in white, bold, sans-serif font in the upper left quadrant.

4. Safeguarding the Urban Resilience

The application of resilience planning concepts as a tool for Assessment and evaluating Egyptian urban communities to achieve resilience after disasters

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Abstract

After the revolutions of the so-called Arab Spring which begin in Egypt at January 25, 2011, many disasters occurred in many Egyptian cities, and also significant changes in cities led to the emergence of severe shocks suffered by the community, including other subversive threats as Corona pandemic, long-term social pressures like unemployment and poor access Barriers to education, crime or homelessness, as well as deliberate sabotage of urban structures and infrastructure, directly or indirectly, have led to the deterioration of cities and the change of human behavior for the worse.

The research aims to identify the concepts and methodology of resilience planning, and apply them to Egyptian cities to increase its ability to recover and adapt positively to an expected changing circumstances or challenges, including Revolutions, Corona pandemic, disasters and climate change, to maintain quality of life and healthy growth, and to achieve permanent systems that can preserving resources for present and future generations. It will also aim to create a tool as (Cities resilience assessment form) for assessment and evaluating the Egyptian Cities for its resilience. That will help to make a community resilience plan includes policies, programs and other actions that can be taken in many sectors to improve a society's ability to cope with risks or change circumstances. Resilience planning can thus reduce future disaster response and recovery costs and improve recovery time after natural or human hazards events.

The research will include the definition of resilience planning concepts, implications and objectives that aim to update flexible land-use codes, zoning, development criteria, incentive programs, and other plans or policies to better prepare for potential shocks and pressures, and also help to develop standards that allow action against unexpected events.

Keywords

resilience planning concepts, Disasters, Sabotage and destruction of cities, Development criteria, Disaster response measures

1. Introduction:

The resilient city is one of the modern planning terms for cities that appeared at the beginning of the twenty-first century, especially after cities and urban communities were exposed to many devastating natural disasters such as earthquakes, volcanoes, floods, rising sea levels and the exacerbation of global warming. Natural disasters were not the only ones affecting the city, but there are human impacts that accumulated over a long period of time, which led to the deterioration of city urban mass and the poor quality of life in it with the emergence of deficiencies in its facilities and services.

Resilience means the ability to recover quickly from disasters that happen suddenly. Planning for resilience in such place means the strategies that you plan in order to fight unexpected disasters such as a sudden shortage of human resources, assets, or anything else. Preparing to reduce risk is the most that can be done as part of resilience planning. The right resilience procedure helps planning processes through resilience management to prevent disaster. With the help of tools such as efficient and streamlined technology for basic in-place procedures. Urban resilience has gained greater importance over the past decade in international development discourse and has emerged as one of the basic principles of sustainable urban development in global development frameworks and goals, including conference of Sustainable Development Goals, a new urban agenda, as well as the Paris Agreement on climate change, in addition to the Sendai Framework for Reduction. Disaster Risk 2015-2030.

2. Resilient cities:

Resilient cities were defined by several definitions, the most accurate of which is that it is the city can live after being exposed to disasters, and quickly return to its normal position (before the disaster). Habitats have defined resilience city as the city that have the measurable ability of any urban system, along with its inhabitants, to maintain continuity through all shocks and stresses, with positive adaptation and a shift towards sustainability. Faced with risks from earthquakes to floods, rapid migration to cyberattacks, all cities face a combination of shocks and stresses, both natural and man-made. Today, urban and urban residents face additional and amplified challenges as a result of rapid urbanization, climate change, political instability, and many other things.

The resilient city was also known as the city that accommodates the activities and residents and interacts with the current conditions and is formed to deal with any future activities and risks that may pass through. Through this, resilient cities are defined as being more capable of protecting and enhancing people's lives, securing development gains, and promoting an investable environment and positive change. Three major dimensions of resilient city structure that are governed by effective leadership and strategy, sharing stakeholder authority to put integrated planning (Figure -1)- They include: -

- Health and well-being of everyone who lives and works in the city.
- Financial and Society systems that enable city dwellers to live in peace and work collectively.
- Infrastructure and Environment which means what man-made to provides basic services.



Figure 1. The main dimensions of urban structuring for urban resilience

A set of standards and specifications have been developed to achieve the characteristics of a resilient city through research carried out by some institutions, including the following:

Reflexive and resourcefulness: it means learning from the past and acting in times of crisis. Individuals and organizations reflect the experience of using the past to inform future decisions, and adjust standards and behaviors accordingly. This makes planning processes more responsive to changing conditions. As for the **resourcefulness of people and institutions:** it is the ability to find alternative ways to use resources in times of crisis in order to meet people needs or achieve their goals.

Durability, Repetition and Flexibility: These are the qualities that help visualize systems and assets that can withstand shocks and stresses as well as the willingness to use alternative strategies to facilitate rapid recovery. Robust design includes adopting and managing arrangements in place to ensure failure is predicted, safe, and proportionate to the issue. As for redundancy, it refers to the reserve capacity that has been intentionally created to absorb the damage that has occurred due to severe pressures, such as storms or an external event, and it includes diversity where there are multiple ways to achieve a specific need, for example, power systems that incorporate redundancy aim to provide multiple conduction paths that can accommodate surges in demand or disruptions to network supplies. While flexibility is concerned to adopt alternative strategies such as responding to changing circumstances or sudden crises, through systems that can be more flexible by introducing new technologies or methods of knowledge, that including the recognition of traditional practices. For example, in times of crisis, cities can reassign public buses for emergency evacuations.

Inclusiveness and Integration: It relates to good governance and effective leadership processes that include appropriate investments and standards to meet the needs of the most vulnerable groups and to create a flexible city for all. Inclusivity emphasizes the need for broad consultations and "lots of seats at a table" to create a sense of shared ownership or a shared vision for building resilience in the city, This helps to achieve early warning of danger to all, enables people to protect themselves and reduce loss of life and property. Complementarity is concerned with cooperation between people and different

agencies (each according to his potentials and capabilities) to activate the required tasks of all groups of society under rational leadership.

3. Resilient cities and types of disasters

3.1. Types of disasters that cities are exposed to

There are many natural hazards and dangers caused by humans, and the so-called natural disasters are often the result of latent factors that originate from the earth or from the sky and are often caused by human activities that are incompatible with nature, such as building in areas subject to floods, cutting trees, or the construction of buildings on fragile lands or soils subject to swelling, or that were carried out without engineering studies and not taking into account safety standards, and here are some of the most common hazards that may lead to disasters according to the studies of the World Meteorological Organization; And the International Science Council, 2007 (WMO, ICSU)- figure (1):.

- **Climate hazards:** tropical cyclones, heat waves, fires - lightning and torrential rain.
- **Dangers of climate change:** increased frequency and intensity of storms, glacial lake flooding (occur when dams collapse Containing a glacial lake).
- **Hydrological hazards:** floods in rivers or beaches, flash floods and tsunamis, and suitable high seas and oceans.
- **Geological hazards:** volcanoes, earthquakes, and massive movement of land masses (waterfalls, slides, and landslides).
- **Astrophysical hazards:** meteors and meteors.
- **Biological hazards:** epidemics and pests.
- **Human risks:** armed conflict, fires, pollution, collapse of infrastructure, civil unrest and terrorism, in addition to the piles of waste and rubble resulting from human and construction waste.

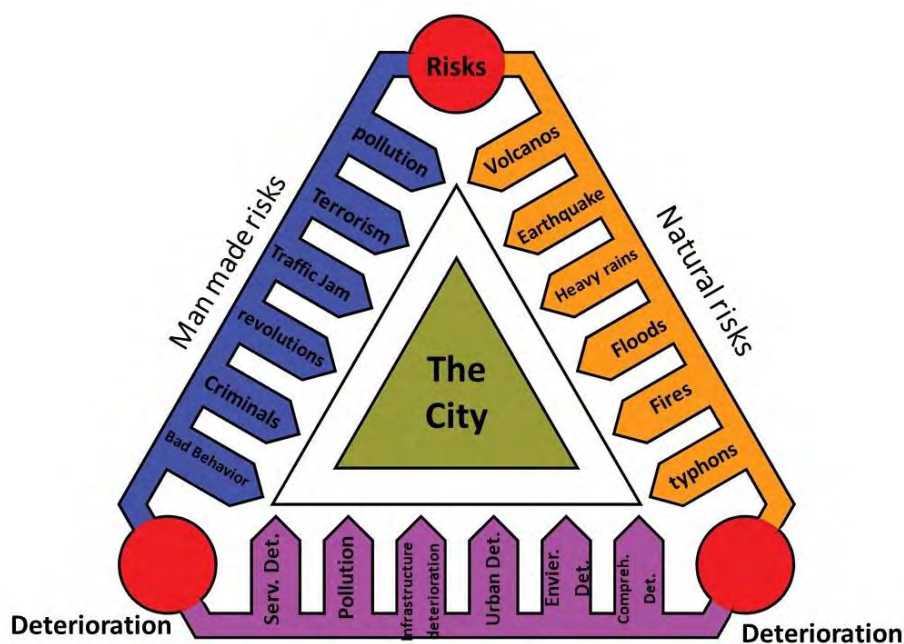


Figure No. (2) Types of risks and their impact on cities

3.2. The impact of natural and human hazards and disasters on cities and urban agglomerations

The natural and human disasters in the past few years have caused a great loss in urbanization of cities and communities. The earthquake that struck Egypt in 1992 caused the collapse of thousands of residential and service buildings, the loss of thousands of people, cracks that affected many important heritage, and the floods that occur with the onset of winter on coastal cities such as Arish And Dahab and some cities in Upper Egypt that lost many buildings and destroyed many utility networks, cutting off the roads leading to them. All this led to complete paralysis. And the heavy rains that fell in the winter of 2019 on some new cities east of Cairo, which also led to traffic problems that reached for several days because they led to the collapse of some roads and filled the tunnels with water. Natural disasters happen to most countries of the world, and of different types, for example, the earthquake that struck the city of Bam (in Iran) in 2003, the fire that broke out in the old city in Edinburgh) United Kingdom (In 2002, sabotage and armed conflict that caused the destruction of large Buddha statues in Bamiyan, The Sacred Tooth Temple was destroyed in Sri Lanka due to a terrorist attack in 1998, and in 2007 Cyclone Sundarbans destroyed orchards of tropical mangrove trees, drowned fishermen and ruined wildlife due to salt water intrusion in Bangladesh. Also, the climatic cycles that cause natural phenomena such as the El Nino phenomenon that in turn control with cycles of drought and floods in different parts of the world, the potential for hazards in protected areas may increase if combined with disturbances at sea level due to climate change.

Hazards are events that change, weaken or destroy the valuable aesthetic elements.

4. Planning methods for implementing resilient cities

4.1. Resilience planning method

There are many thinkers and planners who have begun planning the new city for the sake of resilience, especially in some countries that are exposed to frequent dangers such as Japan earthquakes and river floods in some countries such as Sudan and landslides, and the planning steps for resilience have been reduced to eight steps as follows:-

- **Forming a cooperative planning team:** it includes identifying team members and their leader, main stakeholders, as well as defining the role of each member and the different groups of society.
- **Study of the social dimensions:** by selecting and distinguishing the social function and dependencies and determining the support from the built environment as well as the main contacts.
- **Study of the built environment:** including determining the city mass and identifying the main points of contact and determining the plan of influencing communities.
- **the link between the social function and the built environment:** It begins with the study of its uses and urban characteristics with linking the mass uses and activities data to the social and economic characteristics of the population.
- **Defining goals and objectives:** setting long-term societal goals and setting performance goals in addition to identifying community risks and determining performance to address those problems, as well as an executive summary of tasks and steps and reaching the expected result.
- **Setting a development plan:** to achieve flexibility, assessing gaps, identifying problems, identifying solutions and alternatives, developing an implementation strategy.
- **Preparing, reviewing and approving the plan:** documenting the plan and strategy, obtaining feedback and approval, finalizing the plan, adopting the plan and approving.
- **Implementation and maintenance plan:** implementing approved solutions. Evaluating and updating the disaster management plan, modifying the strategy as needed

4.2. The City Resilience action plan RAP and frame work plan RFP

There are also other types and approaches for flexible planning that correspond to the size of the gatherings and the levels of planning, including: -

- a- RAP is a Tool methodology enables the delivery of high-quality, innovative and interactive training courses to help build and strengthen capacities of both communities and decision-makers in disaster risk management, climate change adaptation and urban resilience. Two types are available:
 - The City RAP Tool training of trainers' program, which provides tailor-made training courses adapted to local realities. After completing the training, participants are enabled to carry out training workshops themselves, and can use participatory planning and vulnerability assessments.
 - A team of external trainers' kicks-off the process and supports it throughout each phase. A small group of at least three people should be trained to lead the process at the city level, hereafter referred as the Municipal Focal Points. They play a very important role as collecting data, supporting data analysis, facilitating discussions, ensuring effective communication with partners/stakeholders, actively engaging with communities through participatory approach, and drafting the City RFA.
- b- RFA is a key document guiding decision-makers to improve city resilience and reduce risks. It identifies relevant challenges, priorities and actions to be implemented according to the real context. It can also be used as strong fundraising instrument for financing priority actions.
- c- Many organizations as DiMSUR supports resilience planning and the development of RFAs in many municipalities as Chokwe (Mozambique), Zomba (Malawi), Moroni (Comoros) and Bissau (Guinea Bissau). They offer demand-led technical assistance providing different stakeholders with the expertise needed to promote urban resilience, manage disaster risks and adapt to climate change, and they work hand-in-hand with beneficiaries to develop locally appropriate solutions tailored to specific needs.

5. Resilient city relationship with residents' needs, and quality of life elements

There are needs for basic elements for urban dwellers, including housing and community services of all kinds, and their minimum standard rates, and the higher the quality and efficiency of these elements, enhance resident's quality of life, and these elements include:-

Housing: where it must be a healthy dwelling, and achieves thermal comfort, and these requirements must cover all levels of housing.

Services: where the necessary services must be available including health, education, and other services. They must have the appropriate efficiency and compatibility with the requirements of the segments of society, and these services have rates and standards according to the planning level.

For Egypt, in order to achieve the requirements and desires of society, a code of quality of life is being created for the Egyptian citizen in the various urban communities.

Utilities: it includes the provision of drinking water and sanitation services, electricity and communications which considered the most important elements that affect the lives of people.

Urban spaces: It help in practicing social activities and political gatherings, various celebrations on holidays and occasions, and whenever these spaces exist it increases the quality of life.

Green areas and parks: green spaces contribute to raising the efficiency of the city urban environment, as it contributes to improving the characteristics of the climate, it give psychological comfort to the inhabitants around or near it, and encouraging meetings between them, It also contributes to making the people healthier.

Transportation and roads: Peoples require a good transportation network suitable to meet their requirement's mobility, and the efficiency and quality of these types depends on their condition, efficiency and diversity, in addition to the places of their distribution within the city and their relationship with Population concentrations, service and economic activities.

The urban mass condition: Sometimes there is enough of the aforementioned elements, especially housing and services, but they are not in good condition, as they lack durability or have not been built or finished, and also have not been furnished in an appropriate manner that makes them perform their role to achieves the quality of life, and this appears today in People have random or even informal areas, and there are fast-growing cities in which these problems appear (such as the spread of random areas in Cairo after the October War (1973).

6. Critical cities and cities with the least resistance to disasters

There are many cities that have the minimum requirements that achieve and meet the needs of the population, but they are not suitable for exposure to any risks, as they are more vulnerable to destruction and collapse when the risks occur. Rapidly growing and unplanned cities, they are more likely to collapse after a shock because they often suffer from pre-existing stresses and recurrent crises, they are often unprepared or unable to recover after the occurrence of disasters, that create a series of negative impacts, which endangers the city's jobs, exposes people to danger, and brings the city closer to the random phase. They are often uncontrolled, which weakens them and reduces the efficiency of their urban and economic components in addition to the failure of community services to serve required population.

The increase and strength of risks and their impact on cities and urban areas has a strong relationship with the increase in their population. The unplanned cities often suffer from deficiencies in educational and health services and other services, a lack of green areas and urban spaces, in addition to the deterioration of the state of urbanization and the lack of adequate housing, especially for the low social levels who suffer from Unemployment, poverty, marginalization, high population densities and urban congestion, the poor condition of roads, transportation, many utility networks, and waste collection network.

Many residents of those cities and urban agglomerations have shortcomings in quality of life standards, it affects behavior especially poor peoples, discrimination against strangers and women, and increasing crime rates, but often there is cooperation between them during risks. These citizens also suffer from social problems, which fast the decline in urban conditions, and their cities not able to bear any disasters or risks.

7. Applying the resilience cities methodology to one of the existing Egyptian cities

By identifying the basic needs of the population in urban communities, as well as the elements of quality of life that were mentioned previously, an evaluation form was formed including the basis of which the city or urban grouping would be evaluated and its ability to be a resilience city, the following table clarifies those elements as well as the process of evaluating the communities based on City Specifications and Elements. Through the table, each sub or basic element of the city can be evaluated and its compatibility with the city's resilience specifications, A standard weight is also determined to measure the extent of the element's importance to citizens, the table also determines the maximum standard weight of the elements to be 100 degrees, and to be distributed on the evaluation scale in proportions of 80-100% of the degree when resilience, 60-80 in equilibrium, 40-60% in case it is in the critical phase, 20-40 in case it is fragile, and less than 20 in case of deterioration or onset of collapse.

The following weights have been assumed for each basic element such as housing, services and utilities 100 degrees, green areas 80 degrees and spaces 75 degrees, either the urban status is also 100 degrees, the social status 80 degrees, the economic 75 degrees, as well as management and governance to be 80 degrees as well, and the previous table is applied to the Resilience Diagram (Form) which contains the basic guidelines for achieving the resilient city, and thus there is a clear assessment of the elements in the city based on their fulfillment of the requirements of the resilience city,

This gives a clear image of the problems facing the city and every component in it, as well as giving more accurate and clearer perceptions to address the deficiencies. For example, if there is a problem with the availability or efficiency of services, the evaluation point appears far from achieving the characteristics of the flexible city, which gives an indication that the city needs to provide some deficient services or raise its efficiency. (Figure 2).

8. Disaster risk management for Egyptian urban communities

For the city to be resilience, it must have a management of the city's capabilities, they must have the expertise and the competencies to achieve the required resiliency characteristics through a good reading of the city and its elements, as well as the characteristics and people needs, they have a wide knowledge of the risks and disasters that the city is likely to encounter and can developing a plan to manage the city against disasters and risks.

There are three main stages in disaster risk management begin with the pre-disaster stage, which include the preparedness measures that must be taken before a disaster strikes, such as: risk assessment, mitigation measures for specific risks, and prevention (maintenance and follow-up, and preparation of various disaster management policies and programs). Contingencies that should be taken before a disaster strikes include measures such as establishing an emergency team, developing a plan and defining evacuation procedures, installing early warning systems, developing periodic training plans (such as evacuation training, for example), and providing temporary storage.

During a disaster, which is the period of the occurrence of the event, various emergency response measures should be taken to save the people and the city's capabilities, and the site's operators should have been trained to implement these measures during the emergency preparedness phase. Activities undertaken after a disaster include assessing damage and losses and remediating the elements that were

damaged by carrying out repairs, restoration and retrofitting operations. And the plan, during the occurrence of the disaster, is to try to reduce the damage as much as possible, while focusing on guidance and direction in the local language for the residents of the urban community or city in order to save their lives and capabilities.

After the disaster, the phase of recovery/ risk prevention, rehabilitation and mitigation of its effects, preparedness and preparedness for emergencies, risk assessment, procedures for responding to remedial emergencies (such as repair, restoration and reconstruction).

As for the existing cities, a planning methodology can be followed, that begins with evaluates the elements of the aforementioned city and transforming it to a resilience city, as follows:

- Study of the current state of the city: It includes studying its environmental, urban, social and economic condition.
- study of the risks: This is done by studying the history of the city's or region exposure to and that may affect the city.
- Evaluating the city and its components based on resilience criteria.
- Determine the basic guidelines for achieving resiliency.
- The formation of an urban resilience department, including risk and disaster management.
- Developing an operational resilience plan.
- Establishing and activating the implementation tools and their management.
- Developing resilience plan review indicators.
- Implementation, monitoring and evaluation.

9. Application of the resilience methodology to (San Al-Hajar city-Egypt)

The city of San Al-Hajar is located in the Sharika governorate, next to an important archaeological area (Tanis), and its area is currently about 484 acres. This city had a strategic plan made in the beginning of 2016 after it was transferred from a village to a city at 2013. The adoption of the urban space for it in 2017 so that the space of the space is 555 acres. Table (1)

| Land use | Area 2016 | | Area 2032 | |
|-----------------------|-----------|--------|-----------|--------|
| | Fed | % | Fed | % |
| Housing | 153.98 | 31.79% | 243.7 | 43.90% |
| Mix. Housing | 30.58 | 6.11% | 35.48 | 6.39% |
| Education | 9.54 | 1.97% | 24.66 | 4.44% |
| Health | 0.64 | 0.13% | 3.16 | 0.57% |
| Religious | 2.19 | 0.45% | 4.17 | 0.75% |
| Sports - recreational | 5.04 | 1.04% | 5.04 | 0.91% |
| Commercial | 5.55 | 1.15% | 10.1 | %1.82 |
| Other services | 15.24 | 3.16% | 16.35 | 2.94% |
| Industry - Crafts | 0.61 | 0.29% | 36.12 | 6.51% |

| | | | | |
|----------------------------------|---------------|----------------|----------------|----------------|
| Utilities | 6.81 | 1.41% | 6.94 | 1.25% |
| Stop Station | 0.19 | 0.04% | 1.71 | 0.31% |
| Vacuumed land | 39.6 | 8.18% | 0 | 0.00% |
| Water Lines | 22.08 | 4.56% | 19.74 | 3.56% |
| Agriculture Pockets | 45.62 | 9.42% | 0 | 0.00% |
| Roads | 142.36 | 29.39% | 144.46 | 26.02% |
| Cemetery | 3.55 | 0.73% | 3.55 | 0.64% |
| Projects Land | 1 | 0.21% | 0 | 0.00% |
| Total Area | 484.36 | 100.00% | 555.18 | %100.00 |
| archology | 534 | | 534 | |
| Total Area with Archology | 1018.4 | | 1089.18 | |

Table 1. the existing and proposed Budget (2032) for San El-Hagar city

| Dim | Disaster kind | Disaster power | the cities vulnerability disaster | | | | | Notes |
|--|--------------------------------|----------------|-----------------------------------|--------|-----|------|---------|-------|
| | | | V. Strong | Strong | Mid | Weak | V. week | |
| The quality of disasters and pressures | Economic crises | | | | | | | |
| | Revolutions | | | | | | | |
| | Terrorism and armed civil wars | | | | | | | |
| | Epidemics and diseases | | | | | | | |
| | Earthquakes - Volcanoes | | | | | | | |
| | Landslides | | | | | | | |
| | Other (to be determined) | | | | | | | |

Table 2. Assessment of disasters and risks facing the city of San Hajar

For assessment, Table (2) was added all city elements to ease evaluation based on standards and specifications for resilience of cities.

| Dim | Element | Sta. W | Evaluation based on flexibility | | | | | Ach. W | Notes |
|-----------------|-------------|--------|---------------------------------|-----|-----|------|-----|--------|-------|
| | | | Res | Bal | Cri | Frag | Det | | |
| Quality of life | 1- Housing | | | | | | | | |
| | 2- Services | | | | | | | | |
| | Education | | | | | | | | |
| | Health | | | | | | | | |

| | | | | | | | | | |
|------------------------------------|---|--|--|--|--|--|--|--|--|
| | Religious | | | | | | | | |
| | recreational | | | | | | | | |
| | Social | | | | | | | | |
| | safety | | | | | | | | |
| | Administrative | | | | | | | | |
| | other | | | | | | | | |
| | 3- Roads, transport and facilities | | | | | | | | |
| | Drinking water | | | | | | | | |
| | Sanitation | | | | | | | | |
| | Drainage of rain | | | | | | | | |
| | Solid Waste | | | | | | | | |
| | Electricity | | | | | | | | |
| | Communication | | | | | | | | |
| | Roads and paths | | | | | | | | |
| | Transportation | | | | | | | | |
| | 4- Green areas | | | | | | | | |
| 5- Spaces | | | | | | | | | |
| 6- Urban existing condition | | | | | | | | | |
| peoples and society | 7. The social status of society | | | | | | | | |
| | The human resources power. | | | | | | | | |
| | Cultural level | | | | | | | | |
| | Scientific level | | | | | | | | |
| | Working status | | | | | | | | |
| | Behavior | | | | | | | | |
| | The desire for change | | | | | | | | |
| | Acceptance of others | | | | | | | | |
| | Economic level | | | | | | | | |
| | other | | | | | | | | |
| Economic Situation | 8. Economic state | | | | | | | | |
| | Type of activity | | | | | | | | |
| | Economic diversification | | | | | | | | |

| | | | | | | | | | |
|------------------|-------------------------------------|--|--|--|--|--|--|--|--|
| | Economic weight | | | | | | | | |
| | other | | | | | | | | |
| urban management | 9- Management and governance | | | | | | | | |
| | Appropriate leadership | | | | | | | | |
| | Plans | | | | | | | | |
| | Community participation | | | | | | | | |
| | Innovative solutions | | | | | | | | |
| | other | | | | | | | | |

Table 3. the assessment of urban agglomerations based on the criteria and principles of resilient cities

The work of the strategic plan for the city has been completed in 2020 and is being approved to work on its basis. By studying the current conditions of the city, the following was found:

The city is dominated by residential uses by 32%, and community services represent 8%, including educational services (primary, preparatory and secondary), and simple health services where there is no general hospital or any hospital with a family, and there is a youth center that is built only without playgrounds or open spaces, and there are religious and administrative services, a post office, and finally a modern branch of the Faculty of Archeology (Zagazig University). The road network represents its percentage of 30%, Empty land 18% including Agriculture pockets, and utilities represents 1.4%. the city has many problems as services and utilities shortage and traffic jams in the entrance and city center. By studying the conditions of the facilities, it was found that there is a shortage in the per capita share of drinking water (60 liters/person/day) which is less by 60%, as the per capita, and there is no sanitation network for about 65% of the city, while electricity and communications are well available, except for the extensions or New urban areas on the outskirts of the city, which was built in the absence of planning after the January 2011 revolution.

