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**Abstract :**

*The development and scientific and technical progress :and the twenty - one century has made suggestion and solutions appropriate to many problems That cities suffer from ; especially our traditional cities and to improve the quality and and quality of human life ; as well as to contribute to intellectual and cultural development to reach an integrated and solid infrastructure ;by working to adapt and develop local and digital especially smart ones ;to support sustainable development and this is what aims to study this research paper by addressing the topic of smart cities and its role in achieving and embodying the sustainable development goals by some mechanisms to achieve this goal . addressing the topic of smart cities and their role in achieving and embodying the goals of sustainable development through some mechanisms to achieve this goal.*

**Keywords:** City, Memory cities, Sustainable development, Intelligence.

**الملخص :**

إن التطور و التقدم العلمي و التقني الذي واكب قرن الواحد و العشرين قدم العديد من الاقتراحات و الحلول الملائمة للكثير من المشكلات التي تعاني منها المدن لاسيما مدننا التقليدية ، و لتحسين نوعية حياة الإنسان و جودتها و كذلك للمساهمة في التطوير الفكري و الثقافي للوصول إلى بنية تحتية متكاملة و صلبة ، وهذا من خلال العمل على تكيف و تنمية المناطق المحلية و الحضرية و تسخير كافة الوسائل التكنولوجية و المعلوماتية و كذلك الاتصالية و الرقمية خاصة الذكية منها لتدعيم التنمية المستدامة وهذا ما تهدف إلى دراسته هذه الورقة البحثية من خلال معالجة موضوع المدن الذكية و دورها في تحقيق وتجسيد اهداف التنمية المستدامة وذلك بواسطة بعض الآليات لتحقيق هذا الهدف .

**الكلمات المفتاحية :** المدينة ، المدينة الذكية ، التنمية ، التنمية المستدامة ، الذكاء.

## **The Introduction**

The technological development witnessed in the twenty-first century is considered the emergence of many modern technologies that changed the method and way of life a challenge that it is very large on all societies ; obliging them to enter the world of numbers and technologies to generates the emergence of an new pattern of societies that depend on their work on digital knowledge ; the latter contributed to building cities completely different from traditional cities .

Accordingly; the term city has evolved with the development of the technological that occurred so that many names appeared to it some of which were called digital cities and other names and their advantages are manifested in being characterized by a set of characteristics such as creativity ; innovation and ability to address crises and problems.

Perhaps the most important feature of smart cities is that they take into account the requirements of sustainable because they work to preserve naturel resources as well as the capabilities of future generations ; and that with the aim of converting cities into more intelligent living environments through the application of mechanisms in some areas such as energy ; renewable energies life and waste and therefore we ask the following question :

To what extent the smart cities contributed to achieving the ways of sustainable development?

**Study objectives:** The current study aims to achieve a set of objectives, which we will highlight as follows:

- Learn about smart cities and the most important concepts related to them
- -Identifying the characteristics of smart cities, their most important elements and advantages
- -Demonstrating the ability of smart cities to serve current and future generations
- -Describe the most important challenges facing smart cities in achieving sustainable development..
- Clarifying the relationship between smart cities and sustainable development.

### **Importance of the study:**

The importance of this study stems from the importance of smart cities in their ability to achieve sustainable development, as they work to reconcile most of the pillars, whether social, cultural or even environmental, by adopting a system that combines participatory governance and rational management of natural resources in order to meet the needs of individuals.

**Study method:** In order to achieve the aforementioned study objectives, the analytical approach was adopted, which allows us to cover all aspects of the subject and the possibility of reviewing it in a way that enables the researcher to understand the content of smart cities and how they respond to all sustainability requirements and standards.

### **Firstly: Conceptual Framework**

The step of defining concepts in any scientific study is considered one of the most important main steps of scientific research, as it is the gateway that clarifies the topic. And its dimensions and connotations are determined, and the concepts, if they are in their general context, are often There is an agreement among researchers on it or if it carries an interpretation For more than one wish, here it becomes subject in its meaning to the concept that each researcher wants to reach and research.