When preparing the strategic plan, many small urban areas were added to the city Cardone 71 acres including 45 acres of agricultural pockets to be used to make the city resilience by adding residential uses and basic services or to add roads and utilities to serve the city.

10. Applying the evaluation form to the city of San El-Hajar

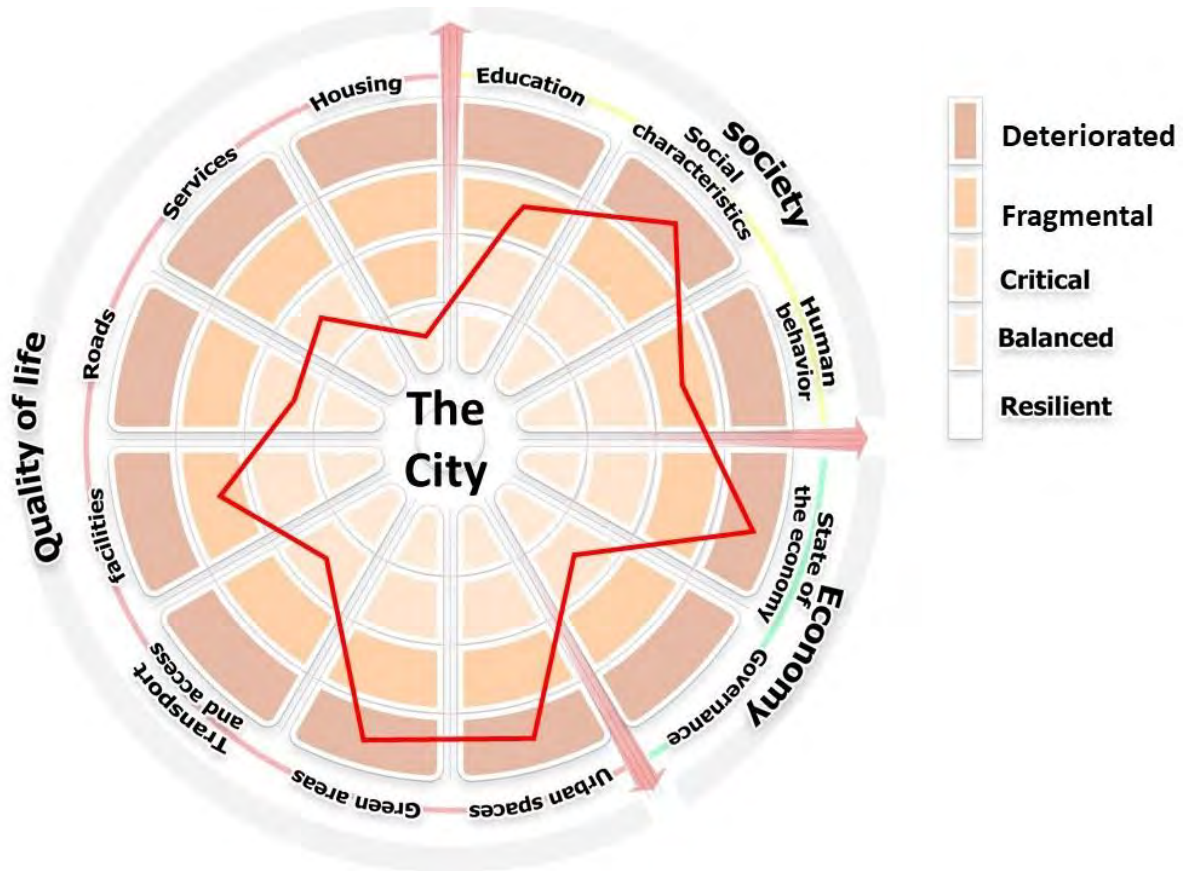


Figure No. (3) Applying city assessment form to comply with the resiliency requirements for San El-Hagar

By applying the city assessment form to comply with the resiliency requirements. (3) found the following.

- The city is characterized by high flexibility in the field of housing, as there are 25% vacant housing that represents a housing stock that accommodates high ratio of current and future needs of the population.
- The status of the city is critical in the field of educational and administrative services, and is fragile and deteriorating in the field of other services, and water and sewage utilities too, and it is critical in the field of transportation and roads.
- The city suffers from major economic problems, as unemployment increases to be (18%), and the economic structure suffers from deterioration due to the collapse of one of the leading companies as (San El-Hagar Company) which sale of its lands and assets to pay the salaries for employees as well as the collapse of projects as breeding and exporting of poultry and rabbit meat.
- The environment is still clean because the city is surrounded by agricultural lands, with the exception of the southern part, which suffers from some environmental problems as a result of the contiguity with the fish farms that caused problems for the nearby buildings.
- The city does not contain spaces or green areas.
- The cultural and scientific level and human capabilities are good, as most of the population of the young age groups are educated and lead a simple, good social life. The poverty rate is 25% (less than the average in the governorate)

The city's assessment has been signed on Diagram, the basic guidelines for evaluating the city and its components and achieving the requirements of a resilient city as in Figure (3)

- It is worth noting that the city is not exposed to natural hazards except for desertification of agricultural lands and encroachment of buildings on it, which makes the city lose a significant economic resource, and the spread of solid waste on canals and drains.

Through Figure No. (3), the analysis and study were carried out on how to address the shortcomings and to transform the city to resilience city, where the following was done: -

- **For the expected population:** an area of 35 acres of housing was provided to accommodate 8750 until 2032, with a density of 250 person/ acre.
- **Concerning services:** Several sites have been proposed to provide a number of primary - preparatory, and - secondary classes, with the suggestion of a technical school or institute or college specialized in archeology. As for health services, an addition has been proposed 5000 m2 for a hospital 150 bed to serve the city and surrounding villages. In addition, consideration has also been given to providing missing services for youth as sports and recreational, administrative and religious services.
- **Economy of the city:** It was proposed to increase the city's economic capabilities by providing some light industrial and hand crafts activities that depend on tourism, especially next to (Tell San Al-Hajar - Tanis), where the residents of the village of Tal San Al-Hajar can be encouraged to host tourism for daily accommodation and to create a three or four star hotel and commercial services for handicrafts. Clearing canals and drains and dig wells to preserve agricultural land, which is forbidden to encroach on
- **Roads and facilities:** the efficiency of the road and transportation network is increased by expanding the main and community roads and creating a station for the city on its southern borders, and the facility's capabilities are increased to match the reasonable rates of potable water and sanitation, as well as the extension of electricity networks throughout the city.

Through these treatments, it can transform the city of San Hajar to a resilience city, especially with the increase in the capabilities of facilities and roads, and the provision of the necessary services at natural rates and raising the efficiency of each of them.

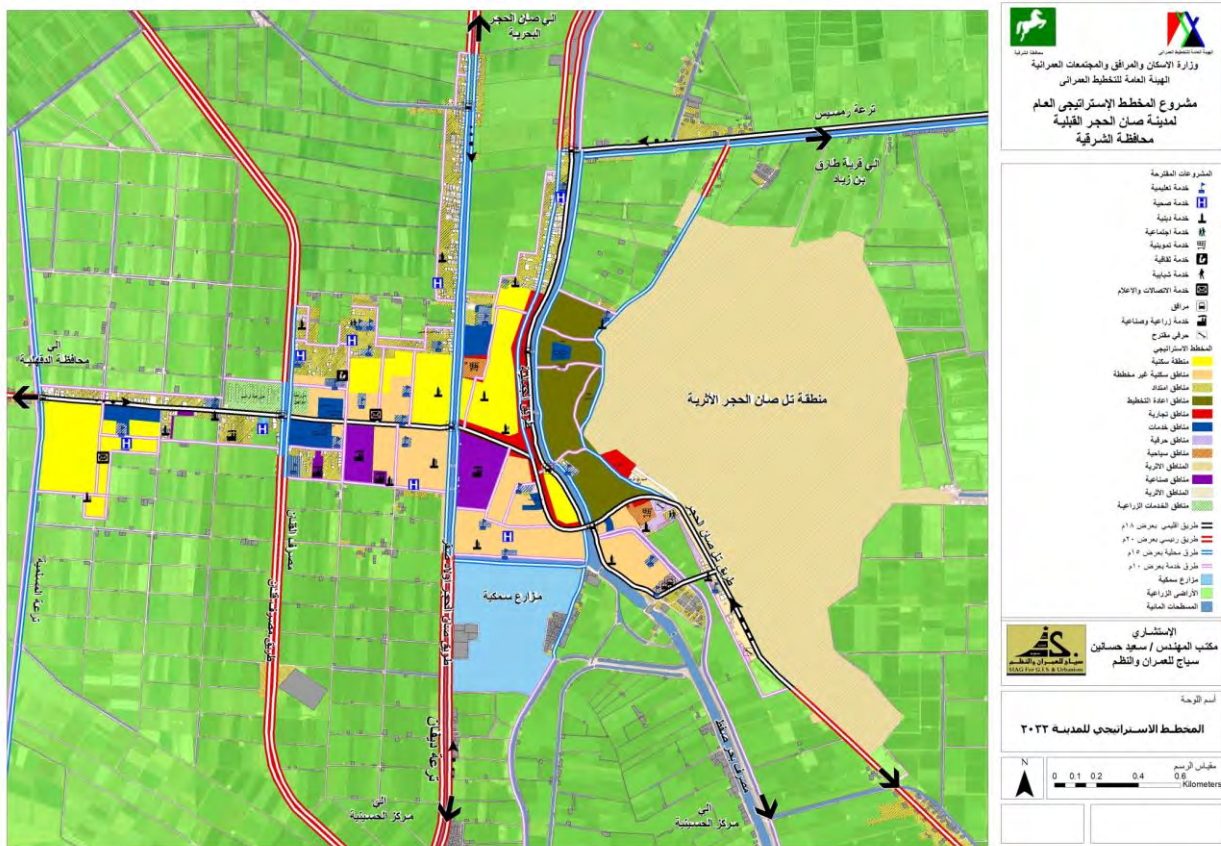


Figure (4) the Resilience strategic plan of San El-Hagar city

11. Conclusion and recommendations

- Applying resilience city principles and foundations to existing cities by identifying the extent of the compatibility of the city's elements with the basic guide lines of the resilience city, then evaluating and then taking the appropriate decision to transform it into a resilience city.
- The city can be resilient only when it fulfills the minor limits of quality of life, while providing an additional range in its ratios that can be consistent with the risks that faced the city.
- City administration and local government are effective management to maintain the resiliency of the city and even achieve its requirements. Therefore, effective administrative elements must be chosen with extensive and innovative experiences in the social, economic and administrative fields while providing a strong information base that helps them in making decisions.
- The accurate study and analysis to the existing cities that is followed by the evaluation on the basis of resiliency helps in applying and realization of the principles of the resilient city.

12. References

100 RESILIENT CITIES, THE ROCKEFELLER FOUNDATION, 2017, Cities taking Action- HOW THE 100RC NETWORK IS BUILDING URBAN RESILIENCE, USA

World Bank (GFDRR), 2017, RESILIENT CITIES - Reducing urban risk.

Dr. Niki Frantzeskaki, Lead Expert, Resilient Europe, 2016. URBAN RESILIENCE- A concept for co-creating cities of the future- - DRIFT, Erasmus University Rotterdam, The Netherlands – Europe Union.

Ayyoob Sharifi1, Yoshiki Yamagata, 2014, Resilient urban planning: Major principles and criteria, The 6th International Conference on Applied Energy ICAE - Published by Elsevier Ltd

Rebecca Laberrenne P.E, 2016, 100 Resilient Cities- Program Overview- and Case Studi es.ICC Global Connections Day- Kansas City.

World Bank Group's, 2017, Evolving Approach Paper -Towards Urban Resilience -(2007-2017, USA

DIMSUR TECHNICAL CENTRE FOR DISASTER RISK MANAGEMEN, 2014 SUSTAINABILITY AND URBAN RESILIENCE IN SOUTHERN AFRICA -BASELINE STUDY -Working Document for Discussion

100 RESILIENT CITIES, THE ROCKEFELLER FOUNDATION, 2019 Resilient Cities, Resilient Lives- Learning from the 100RC Network, USA.

100 resilient cities program, 2019, SAFER AND STRONGER CITIES STRATEGIES FOR ADVOCATING FOR FEDERAL RESILIENCE POLICY, USA

Dr. Mohammed Mahdi Hussein, 2016, The Effect of the Resilient Urban Form on the Resilience of City- مجلة الهندسة والتكنولوجيا، المجلد ٣٤، الجزء (A) ٤٨٧ - ٥٠١ - العدد ١٠،

اللجنة التحضيرية لمؤتمر الأمم المتحدة المعني بالإسكان والتنمية الحضرية المستدامة (الموئل الثالث) -الدورة الثالثة -٢٠١٦ - سورابايا، إندونيسيا، ورقة السياسات رقم ٨: الإيكولوجيا الحضرية والقدرة على الصمود.

إورشة عمل في الأمريكتين تابعة لمكتب الأمم المتحدة جينيف، إصدار 2017، مكين المدن من القدرة على الصمود دليل قيادات الحكومات المحلية مساهمة في الحملة العالمية ٢٠١٠ - ٢٠٢٠.

منظمة الأمم المتحدة للتربية والعلم والثقافة، اليونسكو، ٢٠١٦، إدارة مخاطر الكوارث- للتراث العالمي-.

– محافظة القاهرة- الإدارة العامة للآزمات والكوارث، ٢٠١٤، إجراءات الحد من مخاطر الكوارث مع الحد من مخاطر التغيرات المناخية، مصر.

دور النظم غير الرسمي في استدامة المدن وقدرتها على الصمود- دراسة لمعهد عصام فارس للسياسات العامة والشؤون الدولية في الجامعة الأميركية في بيروت- ٢٠١٧

المخطط الاستراتيجي لمدينة صان الحجر القبلية - ٢٠٢٠ - الهيئة العامة للتخطيط العمراني - مكتب سياج للعمران والنظم- مصر.

<https://www.emergency-live.com/ar/civil-protection/urban-resilience-resilient-cities-plug-in-to-technology-for-response-and-recovery/>

<https://planningforhazards.com/resilience-planning>

https://www.researchgate.net/publication/321609156_A_framework_for_urban_resilience_planning

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د. سعيد حسنين السيد

تحية طيبة وبعد،،،

نفيد سيادتكم بأن البحث المقدم منكم بعنوان:

The global administrative capital and harmony with Cairo (the eternal capital)
to administer a new Egyptian Republic (article)

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لإدارة جمهورية مصرية جديدة

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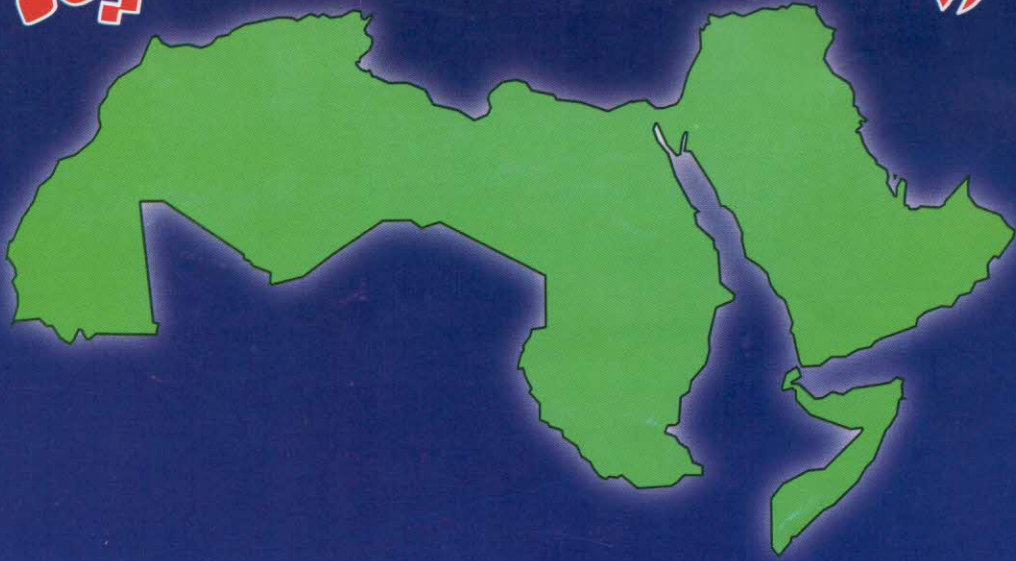
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المجلة الدولية للتنمية



المجلد العاشر - العدد الأول (٢٠٢١)

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المستخلص

تعد العواصم من المدن الهامة في كل الدول ليس فقط لكونها مدينة الادارة والتحكم في مفاصل الدولة، ولا لكونها تأوي عددا معينا من السكان ولا بسبب الانشطة العديدة التي يمكن ان يمارسها قاطنوها، بل لأنها تعتبر مركز حضري اساسي في الدولة واكثر المدن علاقة بالدول الاخرى. واحيانا يصل الامر بمدن العواصم ان تفتقر الى الادوات والامكانيات التي تجعلها تقوم بمهام الحكم بطريقة مناسبة لوضع الدولة وحجم قاطنيها وتزيد مشاكلها وازماتها الى الدرجة التي يستوجب معها نقل العاصمة او نقل بعض انشطة العاصمة الحاكمة والادارية الى موقع اخر يتوفر فيه الامكانيات والانظمة المتطورة للقيام بادارة الدولة من خلالها وحل المشاكل بالعاصمة القديمة. وقد مرت العديد من دول العالم بهذه التجربة ومنها مصر التي قامت بنقل العاصمة الادارية لها من القاهرة الى موقع متوسط بين نهر النيل ومحور قناة السويس (العاصمة الادارية الجديدة) والمخطط على مبادئ المدن الذكية ومستخدمة لادواتها التكنولوجية بهدف توفير مقومات حياتية جيدة للسكان وتسهيل ادارة الدولة والربط السريع مع عواصم الدول الاخرى.

كلمات مفتاحية: الجمهورية الجديدة - العاصمة الادارية - المدينة الذكية - عبقرية المكان

منهجية الدراسة: يتم استخدام المنهج التحليلي حيث يتم تحليل المشكلة ودراسة الجزئيات بدقة، وبعد ذلك تهيئة الموضوع بشكل كلي ثم استنباط الأحكام، ومن ثم التعميم.

المقدمة

عندما وصف جمال حمدان مدينة القاهرة (عاصمة مصر) واكد ربط المكان بالإنسان المصري الذي يعيش عليه جغرافيا، والحضارة التي نشأت ونمت عليها واحتلت موقعا حتميا فريدا في مصر في موقع التقاء الوادي وفرعي النيل المشكلان للدلتا، ولذا تحركت فيه العاصمة عبر العصور ولكن دون أن تخرج عن اطواره ومجاله المغناطيسي (1-3). ومع الوقت وعمليات التنمية امتدت القاهرة شرقا وجنوبا متحديا للعديد من العوامل الجغرافية والصناعية حتى زاد حجمها وزاد معه مشاكل القاهرة التي تفاقمت ووصل بعضها الى الدرجة التي اضعفت العاصمة واعجزتها عن القيام بدورها بكفاءة مثل التكسد السكاني والعشوائيات والمشاكل المرورية مما استوجب ايجاد حولا مبتكرة تساعد العاصمة على الارتقاء بدورها القومي والدولي. وكان احد الحلول هو نقل العاصمة الى موقع اخر تمثل في مدينة السادات التي انشأت في غرب النيل واقعة على طريق مصر الاسكندرية الصحراوي، وهو المقترح الذي لم يلقى قبولا لدى الكثيرين مما ادى الى عدم تنفيذه رغم تنفيذ المدينة وبعض منشآتها. واستمرت محاولات معالجة مشاكل العاصمة عن طريق وضع الحلول المرورية او بتوزيع بعض المهام على هيئات متخصصة تتبع الوزارات السيادية الهامة مثل هيئة الطرق والكباري، هيئة المجتمعات العمرانية الجديدة، وهو ما مثل حولا مؤقتة لبعض المشاكل وليس حل جذريا للمشكلة. الامر الذي أستوجب البحث على حل جذري لمشاكل العاصمة والتي كان اهمها نقل المباني الوزارية من وسط القاهرة المزدهم الى مدينة جديدة مرتبطة جغرافيا او مروريا بالقاهرة وهو ما تم اعتماده وبلورته وتطويره بعد ثورة 30 يونية 2013 لتكون هناك عاصمة جديدة تركز على النواحي الادارية في حين تكون القاهرة هي العاصمة التراثية الثقافية التاريخية. هذه العاصمة تحقق متطلبات الدولة المصرية من خلال مدينة عصرية بيئية خضراء ومستدامة تعمل بمبادئ المدن الذكية تخدم الانسان المصري وترفع من جودة الحياة لقاطنيها وتتكامل مع العاصمة الابدية لمصر وهي القاهرة وتكون بمثابة مدينة نموذجية يحتذى بها في تخطيط وتنفيذ باقي المدن الجديدة التي سيوجد بها مقومات للحياة مثل السكن والخدمات الاساسية والاقليمية، اضافة الى المباني الادارية السيادية والخدمات الدولية والمباني والمناطق الاقتصادية لتستوعب حوالي 7 مليون نسمة وقد تم اختيار موقع صحراوي شرق الطريق الدائري الاقليمي محصورا بين طريق السويس والعين السخنة ومتصلا بالقاهرة عن طريق محور مدينة القاهرة الجديدة الاداري (1)

1 - الجمهورية المصرية الجديدة

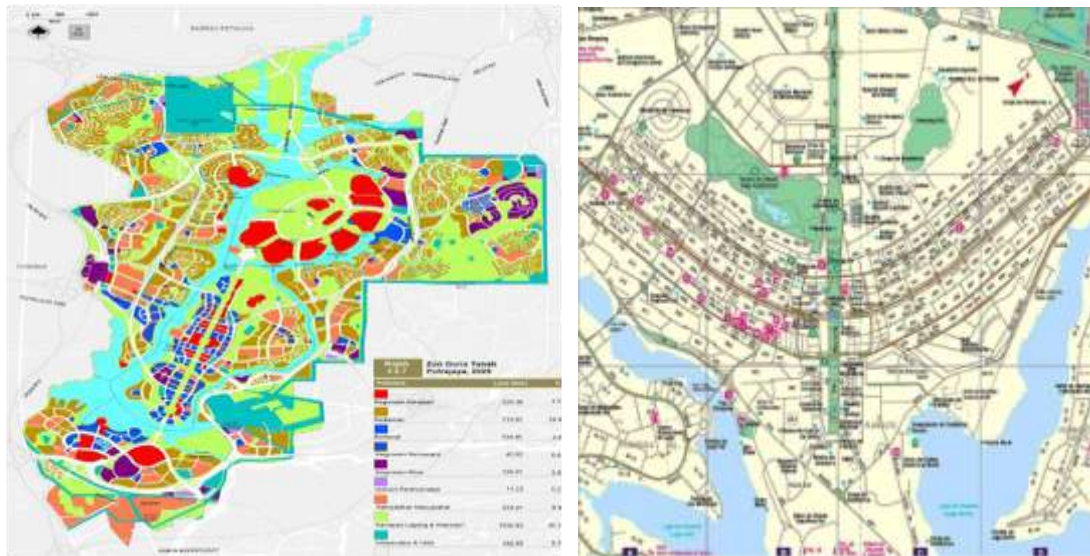
اعلن السيد عبد الفتاح السيسي رئيس مصر عن ان هناك جمهورية جديدة تقوم على تطوير ضخم لاواصر الدولة المصرية ومفاصلها الحيوية معتمد على ما يتم انشاؤه من المدن الجديدة مثل مدن الجيل الرابع الجديدة التي ستفتتحها الدولة ويزيد عددها عن 30 مدينة يتم العمل حاليا منها على 22 مدينة وتجمع عمراني جديد ، وسيتم تنفيذ 8 مدن أخرى، مشيرة إلى أن مساحة المدن الثلاثين ستكون 580 ألف فدان، تستوعب 30 مليون نسمة، باستثمارات تُقدر بستة تريليون جنيه. وتضم هذه المدن الجديدة شبكات ذكية، ومنظومات متطورة، ومنظومات لمواجهة الأمطار وتصريفها، ونظم للإدارة الذكية، ومساحات خضراء بهدف تحقيق الرفاهية وتحسين جودة الحياة للمواطن المصري وتغيير وجه مصر العمراني الى الافضل (4). من هذه المدن أسوان الجديدة، والعلمين، والمنصورة الجديدة، ورشيد، والعاصمة الادارية . وعلى ان يتم استكمال تطوير للمدن الحالية خاصة القاهرة لتعمل متكاملة مع العاصمة الادارية في ادارة مناحي الحياة بالجمهورية المصرية الجديدة التي تعتبر تنفيذا للمخطط الاستراتيجي العمراني للدولة. حيث اعلنت الدولة انها تتحرك على محورين لتحقيق هذا المخطط لتحقيق التنمية المستدامة، لافتة إلى أن المحور الأول يكون بزيادة الرقعة المعمورة لاستيعاب الزيادة السكانية، والمحور الثاني هو تطوير العمران القائم بكل المحافظات بغرض تحسين جودة الحياة في الريف والحضر. ولكي تكتمل اواصر الجمهورية الجديدة سيتم الاعلان عن ما تم من المشروعات القومية الكبرى او الجاري تنفيذها وهي احد العناصر الهامة التي تُمهد لإعلان الجمهورية الجديدة، وتُقدر تكلفة المشروعات القومية الكبرى التي بدأت الدولة على إنجازها منذ 2014 حتى 2021 لتحقيق الجمهورية الجديدة، بنحو 5.8 تريليون جنيه(5).

2 - العاصمة الادارية وتجارب العواصم الجديدة السابقة

طبقا لدراسات الاستشاري الذي قام باعداد مخطط المدينة فانه قد استرشد بتجارب العواصم السابقة في القرن الماضي مثل برازيليا بالبرازيل وبترواجيا بماليزيا (شكل 1)، كما استرشد بنقل مباني الحكم وبعض المباني الهامة من مكان الى اخر داخل العاصمة مثل حى السفارات بمدينة الرياض، وحسب الدراسة فان التجارب السابقة افادت عملية تخطيط العاصمة بما يلي:

- الاستفادة من برامج الدول لصياغة توازن جيد بين المناطق الخضراء والقدرة على التنقل سيراً على الأقدام وخلق تنفس اخضر وحياة طبيعية جميلة .
- (تصميم المناطق الحضري هي خطة رائده تصورها لوسيو كوستا وهو طالب للمعماري الشهير لوكوربوزي، وهو الذي الف الفكرة الاساسية والتي تقول ان الحدائث غير المخطط لها تؤدي الى الفوضى).
- بنيت الخطة الرائدة لتتفق مع ميثاق اثينا والتي تجسد صفات المدينة المثالية وهذه الصفات هي:
 1. تهوية جيده للمساكن وذلك بالقرب من المساحات الخضراء و فصل المساكن عن اماكن العمل مع استبعاد الصناعات من المدينة .
 2. فضاءات حضرية للأنشطة الثقافية وذلك بالقرب من المساكن .
 3. فصل حركة السيارات عن حركة المشاة .

شكل 1: أ-مدينة برازيليا الجديدة . ب-مدينة بترواجيا(6)



(ب)

(أ)

العاصمة الادارية العالمية وتناغم مع القاهرة (العاصمة الابدية) لادارة جمهورية مصرية جديدة (مقال)

ولم تكن تلك الدراسات والتجارب السابقة هي فقط ما تم الاستفادة منه ولكن هناك تجارب اخرى لبعض المدن الذكية كانت ايضا مفيدة ويمكن ان تطبق مبادئها ومفاهيمها على العاصمة الادارية الجديدة خاصة في استخدام تكنولوجيا المعلومات والاتصالات في بناء مدن ذكية مستدام ومنها:

- سنغافورة: حيث تعتمد أجهزة الاستشعار والكاميرات على النظام الرقمي القائم في دولة مدينة سنغافورة وتُمكن الحكومة من تقييم أداء حركة المرور وكفاءتها، وتحديد مشاكل مثل مطبات الطرق، ورحلات الحافلات الوعرة ومنتهي القانون. فعلى سبيل المثال، قامت المدينة، من أجل تعزيز الأمن في الأماكن العامة، بتركيب أكثر من 62 ألف من كاميرات الشرطة في المجمعات السكنية العامة ومواقف السيارات.
- كوبنهاغن ، الدنمارك: قامت بتحديث أضواء الشوارع بمصابيح إنارة تتسم بالكفاءة ومتصلة بواسطة شبكة لاسلكية. توفر مصابيح الإنارة الذكية في شوارع المدينة التكاليف لأنه يمكن برمجتها لكي يتم إطفاء أو زيادة الإضاءة تلقائياً، مما يسمح بالاستفادة المثلى من الطاقة وفي الوقت نفسه الحد من خطر الجريمة وحوادث المرور.
- ساو باولو ، البرازيل: وضعت حلاً لتقدير جودة الهواء والتنبيه به باستخدام الذكاء الاصطناعي، وتحليلات البيانات الضخمة. ويتم الجمع بين البيانات الكلية والمجمعة التي تكون هوية أصحابها مُعقّلة من شبكة الاتصالات المتنقلة وإضافتها إلى بيانات من أجهزة استشعار الطقس والمرور والتلوث. وهذا يساعد على حساب مستويات التلوث قبل 24 إلى 48 ساعة مقدماً، مما يساعد صانعي السياسات والبلديات والحكومات على اتخاذ إجراءات لتفادي حالات الوفاة والمرض - على سبيل المثال، من خلال إعادة توجيه حركة المرور قبل أن تضرب بؤر تلوث الهواء.
- بلدية هولان في إسرائيل: يعاني نظام الصرف الصحي من مشاكل مثل الانسدادات المتكررة والطفح. وركبت البلدية أجهزة مزودة بأجهزة استشعار لتحسين إدارة أنظمة المجاري، وإرسال التنبيهات عبر خدمة الرسائل القصيرة (SMS) عندما يصل المستوى إلى حدود منخفضة أو عالية.
- دبي: أدخلت نظاماً للشكاوى الإلكترونية للمواطنين لكي يقدموا آراءهم عن الخدمات العامة بانتظام.
- أمستردام: يتم تزويد المنازل بعدادات طاقة ذكية مصممة لتحفيز تقليل استهلاك الطاقة،
- مدينة شينيكنادي بنيويورك: يتم تغيير مصابيح الشوارع الخاصة بها إلى تقنية LED، والتي تسمح بتعديل الأضواء أو تعتيماً على أساس بيانات الوقت الحقيقي⁽⁷⁾.

3 - عبقرية اختيار موقع العاصمة الادارية الجديدة

كان موقع القاهرة دائما مرتبط بنهر النيل، ومن عبقرية ارتباطها الوثيق بالموقع بين مسار النيل الجنوبي الذي شكل الوادي الضيق وفرعية (دمياط ورشيد) اللذان يشكلان الدلتا المصرية فهذا التقاطع يعد فعليا مركز الثقل العمراني والسكاني الذي جذب العديد من الحكومات لادارة الدولة المصرية وامبراطورياتها عبر العصور،(جمال حمدان)، وكانت القاهرة تنمو بقوة شرقا وغربا مرتبطة بنهر النيل ومحددة شرقا بهضبة المقطم وغربا بالنيل حيث نما جزء منها على الاراضي الزراعية الملاصقة للنيل وامتدت في الصحراء شرقا.

3-1 اختيار مكان العاصمة الادارية

هناك اسباب ومعايير لاختيار موقع العاصمة الادارية منها أسباب السيطرة والادارة لجميع امور الدولة وكذلك توحيد العلاقات الخارجية بالاضافة الي الابعاد الاقتصادية والامنية ومن المعايير:

- العلاقة بالقاهرة قريباً أو بعداً: أن تكون العاصمة الجديدة بعيدة بعداً كافياً عن القاهرة لكي لايتلاحم العمران كما حدث في العديد من المدن القريبة من القاهرة.
- التوسط الجغرافي: ألا تبعد العاصمة الجديدة كثيراً عن القاهرة والتي تمثل مركز الثقل الديموجرافي لمصر.
- العلاقة بالتجمعات القائمة : ان تقترب العاصمة الجديدة من مدن متوسطة أو صغيرة يمكن نموها نتيجة التنشيط المتبادل.
- العلاقة بوادي بالنيل: ألا تكون العاصمة الجديدة داخل أراض زراعية أو أراضي توسع زراعي مستقبلي بسبب محدودية الرقعة الزراعية بمصر.
- البناء على السهل أو الجبل.
- العلاقة بالسواحل والحدود الدولية .
- مركز الثقل الجغرافي.

كذلك وجود مشاكل في العاصمة الحالية تؤثر علي كفاءة ادارة الدولة او تسبب مشاكل بالمدينة كالحزام المروري خصوصا في المناطق المركزية او مناطق مركز مبانيتها الحكومية. ولهذا كانت هناك ضرورة لنقل المباني الحكومية لادارة الدولة من القاهرة مثل الوزارات والهيئات ومجلس الوزراء والمباني الاخرى والبرلمان الي مكان اخر في أحد المدن

الجديدة وكانت مقترحا لها تخصيص 11 كم مربع من مدينة القاهرة الجديدة (حوالي 2620 فدان) في دراسة اعدتها هيئة التخطيط العمراني عام بالتعاون مع مستشارين من جامعة القاهرة (8). وقد كان هناك تفكير جاد في عمل (مدينة السادات الجديدة) كعاصمة جديدة في بداية الثمانينات من القرن الماضي، ولكن لم يتم تنفيذ الفكرة التي على الرغم من تخطيط وتنفيذ المدينة على طريق الاسكندرية الصحراوي وتوافر مقومات نقل الوزارات بها.

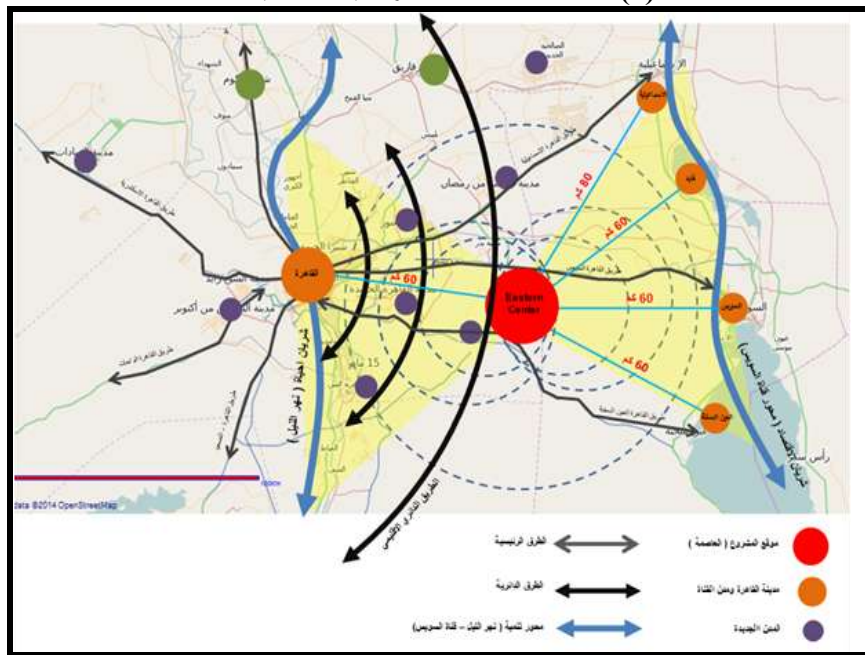
3-2 التغيرات الحالية وضرورة نقل العاصمة

هناك تغيرات علي المستوي المحلي للقاهرة والقومي والعالمي فالقاهرة تغيرت ملامحها وامتدت شمالا وجنوبا واصبحت مدينة مليونية كبرى فاقدة للنمو المتزن المخطط، تدهورت حالتها وزادت مشاكلها العمرانية والاقتصادية والبيئية، فالمشاكل العمرانية اهمها سوء حاله العمران وزيادة مساحات المناطق العشوائية بها حيث يعيش بها ما يزيد عن 50% من سكان القاهرة، وكذلك زيادة تدهور المناطق القديمة او تغير حالتها للأسوء مثل مناطق حدائق الزيتون والحلمية الجديدة والقاهرة التاريخية. كذلك الزحام المروري وعدم قدرة الطرق علي استيعاب الحركة مما اثر علي كفاءة الخدمات والمباني الحكومية والادارية الهامة التي كانت احد مسببات المشكلة المرورية، خاصة مع تركزاها في موقع واحد بالقاهرة (مربع الوزرات).

أما مشاكلها البيئية فأهمها التلوث الذي لم يقتصر فقط علي تلوث الهواء بل وصل الي تلوث المياه وانتشار المخلفات في كافة ارجاء القاهرة.

وعلى المستوي القومي: ففي الفترة القليلة الماضية حدثت تغيرات كبيرة وكثيرة اولها توجه الدولة بقوة الي التعمير الصحراوي ونشر المدن الجديدة في ربوع الدولة والذي وصل حاليا الي ما يزيد عن 30 مدينة بخلاف التجمعات الخاصة الاستثمارية، وزادت المساحة المعمورة، وزادت المشروعات العملاقة وتم الاهتمام بمصادر الطاقة وتوفير بنية اساسية لاقتصاد جديد قوي وعالمي، وكانت أهم المشروعات هو محور قناة السويس واستصلاح ملايين الافدنة من الاراضي وتطوير شبكات الري بالاضافة الي تطوير الكثير من الطرق وانشاء الكباري. ايضا الاهتمام بانشاء وتطوير صناعات متطورة كانت قد اختفت علي مدار العقدين الماضيين. ويوضح شكل (2) العلاقة بين العاصمة الادارية الجديدة وباقي المدن الجديدة ومدينة القاهرة.

شكل (2). علاقة العاصمة الادارية بالمدن الجديدة (8).



ومن يري مصر من الفضاء يدرك حدوث تغييرات جوهرية في عمرانها، ومن يدرس اقتصادها يلاحظ وجود قفزات اقتصادية وتحولات سياسية تحدث الكثير من الظروف المرعبة التي مرت بها الدولة خاصة بعد ثورتى 25 يناير 2010 و30 يونيو 2013، فكثير من الدول حولنا تغير حالها للأسوء بعد ثورات الربيع العربي ولكن مصر تغيرت الي الافضل لدرجة التفكير في جمهورية مصرية جديدة تتكون معالمها حاليا علي الارض بخطوات ثابتة وبخطط طموحة، كذلك فإن اقتصاد الدولة يتوجه الان الي زيادة دور مصر في تبادل الطاقة بعد ان ظهرت لها بمصر مصادر في العديد من المناطق أو محيطها الاقليمي ومياهها الاقليمية، وليس فحسب بل هناك تفكير للساسة والحكومة بأن تكون مصر مركزاً

العاصمة الادارية العالمية وتناغم مع القاهرة (العاصمة الابدية) لادارة جمهورية مصرية جديدة (مقال)

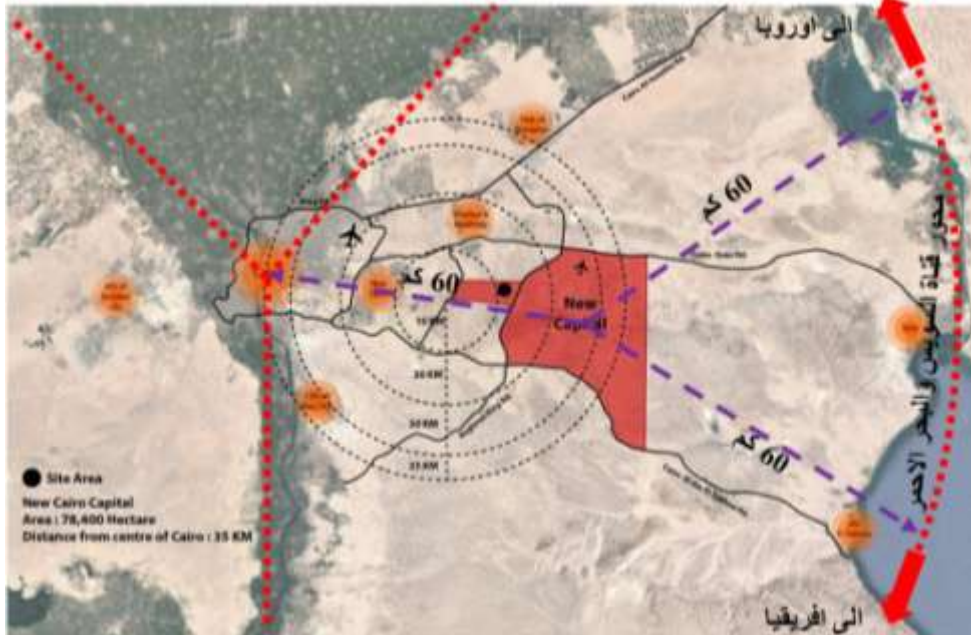
للتبادل التجاري للعديد من السلع والخدمات بين اوربا وافريقيا التي يزيد الاحتياج اليها مع زيادة حجم التجارة بين الاقليمين.

اما التغيرات العالمية: فأولها التغيرات الاقتصادية التي أهمها توجه دول العالم الي الاستثمار في افريقيا لاستغلال ثروتها والتفكير في كسر القيود الاستعمارية التجارية التي وضعت علي المنتجات الزراعية والمعدنية ومقومات الطاقة، والتي علي الرغم من أن نسبة الاحتياطات المثبتة فيها متواضعة نسبياً مقارنة بنظيرتها في الشرق الأوسط (حوالي 10%)؛ فإن عدداً من الجهات الدولية تشير إلى أن هناك العديد من المناطق غير المكتشفة إلى الآن، والتي يمكن أن تحوي كميات كبيرة من النفط والغاز بشكل يجعل من القارة الملجأ الأخير غير المستنفد بعد النفط، خاصة أن قدرات الإنتاج في العديد من دول القارة لم تصل إلى طاقتها القصوى (9، 10).

هذا بالإضافة الي ظهور فكرة اعاده طريق الحرير الي ما كان عليه وظهور مصادر الطاقة (الغاز) في مواقع كثيرة بشرق البحر المتوسط واتجاه العديد من دول افريقيا الي تطوير تعاملاتها الاقتصادية مع الدول الكبرى والاقطاب الاقتصادية بعد ان شعر العالم بأهميه القارة السمراء، والجدير بالذكر ان أغلب التعاملات التجارية بين الدول الافريقية والدول الغربية والاسيوية وامريكا يتم عن طريق سواحلها الغربية والشرقية فيما يجعل ساحل مصر الشرقي والبحر الاحمر محوراً تجارياً هاماً يخدم التبادل التجاري العالمي. ومع سيطرة الصين اقتصادياً في الأونة الاخيرة وزيادة انتاجها وصادراتها الي أغلب دول العالم بما قيمته 2.25 تريليون دولار، مستخدمة النقل البحري عبر سواحلها الجنوبية مرورا بالبحر الاحمر ثم قناة السويس وهو الاخر الذي زاد وعظم دور المحور الاقتصادي الشرقي لمصر من جنوبها حتي بورسعيد في شمال قناة السويس (11).

ومن خلال اهميه محور البحر الاحمر قناة السويس، وتفكير مصر في أن يكون لها الدور الاكبر في عمليات التبادل التجاري بين الدول الغربية (اوربا) ومصادر الثروات (افريقيا) وبالتالي كان من الضروري ان تكون عاصمة مصر العربية او قريبة من هذا المحور الحيوي (محور البحر الاحمر)، وان افضل مكان للعاصمة في هذه الحالة يكون علي ساحل البحر الاحمر قريبا من محور قناة السويس (شكل 3). ولكن هناك بعداً اخر امنياً يمنع ان تكون العاصمة ملاصقة او قريبة من الساحل الشرقي حيث يجب ان يكون لها حرم وعمق أمني داخل حدود الدولة المصرية لحمايتها، وكذلك يجب ان تكون لها علاقة بالقاهرة (العاصمة الابدية التاريخية لمصر) والتي لن تقل اهميتها بنقل الادارة الي العاصمة الادارية، بل ستتحول الي عاصمة حضارية وثقافية وتراثية لمصر ولن تقل قيمها السياسية او الاقتصادية ولن يخبوا نورها وستظل مدينة النور التي تعمل ليل نهار على مدار 24 ساعة.

شكل (3). موقع العاصمة الادارية وعلاقته بالمحور الحيوي لقناة السويس ومدينة القاهرة (8)



4 - تكامل العاصمة الادارية الجديدة وعاصمة مصر التاريخية الابدية

إختيار موقع العاصمة علي بعد 60 كيلو من العاصمة الادارية الحالية لمصر و 60 كم من محور قناة السويس ومحور السخنة (شكل 3) هو اختيار صائب يدعم تطوير العاصمة الحضارية (القاهرة) وزيادة عناصر الربط بينها وبين العاصمة الادارية الجديدة عن طريق شبكة طرق عملاقة تم تجهيزها وتنفيذها في سنوات قليلة لتربط القاهرة ونهر النيل

بالعاصمة بمحاور عرضية مثل طريق السويس الصحراوي وطريق العين السخنة، وطرق دائرية مثل الطريق الدائري الاقليمي والطريق الاوسط الدائري، وايضا ربط اقتصادها بمحور اقتصادي هام يربط الطريق مراكز الاعمال بالقاهرة مع العاصمة الادارية بمحور اداري هام بالقاهرة الجديدة طوله اكثر من 20 كم، هذا بالإضافة الي تحسين المحاور والطرق الداخلية بالقاهرة الحالية مثل طريق الاوتستراد وصلاح سالم وجسر السويس وبعض المحاور بالسلام والمطرية وشبرا الخيمة ومصر الجديدة واخري) وهو ما يؤكد التكامل بين العاصمة الادارية التي تمثل مركز المال والاعمال ومركز الحكم من جهة والقاهرة التي ستظل العاصمة الحضارية بمقوماتها التراثية والحضارية.