Since the topic of smart cities and sustainable development is a broad topic that carries more than one meaning, we will address it as follows:

\* **The concept of the city:** Despite the large number of scientists interested in defining the city they did not give a clear definition for it that what applies to the city does not apply to another because it was know for multiple specializations according to the viewpoint of each world ; some of them are interpretation of cities in the light of them binaries that meet between the rural and urban community ; and some of them explained in the light of ecological factors and some of them explained in light of cultural values otherwise we can be defined as follows : it is a product or outcome with ecological interaction issued by the human being and its urban impact on the naturel environment

\***The city Smart:** Smart cities are called virtual cities, digital cities, electronic cities, knowledge cities, etc., but the common name is smart cities.

\* The smart cities is defined as the innovative city that is based on the use of information and communication technologies to improve the quality of life and the efficiency of urban operation and services and ensure to meet the needs of present and future forms in relation to economic ; social and environmental aspects.

### **\* Development:**

Development defines many definition which corresponds to the different reference of definition ; among them that development is a process that aims to raise the level of entry of individuals increase national income and re-distribute total income among individuals society in away that hurts to reduce differences .

Between two sexes .

### **\* Development Sustainable:**

It means providing the individual with the necessary experiences knowledge and trends as well as accustoming him to useful habits; so knowledge and experiences alone are not sufficient so the individual must get used to habits related to the preservation of resources especially not renewable and good income thinking about others around him and thinking about the future of generations (Tee et al., 2020, p. 283)

### **\*Urban development:**

It is the process of developing rural communities into urban communities, and it also refers to the emergence, growth and development of urban communities. Social Ensuring growth Economic And the fair distribution of resources and the preservation and protection of the environment and respect Cultural diversity of the community, ensuring that the requirements of current generations are met without compromising the needs of future generations.

### **\*Intelligence:**

Intelligence can be defined as the ability to use information and transform it into knowledge through use Information Technology and Communications.(Hamed, 2016, p. 55)

### **Second: Sustainable development\* Dimensions and objectives \***

## **1- Dimensions of sustainable development:**

Sustainable development includes three dimensions that are intertwined and interconnected with each other within an interactive framework characterized by precision and rationalization. Each dimension includes sub-systems or elements. These dimensions are represented as follows:

### **-A- Economic Dimension:**

It means Sustainability by achieving continuity this is done by generating high income From replay investment Part of it to allow for replacement Renewal and maintenance of resources And also production Goods And services in the form of Continuous and maintains a certain level of balance that includes the elements Next: Growth Economic Sustainable And a competent head the money and economic justice Providing and satisfying needs Basic.

### **-B- Environmental dimension:**

The idea is Sustainability Environmentalism is about leaving the Earth in good condition for future generations. Keep Man with his activity and performance without drain Natural resources or environmental waste This activity is naturally sustainable and this is achieved by reducing the consumption of natural resources and using fully recyclable materials after Consumption And be acceptable For renewal, and It is assembled without harming the environment. Or take a shower Its resources (Khenshol, 2018, p. 76)

### **-C- Social dimension:**

Focuses on human resource development through interest in health and educational aspects Cultural, Increase the community's ability to overcome poverty and achieve justice Social And luxury. (Buffinch means,2018, p. 21)

## **2- Sustainable Development Goals:**

Below we will try to review examples of the most important sustainable development goals, which are as follows:

- **Water:** Work on ensuring adequate water supply and improve efficiency Use Water in agricultural, industrial, urban and rural development And the ability to secure access to In the area sufficient for domestic use and small-scale farming for the poor majority.

- **the lunch:** It is the ability to raise agricultural productivity and production to achieve security Food in area Regional and export, improving productivity and profits of small-scale agriculture and incorporating An security Food Home and Ensure sustainable use and conservation of land and adequate protection of biological resources, ecosystems and life-support systems.

- **Health:** Sustainability aims Health To increase productivity through preventive health care and improve health and safety in the workplace, and sustainability aims Health Enforce air, water and noise standards to protect human health and ensure primary health care for the poor majority,

**Shelter and services:** Work on Ensuring adequate supply and Efficient use of building resources and systems Transportation, and Ensuring access to suitable housing at the right price, in addition to sanitation and transportation.