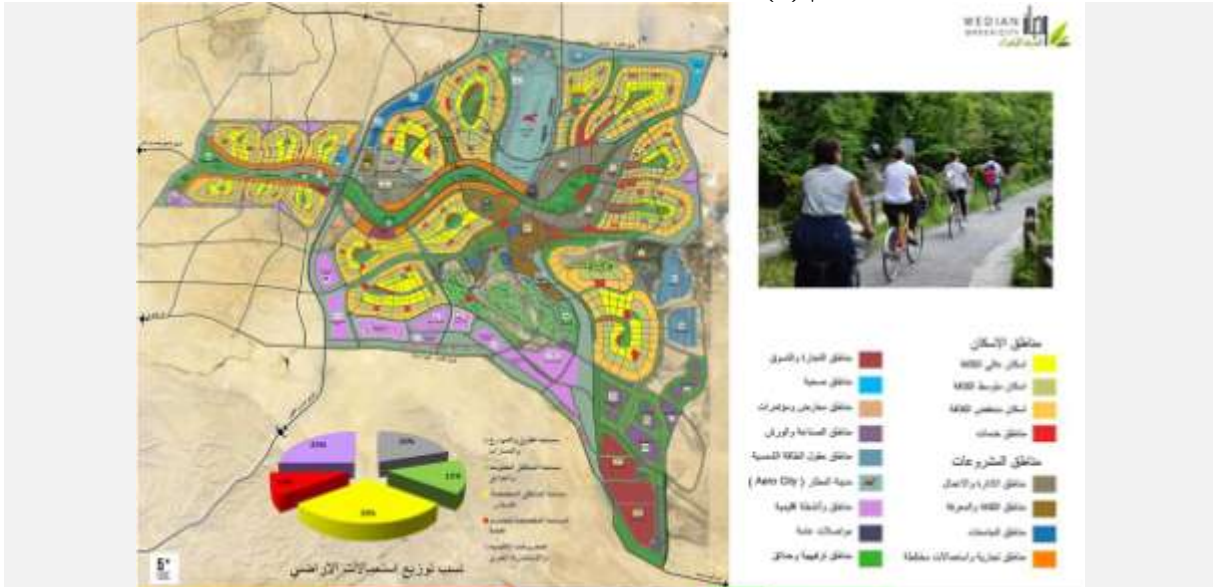
ولتحسين صورة القاهرة الحالية فإن هناك العديد من الانشطة العمرانية والتي من اهمها معالجة العشوائيات وتحسين وتجديد المناطق التي لها قيمة اقتصادية او حضارية، فكانت هناك تجديدات حضارية لمناطق وسط المدينة مثل روضة السيدة زينب والتي انتهت بها مشكلة منطقة تل العقارب، وجاري عمل منطقة ماسبيرو وسور مجري العيون وعين الصيرة وعين الحياة. وتم تحسين مناطق وسط البلد من خلال تجديد الواجهات وازالة الغبار من عليها فظهرت القاهرة الخديوية مثل باريس الشرق، وجاري اعادة القاهرة التاريخية وبعض مناطق قلب القاهرة الي سابق عهدها لتمثل نقاط مضيئة داخل العاصمة الحضارية لمصر.

ومن ناحية المسؤولين عن تنفيذ هذه العاصمة التي يصل مساحتها الي ما يزيد عن 170 الف فدان وتستوعب ما يقارب 7 مليون نسمة، فكان علي الدولة ان تبدأ بالتنمية وتشجع القطاع الخاص علي التطوير بالشراكة الاستثمارية وفي التطوير العمراني وتنمية العاصمة، ثم المشاركة والمساهمة في عمليات تطوير الاقتصاد وتعظيم عمليات التبادل التجاري التي تستهدفها مصر من خلال الشركات الادارية بمركز المال والاعمال والتي ستخصص للشركات الكبرى والمتوسطة وحتى المكاتب الصغيرة. فمن الصعب علي الدولة وحدها تحمل عبئ مدينة تكاليف مرافقها فقط يصل الي حوالي 800 مليار جنيه واجمالي تكاليف انشائها قد تصل الي حوالي 6 تريليون جنيه مصري وهذا يعزز دور القطاع الخاص بالاستثمار والمشاركة في التطوير والتنمية لاراضي يشترؤها من الدولة بأموال تضخها الدولة في تنفيذ المرافق الرئيسية والطرق وبعض مباني الوزارات وبعض المباني والخدمية الغير استثمارية بالعاصمة الادارية الجديدة، ومن المتوقع ان يشارك القطاع الخاص والمستثمرين والشركات العقارية بما لا يقل عن 60% من اجمالي تكاليف المدينة بالإضافة الي مساهمة الدول في تنمية السفارات وبعض المباني العامة وكذلك تشارك المؤسسات الدولية في بناء مقرات لها.

5 - مقومات العاصمة الادارية الجديدة

لكل تقوم العاصمة بدورها وتحقق اهدافها ورسالتها كان لزاماً توافر العديد من المقومات والتي كان أولها ان تحتوي علي كافة الاستعمالات والمباني الادارية (شكل 4) التي يسهل من خلالها ادارة الدولة المصرية وتسهيل ربط مصر سياسيا واداريا واقتصاديا مع الدول العربية شرقا وغربا، والدول الغربية وامريكا شمالا، وافريقيا جنوبا واسيا من الشرق، ولهذا فوجود مطار عالمي دولي بالعاصمة ومجمع للسفارات والهيئات السياسية الدولية، ومركز عالمي للمال والاعمال بالإضافة الي الوزارات ومباني التشريع والقضاء سيكون له اثره لزيادة قدرات العاصمة وقوتها. هذا بالإضافة الي مقومات الحياة الطبيعية لسكان المدينة والموظفين حيث يتوافر عدد من الأماكن بالعاصمة كمجمعات سكنية بالإضافة إلي توافر المدارس والجامعات الدولية والمجمعات الادارية، ومدن للفنون والأوبرا ومناطق استثمارية وقاعات المؤتمرات بالعاصمة(12).

شكل رقم (4) مخطط استعمالات العاصمة الادارية الجديدة



العاصمة الادارية العالمية وتناغم مع القاهرة (العاصمة الابدية) لادارة جمهورية مصرية جديدة (مقال)

ومن المقومات ايضا ما تم اضافته الي الطرق الاقليمية الرابطة بين العاصمة الادارية الجديدة والقاهرة الحالية وكذلك الربط مع محور قناة السويس والبحر الاحمر وايضا المحاور الحركية المتجهة الي الجنوب والدائرية التي سترتبط عواصم اكثر من 10 محافظات بها مثل الطريق الدائري الاقليمي ومعها محافظات الجنوب التي سترتبط بالعاصمة عن طريق بوابة حلوان ثم الطريق الدائري الاقليمي.

6 - العاصمة مدينة ذكية مستدامة

اعتمد الفكر التخطيطي للمدينة على تحقيق فكرة المدينة الذكية المستدامة التي تستخدم تكنولوجيا المعلومات والاتصالات لحل كثير من المشكلات التي يعاني منها سكان المدن في الوقت الراهن، منها الاكتظاظ المروري، وشح الطاقة وغيرها، وتهدف لتحسين نوعية الحياة بتعزيز كفاءة استهلاك الطاقة وإدارة المخلفات، وتحسين الإسكان والرعاية الصحية، وتحسين تدفق حركة المرور والسلامة، والكشف عن جودة الهواء، وتنبيه الشرطة إلى الجرائم التي تحدث في الشوارع وتحسين شبكات المياه والصرف الصحي، وكفاءة العمليات والخدمات الحضرية، والقدرة على المنافسة، وتلبي في الوقت ذاته احتياجات الأجيال الحالية والقادمة فيما يتعلق بالجوانب الاقتصادية والاجتماعية والبيئية، والثقافية واستخدام معدل الاخضر العالي (حوالي 15 م² / فرد) بوجود نهر اخضر، هذا بالإضافة الي تحقيق مبادي المدينة الذكية والتي ستقوم علي تطبيق تكنولوجيا المعلومات والاتصالات على المدن سواء الجديدة او القائمة في كافة جوانب الحياة في المدينة (الجانب الاقتصادي والاجتماعي والبيئي والثقافي والإداري). وكذلك يركز على الابداع والابتكار والتفاعل بين المواطنين، وهي المكان الذي فيه حركة الافراد والحكومات والشركات التي تتعامل مع الافراد في إدارة المدينة والشركات الحكومية مع تكنولوجيا المعلومات الذكية بشكل منظم ويتم ربط هذه المكونات المتعددة أو المتنوعة من خلال شبكة المعلومات (انترنت فائق السرعة) ومكونات المدينة بواسطة التي تحول الأشياء والأفراد إلى (G.B.D) أجهزة الاستشعار واجهزة التموضع العالمية مثل مكون رقمي تقوم انظمة المدينة بتخزينه وتحليله وتحويله إلى معلومات في سوق العمل⁽¹³⁾. وتهدف المدينة الذكية المستدامة الي تحسين جودة الحياة فيما يلي⁽¹⁴⁾.

الصحة: حيث سيكون استخدام المدينة الذكية للتقنيات أن تجعل سكانها أكثر صحة من خلال توفير بيئة أكثر نظافة، مع تمكين السكان من تعزيز أنماط حياة أكثر نشاطاً وحيوية وراحة، والعمل على تقليل الاحتكاكات السلبية مثل الازدحام المروري أو التلوث، بالإضافة إلى تشجيع التفاعلات الاجتماعية بتوفير فراغات عمرانية ذكية.

الأمن والسلامة: حيث ستستخدم التقنيات الحديثة من أجل الحصول على مجتمعات أكثر أماناً حيث توفر المدن الذكية معايير عالية من الأمان والسلامة، فهي تستخدم أنظمة مرور ذكية تدار آلياً، وتقدم خدمات إدارة أمن متطورة.

تدفق حركة المرور: حيث ستقدم التكنولوجيا التي استخدمت في بعض المدن الذكية مثل مدينة هانغتشو الصينية التي تمكنت من تقليل الاختناقات المرورية بنسبة 15.1% عن طريق تطبيق بعض الحلول الايجابية مثل تعديل مسارات وطرق وسائل النقل العام في الوقت الفعلي وفقاً للطلب، ويمكن استخدام أنظمة إشارات المرور الذكية لتحسين حالة المرور وتقليل او انهاء الازدحام.

التوفير في الطاقة واستخدام الطاقة النظيفة والجديدة والمتجددة: فاستخدام التقنيات الذكية المختلفة في ترشيد استهلاك الطاقة، والاستثمار في مصادر الطاقة النظيفة، واستخدام التكنولوجيا للمساعدة في مراقبة استخدام الطاقة في الوقت الفعلي عن كذب يساعد في تقليل استهلاك الطاقة.

المرونة والقدرة على مواجهة الكوارث: عندما تحدث الكوارث الطبيعية يمكن أن يكون لها تأثير مدمر في المجتمعات والبلدان والاقتصاد، لكن استخدام أنظمة المدن الذكية ومن خلال تطبيق التكنولوجيا على التخطيط والتصميم الحضريين سيمكن للمدن في المستقبل ان تكون أكثر قدرة على مواجهة الكوارث والأخطار.

تخفيض الانبعاثات: وتوفر المدن الذكية العديد من الجوانب الإيجابية التي تعود بالنفع على الفرد والمجتمع والبيئة بشكل عام، ومن أبرز ما يميزها أنها تساهم في تخفيض نسبة التلوث والانبعاثات الكربونية وتوفر المليارات التي تنفق لمعالجة التلوث⁽¹⁶⁾.

7 - التنمية البشرية ورفع قيمة وكفاءات الانسان المصري

يأتى مفهوم التنمية البشرية في مجال الأمن ليكون أكثر تركيزاً على أمن البشر، ويشمل الأمن الاقتصادي والغذائي والصحة والتنمية السياسية المتواصلة الشاملة أو المستدامة، ويتحقق أهدافها سواء في مجال التعليم أو التدريب

المتواصل أو التوعية والبحث العلمي واستخدام القدرات البشرية والاستفادة من تطبيقاتها في المجالات المختلفة. ونحن في مصر لدينا مشروعات قومية عديدة في موضوعات متفرقة، منها ما يخص الاقتصاد أو التعليم أو التطور التكنولوجي، أو الرعاية الاجتماعية، أو الحماية والصحة والتنمية الأساسية، وغيرها من المشروعات، فالتنمية البشرية تأتي بالأولوية على قمة تلك المشروعات القومية، لأنها تعالج التشوّهات الواضحة بين درجات الثقافات في المجتمع ودرجات التعليم والكفاءة والثراء والعادات والتقاليد وتهدف تحسين المهارات الشخصية والمعرفة بكفاءة لتحقيق النمو الاقتصادي، وزيادة أداء الفرد في العمل وإتقانه وصقل الخبرات والاعتماد بالقدرة على النجاح والتخلص من معوقاته لكل الناس على اختلاف فئاتهم⁽¹⁷⁾.

وما يزيد من أهمية العاصمة هو انه مشروع قومي يلتف حوله المجتمع المصري باجملة ليحقق من خلاله مع بعض المشروعات القومية الأخرى التنمية البشرية ورفع كفاءه الموظف المصري الذي سيعمل بها حيث سيتم رفع كفاءه اربعون الف موظف كمرحلة أولى ليتم نقلهم الي الوزارات والمباني الحكومية لسيكمل العدد فيها بنهاية مراحل تنمية المدينة المختلفة الي اكثر من مائة الف موظف يعملون في بيئة مناسبة وبامكانيات عالية ويتم توفير سبل الحياه الجيدة لهم، هذا بخلاف مشاركة القطاع الخاص بعاملين وموظفين والذي يتوقع ان يصل عددهم عند اكتمال المدينة الي اكثر من مليوني موظف يعملون في كافة المجالات الخدمية والاقتصادية والادارية.

المراجع:

- 1 - جمال حمدان، شخصية مصر - دراسة في عبقرية المكان - الجزء الاول - دار الهلال - مصر - جزء 1 - 1994.
- 2 - جمال حمدان، شخصية مصر - دراسة في عبقرية المكان - الجزء الاول - عالم الكتب - مصر جزء 3 - 1984.
- 3 - جمال حمدان، شخصية مصر - دراسة في عبقرية المكان - الجزء الاول - عالم الكتب - مصر جزء 4 - 1984.
- 4 - حاتم حمودي - ورقة بحثية عن المدن الذكية ودورها في حل مشكلات الخدمات المجتمعية في المدن - (مدينة بغداد) أنموذجاً- الجامعة العراقية - كلية الاداب - 2019
- 5- <https://www.elwatannews.com/news/details/5367830> (accessed 2021).
- 6 - الامم المتحدة - سلسلة بحوث القمة الحكومية - المدن الذكية - المنظور الاقليمي - 2015
- 7- <https://www.itu.int/ar/mediacentre/backgrounders/Pages/smart-sustainable-cities.aspx> (accessed 2021)
- 8 - وزارة الإسكان والمرافق والمجمعات العمرانية- تقرير تخطيط المركز الاداري الجديد للمال والاعمال (العاصمة الإدارية)-مصر 2014
- 9 - نايت فرانك إل إل بي، الأبحاث - تقرير افريقيا 2017-2018 - 2017
- 10- <https://www.qiraatafrican.com/home/new/%D9%85%D9%88%D9%82%D8%B9-%D9%82%D8%A7%D8%B1%D8%A9-%D8%A5%D9%81%D8%B1%D9%8A%D9%82%D9%8A%D8%A7-%D8%A7%D9%84%D8%A7%D8%B3%D8%AA%D8%B1%D8%A7%D8%AA%D9%8A%D8%AC%D9%8A-%D9%84%D9%85%D8%AD%D8%A9-%D8%AA%D8%B9%D8%B1%D9%8A%D9%81%D9%8A%D8%A9#sthash.XZtZ10KR.dpbs> (accessed 2021)
- 11- <https://al-ain.com/article/who-fighting-china-world-exports> (accessed 2021)
- 12- <https://m.akhbarelyom.com/news/newdetails/2801463/1/%D8%AA%D8%B9%D8%B1%D9%81-%D8%B9%D9%84%D9%89-%D8%A3%D8%B3%D8%A8%D8%A7%D8%A8-%D8%A7%D8%AE%D8%AA%D9%8A%D8%A7%D8%B1-%D9%85%D9%88%D9%82%D8%B9-%D8%A5%D9%86%D8%B4%D8%A7%D8%A1-%D8%A7%D9%84%D8%B9%D8%A7%D8%B5%D9%85%D8%A9-%D8%A7%D9%84%D8%A5%D8%AF%D8%A7%D8%B1%D9%8A%D8%A9-%D8%A7%D9%84%D8%AC%D8%AF%D9%8A%D8%AF%D8%A9> (accessed 2021)
- 13 - محمد خميس الروكة - التخطيط الاقليمي وابعاده الجغرافية - دار المعرفة الجامعية - 1991.
- 14- <https://www.albawabhnews.com/4259060> (accessed 2021)
- 15- <https://www.itu.int/web/pp-18/ar/backgrounder/smart-sustainable-cities> (accessed 2021)
- 16- <https://www.rowadalaamal.com/%D9%85%D8%B3%D8%AA%D9%82%D8%A8%D9%84-%D8%A7%D9%84%D9%85%D8%AF%D9%86-%D8%A7%D9%84%D8%B0%D9%83%D9%8A%D8%A9-%D9%86%D8%AD%D9%88->

[%D9%85%D8%AC%D8%AA%D9%85%D8%B9%D8%A7%D8%AA-%D8%A3%D9%83%D8%AB%D8%B1-%D9%81](#) (accessed 2021)

17- <https://www.almasryalyoum.com/news/details/2301920> (accessed 2021)

The global administrative capital and harmony with Cairo (the eternal capital) to administer a new Egyptian Republic (article)

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ABSTRACT

Capitals are important cities in all countries, not only because they are the city of administration and control of the main parts of the state, nor because it harbors a certain number of residents, or the many activities that its residents can practice, but it is considered a major urban center in the state and the most connected city to other countries. Sometimes the administrative capitals suffer from lack of tools and capabilities that make them perform the functions of governance in an appropriate manner. the capital's urban situation and the size of its residents, and increase their problems and crises to the extent that it is necessary to move the capital or transfer some of the its administrative bodies and activities to another location where the capabilities and advanced systems are available to carry out the state administration, and also solve the problems of the old capital. Many countries have gone through this experience, including Egypt, which moved its administrative capital from Cairo to an intermediate location between the Nile River and the axis of the Suez Canal (the new administrative capital). It is planning concept based on the principles of smart cities and uses their technological tools with the aim of providing a good life necessity for the population, facilitating state administration and quick and easy linking with the capitals of other countries.

Keywords: the new republic - the administrative capital - the smart city - the genius of the place

Study methodology: The analytical method is used, where the problem is analyzed and the details are carefully studied, and then the topic is fully prepared, then judgments are elicited, and then generalized.

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البحث رقم (5)

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|--|---------------------------------------|
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| The Impact of the Smart Modern Transportation on Urban Structure of the Cities | عنوان البحث باللغة الانجليزية: |
| Springer Book, Advanced Studies in Efficient Environmental Design and City Planning | مكان النشر: |
| https://link.springer.com/book/10.1007%2F978-3-030-65181-7 https://doi.org/10.1007/978-3-030-65181-7 | المجلد: |
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To whomever it may concern.

This is to confirm that the manuscript titled **“The Impact of the Smart Modern Transportation on Urban Structure of the Cities”** authored by **Yousef A. Elsayed and Said Hassanien Al-Sayed** has been regarded as a distinguished research paper submitted to the **Green Urbanism (GU) 3rd Edition** held in the University of Rome Tor Vergata, Rome, Italy from the 11th and until the 13th of December 2019. The manuscript has, therefore, been accepted after the peer review process and will be published in a book titled **“Advanced Studies in Efficient Environmental Design and City Planning”** within a book series titled **“Advances in Science, Technology & Innovation” (ASTI)** by **Springer**.

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Sincerely,



Haitham Mohammed
IEREK Publishing Editor





Certificate of Appreciation

This certifies that Said Hassanien Al-Sayed has contributed a research paper titled
"The Impact of the Smart Modern Transportation on Urban Structure of the Cities" in
the 3rd international conference titled Green Urbanism (GU) which was held in Italy,
from the 11th of December and until the 13th, 2019.

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The Impact of the Smart Modern Transportation on Urban Structure of the Cities

Youssef A. Elsayed and Said Hassanien El-Sayed

Abstract

The city urban structure is affected by many factors including the evolution of transport systems, transportation technology, and kinds of transport at the end of the nineteenth century up to the twenty-first century, which led to significant transformation of cities urban structure as a result of its fast development, the technological development in the first two decades of the twenty-first century, and there have been many indications that the new systems of transport will result a fundamental change in the methods and networks of transport, including flying taxis and taxis without a driver systems which will be applied soon in many Arab cities, where some countries are currently support and equipping cities with basic services to implement these systems, which will affect the formation of city urban structures. The aim of the research is to study the impact of smart modern transportation systems on the structure of Arab city, and the changes that will occur in our existing cities as a result of the application of these systems of transport as well as prepare a general perception of the formation of the structures of these cities. The research will follow the inductive approach which starts with the observations, and theories are proposed toward the end of the research process as a result of observations

Keywords

Sustainable development • Transportation technology development • Smart transportation system • City urban structures

1 Sustainable Development (SD)

The (SD) aims to provide the present generation with all basic requirements without affecting the sources of the future generations or damaging the natural environment; the concept of (SD) in its general framework is considered an environmental concept and turned into a comprehensive development concept, considerate main axes as social, economic, and the environmental axis.

1.1 The Concept of Sustainable Cities and SD

With the adoption of (SD) concept and its effects on city urban structure, social and cultural environment, the concept of “sustainable cities” has emerged, aims for creating new form of cities. Economic growth is achieved through an economic base that does not consume or pollute natural resources. The reuse of the product, i.e., recycling as an input in another production process, or the restoration of the energy, invested in this product while relying on sustainable transport (ITS-UK, 2014).

A sustainable city is defined as: the city where the absorptive capacity of local resources and ecosystems is balanced by increasing resource efficiency and minimizing polluting output, characterized as a low or zero-emission city, and thus contributing to reducing CO₂ production, and other organic compounds that exacerbate climate change. Such structural transformations require integrative systems for the management, as recycling of wastes, and also cultural transformations in consumption, recreation, and transition patterns, for example, cities that are relatively sustainable are characterized by cohesive tissue, to reduce transition distances between housing and work or services, and also reduce the use of energy for transport.

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1.2 Tools for Achieving Sustainable Development (SD)

Global Report on Human Settlements. 2009 entitled “Sustainable Town Planning” includes an assessment of the effectiveness of eco-urban environmental planning systems as a tool to meet the unprecedented challenges facing cities in the twenty-first century (ITS-UK, 2014). To achieve sustainable planning processes, emphasis should be placed on its tools, shown in Fig. 1

2 Benefits of Smart Transportation Systems (STS) (ITS UKnited Kingdom, 2016)

STS has many benefits for the city and the population that help raise the efficiency of the city and society more communicative as follows:

2.1 Health, Safety, and Environment

There are many benefits of STS as creating of traffic-free zones in cities reduce pollution and premature deaths, integration of vehicle systems with mobile communications and advanced mapping technology gives a potential, “smart motorways” improve traffic safety as well as capacity and average speed cameras deliver tangible improvements through casualty reductions, congestion improvements, and improved environmental factors.

2.2 Public Transport

Electric and hybrid public transport vehicles reduce pollution, provision of online information to buses, trains, and their passengers create a better informed traveler and operator and electronic ticketing enables faster, easier travel by public transport and provides management information leading to improvements in the transport system.

2.3 Driver and Traffic Management Benefits

Equipping the vehicle with driver assistance systems to improve the efficiency and safety of road transport, management of vehicle fleets, both private and public transport, via online information and two-way communication between manager and driver, safety and security benefits for drivers and loads, electronic motorway tolling and congestion charging and parking assistance.

2.4 Economic Benefits

Use of “telematics” ITS devices in vehicles leads to a more efficient motor insurance industry and also allows reduced premiums for young drivers, and there are safety benefits by imposing location and timing restrictions on high-risk drivers via insurance products and introduction of road pricing and congestion charging would have major economic as well as environmental and traffic management benefits.



Fig. 1 Tools for achieving sustainable development

3 Types of Transportation

City urban growth is always linked to the accessibility and quality of the transports type used by passengers to reach their areas of residence, especially the business trips, which represent the majority of trips within any city or urban community, and with the technological development in the transport, the development of transport began with the spread of horse-drawn vehicles and the appearance of a horse-drawn bus, then the tram and trolley-bass, which carried more passengers. This development had a strong impact on the city, such as Paris and London, showed the urban strips around the paths of this types and emerged new urban areas around the stops. The block expanded and increased its urban area (Daniels & Warrens, 1980). The need of widening of the streets around the paths of these types make tall buildings and the barricade appeared as radiologically around trains paths and local linear urban transport such as tram and metro, the effects of the use of the regional types of transport as real ways in the growth of urban area around train stations are far from each other, while urban metro with short distances between their stations contributed to make urban strips around the entire path (Bashandy, 1987).

Rubber-coated vehicles including door-to-door car and public transport routes to serve all areas of the city have led to increased growth of urban areas and contributed to filling the spaces of the city that resulted from the presence of foci urban strips formed by the linear transport. New areas, such as suburbs, have grown and have become as important as central areas, especially after urban residents have been attracted to them (Lang et al., 2016).

3.1 Transportation Types

- In the past, the traditional types of transportation were expressed as the main types of access to cities, and it was carried out for people (passengers) and materials and animals (the goods) in all their forms.
- At the end of the twentieth century began the boom in technology and the era of the Internet and telecommunications, which participated traditional types of transportation to carry out some tasks and activities, and it became one of the most important types of communication, but by virtual.
- There are three main types of traditional transport, including road transport, air transport, and water transport. Some vehicle uses two fields such as land–water transport, roads and air transport, or even water, air.
- The road transport was initially based on the progress of horse riding and then horse-drawn vehicles and trains,

metro and tramways, motor vehicles that use rubber tires, and some of them became more reliable, enabling them to be without driver. (Daniels & Warrens, 1980)

- The water transport is very large in size, giant ships that can carry more than 10,000 passengers and Massive transport of materials (fish—oil—river buses and this type of transport includes yachts, and floating hotels (Bashandy, 1987).
- The air transport has multiple uses between the transport of passengers and goods in addition to its role in wars, including small and large aircraft, private and mass transit, or air taxi used recently (Bashandy, 1987).

3.2 Spaces and Equipment Needed for Transportation

- **Space:** All Transportations need a space to start from and other to go to, the traditional transportations require many spaces (parking, station, stops) leaner space as road, while the water transport needs to a port and an appropriate waterway. The air transport needs air routes or lands, each place varies according to the type of the transportations and according to destination and origin, and also for service element. Non-conventional kind of transport as virtual communication require only small-sized spaces and sophisticated technology. The Internet starts to grow day by day and increase control. Underlining many of the activities carried out by humans and thus will reduce the need for traditional transport (ITS-UK, 2014).
- **Equipment:** All transport types need a lot of equipment to perform its function as buildings, stations and parking areas, power stations technological devices that control the operation of such devices as computers, satellites, or traditional mechanical equipment such as maintenance areas.
- **The human factor:** Most of the traditional types of transportation needed to be controlled by humans, except for some self-driving, self-guided, remote or satellite-controlled transportations, also flying taxi and on limited routes transportations such as trains and metro.

4 Intelligent Transportation Systems (ITS) (Ezell, 2010)

There are kinds of transportation based on artificial intelligence in management, some of them to be controlled remotely. (ITS) deal with vehicles, roads, routes,

instructions and systems, some other control movement, and control of traffic and transportation of all types. These types that to have database for transport system are obtained from road sensors, traffic reports, city maps, as well as drivers of vehicles, traffic men, and researchers in this field (Peña, 2015),

ITS Subsystems: works to reduce traffic congestion, road management, security, safety, flight information, and separation between public and private transport, Table 1 showed (ITS) and specific.

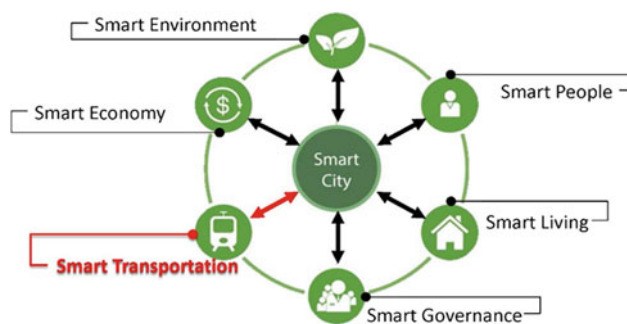


Fig. 2 Smart transportation as apart from smart city

5 Smart Transportation System Requirements (Grob, 2009)

- Achieved smart cities (Fig. 2)
- There is many requirements (STS) as apart smart cities such as an intelligent transportation management (Fig. 3).

6 The Arab Cities (Bashandy, 1987)

Most of Arab cities applied the most recent technology of transportation, but only few of them uses the (ITS) as Dubai and Abu Dhabi.

6.1 Kinds of Transportation in the Arab City

- Transport vehicles varied in Arab cities of the countries where they began to develop in a similar way as in

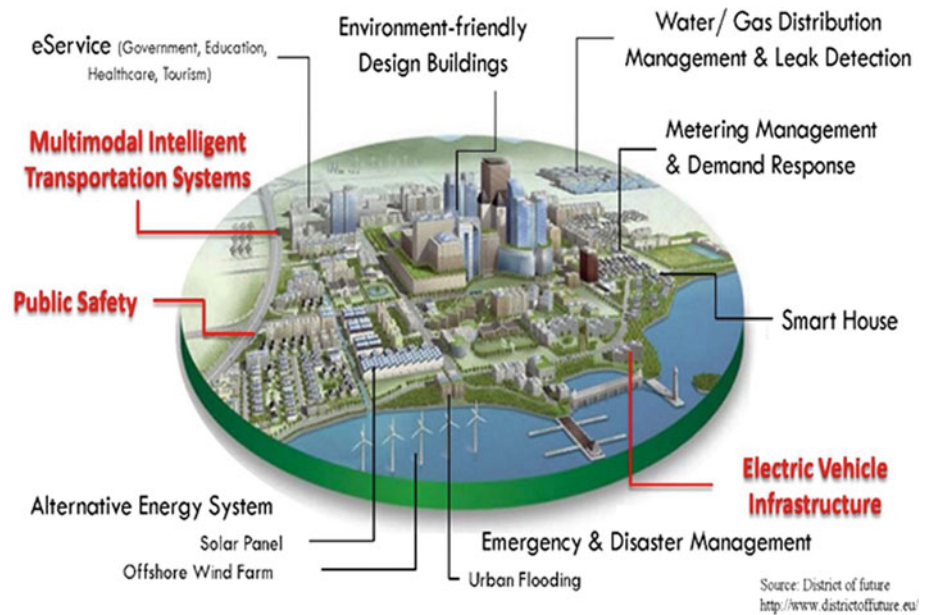
European cities, where the horse-drawn vehicles in most Arab countries, Egypt was one of the first countries in the world to use trains in the middle of the nineteenth century, while metro was first operated in Cairo also in 1980 followed by metro of Dubai and the fast train between cities Saudi Arabia. The cars that used rubber tires appeared in Cairo, Gulf cities and were used for private transport, taxi, and public transport. There were also light transportations, such as monorail. The planes appeared at Cairo in the middle of the twentieth century followed by all Arab cities, Hence, most of the traditional Kinds have emerged in most Arab cities, and with the great development as European transport methods, STS have emerged, such as Dubai, where cars and aircraft without driver appeared, and will be followed by Abu Dhabi and Doha to generalize the system in the next few years.

- There are some Arab cities planned to accommodate flying taxi in Gulf countries, while others develop the traditional transport to be supported by smart techniques

Table 1 Showed intelligent transportation systems and specific

| Specific | Intelligent transportation systems |
|---|--|
| Real-time traffic information provision Route guidance/navigation systems Parking information Roadside weather information systems | Advanced traveler information systems (ATIS) |
| Traffic Operations Centers (TOCs) Adaptive traffic signal control Dynamic message signs (or “variable” message signs) Ramp metering | Advanced transportation Management Systems (ATMS) |
| Electronic Toll Collection (ETC) Congestion Pricing/Electronic Road Pricing (ERP) Fee-Based Express (HOT) Lanes Vehicle-Miles Traveled (VMT) Usage fees Variable parking fees | ITS-enabled transportation pricing systems |
| Real-time status information for public transit system (e.g., bus, subway, rail) Automatic Vehicle Location (AVL) Electronic Fare Payment (e.g., smart cards) | Advanced public transportation systems (APTS) |
| Cooperative Intersection Collision Avoidance System (CICAS) Intelligent Speed Adaptation (ISA) | Vehicle-to-infrastructure integration (VII) and vehicle to-vehicle integration (V2V) |

Fig. 3 Element of transportation system to achieved smart city



to enable passengers to use their smart phones via Internet to facilitate ticket reservation find the location of vehicle and stations and also in part at about traffic congestion or any problems may face tripe. The passenger can also work during his journey by providing Internet services systems via satellite.

6.2 The Urban Structure of the Arab City

- Cities began with the beginning of civilizations and many of them emerged in the Arab world as Assyrian and Egyptian cities, which were developed strongly during the nineteenth and twenty century using modern city models as linear and central cities, and the theories of land use distribution, many Arab cities appears such as the circular cities (the city of Mansour Baghdad), or cities with walls as Cairo or coastal cities and ports such as Dubai, Alexandria, and Tripoli in Lebanon. Or follow certain types of planning such as organic planning as in Garden City Cairo, or network mechanic as in the city of Riyadh, or radiation as in Heliopolis in Cairo and Maadi.
- Arab cities are developing strongly as technology evolves, such as Dubai, Doha, and Kuwait. This development is manifested in urban structures such as the city of Kuwait, Cairo, or coastal stripes in Dubai, or in the form of iron grid as in the city of Riyadh and city of Jeddah (KSA).
- The urban structure of the Arab city is affected by site conditions in many cities and also characterized by dependence on the private car as a main transportations of movement, as in most cities of Gulf, Cairo, Damascus, and Baghdad, the paved ways shows interest in the road network in these cities, which indicates a defect between private transport and public transport. The Arab cities also express the development of the city and in conformity with the urban change and show cohesive fabric and narrow streets in the old and historical urban areas, while the spaces and streets are organized and increase its wide in newly planned areas as in new cities around Cairo.
- The structures of the Arab cities are also distinguished by taking the environment into account, and also the social dimension and the religious values, where the elevations are controlled by proportion to the width of the streets, and there is special urban spaces represent the public spaces as of squares on the market or palace of government or important religious buildings, while high-rise buildings are found for multiapartment buildings (Fig. 4).
- There is many indicators that the structures of Arab cities are strongly changing due to global changes in planning patterns and emergence of new types of cities such as environmental or smart cities that use smart transport and Internet cities, these indicators have emerged in Dubai and in many Gulf and Arab cities, investment private cities as Madinaty and Dream Land around Cairo.
- It is expected that smart and modern kinds of transport will be used in some Arab cities, which will have a significant impact on the structures of these cities.

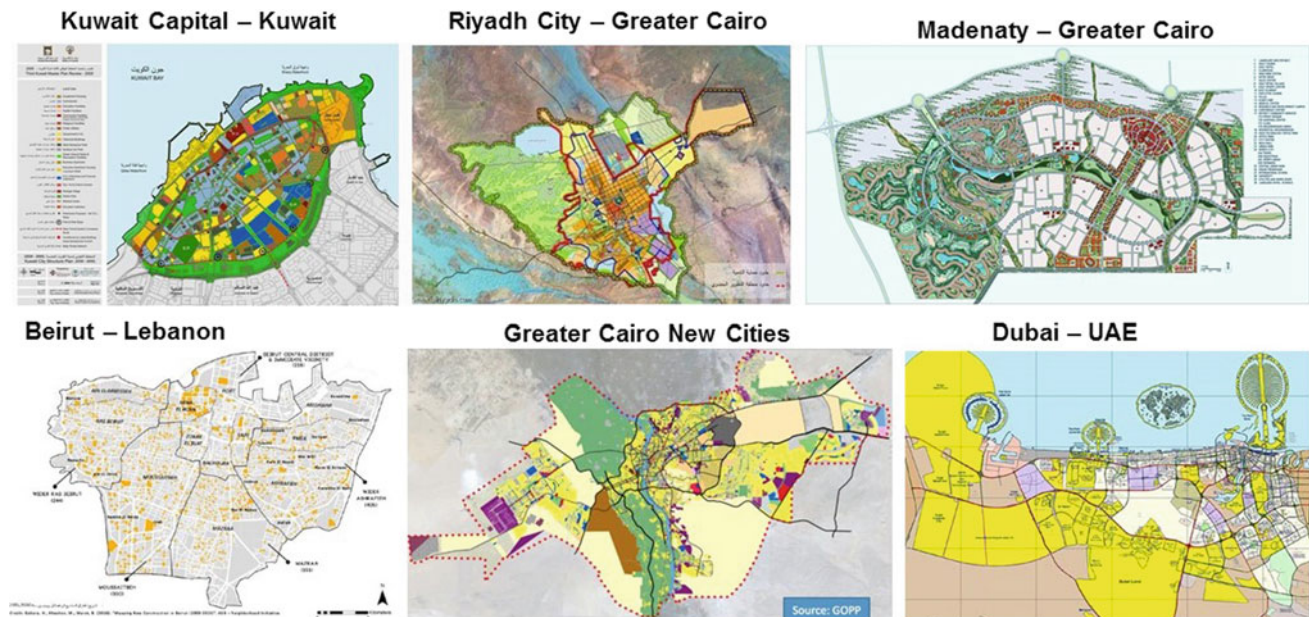


Fig. 4 Arabic city structure in many Arabic countries

7 Analysis of Sustainable Transportation for Some Cities

7.1 City of Vancouver—Canada (Vancouver, 2040–2015)

The vision 2040 of the transportation in the city of Vancouver is more than just mobility. That vision—that falls under the three pillars of sustainability—includes a number of goals. These goals address some challenges that we face and support, among which are the followings:

- Economically sustainable city
- Environmentally sustainable city
- Socially sustainable city.

These goals support each other across issues; striving for an environmental goal, for example, will also move forward social and economic goals and thus will advance overall sustainability. In addition, when we talk, for example, about the City's Greenest City 2020 Action Plan, these goals are aligned with transportation goals. Here, we can mention some relevant Greenest City goals, as mentioned above, the goals of this plan align with the transportation-related goals found in the City's Greenest City 2020 Action Plan (Table 2).

- Pedestrian, bikeways, and transit
- Low fossil fuels
- Healthy lifestyle and clean air.

7.1.1 Greenest City Directions (Vancouver, 2040–2015)

7.1.2 Greenest City Transit




Transit improvements should be supported to increase capacity and ensure service that is comfortable, frequent, fast, fully accessible, and reliable (Table 3).

7.2 Masdar City Model—UAE

The UAE has been implementing road and intelligent transportation systems in many of its cities since the beginning of the twenty-first century to help to ease traffic, reduce accidents, and improve the urban environment. The new cities in the UAE have been planned to reduce the problems stemming from the traffic, especially the environmental ones. The smart transport system in Masdar city and Abu Dhabi city development plan have been implemented as environmental models for smart cities ([The masdar report on technologies for future smart city transit, 2018](#)) (Fig. 5).

- **Transport and logistics:** UAE has established its strategic position as a global hub for transport and logistics. It has expanded and developed its ports, airports, and road network, as well as measures to increase the capacity of public transport systems to reduce dependence on private vehicles and reduce traffic congestion, and thereby reduce carbon footprint. At 2009, the department of transport in Abu Dhabi launched a comprehensive transport plan in response to Abu Dhabi

Table 2 Showed green city directions in Vancouver

| | | |
|--------------------|---|--|
| Walking | City for all (public life, healthy and safe walking, comfortable spaces, and enjoyable) |  |
| Land use | Short distance between utilities, more connections to serve cost-effectively with transit Unique and attractive building design and public realm Mixed use and housing types makes it easier to live, work, shop, to achieved high connectivity and accessibility Increase residential rates and employment to reach higher-level density and more service beside cycling and walking distance, and sustainable transportation | |
| Public spaces | Create a healthy public spaces and streets throughout the city to achieved enabling and encouraging creative uses |  |
| Cycling | Create bikeways characterized comfortable, safe, fun, and suitable for people of all citizens | |
| Cycling network | Connecting all parts of the city with a highly efficient bicycle network, multi-modal integration, provide many and convenient bicycle parking and facilities, comfortable bikeway's suitable for people of all citizens, regular maintenance of bicycle network and facilities, provide a bicycle network system, combine cycling with other public transportation |  |
| Pedestrian network | City design for pedestrians, free pedestrian and sidewalk on all streets, high accessibility for all citizens, complete all gaps in the pedestrian network, design all street to achieved safety and walking, design network to collect rain water in the streets and spaces, provide attractive pedestrian network | |

Source <https://vancouver.ca/files/cov/transportation-2040-plan.pdf>

Vision 2030, while the Dubai Road and Transport Authority (RTA) operates according to Dubai Strategic Plan 2015.

- **The use of modern public transport:** Dubai Metro contributes to reducing carbon dioxide emissions by more than 645 tons per day due to the decline in the use of private vehicles. Dubai Roads and Transport Authority (RTA) plans to add three new metro lines by 2030 and expand the red line to the Expo 2020. Tram Dubai is the first tram project to be developed outside of Europe and operates a ground-based power supply system. Abu Dhabi has Emara begun the construction of an integrated metro network with a length of 131 km, in addition to the 1200 km railway network which is expected to contribute to the upgrading of the public transport system in the country. There is also the Masdar City project, which aims to build a pedestrian-friendly, vehicle-free city where private parking spaces will be provided only at city entrances and accessible through public transport.

- **Transforming traditional transportation into green and clean solutions:** Following the success of the first “green bus” experience, RTA plans to use biofuels in 118 other buses, with the potential to reduce carbon dioxide emissions by 33% compared to traditional buses.
- **Development of an alternative to mobility and exercise:** Dubai RTA has developed a comprehensive plan for the implementation of 850 km of special routes in the central and new commercial areas in order to stimulate the use of bicycles as alternative solutions for internal mobility. Next bike has developed a European bicycle rental system that includes more than 100 bicycles that can be rented from dedicated stations in both the city center and the Dubai Marina area.
- **Motivating responsible use of private vehicles:** “Salik” has been introduced to address traffic congestion and congestion problems in Dubai. The Roads and Transport Authority (RTA) also legislated the carpooling service in the Emirate with the aim of increasing vehicle occupancy rates and thus traffic management. In turn, the Department

Table 3 Showed green city transit in Vancouver

| | |
|---|--|
| Accessibility | Support a universally accessible transit system with a goal of equal transit outcomes for people of all ages, incomes, and abilities |
| Transit network | Development transit reliability and speed using transit-priority measures Support increased water-based transit Combine cycling with other public transportation and trips Support integration with taxis in the city Development rapid transit Improvement local transit Support improved pass transit Provide comfortable connections between parking and network in the city Multi-modal integration Provide a bikeway networks Support a transit system to achieved high accessibility |
| Transit financing | Support effective prices that encourage transit use Support equitable and stable long-term transit funding sources |
| Neighborhood impacts | Reduce environmental emissions and noise for transit Highly efficient streets |
| Road network | Develop a network operation to manage crowding impacts Manage traffic to develop to achieved livability, community, safety for neighborhood Consider impacts to transit, commercial vehicles, and general traffic flow before redesign road space |
| Local goods and services movement | Support low-impact goods and services movement and delivery Provide for efficient loading and unloading Maintain an efficient network of designated truck routes Support local production and distribution to reduce the need for large-scale transport Manage the impacts of moving goods and services, maintain effective emergency response times, and support economy |
| Parking | Use off-street parking requirements to support reduced auto ownership and use Support strategies that reduce the need for parking Separate parking and housing costs to increase housing affordability Approach parking as a shared district resource Provide parking to be flexible and adaptable Make it easier for drivers to find available parking spaces Manage parking in neighborhoods Provide accessible parking for persons with disabilities Support cycling, low-carbon vehicles, and car sharing Support efficient loading and servicing |
| Car sharing | Support increased car sharing |
| Motor vehicles | Manage crowding, develop road safety, make it easier to drive less, accelerate the shift to low-carbon vehicles, provide charging infrastructure to support electric vehicles |
| Taxis | Support improved taxi service and safe use of taxis for persons with disabilities |
| Regional-and-beyond goods and services movement | Support truck movement on key regional routes Protect and develop rail corridors for goods and passenger movement Support Vancouver international airport as universal gateway Support port metro Vancouver efforts to reduce impacts environmental |
| Emergency response | Accessibility information on traffic calming measures and closures Consider emergency vehicle access in street designs and traffic calming measures |
| Other demand management tools | Support regional road pricings Improvements income directed toward sustainable transportation |

Source <https://vancouver.ca/files/cov/transportation-2040-plan.pdf>

of Transport (ADTA) has launched “Saf and Tanaqul” service, which aims to facilitate traffic and mobility in the city. This service comes in the context of the Department's efforts to provide convenient, sustainable, and integrated transportation services.

- **Contributing to making the air transport sector greener:** Etihad Airways, in coordination with Boeing, Tackerir, Total and Masdar Institute of Science and Technology, launched the Abu Dhabi Biofuel Initiative Support sustainable biofuel industry in the UAE.

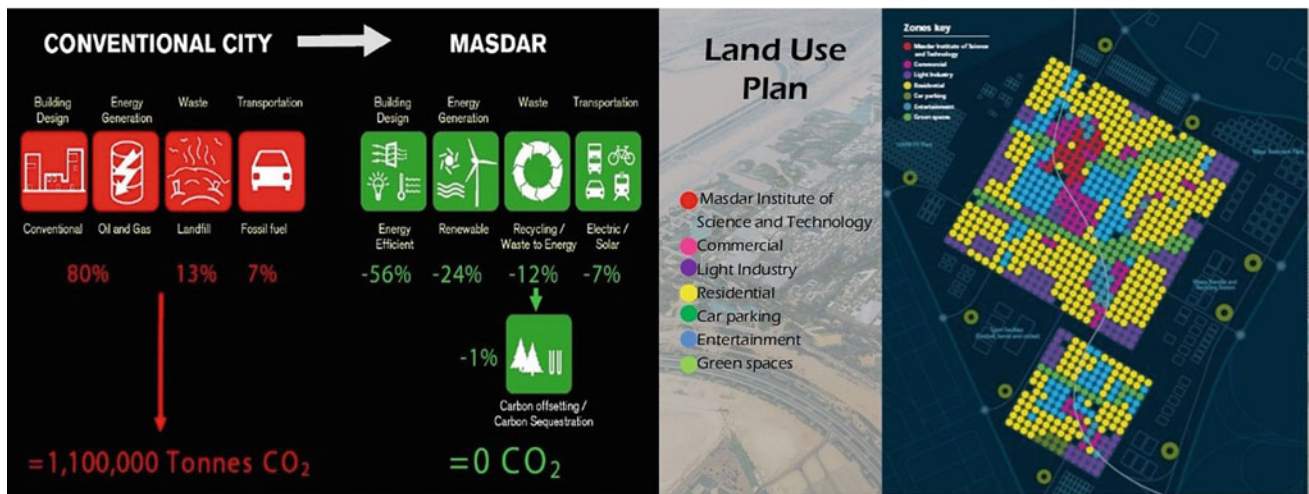


Fig. 5 Masdar city as the first zero-carbon city

8 Comparative Analysis of Sustainable Transportation for Some Cities

See Table 4.

9 Conclusion

- The change in the transportation system and the use of new and modern transportation have strong and effective impact on reshaping road network and its contents such as, parking, smart technology, which simultaneously affect Arab city structure.
- The STS will achieve livability by reducing traffic congestion and trip time, it also increases controls, and improving public safety.

- STS will achieve workability by increasing cities competitive advantage and becoming more attractive.
- ITS will help to apply sustainability by reducing pollution from transportation, improving transportation budgets and achieved smart cities guide lines.
- The modern transportation requirements as (utilities—road network—pedestrian network—cycling network—parking), force changing of city structure to accommodate ITS at all levels of planning for the city.
- The improvement and development of all Arab city roads by redesigning road network to accommodate intelligent transportation, and also by providing footpaths—trail routes—public transport routes.
- The use of transportations and information panels on both sides of the road provide green areas according to global rates, reinforcing pedestrian network and cycling network.