-**Income:** Economic sustainability aims to increase economic efficiency and grow employment opportunities in the formal sector and Supporting small projects and creating jobs for the poor and destitute majority in the informal sector,

- **The environment:** **Environmental** sustainability aims to ensure the sustainable use of natural resources and Ideal for lands and forests. (Mashri, 2011, p. 59)

### **Third: Smart cities**

#### **1- Historical foundation and Origin Smart cities:**

The phrase the smart city appeared in the nineties as a fruit of the market restoration strategy as the latter considered the cities as a large possible market if it runs through the media and communication technologies and is considered the prevalence of the phrase and its popularity is a publicity sentence that “**abiam**” company carried out the context of its search for the restoration of the market .

The phrase smart cities was also used at the European conference of the digital city in 1994 and in 1996 the European opened the digital city project that met with modest success then the European authorities adopted mainly the city of “**Amsterdam**” as a digital city followed by the city of “**Holsky**” (Shook, 2017, p. 2034)

Competitiveness in the united states America several attempts to prepare some smart cities have emerged but most of the them took the commercial nature and not the comprehensive civil nature of the city that is why most of the countries have taken the cheek in the smart city as a pattern for the future city ; especially in front of the challenges it know as an acceleration in urban growth and construction and the lack of natural resources so they focused on the three pillars of sustainable development “ economic ; social ; and cultural development “ (Gawas, 2021, p. 6)

## **2- Laws And establishment legislation Cities Smart:**

Algerian cities have experienced a deep and advanced deterioration in their urban framework and appearance .Urban, And the quality of life is declining due to neglect and Indifference Which affected public spaces, the many encroachments on the urban environment, and the excessive waste of the components of the urban and environmental domain (Larouq, 2008, p. 9)

In order for Algerian cities to regain their environmental and aesthetic balance, it was Accreditation Urban improvement policy and providing the appropriate conditions for the transition towards establishing a sustainable city characterized by quality and competitiveness. Gravity, as an introduction To join In a hurry Sustainable urban development where Go Project towards formulating a city policy take For away Consideration Preserving the environment as a principle of its principles during He didn't come and In the city's guiding law 06/06 and Law 02/08 relating to the conditions for establishing new cities with the aim of achieving sustainable urban development, the concept of sustainable development was included in the city's policy and the cities were qualified to be smart cities in the future (Gawas,2021 ,S10)

These cities are classified as major constructions aimed at developing the country's economy, especially in terms of urban development. Scientific and technological, And it was considered These constructions are an opportunity to transfer technology from abroad to Algeria. And a decisive stage In evolution Strategic For the country.

## **2- The importance of cities Smart:**

### **3- Smart cities goals:**

\* converting cities into more sustainable intelligent ; solid and resistant living environments reducing gas emission and achieving what is suitable for for the smart environment that relates to smart applications for environmental management and includes renewable smart energy among the goals is also to increase sustainability in order to preserve the environment for future generation ; improve citizen life increase economic growth ; and increase the need to use information and communication technologies as stimulating factors to provide the three sustainable development pillars of economic development ; social integration and environmental protection s (.QYadom , Mamen, 2019, p. 168)

\* some also see that the smart city aims to achieve three main goals technical goals ; social goals and environmental goals ;the technical goals aims to consider that the smart city is a digital and virtual city that it is a multi -layer digital representation for the future city as a system to operate the smart community and urban administration as for the social goals it is that the smart city is considered a creative cognitive focusing on cognitive activities and has a high percentage of education and creativity as it mainly

depends on the creativity of individuals as for the last goal of the environmental goal the smart city where energy and renewable energy distribution net works are available ( maamen ;2019; 168)

### **4- Characteristics of the smart city:**

The characteristics of smart cities are related Using Information technology techniques and these characteristics are: What does it mean:

**\*the environment Smart:** It represents the urban nature as it is the physical environment of the city through which all activities are carried out.

**\* Smart governance:** It is the development of the government work system .Using Electronic means of providing t services. The most important applications of e-government are: in :(Judge, fortune teller,2019,p2)

1- Providing information. making available all activities related to the city's residents.

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2-Communications It is the ability to exchange information and communicate between the population and governance.

3- Electronic transactions and performing services Electronically

**\*Economy Smart:** and he is Economy The cheerleader Innovation Leader ship, productivity and developing the spirit of competition for excellent production by Use The latest technological equipment and software (Al-Zawi, 2019, p. 210)

**\* Smart living:** It is represented in the quality of life, represented in health care and access to all types of services .Social By all categories, tourism, urban space management, culture and entertainment (Al-Yousef, 2018, p. 20)

**Table (1) shows the characteristics of smart cities**

|                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Smart Technologie                                                                                                                                                                                                       | Economy Smart                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>*Local accessibility</li> <li>*International access</li> <li>*Providing infrastructure</li> <li>* Innovative transportation system and sustainable security</li> </ul>           | <ul style="list-style-type: none"> <li>*the spirit Innovative</li> <li>* Entrepreneur ship</li> <li>*Image Economic and business relations</li> <li>*yield</li> <li>*Labor market flexibility and international inclusion</li> <li>*Ability to transforme</li> </ul>                              |
| Smart Environnent                                                                                                                                                                                                       | <b>smart people</b>                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>*affinity To wards normal conditions</li> <li>* Pollution</li> <li>* Environnemental protection</li> <li>* Substaminale Resource management</li> </ul>                           | <ul style="list-style-type: none"> <li>*Qualification level</li> <li>*affinity Towards lifelong learning</li> <li>* Pluralism Social And ethnicity</li> <li>* Flexibility And creativity</li> <li>* Participation in public life</li> <li>* Plural list of customs and open-mindedness</li> </ul> |
| Smart environnement                                                                                                                                                                                                     | <b>Smart Gouvernance</b>                                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>* Cultural Facilities And éducationnel</li> <li>* Health statues</li> <li>* Individual safety</li> <li>* Quality of accommodation And drought Tourist Cohésion Social</li> </ul> | <ul style="list-style-type: none"> <li>*Participation in take décision</li> <li>* Public services And social</li> <li>* Transparent gouvernance</li> <li>*StrategyTand political views</li> </ul>                                                                                                 |

### **5- The mission of cities Smart:**

The main goal of a smart city is to provide a happy and comfortable life for citizens. Its mission is to work on developing...And implementation accurate development plan And successful Ensures improved quality of life For citizens,

In addition, it stimulates business institutions .For investment And generate a sustainable urban environment for living The rich.

As You can't A smart city can be a goal or objective that must be achieved, and reaching a smart city as a result of development is an achievement in itself, in order to strive to achieve it. This term may be used to refer to the method of work followed and to the extent of progress in developing the city, which in turn testifies to the extent of the growth of intelligence in the city (Hareer Ahmed, 2021, p. 11)

### **6- Elements of smart cities:**

There are four basic elements in a smart city that are necessary and general as follows:

\*Usage Effective infrastructure networks to improve Economy And the effectiveness of policies to enable urban development and Social And cultural, as these infrastructures include all types and categories .Don't take revenge On those related to the technological perspective such as Communications And broadband before it goes beyond the physical structures and even the logical networks.

\* Provides vision and strategy To reach a competitive port and Benefit Opportunities to increase Prosperity Local and competitive and is preparing and Accreditation A vision for a smart city and its mission is a source of motivation for policy formulation and Strategy which is being Approval In the process of transforming the city into a smart city.

\* Providing and supporting a multi-stakeholder, multi-sectoral, and diverse urban perspective towards competitiveness and Sustainability This necessary participatory policy must be effective and have tangible results to ensure the city's ability to successfully transform into a smart city.

\* Ability to Sustainability Continuing efforts to adapt and Innovation And use New ways to save capital Social A developer and sustainable urban development, despite possibility This trend can be interpreted from multiple perspectives, but the key words in it express a determination to implement the opposite of efforts. The effort These words are adaptation and Innovation And capital Social and urban development

### **Fourth: Challenges and obstacles of smart cities**

With the increase conviction The feasibility and importance of the opportunities it provides Innovation In smart cities ,His reflection Positive impact on various aspects of individual and collective life alike and pushing the city towards global leadership to become a global investment center and a pole of discovery and innovation With distinction With the flow of capital that this allows ,boom For the economy And the increasing demand for labor, the establishment of this type of cities Facing Many challenges during the embodiment phase, i.e. the phase of completing the smart infrastructure, most notably the challenge of Economic(Makhlouf, 2020, p. 41)

**\*The challenge of financing and infrastructure:** Large urban areas that are already on their way to becoming smart cities face the challenge of needing huge funding in order to replacing Decades-old infrastructure such as underground cables, steam pipelines and transportation tunnels is being replaced by another infrastructure based on technology products.