Table 4 showed comparative analysis of sustainable transportation for some cities

| | | |
|-----------------|---|--|
| The city | Vancouver—Canada | Masdar city—UAE |
| City goals | Pedestrian, bikeways, and transit Healthy lifestyle and clean air | Zero-carbon city Renewal energy Water, waste |
| City directions | Walking, mixed housing and land use, public spaces, cycling network, pedestrian network | Sustainable public transportation , communications, technology |
| City transit | Accessibility, transit network, transit financing, neighborhood impacts, road network, local goods and services movement, parking, car sharing, motor vehicles, goods and services movement, emergency response | Transit (PRT,LRT), parking , pedestrian, accessibility , smart technology, open spaces, optical network, information center, transport and logistics, the use of modern public transport, transforming traditional transportation into green and clean solutions |

Source <https://vancouver.ca/files/cov/transportation-2040-plan.pdf>

References

- Bashandy, S. (1987). *The impact of transportation technology on city formation*. Ph.D. thesis, Faculty of Engineering, Cairo University.
- Brown, S., Eng, P., Mike Anderson, M. C. I. P., Planner, I. I., Brian Gould, M. C. P., Assistant III, E. P. (2012). Vancouver transportation plan update. In *TAC Annual Meeting* (www.tacatc.ca).
- Dalton, D. L. (2018). *Expanding access to our communities: A guide to successful mobility management practices in small urban and rural areas* (No. NCHRP Project 20-65, Task 68).
- Daniels, P. W., & Warrens, A. M. (1980). *Movements in cities*. University Press.
- De La Peña, E. (2015). Smart roads: A vision. *Smart Transportation Alliance*.
- Ezell, S. (2010). *Explaining international IT application leadership: Intelligent transportation systems*.
- Grob, G. R. (2009, March). Future transportation with smart grids and sustainable energy. In *2009 6th International Multi-Conference on Systems, Signals and Devices* (pp. 1–5). IEEE.
- ITS United Kingdom. (2016). *Intelligent transport systems (ITS) and their benefits*.
- ITS-UK2014. (2014). *Local authority guide to emerging transport technology*. The Institution of Engineering and Technology.
- Lang, N., Rübmann, M., Mei-Pochtler, A., Dauner, T., Komiya, S., Mosquet, X., & Doubara, X. (2016). Self-driving vehicles, robo-taxis, and the urban mobility revolution. *The Boston Consulting Group*, 7, 2016
- Siemens—Mobility Division—Smart Mobility. (2015). *A tool to achieve sustainable cities*. Restricted © Siemens AG.
- The Masder Report on Technologies for Future Smart City Transit (2018 January).
- Vancouver 2040–2015. (2015). *Moving forward, city of Vancouver*. www.vancouvercity.com, <https://vancouver.ca/files/cov/transportation-2040-plan.pdf>

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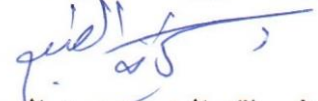
تحول الهيكل العمراني بين أساليب التخطيط العمراني وقوة السوق العقاري: دراسة حالة مدن
الألفية المصرية الجديدة

**Urban Structure Transformation of Egyptian New Millennial Cities between
Urban Planning Methods and Real Estate Market force**

فانه يسعد هيئة تحرير المجلة ان تحيط سيادتكم علما بانه قد تم قبول البحث للنشر بالمجلة في
تاريخ ٥ سبتمبر ٢٠٢١م وسيتم نشر البحث في المجلد ٤٩ - العدد ٦ - نوفمبر ٢٠٢١م.

تحريرا في ١٢/٠٩/٢٠٢١م.

مدير التحرير التنفيذي للمجلة



د.د. شحاته الضبع عبد الرحيم

وكيل الكلية لشؤون الدراسات العليا والبحوث

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Urban Structure Transformation of Egyptian New Millennial Cities between Urban Planning Methods and Real Estate Market force

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Abstract

Over the past forty years, many new cities have emerged in Egypt, including millennial cities. It is noticed that there are many urban changes in these cities since the beginning of their inception until now. Including city area, patterns, characteristics, rates, and percentages of land uses within the city as the decrease or increase of some elements ratios, disappearing of some uses, in addition to transfer of some uses from its usual place to another inside the city. UN- Habitat conclude that many reasons have led to these changes as the change of housing policies and the strong participation of private sector who use an innovative model based on customer preferences in development of many cities areas and the change of housing policies. This new model depends on replacing the domestic basic services in the centers by green areas and recreational.

The research aims to monitor the changes and urban transformations occurring within the major millennial cities within Greater Cairo region in Egypt since the beginning of its inception at late 1970s up to now, studying the different reasons that led to these changes, then deriving some indicators

and set guidelines and put foundations and standards that help to develop urban planning of major new Millennial cities structure in Egypt.

Keywords: New Millennial Cities, Urban changes and transformations, urban planning, Housing policies and housing patterns.

1. Introduction

The city is always created to serve its inhabitants and to fulfill their requirements and their desires in each society by using the available capabilities. The city influences society and the environment, and then city and its characteristics change. These changes are not limited to urban structure, environment, and human behavior, but also change its economy, its components, and its potentials.

Many studies and reports as (Why the worlds need an urban sustainable development goal) by UN-Habitat [28] indicate that cities have a strong ability to attract and establish a strong economy in many fields like industry, production, service or administration, and the real estate economy, which represent an important part of national economy for any country.

Many factors have a strong impact on the city planning and its urban structure [2],[29], such as.

- Environmental, and socio-economical characteristics that elaborate the basic requirements and desires of the population.
- Housing policies and political decision.
- Regulations, urban planning laws, planning methodologies within its specific steps [15].
- Real estate market.
- Technological development affects all aspects, and has an influential role in the physical changes of the city

In Egypt, housing policies have been changed, and due to that the city has been changed too. The private sector has been involved in development of various lands which allocated by government. The questions now are [18].

- What is the most powerful player in making the new city structural changes? Is it the real estate marketing or planning?
- What is the impact of real estate marketing on urban transformations of cities?

- What is the relationship between urban planning methodology and real estate marketing? Which factor has the strongest impact on the other?

In response to these issues, two cases of the new Egyptian millennial cities were studied:

- a- New Cairo City (East of Cairo)
- b- 6th of October City (west of Cairo)

The research will follow the changes that have taken place in both cities since the beginning of their inception at late 1970s, while studying the policies and the used planning methods for planning and implementation, as well as those responsible development during that period.

2. Literature Review

Larry Miles developed a reputation for great enthusiasm for developing cost-effective operations and using unconventional problem-solving methods in the late 1940s, (Mandelbaum, 2006). The Value Engineering concept gained worldwide recognition in the late 1980s. An international organization committed to its practice and the certification of skilled professionals was established (Society of American Value Engineers International or SAVE International). In addition, billions of dollars have been saved (Mandelbaum, 2006; SAVE, 2020).

Housing and the New Million Cities in Egypt: At mid-1970s Egyptians aimed to create new urban communities to make a comprehensive change in all aspects of life in Egypt (economic, social, environmental, and urban). At this year, Law 59 to was passed to build integrated urban cities in the Egyptian desert and coasts and was assigned to the New Urban Community Authority (NUCA) which manage new cities and communities in four generations.

- First Generation: Includes 10th of Ramadan, Sadat, 6th of October, Burg Al Arab and Damietta, ten new communities in Greater Cairo, most of which were later transformed into cities [23] [24].
- Second Generation: Included the cities of Bard, Sheikh Zayed, Menia, Beni Suef and Thebes.
- Third Generation: New Cairo which included (1-3-5) communities, Shorouq (Com. 2), New Assiut.

- **Fourth Generation:** Included New city of Toshka and many cities that are twinned with the old cities in most of the country's governorates as; New Fayoum, Suhag and Beni Mazar. Also include Major cities as New administrative capital, New Obour city. New Alex. And Alamain New million city.

These cities were established through ministerial decisions issued with the change of housing policies and the institutional framework, followed by the change of attitudes, Planning methodology, and housing elites. By using the three communities (1-3-5) combined with the inter- areas in east of Greater Cairo, the first New Millennial City was started at 1992 after planning of the New Cairo city, while 6th October city turned into a millennial city in 2006, where planned population reach 1.5 million, followed by the New Administrative Capital in 2014 east of Cairo, of nearly 7 million people [2].

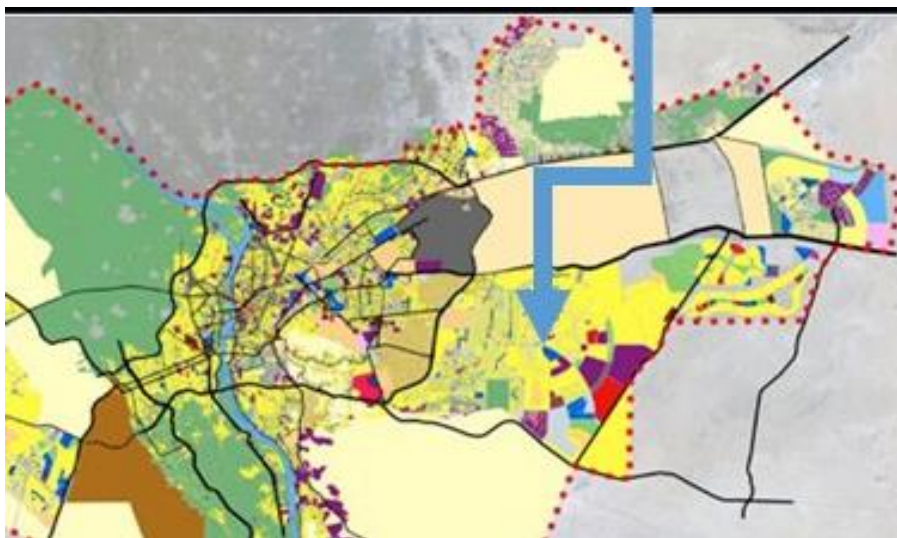


Figure (1): the first New Millennial City (New Cairo)

3. The relationship between changing housing policies and the role of real estate companies

The Ministry of Construction and New Urban Communities (NOAH) put the policy of establishing new urban communities, Egypt aimed to provide low-cost housing units for low-income peoples (ranging from 60 to 70%) by establishment of 18 new cities [11], while they share with individuals and Real estate developers for provision of middle, upper middle and Upper class [12].



Figure (2): low-income housing at 5th settlement and Alshorouk (10000 units)

At 1990th (NOAH) enforced the vital role of private sector by spread of resorts and housing projects in the new cities. In 1992 they only carry out the implementation of main infrastructure and put the urban conditions and regulations for the lands and buildings to speed up implementation in accordance with specific standards and requirements for quality. They start to give the private sector a greater role in develop various housing projects by giving them large and mid. land lots with relatively low prices. Many major projects had strong beginnings, including Al Rehab in New Cairo on about 3500 acres as total area, And Dream Land on 6th October city on 2000 acres, they use new thoughts and marketing ideas that has a strong role and influences on Community planning.

Egyptian state continues providing lands including small and med-sized lots of areas ranging from 10 to 2000 acres for private communities in New Cairo and 6th October such as Hyde Park, Mivida, new Giza, and Helio Park, on other hand they sell large areas for major real estate companies, as 8000 acres (Madinaty), and 11,500 acres for Mostaqbal city [4] to make many large and med-sized communities.

State also provided many types of housing for low-income people by achieving Mubarak's presidential program, including Youth Housing Project in 1997, Future Housing Project in 1998. During period from 2005 to 2012, (NOAH) implemented national housing project in all provinces, (established 500000 housing units) [17]. They have partnered with some real estate associations and investors according to

specific governmental housing models. And adopted the Social Housing Program Family Housing Project which aims to create one million housing units within five years (between 2006 and 2011), as National housing, house of family and Biet Alwatan project, and build your house project [18]. The state also provides lands ranging from 200 to 1200 m² with complete infrastructure for individuals and small developers.

At 2006 (NOAH) use the policy of managing new urban communities and decision-making in the manner of the businessman and the tendency to employ Egyptian and foreign expertise houses [17], they began to offer lands for real estate projects with auction system, they started with two lots of an area of 80 acres at New Cairo and 200 acres in 6th October, the price reach 4050, and 1200 EGP\m respectively, which is higher price about 6 times than the allocation by acquisition in city of 6th October, and 20 times in New Cairo. The new prices had a strong impact on the prices of units, where it rose from 2 to 3 times in only 1 year. Until that time the state uses traditional models in city planning as: leaner city and concentric city and put the domestic services in the centers of the city in hierarchal order.

As a result of land price increase, developers and investors of real estate market has to find a new housing types and ideas to compete with other projects on land with less prices, these ideas were based on the achievement of environmental, recreational and social dimensions in addition to increase the quality of life especially in gated communities, similar to old romantic areas as Garden City and Heliopolis (at Cairo), they come back to dream cities, utopian city, the European countryside cities. They found a different planning models, most of them depend on the centrality of the green, recreational and sports zones in central areas, and the main basic services and non-residential uses were placed on outer ring for privacy of the residents.

4. Planning Process Used for The Millennial Cities

Two types of planning systems emerged for the new cities: The first is comprehensive planning approach, which follow set of steps and studies to produce Master Plan which determine the land use distribution for housing, services, and economic uses for a certain population [1]. The second planning system is carried out by real estate developers, especially those who develop communities (50 to 500

thousand inh.), they compose development team including planners, analysts, administrators, economists and representatives, all team members have new genius ideas and applicable proposals and depend on comprehensive concepts, as well as applying the concept of sustainable development by achieving conservation of resources and capabilities for future generations. They use following planning tasks to develop the land, its stages are [18].

- a) Preparing a preliminary strategic real estate idea: where planners and visionaries propose visions and ideas to do a preliminary feasibility study include a forecast of costs, expected activities, and a determined plan of what can be done to achieve the vision of real estate of the company.
- b) Preparing detailed outline plan of real estate element: including units and land for all uses, then determines proposed financing and marketing plan and determine pricing for each.
- c) Preparation of project management documents: Which include advertising plans, financing, marketing, and pricing, as well as planning documents and implementation management.
- d) Marketing activities (selling, sorting and spare, renting, leaving.)
- e) Securing and financing the project.
- f) Design and urban planning: include legal and executive plans, implementation documents and all related to the aspects of urban in line with marketing plan.
- g) Construction and implementation stages
- h) Delivery and Accreditation
- i) The practice of selling or renting
- j) Insurance and efficiency during the warranty periods

Both two types begin with study and then analyze, followed by plans for mid. long periods, but the real estate companies' approach make enormous changes in urban structure to attract peoples to their project, they care for people and users because their products remain for long years. They are responsible for covering all areas related to real estate development, implementing various projects for profit, contributing to Gross Domestic Production, generating jobs in various economic projects, and forming the physical and natural environment with its buildings and spaces [2].

5- The role of the state, individuals, real estate investors in new cities planning in Egypt

Between 1996 and 2006, there were about 7.9 million Housing units built in Egypt, including urban housing units, 3.9 million was implemented by three groups, the state by related authorities and public bodies (about 10.5% of the total units), while private sector (investors, real estate developers and social associations), implement 24.3% of units, the remaining 65.2% of housing was built by individuals in an informal settlement [18].

Real estate in Egypt is involved in the construction of about 948 thousand units, most of which are distributed to the Greater Cairo region and Alexandria [18].

In new cities, the state participated in developing about 35.9% of the total units of 902 thousand units, while individuals built more than 41.5%, and about 12% by housing associations, and 10.1% by investors (real estate companies [18].



Figure- (3) private communities

Here after the real estate major companies that had an active role in the planning and development of major projects and development were the following companies [26]:

- Orascom Development Holding is a mid-level residential
- Talaat Mustafa Group is a high-level residential unit
- Palm Hills Development of high-level residential units
- SODIC residential units of upper high level

- Miemar Al Morshedy is a medium level residential unit
- Emaar Egypt is a high-level residential unit
- DAMAC residential units of high standard and Qatari Dear high-level housing units

These companies use different urban planning models to develop their communities depend on users requests and desires. Most of private sector developers employ experts or contract with consulting firms including urban planners to accomplish development tasks and contractors to carry out the construction, some of them have their own team work to develop residential compounds, mostly implemented at five new cities around Greater Cairo, (New Cairo, 6th October, Sheikh Zayed, Obour and Shorouk). they focus on luxury homes, med., and upper med. housing such as (Talaat Mustafa Group and Emaar Morshedy). On other hand the state delivered small lands to individuals and small developers to build housing for the less affluent people, which represent about 41.5% of Egypt's total urban housing production. and promote these projects through direct Media and/or marketing agencies [17].

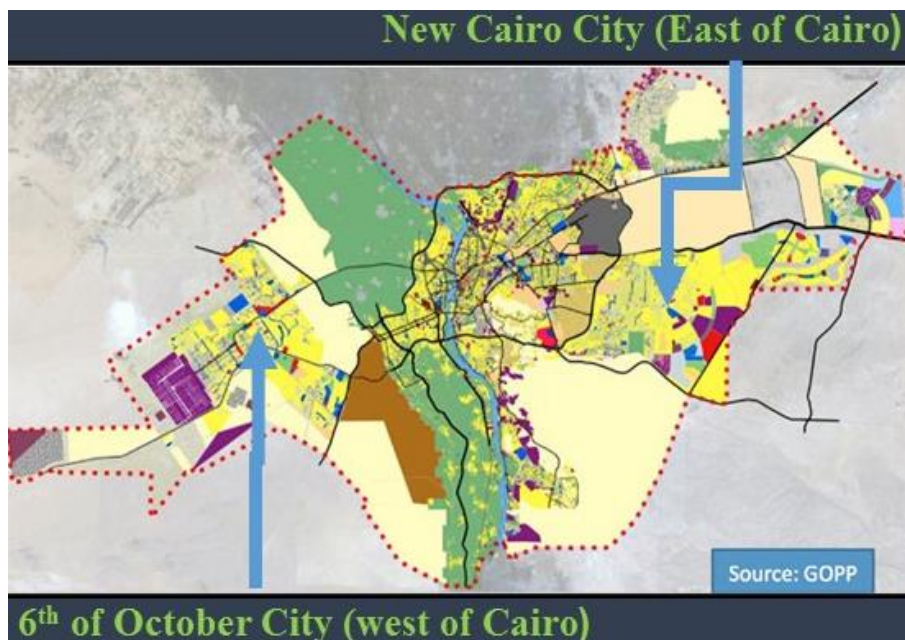


Figure- (4) The two case studies of millennial cities

6- Case study – 1: (New Cairo City)

At 80s, three urban communities (1, 3 and 5) start with an area ranging from 2000 to 3000 acres and a population of 200 to 250 thousand inh. per each one. In 1992 the first millennial city of areas about 27,600 acres including the three communities and areas in between [23], the city was surrounded by a green belt with an area of 2600 acres. The service center was planned in leaner form to represent an extension of Nasr City main service axis at east direction of Cairo, and to emphasize the fill the spaces between the three communities in 1992. during this period, the beginning of allocation of lands to real estate developers such as Al-Rehab Community, which represent large participation of real estate developer in cities.

In 2006 the city become one of major cities with an area 67000 acres to accommodate 3.7 million inhabitants [10]. It has allocated several medium and large lands for investors such as Madinaty, Heliopark, Future city, Hyde Park and other several gated communities. Then the city increased to reach about 78000 acres in 2014 to accommodate nearly 5,5 million. and including 4 other new communities (Sectors) to be developed by government and the private sector [18].

The city axial service center extends about 20 km from first ring road to east ended with services area in rectangular shape, its areas is about 19.5% of the total area, including 11% basic services and 8.5% green areas recreational services, these services are excluding special elements such as the fossilized forest on the south as well as the various services within many gated communities (with fence) developed by private sector [11]. These gated communities divided the city internally into fenced zones, the pace of construction has increased. Most of communities (1,3,5), and other gated community's zones have been totally completed. Here are some Communities at new Cairo. The services areas ratio decreases by time specially the basic services, but the green and recreational areas ratio is increased specially for communities developed by real estate as shown in table (1) [27].

The table indicate that the domestic service is become less in the private compounds developed by real estate companies than the cities developed by (NOAH), and greens ratio decreased at first millennial plan in 1992 and 2000 because they fill the spaces between (1-3-5) settlements, then increased after 2004 even in cities planned by the

government (as Abo Elhool and Beit Elwatan) affected by private compounds.

Table 1: services and green areas ratio at New Cairo and its communities

| City/community | total urban area Acres | Basic services | % | Green & Recreation | % | total area | % |
|--------------------------------|------------------------|----------------|-------|--------------------|------|------------|-------|
| 5 th community 1986 | 2175 | 380 | 16.46 | 235 | 10.8 | 615 | 27.26 |
| New Cairo 2014 | 78000 | 8580 | 11 | 6630 | 8.5 | 15210 | 19.5 |
| Al-Rehab City 1992* | 3500 | 315 | 9 | 298 | 8.5 | 613 | 17.5 |
| Madenaty 2004* | 8000 | 640 | 8 | 960 | 12 | 1600 | 20 |
| Abo Elhool 2004** | 700 | 42 | 6 | 100 | 14 | 142 | 20 |
| Mostaqbal city 2006* | 11500 | 805 | 7 | 1550 | 13.5 | 2355 | 20.5 |
| Heliopark 2006* | 1695 | 120 | 7 | 170 | 10 | 290 | 17 |
| beit Elwatan 2014** | 3500 | 300 | 8.5 | 420 | 12 | 720 | 20.5 |

*- They are a part of New Caro city

** - developed by state

a) Al-Rehab City- New Cairo (Talaat Mustafa Development) 1992-1997 [22]:

Al Rehab is considered the first large integrated residential community established by private real estate developer. It's located in New Cairo city near the Cairo-Suez Desert Road, it was built on 3500 acres to accommodate 200,000 people. It's divided into ten neighborhoods each on an area of 250-300 acres, in addition to basic services (9%) which distributed on the outskirts of the city, recreational green areas are about (8.5%), including sports club and gardens in central area, while other smaller basic services are distributed as an intermediate ring within the city including some of green areas.

b) Urban Community (Madinaty)- (Talaat Mustafa) 2004 [5]:

The city was built on 8000 acres to accommodates 600 thousand inhabits. The planning idea based on the Axial centralization of Green and recreational area, the basic services is about (8%) and 12% for green areas and recreational services. Many services that serve on a regional level, such as the media village, mega malls, smart village, and Olympic sports village which have been settled on city outer ring.

c) Abo Elhool Family house - (State development) 2004 [14]:

It was about 700 acres and is located near Cairo-Ain Sokhna Road to the east of the fossilized forest. It was developed by the authority to accommodate and serve 100,000 inhabits. The residential community

was divided into three districts, in addition to a park, recreational areas, club, and mixed uses in the central area. Services represent 20% of the total area including 6% basic services and was distributed on its outer borders, and 14% for recreational, greens and a central park.

d) The Mostaqbal City (The Arab Contractors) 2006 [6]:

The city was planned to accommodate more than 500 thousand people in about 11,500 acres. its located east of the Greater Cairo region and bordered by Cairo-Suez Road at north, and by regional ring road from the east. The planning idea was based on locating large recreational area as central axis of the city surrounded by residential Zones, while services were distributed outer ring including basic services of about 7%, while recreational services and green areas reached 13.5%.

e) Hyde Park Residential Complex - (GCC real estate co.) 2006.

The Community area is 1,120 acres and developed by gulf real estate company to accommodate between 25 and 30 thousand inhabitants, it contains a large green heart, where residential areas was settled around it. The total service is 25.5% of the total area including basic service which represent 9% and distributed in organic forms on the outskirts of the residential zones, and there is 16.5% for green parks and recreational services. The community is located at southeast of New Cairo.

f) Helio Park - (Development of New Egypt co.) 2006 [25]:

The city area is about 1695 acres, planned for 100 thousand people, its divided into 6 residential districts located around a linear green center with total area 1060 acres which includes some commercial services too, each district has a central garden. There is a regional civic center parallel to the Cairo/ Suez Road. The basic services area represents (9%) and is located on the outskirts of districts. Recreational areas and gardens represent (7%) concentrated in the central axis. Other green areas are electricity lines and within each district, which represent about (10%) of the total area.

g) Lake view- New Cairo (By Egyptian Oil Company) 2006:

On 500 acres, residential Compound was in the heart of the city axial central to accommodate about 10000 inh., where the state replaces a part of the central services with Luxury housing and sporting club,

some Basic services distributed at north and south, and 5-star hotel too. The idea of its plan was based on locating sports and recreation area in the center of the community surrounded by residential groups from the east, west and south. Basic services in the city are 8%, while green areas and recreational services represent 16.5%.

h) Beit Al Watan Project (State Authority) 2014

Its located-on Cairo-Suez Road, east of Greater, with an area of about 3500 acres, its planned to accommodate more than 200,000 people. its idea of planning was based on central leaner green axis extends from north to south surrounded by 8 residential districts, a concentration of huge services area at north and south. The basic services ratio is 8.5%, and the green and recreational service is 12.



Figure- (5) New Cairo urban communities developed by state and private real estate

7- Urban Structure Changes of New Cairo Millennial City

Through the study of New Cairo city, it is noticed that many changes in city structure, as follows: -

- The state starts to change the city Urban Structure by gathering the three isolated communities (1-3-5) to form the first millennial city which follow the model of linear city with a long axial civic center surrounded by residential districts.
- The real estate developers have established communities surrounded by fences which called the Gated community, as Al

Rahab, Lake View, Mivida, Hyde Park, that include mid-size cities that emerged within the city and its borders as (Madinaty–HelioPolis and Future City).