As smart cities require a solid foundation to thrive, the implementation of infrastructure that is complex and expensive depends on stabilizing High speed internet, and on technologies Sensing Such as models to collect and analyze information in an attempt to improve the quality of life of the population.

It is therefore necessary to allocate financial resources and government support in order to bring about successful infrastructure change, by ensuring the availability of long-term and sustainable investments that encourage...Exploitation Effective resource optimization.

**\*Lack of experienced professionals and technicians:** The most pressing challenge that smart cities may face is the lack or absence of experts, professionals and technicians who prepare a strategy to achieve the smart city project, as it falls on them to determine the areas of implementation of technologies and the operation of these tools.

**\* Community engagement challenge:** Once the smart city project is embodied on the ground, and this city actually exists and flourishes, it needs smart citizens who participate, interact and benefit from new technologies by integrating with any new technical project at the city level, so that they can participate in all aspects of smart life.

Therefore, to meet this challenge, part of the smart city management process must include educating society as a whole about the benefits of using technology, which is the key to the success of these cities.

**\*Challenge of the right to cultural privacy:** It may help. Camera Installed on every street corner, they deter crime, but they can also create fear and anxiety among citizens through the amount of data collected from all the devices .Sensing The smart technology that people connect to every day, with the problem of how smart is the technology protected if hackers canstorming it And tampering with the symptoms and privacy of the population in the event of not providing network security. To confront this multi-dimensional challenge, it is necessary to develop and implement privacy and confidentiality protection policies in parallel with strengthening smart infrastructures with modern and advanced protection systems (Makhlouf,2020 ,pp43 -44 )

**\* Urban and urban planning challenge:**The mechanisms and tools of urban and urban planning have multiplied, including, for example, the national plan for regional development, the regional plan for the program region, the master plans for the development of the spaces of major cities, the master plan for development and construction, the land use plan, and others. However, they have remained limited in their objectives .Classic And Represented in achieving urban balance, dividing urban properties and anticipating the future, as these plans neglected to detail the frameworks and horizons .Digitization Which qualifies the city To open up On modern techniques, She had enough Most of them By pointing And to establish networks For Communications Wired and wireless only without specifying it Electronic measures And Spread in the digital space, and this is inconsistent with the most important components of urban planning, which is based on the principal of flexibility. (Guas,2021,S16)

**\* Technological challenges:**

Technology is the foundation of the smart city where Use Information Technology and Communications In the development of life and It is considered Having a good infrastructure and applications is essential, but not sufficient to achieve a smart city. Because without a real desire to participate and cooperate between government institutions, the private sector, voluntary organizations, schools and citizens No way Smart city.

Smart cities are also supported by several types of technologies including connected physical devices .Using network The Internet Information technology and Communications Which provides the software infrastructure for these devices and the geographic information system, which is a computer-based system that collects, maintains, stores, analyzes, outputs and distributes spatial data and information. (Dalati, 2021, p. 6)

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\*The most important challenges facing smart cities in achieving sustainable development are as follows:

#### **\* Administrative challenges and Organizational :**

Smart governance is the core of smart city initiatives and is a delicate and sensitive matter because it basically require s: Governance a policy that has the ability to operate at three different levels within the city for its citizens and to coordinate and govern in harmony with the central government.

#### **\* Challenges Economic:**

Economy It is the main driver of smart city initiatives and with a high degree of competitiveness .Economic The city thus includes one of the characteristics of smart cities, and is known as :Economy Smart as it includes factors that achieve competitiveness Economic like Innovation Entrepreneur ship, brands, productivity, flexibility of the labor market, as well as integration between the local and global markets for change and development. Economic.

#### **2- Obstacles to smart cities:** It is represented in What does it mean:

| Environnemental Level                                                                                                                                                | Level Social                                                                                                                                                              | Technical level                                                                                                                                                                                                                                                                                                        | Administrative level                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>* Air pollution and Emissions The invader</li> <li>* Water resources allocated per person</li> <li>* Security Food</li> </ul> | <ul style="list-style-type: none"> <li>*Migration from rural to urban areas</li> <li>* High unemployment, especially among graduates of academic institutions.</li> </ul> | <ul style="list-style-type: none"> <li>* Data availability</li> <li>*weaknesses pread E-business and merchants</li> <li>*Lack of skills and competencies</li> <li>* Weakness of electronic services in the public sector</li> <li>* Lack of community participation</li> <li>* Technological infrastructure</li> </ul> | <ul style="list-style-type: none"> <li>*Lack of clear policy and vision</li> <li>* Legal frameworks are not appropriate.</li> <li>* Protection of privacy and confidentiality</li> <li>* Resistance to change</li> <li>* Lack of funding</li> <li>*Increasing competition Economic Globally</li> </ul> |

**Fifth: Smart cities are a scientific approach to serving sustainable development goals.**

**\*1\* The intersection between the concepts of smart cities and sustainable development:**

| sustainable development                                                                                                                                                                                                                                                                                                                                    | Smart Cities                                                                                                                                                                                                                                        |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs.                                                                                                                                                                                                     | A city that innovates through new information and communication technologies to improve various issues related to urban demographic growth.                                                                                                         | <b>Définition</b> |
| <ul style="list-style-type: none"> <li>- Promoting social and economic development while protecting the environment.</li> <li>- Maintaining the environment</li> <li>- Ensuring the health and safety of communities</li> <li>- Ensure social justice</li> <li>- Aims at economic efficiency and creating an innovative and prosperous economy.</li> </ul> | Improving the quality of life of citizens and contributing to sustainable development, particularly through improving urban areas and data processing and analysis.                                                                                 | <b>Objectives</b> |
| <ul style="list-style-type: none"> <li>- An integrated approach to sustainable development</li> <li>- Develop a policy plan</li> <li>- Develop a business plan</li> <li>- Implementation of procedures</li> <li>- Follow-up</li> </ul>                                                                                                                     | <ul style="list-style-type: none"> <li>- Strategic implementation</li> <li>And</li> <li>- Develop a business plan</li> <li>- Implementation of procedures</li> <li>- Follow-up</li> <li>- New information and communication technologies</li> </ul> | <b>Tracks</b>     |
| Cooperative: Working in partnership with public and private institutions and companies                                                                                                                                                                                                                                                                     | Participatory: Involving citizens, companies and organizations in the process of preparing and implementing the project.                                                                                                                            | <b>Style</b>      |

**Source :** (Belaribi, Das, p. 120)

By observing the scientific approach shown in the previous table and what it included: Elements, it is clear that smart cities and sustainable development intersect at many points. Both concepts aim to achieve economic growth and economic efficiency in a way that preserves the environment and the integrity of the ecosystem, thus achieving a better life for citizens and social justice. Here we notice a great intersection between the environmental, economic and social

dimensions, which are dimensions of sustainable development and smart cities. And At the same time, both concepts need another dimension, which is a very important dimension, which is the governance dimension, even if the method of embodiment differs. Smart cities depend on partnership, and sustainable development depends on cooperation, and both carry within them the same meaning, which is cooperation and participation between all actors, whether national, local or global, in embodying and implementing them.

It is clear from this that smart cities are a tool for achieving sustainable development through their use of new information and communication technologies to achieve sustainable urban development.

## **\*2\* Smart city tools and technologies in achieving sustainable development:**

### **\* Smart water:**

The concept of "smart water" or smart management of water networks refers to the existence of an infrastructure for managing drinking water and wastewater that ensures the effective management of water and the energy used to transport it. The water network is a set of solutions and systems that allow water network operators to monitor and diagnose problems, set priorities, manage maintenance operations and use data continuously and remotely. The goal is to improve the performance of wastewater and drinking water services while improving energy efficiency and preserving water resources distributed to consumers. (Belarbi, D.S., p. 120)

### **\* Smart energy:**

Smart technology can reduce emissions by 10 to 15 percent. Buildings that rely on smart technology can reduce gas emissions by 3 percent. Some applications can save energy that will improve air quality, such as installing air quality sensors. Although they do not automatically address the causes of pollution, they can identify sources and save time. For example, Beijing has reduced airborne pollutants by about 20 percent in less than a year by closely tracking pollution sources.