- The communities which developed by real estate developers change the city internal composition including the planned uses and its urban patterns. There are land use transformations of some sites, as the change of a part of the axial civic center to residential areas (as Lake View for example), and Abo Elhool area, which has transformed from secondary service center to a residential community around a central park, also many basic service areas have been transformed into recreation areas such as to the Central Bank Club in the north.
- There are transformations from residential to regional service as (AUC) which has been transformed from residential uses into educational services.
- The huge change in the city is the ratio of basic service and the green elements. Basic serviced decrease and the green area increase in all communities that developed by real estate and the recent cities that developed by the state.



Figure- (6) Urban changes of New Cairo

8- Case study – 2: (6th of October City):

6th of October is residential and industrial City located near Giza Pyramids area at west of Greater Cairo 38 km from the center. It connected by Cairo-Alexandria Road, Wahat and Cairo-Fayoum Road. It was planned in linear urban model. The service centers are representing the city artery. The whole city was surrounded by green belt, and green Zone to separate industrial area at west from adjacent residential areas. The residential districts and neighborhoods contain its basic services. At the south there is different uses areas (tombs-housing of workers- residential areas- universities- clubs- recreational projects such as Dream Park).

The city Cordon in (1978) started with 85680 acres to accommodate about 500000 people [23], the basic services area at that time represent about 8.1% and the recreation and green represent 7.3%. In 1992 the state allocated large and medium land to real estate developers such as Sodik, Dream Land, Mina Garden City for many private residential projects [8]. The planned population increased at year (2000) to 96390 acres for 1.5 million, and reached 2.5 million at 2012, and then reached more than 4 million in (2014-2015) plan, with an urban area of about 80000 acres. The total service area ratio reached 19.4 %, including basic services 6%, while recreational and green areas represent 13,4 [16]. The services and green areas on 6 October city changes through time as shown in next schedule (2)

Table 2: services and green areas ratio on 6 October and its communities

| City/community | total urban area Acres | Basic services | % | Green & Recreation | % | total area | % |
|------------------------|------------------------|----------------|-----|--------------------|------|------------|------|
| 6 October City 1979 | 13700 | 1100 | 8.1 | 900 | 7.3 | 2000 | 15.4 |
| 6 October City 2006 | 75400 | 5500 | 7.3 | 4650 | 6.2 | 10150 | 13.5 |
| 6 October City 2014 | 98900 | 6430 | 6.5 | 12857 | 13 | 19287 | 19.5 |
| dreamland 1992* | 2000 | 130 | 6.5 | 310 | 15.5 | 440 | 22 |
| Sheikh Zayed 1986* | 10000 | 1500 | 15 | 1500 | 15 | 3000 | 30 |
| Mena Garden City 1992* | 210 | 7 | 3 | 38 | 18 | 45 | 21 |

*- They Developed by Real estate companies and are apart from October City [27]

The table indicate that the domestic service is become less in the private compounds developed by real estate companies than the cities developed by (NOAH), and greens ratio increased after 2006 even in cities planned by the government affected by private compounds.

The city has many internal communities as: -

a- Mena Garden City Residential Complex (Mena Tourist Housing Company) 1992[3] [13]:

The city has adopted the distribution of the urban structure on a dedicated strip center for recreational services, sports clubs. There is one basic service center in the south, other one located on northwest, it was established at the end of the twentieth century for Luxury villas and palaces on an area of 210 acres located in the tourist area in the city, and to accommodate about 8000 people. At the beginning of the 21st century was intensified housing with Townhouse and Twin House villas which increase the population to about 15 thousand people. The area of basic services represents only 3%, while recreational services, sports, and green area of 18%, and the total area represent 21%.

b- Dreamland Housing Group (Bahjat Group Companies Development) 1992[19]:

The project began at early 1990s and consider as the first major real estate projects in the city, it located on the Cairo -Wahat Road and ring road. It was planned on 2,000 acres to accommodate 40,000 homes (about 180 thousand people), 20% of its area is Residential buildings, and the rest is for roads, green spaces and services, services represent 22% of the total area, include 6.5% for basic services while 15.5% for gardens and recreational services [9].



Figure- (7) Two examples of Private sector development for urban communities

9- Urban Structure and activities change on 6th October:

- The state planned the city using the linear model as a basic form, later many changes to the activities and uses happened within the city, including transformation of some areas that were planned as

service centers to housing projects due to increasing housing demand.

- Policies was made to apply of fair and homogeneous distribution of main and basic services and greens on many places of the city but later the services distributed in un homogeneous order.
- The private real estate developer depends on concentrating green areas and recreational services such as social and sports clubs in the city center, (as Dreamland, Mena and others Gated communities), and distribute the domestic service on other decentralized places.
- Some changes come by changing services areas to housing projects such as (Build your home project) and some other gated communities.

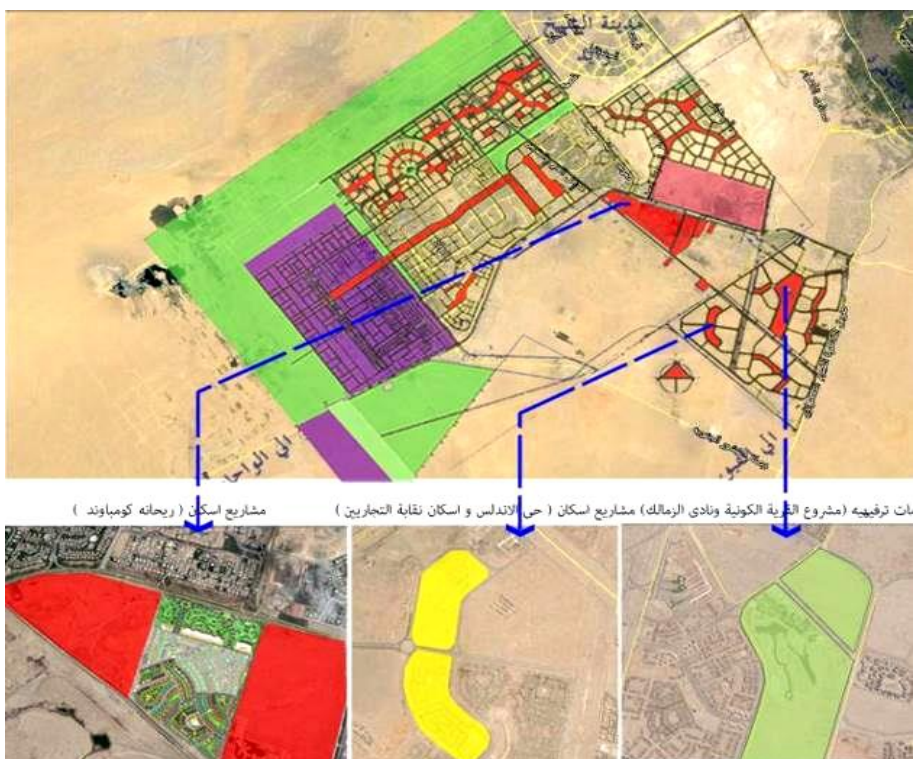


Figure- (8)- Urban changes of 6th October

10- Recommendations:

- a) Applying new methodology that gather the steps of preparing the general plans for residential communities followed in the

comprehensive planning approach with the steps supported by real estate marketing, which include:

- propose visions and ideas to do a preliminary feasibility study.
 - Preparing detailed outline plan of real estate element
 - Preparation of project management documents
 - Marketing activities (selling, sorting and spare, renting.)
 - Securing and financing the project.
 - Design and urban planning: include General and executive plans, implementation documents.
 - Construction and implementation stages
 - Delivery and Accreditation
 - The practice of selling or leaving or renting
- b) It's rerecommended to prepare future research to develop the of major new Millennial cities to be compatible with the requirements at the age of knowledge.

11- Results:

- a) Millennial city urban structure changes coincide with the transformation of the state role through its institutions from main developer to legislator and observer only, and it's also coincides with the change of housing policies in the state.
- b) The city Changes include new Urban patterns and planning Models for units, as well as change of the whole city urban structure, there are also Changes in proportions of uses as basic services, recreational services, and green areas.
- c) The private sector and real estate developers actively participate and plan their land on an innovative model based on customer preferences. New models show their centers have no basic services but have green areas and recreational uses.
- d) On late decade, the state follows the experience of private developers in city planning. The same developers planning models were applied by state, such as green centers instead of basic service in city centers. The state investigates the requests of some investors to provide some activities within the city instead of the previously planned activities, where some services moved out of the civic center and replaced by residential areas or gardens and recreational.

- e) The internal change in the city has emerged through green centers and basic services on the outer ring. and at the whole city level through changes in some activities and uses, also the ratio of basic services decreases about 5% and the greens and recreations has increase twice times.

References:

- [1]. Kaklauskas, E. K. Za vadskas, R. Dargis, D. 2015. Bardauskienė. Vilnius - Sustainable Development of Real Estate-: Technika.
- [2]. Kaarin Taipale. (2012) -Challenges and way forward in the urban sector - Sustainable Development in the 21st century (SD21).
- [3]. Magnus Nikl, Brain Lee. (2011) The desert city of 6 October- -Giza Governorate –Egypt.
- [4]. Nickel, Magnus., Lee, Brain. (ETH Studio Pasel)– The desert city of 6th October –2011. Available at: http://www.studiobasel.com/assets/files/11_Atlas_6thOctober_web.pdf [Accessed July 2015].
- [5]. Cairo Group, Sasaki, space. (2006-) Development plan for Madenaty a New Community Master Plan - New Cairo Egypt, Arab company for projects and urban development.
- [6]. El Mostakbal Urban Development (2013) El Mostakbal City. [Online]. Available from: <http://mostakbal-re.com/mostakbal-city/about-mostakbal-city/> [Accessed July 2018].
- [7]. Heliopoliscompany. (2008) [Online]. Available from: <http://heliopoliscompany.net/index.php/en/2013-12-14-10-00-17> [Accessed 2019].
- [8]. Ghonimi, Islam. et al, (2011) The Contribution of Gated Communities to Urban Development in Greater Cairo Region, New Towns. Journal of Al Azhar University, Engineering Sector,13(6),33-52.
- [9]. Apartments for sale Dream Land Compound. Available from: <http://akkarbook.blogspot.com/2015/04/156-6.html> [Accessed 2018].
- [10]. https://scholar.cu.edu.eg/sites/default/files/nasreldin77/files/09-the_future_of_the_existing_gated_communities_in_greater_cairo_after_january_2011_-07.pdf [Accessed 2019].
- [11].Sabbor Consultant office& Egyptian Ministry of Housing (GOPP)- (1987)– Master plan of Settlement no. (5) – Egypt-.
- [12].Housing and development company& Egyptian Ministry of Housing (GOPP) – (1991)– Master plan of Settlement no. (2) Elshorouk– Egypt.
- [13].Barrada, Abdul Mohsen., Dr. Juhari, Farouk (1995). Urban Design of Mina Garden City. Urban Planning Authority- Egypt.
- [14].Barrada, Abdul Mohsen. - (2004)- Structural and Master plan of the Abo Elhool residential Community for Family Housing. New Urban Communities Authority- Egypt
- [15].Abdulaal, Ahmed (2001). The new cities and regional development in Egypt. (In Arabic).

-
- [16]. Ashour, Ayman. (2011)- Strategic Plan for 6th of October City. Urban Planning Authority- Egypt
 - [17]. Shaimaa El-Shrqawy – (2014) Evaluation of Housing Policies in Egypt- The Arab Forum for Alternatives: Greater Cairo as a Model- Omran -Issue 5 /20-2014.
 - [18]. Un-Habitat – Egyptian Ministry of Housing (GOPP) – (2016) – Egyptian Housing file – Egypt-. (In Arabic).
 - [19]. Dreamland Company (2014) Planned outline and detailed plans for Dreamland. New Urban Communities Authority.
 - [20]. Fathy M. Moselhy (2017) - The Arab City and the Challenges of Urbanization in Changing Communities: Greater Cairo as a Model- Omran -Issue 5 /20-2017.
 - [21]. GOPP, Omara Waemran (2006). The general outline of the city of New Cairo. The new urban communities. - Egypt.
 - [22]. Cairo Group, Sasaki. – (2000) Al-Rehab City Project on the Suez Desert Road- New Cairo- Talaat Moustafa Company -Egypt
 - [23]. . Habeeb, Waheed Helmy (1991) – New cities planning – Part 1 – Cairo - Publishing house and library of engineers.
 - [24]. Habeeb, Waheed Helmy (1991) – New cities planning – Part 2 – Cairo - Publishing house and library of engineers.
 - [25]. Bradah, Abdul Mohsen (2008)- Master plan of the city of Heliopark. Heliopolis Housing & Construction Company- Egypt.
 - [26]. Bank of Alexandria- (2012) - Real Estate Industry in Egypt- The Well-known housing developers in Egypt- Survey study- Egypt- (In Arabic).
 - [27]. Fareed, Mohamed M. (2005) The Recreation Places and their role at urban development of the new Communities "Case study 6 October", Helwan University – Faculty of fine art.
 - [28]. Un-Habitat, Cities Alliance, UCLG, I.C.L.E.I local government for sustainable. (2013)-Why the world needs an urban sustainable development goal- Available at: www.unsdsn.org, www.post2015hlp.org/, and www.globalcompact.org.
 - [29]. Eng. Alsayed H. Said – (2015) – the future of urban structure of Arab cities in 21st century – PhD theses – Benha university– (In Arabic).

تحول الهيكل العمراني بين أساليب التخطيط العمراني وقوة السوق العقاري: دراسة حالة مدن الألفية المصرية الجديدة

الملخص:

على مدار الأربعين عامًا الماضية، ظهرت العديد من المدن الجديدة في مصر، بما في ذلك مدن الألفية. ويلاحظ أن هناك العديد من التغيرات العمرانية في هذه المدن منذ بداية نشأتها وحتى الآن. تشمل مساحة وحجم المدينة وأنماطها وخصائصها ومعدلاتها ونسب استخدامات الأراضي داخل المدينة والذي يشمل انخفاض أو زيادة نسب بعض العناصر، وكذلك اختفاء بعضها، بالإضافة إلى نقل بعض الاستخدامات من مكانها المعتاد إلى مكان آخر داخل أو خارج المدينة. خلصت الهابيتات أن العديد من الأسباب أدت إلى هذه التغييرات مثل تغيير سياسات الإسكان والمشاركة القوية للقطاع الخاص الذي يستخدم نموذجًا مبتكرًا يعتمد على تفضيلات العملاء في تطوير العديد من مناطق المدن وزيادة المساحات الخضراء واستبدال الخدمات الأساسية المحلية بالمراكز بمساحات خضراء وترفيهية.

ويهدف البحث إلى رصد التغيرات والتحويلات العمرانية التي تحدث داخل مدن الألفية الكبرى في إقليم القاهرة الكبرى في مصر منذ بداية نشأتها في أواخر السبعينيات وحتى الآن، ودراسة الأسباب المختلفة التي أدت إلى هذه التغييرات، ثم استخلاص بعض المؤشرات. ووضع خطوط إرشادية وبعض الأسس والمعايير التي تساعد على تطوير التخطيط العمراني لهيكل المدن الكبرى الجديدة في مصر. ويكون ذلك باستخدام المنهج التحليلي المقارن.

الكلمات المفتاحية: مدن الألفية الجديدة، التغيرات والتحويلات الحضرية، التخطيط الحضري، سياسات الإسكان وأنماط الإسكان.

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طيبة العالي للهندسة

البحث رقم (7)

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| دور التخطيط الاستراتيجي في التنافس العمراني المكاني ما بين المناطق المخططة والمناطق الغير مخططة داخل المناطق الحضرية من اقليم القاهرة الكبرى). | عنوان البحث باللغة التي نشر بها |
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دكتور / سعيد حسانين السيد

مدرس - معهد طبية العالي للهندسة بالمعادي - القاهرة - مصر

تحية طيبة وبعد،

بالإشارة الي البحث المقدم من سيادتكم للنشر بمجلة العلوم الهندسية "JES" بكلية الهندسة -
جامعة أسيوط بعنوان:

دور التخطيط الاستراتيجي في التنافس العمراني المكاني ما بين المناطق المخططة والمناطق
الغير مخططة داخل المناطق الحضرية من اقليم القاهرة الكبرى.

**THE ROLE OF STRATEGIC PLANNING IN SPATIAL COMPETING
BETWEEN PLANNED AND UNPLANNED URBAN AREAS OF
GREATER CAIRO**

فانه يسعد هيئة تحرير المجلة ان تحيط سيادتكم علما بانه قد تم قبول البحث للنشر بالمجلة في
تاريخ ٢٩ سبتمبر ٢٠٢١م وسيتم نشر البحث في المجلد ٤٩ - العدد ٦ - نوفمبر ٢٠٢١م.

تحريرا في ٦/١٠/٢٠٢١م.

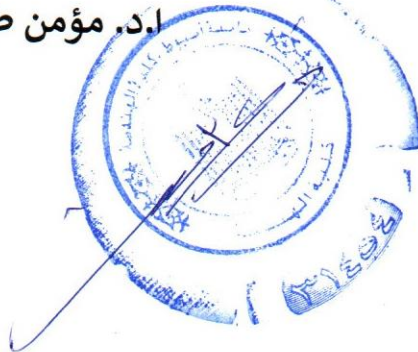
وكيل الكلية لشؤون الدراسات العليا والبحوث

سكرتير تحرير المجلة

أ.د. مؤمن طه حنفي المليجي

مدير التحرير التنفيذي للمجلة

أ.د. شحاته الضبع عبد الرحيم





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The role of strategic planning in Spatial Competing between planned and unplanned urban areas of Greater Cairo

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Abstract:

The urban uses compete to dominate different areas of the city, The services and commercial uses usually dominate the city centers due to its accessibility, and Industrial uses are also looking for areas with lower value and environmentally suitable, while residential uses distributed near to the services centers and jobs generator areas. Urban areas and uses also compete according to their planning status to become planned or unplanned, the planned residential uses are distributed regularly around services or greens, and usually away from pollution-generating areas such as industry, while the unplanned uses are distributed either around these planned areas or around areas of employment generation, especially trade, services, and industrial activities. This explains the spread of slums and unplanned areas on the outskirts of the city or around industrial areas. The applied urban planning approaches have an effective role on arranging areas and ensuring that they do not turn into slums or informal areas. Egypt applies the comprehensive planning approach from 1950th until 2008 where the strategic planning approach was applied for guiding urban development plan. The research will focus on studying the role of applied planning approaches in Egypt to control areas planning status specially the strategic planning which has not shown a clear positive impact on urban areas even with the participation of civil

society and its groups and could not control occupation of land areas by the domestic land use.

Research Aim: To examine the role of applied planning approaches in controlling the state of urban areas in Egypt, and to reinforce the strategic planning tools that contributes to solve the conflict between planned and unplanned areas inside the city, and to create a map that illustrate the interaction between planned and unplanned urban areas inside the city.

Methodology: The descriptive approach will be followed by describing the phenomenon, the variables related to it, and the factors that affect it, and then extracting and generalizing the results, and then use the experimental approach by studding and analyze the urban area of Greater Cairo region, Egypt as case study to apply the approach to formulate theories and axioms according to an ordered system. For the aim of the research an urban map will be drawn that will divide the areas within the study area into three types according to their urban aspects (Planned area- Unplanned areas, Areas under development are undeveloped areas).

Key words: Strategic planning approach, unplanned areas, planed areas, competitive uses

1- Introduction:

Urban areas are formed to meet residents needs and commensurate with their behavior and characteristics. These urban areas sometimes compete to attract some uses to be concluded in them, some uses compete to occupy lands within urban areas. As a result of this competitions, urban changes are increasing, followed by environmental and social changes. The emergence of urban areas occurs in two approaches: by applying planning approaches and its steps to distribute land uses within a specific area, flowing detailed studies on all branches, and then an urban plans is made for development, the second approach is spontaneous cumulative growth, which is often unplanned, and is carried out by Some members of the community, where they construct residential buildings and some services according to the current needs of each of them without taking into account the full needs of all residents in the area [1].

During the construction phase of the city, a group of supportive activities are attracted around the construction sites, including temporary houses, some services, and street vendors serving main

workers. With the lack of control over this area, it increased in size and number of occupants and turns into informal area for random activities (as Hagana in Nasr city). Its residents mostly from low social level and variable limited income groups serve the workers in the planned city until the completion of its construction and then serve the city residents (as Imababa near Zamalek) [1]. Most of unplanned areas usually grow near or around planned areas and there are many reasons for its emergence, including: Increase in population growth rates, lack of urban control, the flow of migration from rural to urban areas, increase in the prices of land prepared for construction, including state-owned, increase in the rental value of the housing supply, the desire of parents to live next to their children and relatives, and the limited suitable housing for the lower social groups [1].

2- Definition of planned and unplanned land.

The Law 119 of 2008 and its executive regulations directed the planners to clarify the areas of different uses that include planned and unplanned areas in addition to the areas of replanning, which are usually informal or deteriorated areas. The characteristics of each kind will be clarified and reinforced with the support of the thinkers and planners in this regard, as well as the planning approaches and tools necessary to preserve the planned areas as the strategic planning approach, and the transformation of the unplanned areas into a planned area, and how to control the undeveloped or under development areas to prevent them to turn into unplanned areas [1].

Planners and thinkers define Planned Area as the area that addressed by any Urban planning approach as city or county planning. Some time it means developed land that have been built [3], they classified the planned areas into Planned Community (PC) [2], Planned Unit Development (PUD). They also define Unplanned areas as the areas that grow without a system or out of low or any urban control, and often by private individuals to provide shelter for them and their families. They often suffer from urban and environmental deterioration, and lack of social services and Utilities including roads and infra-structure networks [4].

The planners classified the unplanned areas to three kinds: pre-urban areas which found at fringe zones around cities, where new urban land

uses, and activities are being imposed on a rural landscape and/or the area between an urban settlement and their rural hinterland. Such areas are often fast changing, with complex patterns of land use and landscape, they are often far more environmentally unstable [°], Areas under development: which led to change the features of this site, whether for investment or otherwise [6], and finally the unclaimed areas (virgin) that have not invested or developed yet, whatever type of ownership or tenure (agricultural, residential, or other) [13].

3- Urban planning approaches applied in Egypt and their impact

The comprehensive urban planning approach (CUP) was the most applied in Egypt since 1950th, it provides a physical master plan that includes a study of land uses distribution on an area and focuses on distribution of roads and basic facilities for peoples [7]. It is a central spatial planning carried out by the government or its affiliates, often centrally funded for such plans and implemented as well. This type of planning may be appropriate in planning the new cities and in some planned stable cities (socially and economically), considering the results of studies of environmental, social, and economic dimension of the target population in the city [8]. Investors and local community are not involved in making decisions or contributing to development, especially at planning stage, but they sometimes participate in implementation. The rigidity and centrality of (CUP) and the lack of participation of private and individual beneficiaries caused a failure to apply plans to many cities, especially the existing ones, in which citizens and investors resorted to breaking the law and not applying the conditions that do not suitable for them, Which have led to urban deterioration of facilities and the emergence of informal areas or slums, especially on the outskirts of planned urban areas and areas with low prices such as agricultural land, (Egypt has lost since 1950th more than 2 million acres of best farmland in Delta) [9].

It is worth mentioning that the encroachment on the desert lands and their occupation in an informal way was much less than on agricultural land due to the high costs of development and because of the control of land by some the state institutions as the armed forces [9]. (CUP) did not have the appropriate tools to deal with emergence of informal areas in Egyptian cities, sometimes it represents a part of the problem

because its lack of flexibility and missing of public participation in decision-making. With the existence of violations and rejection of (CUP), the Egyptian state need to apply an approach that reinforce participation with the private sector and civil society to achieve the urban objectives, especially in existing cities.

Strategic urban planning approach (SUP) was implemented in Egypt in 2008 to give the society a big role in planning and implementation [10]. with the adoption of the implementing regulations of Law 119 (the Unified Building Law) [1], (SUP) was applied in two phases [11]:

The first stage: aims to produce strategic plan (SP) including set of actions and projects for the development of the region through four steps, begin with the basic studies and the collection of information for all sectors of the study, and processing them for SWOT analysis to identify the stresses, weakness, opportunities, and threats. In the second step, the indicators are checked and presentation of the results of the first step, explain the vision and goals to the partners to agree on it for the city to help their development, identify the main objectives and projects that achieve the vision, allocating projects in the city. The results of this phase will determine the urban area of the city, including the identification of all projects. These steps will culminate in the third step in which the strategic plan is being done. The fourth step is the task of adopting (SP) by holding a hearing attendance by the representation (SP) to the government, the local civil society. Individuals, investors, and the private sector, as well as representatives of donors or who wish to participate and support from unions and local and international organizations.

The second stage: is the result of legal detailed plans which represent an effective tool for controlling urbanization. It is an important legal document between the local agencies, citizens or investors who wish to participate in the development of land and create buildings. The outputs of (SUP), which are important tools for urbanization, are:

- Strategic Plan and General Strategic Plan (Development Plan)
- General strategic plan for land use, roads, and infra-structure networks plan
- Description cards for the different project
- Development perspective report and finally detailed plans

4- Strategic planning and its role in solving the problem of unplanned areas.

(SUP) has many tools to achieve fully planned urban areas for the society by transforming unplanned urban areas to planned, and to provide the areas with service and facilities projects, in addition to the decisions to expand the streets and re-structure to accommodate the traffic and in line with the provisions of the law. Theoretically, by SWOT tool (SUP) can define the weaknesses and their effects on society, as well as to identify the threats from external influences, whether environmental or legal, or from any human factors, available through the regional and national framework. Also exploring the Vision/ identify goals/ projects with partners, which make the concept of strategic planning, development plan, and proposed projects which can be applied using the strengths and opportunities, prevent threats and weaknesses to solve Problems of the city including unplanned areas. At first, Egypt applied (SUP) to 40 cities in 2007, followed by 29 cities in 2009, then the rest of the existing cities and many new cities, representing the 10th of Ramadan, the 6th of October, and New Cairo, some of which were in partnership between local and foreign consulting offices. It was distributed among the regions of Egypt, 5 cities were in the Greater Cairo Region, 5 in the Alexandria, 9 in the Delta, 8 in the Ismailia, 5 in the northern and central Upper Egypt, and 7 in the southern Upper Egypt.

By listing the 40 cities for which strategic plans were made in 2007 and following up on what happened to them, it was found that all these cities exceeded their planning period to between 4 to 10 times of planned period (6 months), two cities (SP) was approved only in 2009 and the rest between 2010 to 2015, which is about 8 years passed without the adoption and activation of (SP). Some of them were not finally approved (2 cities), and it is also worth noting that the detailed planning stage was not implemented in most of these cities, while the detailed plan was prepared for some of them and was approved in 2020 and 2021, that is, about 13 years after the beginning of the study. With the delay in the (SP) adoption, the features of most of these cities have changed, their mass area has increased, their problems have also increased. Thus, the strategic plan has become unsuitable for the city with these problems and new existing conditions. In one of the studies in this field, a research questionnaire was presented to many

consultants and planners, it was found that there is no strong impact of the (SUP) on cities, and that there are many negatives and problems encountered in its application, the most important of which are:

- Problems related to the organizational climate: they are related to the centralization system in decision-making, which affects the accreditation periods and makes them longer periods than what is codified, in addition to the weakness of the material and technical capabilities of the auxiliary devices.
- Problems related to the presence of overlap between the authorities and the lack of clarity in the relationship between them.
- the absence of a unified database at the republic level in official information centers in addition to the failure to equip local units at the city level with human and material capabilities that affect the application of the curriculum due to its need for unified and updated information.
- Problems related to the current societal culture: which one of the most obstacles that faced the application of the strategic planning approach regarding the role of civil society, and it is generally related to the unwillingness of civil society to participate in such projects or how to express their opinions.
- Problems related to the preference of developers and some individual investors in the private sector for personal interest rather than the public welfare.
- Problems related to land ownership, as private property is not authorized by law to make any use of it without the consent of its owner.

The study of the 40 cities concluded that the plans that followed (SUP) did not have any role to prevent the spread of informal urban development, and slums increased and many of new informal or slums areas are appeared, and their problems increased and the negative effects of these areas on the population increased.

5- Case Study

Shubra El-Kheima is an industrial city in Cairo region with an area 6563 fed accommodate about 1.2 million Inhabitants (at 2017), and it

is one of the cities that apply (SUP), starting in 2012, in agreement between the authority and the Benha University Studies Center. One of the most important goals of its planning was to address the 19 slums areas at the 2 districts (4 at west district, 15 at east districts) in which more than 780 thousand people live and representing more than 27% of the area (1810 fed.) and with high population densities. Also, the (SUP) aims to solve the dangerous 13 areas problems (under high voltage wires) clarified at table (1) and figure (1).

Table (1): dangerous settlements in Shubhra Alkhema

| No. of Units عدد الوحدات السكنية | Area (Fed.) المساحة(فدان) | Ownership الملكية | Dangerous level درجة الخطورة | Zone Name اسم المنطقة | |
|---|------------------------------|----------------------|------------------------------------|---------------------------------------|----|
| ٢٤٠ | ٤ | Privat | ٣ | Plastic club خلف نادي البلاستيك | ١ |
| ٢٢٥ | ٣,٧٥ | Privat | ٣ | Ibrahim Lotfy ابراهيم لطفى | ٢ |
| ٢٧١ | ٤,٥٢ | Privat | ٣ | Sleem عزبة سليم | ٣ |
| ٤٣٩ | ٧,٣٢ | Privat | ٣ | Saayda عزبة الصعايدة | ٤ |
| ١٩٤ | ٣,٢٣ | Privat | ٣ | Salam city مدينة السلام | ٥ |
| ٣٩٩ | ٦,٦٤ | Privat | ٣ | Alfath الفتح | ٦ |
| ٢١٢ | ٣,٥٤ | Privat | ٣ | Alvilla الفيلا | ٧ |
| ٣٦٠ | ٦ | Privat | ٣ | Bahteem بهتيم | ٨ |
| ٦٤٧ | ١٠,٧٩ | Privat | ٣ | Margoshy عزبة المرجوشي | ٩ |
| ١٨٦ | ٣,١ | Privat | ٣ | Esko مسكن إسكو Housing | ١٠ |
| ٢١٨ | ٣,٦٤ | Privat | ٣ | Arab عزبة العرب | ١١ |
| ٨ | ٠,١٠ | Public | ٢ | Ezbat Rushdy مناطق عزبة رشدي (٢) | ١٢ |
| ٣٢ | ١,٤ | Public | ٢ | Albakry عشش البكري | ١٣ |



Figure (1): Shubra al-Khaymah 13 Dangerous areas.

There was another study for the treatment of slums carried out by the consultant office at Helwan University, which was adopted in 2013 during the period when the studies of the strategic plan for the city were still being implemented. Also, some detailed areas were adopted during this period, such as the Esco area, north-east of the city.

It is worth noting that there are 5 other detailed plans attached to a report that was approved (without approving the five schemes), and despite that, they have been implemented since 2005, and they have continued to be implemented despite the civil society's refusal to implement them due to the presence of uses that are not commensurate with their desires and capabilities (relying on its right to be Use on his land with his consent in accordance with Law 119), in addition to the presence of problems in understanding some technical terms such as the concept of (public services). The (SP) was prepared and approved in 2020, eight years after the beginning of the study. The most important urban goals were to solve the problems of slums, develop

them and raise the efficiency of their vital networks and basic services. In this regard, the following projects were proposed:

- Establishing 75515 new housing units (until the target year 2032).
- Encouraging the occupancy of vacant units, which number up to 95,759 units.
- Replacement and renewal of 3,458 damaged housing units in re-planning areas.
- Packing the slums unplanned areas (19) with 3,316 housing units.
- Improve the urban conditions of existing housing.
- Transfer of highly polluting industrial uses out of the city.
- Establishment of a proposed regional recreational area.
- Developing the existing educational services, raising their efficiency, and intensifying the number of classes in them, if possible, vertically, or horizontally. The total required is to add 55 primary schools, 12 preparatory schools, 5 general secondary schools, and 4 vocational training centers.
- Establishing 10 general hospitals, 4 specialized hospitals, 53 health units and offices, in addition to 24 ambulance centers.
- Social and Cultural Services, Establishment 11 social affairs offices, 3 social clubs, 6 culture palaces, 16 public libraries and 22 children's libraries.
- Services, of
- Sports services: Establishment of 3 youth centers.
- Security Services: to provide land for the establishment of 4 police stations and 18 police points, as well as 10 fire stations in addition to 16 fire stations.
- Communication services (post offices) Providing 7 post offices.

During the preparation of the strategic plan study, which began shortly after the January 25 revolution (which represent the period of urban chaos), there was a great urban activity, whether with build new floors on existing buildings, or new construction in vacant lands (which reached in 2020 the equivalent of 15% of the existing construction), most of which are residential towers that sometimes exceed 12 floors on narrow streets, (their widths sometimes range from 6 to 8 meters).



Figure (2): Changes that occurred in 3 slums area in Shubra al-Khaimah between 2012 until the date of its adoption 2020

Most of these constructions did not have any licenses issued by the districts of the city (Less than 4% from total Buildings), in addition to the establishment of residential buildings by the armed forces and the governorate east of the Ismailia Canal for slum dwellers. The roads and bridges also made a pivotal road linking Ain Shams, El Mataria and El Masala with the ring road to occupy the reclamation lands in which many basic and regional services were proposed to be settled.

Therefore, the proposals to add the necessary services to the city were impractical because most of the vacant lands were lost due to their occupancy in residential buildings, while the population numbers increased, and the number of housing units increased to the degree that

What happened in Shubra al-Khaymah during the study was almost repeated in most of the existing cities, whether the delay in adopting the plans, or the inability of the consultant to distribute the necessary uses to serve the population because shortage of lands allocated for this and far from the ownership of individuals, or the behavior of citizens and individuals to give preference to the private interest over the public well fare, all of this confirms the negative application of (SUP) with its recent tools to the existing cities, and it is necessary to make essential additions and modifications to maximize the benefit from it.

6- The most important problems facing the strategic planning process in Egypt

Through the previous theoretical study and the case study of Shubra El-Kheima, the location of the scheme and Planned cities which followed (SUP) are rarely show positive impact with (SUP). Most of the existing city's cant apply its (SP). There are many problems facing (SUP) implementation in Egypt, here is some of these problems: -

- Inappropriate selection of development partners because most of them need prior training to participate in such tasks and activities, and some participants are interested in his own interest not on public interest
- Problems due to some of provisions of the law, including the signing of uses on land, where the consultant is prohibited to use any private land for any project without the consent of the owner, making it difficult to provide land projects especially non-residential ones.
- The weakness of the state resources to implement various projects, especially utilities and public services, and the unwillingness of owners of private land to participate in the land of many non-residential projects on their land.
- Problems caused by an error in compiling information on urbanization, population, environment, and services, and sometimes the inability of the Consultative Group to manage the planning process.

- The mistrust between the population and state institutions, especially in the field of development.
- Some official statements are illogical and need to be checked and reviewed by other sources, formal or informal, such as the preparation of the population, the borders of the Urban agglomeration, services, and efficiency... etc.
- Sometimes (SP) is not clear to many officials when applied and needs further clarification. It also needs to adopt (SP) for land use with it to clarify the general guiding concepts and facilitate the detailed plans.

Although the strategic plan represents a guiding legal paper to address the urban issues of cities and propose developmental and service projects to provide a suitable environment in all Egyptian citizens in cities (249 cities) and urban areas, the implementation of these schemes were not only in limited ranges and in a few Egyptian cities, as in some cities of Qaliobia and Arish in North Sinai, where detailed plans have been based on the recommendations and studies of (SP) was partially Implemented, for example (1000 lots- project of Build your house). While most of the (SPs) for most Egyptian cities have not been implemented. And because the disadvantages of the (SUP) which weaken its ability to achieve its objectives in general, and (SP) did not lead to sustainable development through the implementation of the proposed projects or help to turn unplanned areas into planned. It was not only the negatives of (SP), but the delay in issuing it for periods of up to five years because of its dependence on various Egyptian bodies and institutions such as the Ministry of Agriculture and Local Affairs and the Committee of Partners and Defense. There are also reasons to resist those who have a private interest to implement the development projects, especially with the right to choose the type of projects that can be located on their own land.

for supporting (SP) to make applicable urban development plan, Rabid planning (RP) was carried out by the General planning organization (GOPP) in cooperation with the German Ministry and applied to some areas in the province of Assiut, using direct intervention to solve the problems of urban and rural areas, considering the application of the regulations and requirements stipulated by the (SP) in the presence of law and 119 requirements and some quarters [16]. (RP) addresses and

treats the delay in the adoption and issuance of (SP) and is more clear and closer to addressing the urgent problems of the fast-growing city and was the beginning of implementation 2014 and has not shown any positive or negative results yet.

Recently, to make (SUP) (2017-2020) the state make some modification in planning approach and planning types as make the (SUP) only for the upper administrative levels (Government, Region and regional centers in governorates) and they enforce new kind of planning called Urban development plan (UDP) for the city and rural urban communities, the plan that shows the future needs of urban expansion and the economic, social, environmental and urban development projects and plans necessary to achieve sustainable development at the local level within the framework of the future vision of the governorate or Administrative center plan that includes the city or the rural urban community [18]. One of the most important elements that can be achieved by (UDP) is the ability of dealing with unplanned zones as urban upgrading zones which can be upgraded alone or with other zones as new extensions and valuable areas [18].

7- Proposed tools to transform unplanned areas into planned

Two groups of tools were proposed for reinforcing implementation of (SP) on Egyptian cities specially the existing cities.

- ***First: added tools and minor amendments on (SUP).***
 - The presence of trustworthy officials, which is the spark of the start of the draft scheme, the specifications for the development partners selection include the strength of influence, commitment, honesty, integrity, the abundance of supporters, flexibility in the debate, their ability to analyze and effective participation to show opinion to His supporters.
 - Training courses for the participants and introducing them to the importance of (SP), and what are the objectives of their participation with the team and clarify the concept of partnership and the role of each member in the development and exploring of strategic planning and localization of projects, and the importance of delivery of the needs and wishes and opinion of their representatives to the consultant, and to deliver and convinced them with decisions. This

is in addition to consolidating the spirit of cooperation with the team in information Gathering and how to express opinion. The training course also contributes to the consolidation of the principle of the interest of the city and the rejection of any special interest at the expense of the public interest.

- Selecting development partners to be qualified for discussion and opinion (e.g., lawyers), For example, an economic expert representing landlords, investors, demographic expert, or urban planners as a partner responsible for the citizens. There is a legal expert on the local community and a development expert on donors and non- Consultant and officials of the city council and the county.
- The early activation of the role of some institutions and ministries of the state such as agriculture, archeology, state of land use association, roads and bridges and defense, in the presence of the consultation meetings of the city from the beginning, provided that the participants in the adoption of the urban cardoon committee of the estate, it must also find a way to speed up the adoption of approvals from some bodies such as the Armed Forces Operations Commission.
- The approved (SP), which will represent the legal framework, should be as close as possible to the land uses plan, up to the target year, development conditions for areas and buildings must be accurately defined, and the definitions and developmental and land use terms must be easily understood and not ambiguous.

These and other new tools will achieve rapid and fair development in all regions. These treatments and tools will deal with each of the six types described above for how planned and unplanned areas compete for land occupation to help strengthen and strengthen planned areas and reduce opportunities. The seizure of unplanned areas on land, these tools are:

- ***Second: Additional Tools to applied with (SUP) tasks.***

- Providing a technical support team to evaluate (SP) of the city council or planning department in the governorate, they work to cooperate with consultant and planning department technical team and the city (urban planners) As detailed by law 119.

- Training tasks on land management and detailed planning for municipality technical planning department and the city council as well as the housing administration. The training course can be carried out practically through their cooperation in preparing the outline of the pilot project on selected areas of the city which contains most of the issues and problems common to the city.
- It may take advantage of Applying the concept of rapid planning and its application to the urban areas of urgent need, the selection of those areas through the consultant authorized must be agreed by the (GOPP) in cooperation with the province or the city council, during the first phase of planning process.
- Drawing urban map according to their planning situation for determining the planned \ unplanned urban areas at the city level, this begins with studying its growing development, then studying areas characteristics and emergence reasons, and use the tool of SWOT analysis to determine the solution and how to deal with.
- It may also use Urban and territorial planning which primarily aims to realize adequate standards of living and working conditions for all segments of current and future societies, ensure equitable distribution of the costs, opportunities and benefits of urban development and particularly promote social inclusion and cohesion. It's a precondition for a better quality of life and successful globalization processes that respect cultural heritages and cultural diversity. For the recognition of the distinct needs of various groups. It's also providing a spatial framework to protect and manage the natural and built environment of cities and territories, including their biodiversity, land, and natural resources, and to ensure integrated and sustainable development [16].
- Applying (UDP) will give some solution for unplanned areas specially if we give the planning consultant more power to manage and control land use of the land, that will be strong tool to solve unplanned areas problems.
- Using the (planned\ unplanned analytical tool) as it will be applied later in case study (GCR)

These additions and modifications will help strengthen the role of the planner and local authorities in controlling urbanization, increasing the

chance of controlling the planned areas and reducing the chances of competition for unplanned areas of land occupation.

8- Conclusion and results

- most of the unplanned areas appeared, strongly emerged despite the existence (SUP) tools of strict and clear but were rejected by society and rebelled against them for not involved in the planning process (they considered that the planning does not represent them and does not suitable).
- Among the participatory groups, the planning lacks justice and equity and the problem of some of the rebellion against this planning.
- Many involved civil society members in making decisions for (SP) did not have enough experience to clarify their demands, and did not have clear concepts of how to reach or explore (SP), it is necessary to prepare training courses in decision-making and planning process for partners and for local and technical professionals from the city and the governorate, that will result in a developmental plan that push the city for the better,
- Partners should have some experience and technical awareness in sectorial fields as: urban, social, environmental, and economic, which will facilitate the planning process in consultation sessions of the city, and these technical partners can have an effective role in communicating their commissioner's requests and convince them of the decisions reached.
- Accelerate the work of the strategic plan with no loss or deficiency or weakness in any of its components and studies will have a positive impact on the city, and in the case of delayed adoption will be necessary to apply a rapid planning approach to one or some areas to prevent the random and informal, especially areas of the border or adjacent areas.

9- References

- [1]. Ministry of Construction and New Urban Communities - 2008 - Issue 2011- Unified Building Law 119 and its Executive Regulations (In Arabic language).
- [2]. The Institute for Local Government- Understanding the Basics of LAND USE AND PLANNING: Glossary of Land Use and Planning Terms- 2010 - Sacramento, CA 95814.
- [3]. <https://www.ldoceanline.com/dictionary/developed-land> - Accessed 2018
- [4]. Zain al-Abidin Ali Safar - Measuring the underdevelopment of urban areas and methods of evaluating it - Journal of Kirkuk University / for Human Studies Volume VII / Issue 2 / Seventh Year 2012
- [5]. Jelena Živanović Miljković¹, Tijana Crnčević, Igor Marić, LAND USE PLANNING- FOR SUSTAINABLE DEVELOPMENT OF PERI-URBAN ZONES - *SPATIUM International Review* UDC 711.4-13/.14(497.11); No. 28, December 2012.
- [6]. <https://www.lawinsider.com/dictionary/land-under-development-> accessed 2020
- [7]. Ahmed Khaled Allam and others - Regional Planning - Anglo-Egyptian Library – 1990 (In Arabic language).
- [8]. Richard Shearmur, McGill University, what is an urban Structure? The challenges of foreseeing 21st Century Patterns of the Urban Economy, 2013 – from https://www.researchgate.net/publication/297225871_What_is_an_urban_Structure_The_challenges_of_foreseeing_21st_Century_Patterns_of_the_Urban_Economy .
- [9]. 8- The Egyptian Council of Ministers - Information and Decision Support Center - Egypt Vision 2030 – 2014 (In Arabic language).
- [10]. 9- King Saud University - 1434 AH - Traditional and Strategic Urban Planning.
- [11]. 10- The General Authority for Urban Planning GOPP - Work guide for preparing the strategic plan - 2014-2015 (In Arabic language).
- [12]. 11- Executive Regulations of the System of Expropriation of Real Estate for the Public Benefit and Temporary Seizure of Real Estate, Saudi Council of Ministers - 1437 AH - Resolution (54) (In Arabic language).
- [13]. 12- UNESCO - World Heritage Center - Urban Revival Project for Historic Cairo - Management of World Heritage Sites in the Republic of Egypt – 2012 (In Arabic language).
- [14]. David Sims -Contribution by Marion Sejoume and Monika El Shorbagi- The case of Cairo, Egypt - Global Report on Human Settlements – 2003.
- [15]. United Nations Human Settlements Programme- International Guidelines on Urban and Territorial Planning- UN-Habitat- Nairobi – 2015.
- [16]. Staroměstské náměstí, Praha, Institute for Spatial Development, Jakubské náměstí Brno- PRINCIPLES AND RULES OF URBAN PLANNING COMPOSITION IN EXAMPLES- 2016.

- [17]. Environmental and Resource Management for Highly Dynamic Metropolises- 2016 Rapid Planning- Sustainable Infrastructure,
- [18]. Ministry of Construction and New Urban Communities - Amendments to the Unified Building Law 119 and its Executive Regulations - 2017-2020. <https://www.almasryalyoum.com/news/details/1219117> accessed Mars 2021- (In Arabic language).
- [19]. the consulting office at Helwan University in cooperation with the city council and the GOPP – 2007- The project of inventorying and packing slums on the outskirts of Greater Cairo (Shubra Al-Khaimah city) (In Arabic language).
- [20]. Qalyubia Governorate - Studies Center, Benha University in cooperation with the GOPP - 2012 / 2020- The strategic plan project for the city of Shubra Al-Khaimah (In Arabic language).
- [21]. Slum Development Fund (guaranteeing safe residential areas), Presidency of the Council of Ministers- 2013- Project of inventory and classification of unsafe areas in Qalyubia Governorate.
- [22]. SolimanM. Ahmed,2018- Strategic planning of the Egyptian city between theory and practice- Journal of Engineering Sciences (JES) Faculty of Engineering Assiut University - Volume ٤٦, Issue ٤ -JUL 2018 (In Arabic language).

دور التخطيط الاستراتيجي في التنافس العمراني المكاني ما بين المناطق المخططة والمناطق غير المخططة داخل المناطق الحضرية من اقليم القاهرة الكبرى.

الاستعمالات تتنافس وتتصارع فيما بينها لكي تسيطر على مساحات الاراضي المختلفة داخل المدينة، ففي بعض الاحيان نجد ان الاستعمالات الخدمية والاستثمارية تسيطر على مراكز المدن وعلى المناطق التي تزيد قيمتها نتيجة لامكانية الوصول، في حين ان الاستعمالات السكنية تسيطر على مناطق اخرى، وكذلك تبحث الاستعمالات الصناعية عن المناطق ذات القيمة الاقل خاصة ما يتناسب منها بينيا ومكانيا. ويوجد هناك تنافس من نوع اخر حيث يمكن ان يكون هناك سيطرة للمناطق المخططة على موقع ما في حين تحتل بعض المناطق السكنية غير المخططة لمناطق اخرى محيطة بها، فهي تتنافس ايضا لاحتلال المواقع. ومنذ تطبيق التخطيط الاستراتيجي في مصر عام ٢٠٠٨ لم يظهر أثر واضح على دور للتخطيط الاستراتيجي في منع المناطق غير المخططة من احتلال للاراضي الفضاء او تحويل المخطط منها الى مناطق غير مخططة، وكذلك عدم القدرة على تحويل المناطق غير المخططة الى مخططة لعدم وجود امكانية للضغط على اصحاب الملكيات الخاصة.

الهدف من البحث: يهدف البحث إلى إنشاء خريطة توضح التفاعل بين المناطق الحضرية المخططة وغير المخططة داخل المدينة، وتدعيم وتعزيز بعض أدوات التخطيط الاستراتيجي التي تساهم في حل الصراع بين المناطق المخططة وغير المخططة بهدف منع سيطرة المناطق غير المخططة على اراضي المدن.

المنهجية: يعتمد هذا البحث على (دراسة وتحليل مدينة شبرا الخيمة كاحد مدن المنطقة الحضرية لمنطقة القاهرة الكبرى - مصر) كدراسة حالة لتطبيق المنهجية.

كلمات مفتاحية: منهج التخطيط الاستراتيجي- المناطق المخطط والغير مخططة – الاستعمالات المتنافسة.