The main goal of using the smart grid, such as electricity, is to generate, transmit and distribute electricity more efficiently and effectively. (Hareer, 2020, p. 58)

### **\* Smart transportation:**

Sustainable transport is the main driver of growth and economic integration while respecting the environment at the same time, without forgetting its contribution to facilitating the adaptation of cities between their urban and rural centers free of carbon while taking into account And Safety and environmental security, as part of the international and local efforts of wise governments to achieve cities with smart transportation networks. The increase in air pollution levels due to traffic congestion and excessive use of private transportation has

led to a rethinking of how to find new ways to ensure health and environmental safety in the urban environment. (Gawas, 2021, p. 13)

### **3\* The relationship between sustainable cities and smart cities:**

The relationship between smart cities and sustainable cities is a very close and important relationship, as smart cities can contribute to establishing the principles of sustainability in the design and operation process. Through the following table, we will try to explain the most important connections between them:

**Table( No. 2) represents the relationship between smart cities and sustainable cities.**

| <b>The relationship between sustainability and smart cities</b>                                                                                                                                                                                                                                                                                                                                        | <b>Features</b>                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| The smart economy is based on the exchange of data and information across various communication networks, as it provides many applications that contribute to the development of various economic activities, which helps to reach the most appropriate ways to preserve basic resources and develop them in ways that maintain their continuity and then sustainability.                              | <b>Economy</b>                    |
| And it is the community An educated person who supports technological innovation and can come up with innovations that benefit society and provide its current energies for the future in an attempt to maintain the sustainability of available resources.                                                                                                                                            | <b>the society</b>                |
| The main goal of the green city is to reach clean, sustainable energy that contributes to the development of the city and ensures its sustainability, which is what the application has produced. Information technology in the field of energy and access to new sustainable resources. These applications are considered one of the most important components of sustainable cities.                 | <b>Infrastructure</b>             |
| Good urban governance and community participation are among the most important requirements for sustainable urban planning, therefore the information city is the appropriate approach through the application of electronic management methods.                                                                                                                                                       | <b>Gouvernance and Management</b> |
| Smart city is the right approach through the possibilities it provides. For its administrative and planning devices such as remote sensing, geographic information systems, and other programs and tools that help in good planning and making the right decision at the right time, which contributes to preserving and developing it according to the concepts of sustainability .And Environmental. | <b>Planning and environnement</b> |
| Live lihood And Smart is the result of all the previous characteristics and it is life in smart ways to preserve the natural environment and ensure its continuity for future generations.                                                                                                                                                                                                             | <b>Living</b>                     |

**Source:(Al-Zawi, Al-Ahdab, 2019, p. 216)**

### **Conclusion:**

What can be concluded is that the shift towards smart cities is more than a necessity ; especially with the acceleration of the frequency of urbanization and accelerated construction and the negative effects of the traditional city therefore the idea of establishing smart cities is a basic and pivotal idea that embodies the images of human intelligence in dealing with the urban environment as well as to draw urban features that reflect the development of human society and meet all concepts of sustainability through the infrastructure of communications that are basic pillar of these cities and digital transition is the basic pillar of its engineering in order to improve the quality of life efficiency of processes and urban services .

### **Recommendations:**

Working on integrating the idea of smart cities or smart neighborhoods into urban planning processes\*

\*Working on developing a highly efficient electronic structure that maintains security. User privacy

\* Re-adapting urban planning and development tools to digital developments and making them more flexible and openness on Investment On the digital side.

\* Working to reduce the costs associated with establishing smart cities.

\* Intensifying efforts The effort By specialists through the development of research centers in various fields.

\*Accreditation On the principle of partnership through the involvement of all regional groups (state and municipality) in the smart cities project.

\* Working on re-adapting the legal system for urban planning and linking it to information technology systems.

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