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SMART CITY: A CONTEMPORARY APPROACH TO INFRASTRUCTURE DEVELOPMENT AS AN INTEGRAL PART OF SUSTAINABLE DEVELOPMENT STRATEGY

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Abstract: *The emergence and intensive development of new technologies is influencing the transformation of the paradigm of global, national, and regional economies. The intensive development of radically new technologies, especially Information and Communication Technologies (ICT) as well as the emergence of the Industry 4.0 concept, accelerated the digital transformation of the economy, public sector, and local government, but also initiated the creation and further development of the Smart City concept. With this concept, cities and regions are being transformed in the direction of achieving greater efficiency of local government, higher quality of life, reduction of energy consumption as well as reduction of the negative impact of numerous actors on the environment. The Smart City concept today represents the dominant direction of urban development, so initiatives and individual projects in the mentioned domain are increasing. These trends have led the authors of this paper to place a special focus on analyzing the role and importance of critical infrastructure development necessary for* *the further development of the Smart City concept as an integrated part of the sustainable development strategy.*

Keywords: *Smart City, sustainable development, new technologies, strategy, strategic transformation, infrastructure*

1. INTRODUCTION

In the introductory part, and to determine the meaning, relevance, and complexity of this topic, it is necessary to define the concept of sustainable development, the concepts of infrastructure and critical infrastructure, as well as the basic meaning of the term "Smart City".

The first term in this paper, which needs to be defined more closely, refers to the concept of sustainable development. "Sustainable Development," according to the United Nations, refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987, p. 39). According to the Government of the Republic of Serbia, i.e. as specified in the National Strategy for Sustainable Development, Sustainable Development, i.e. "Long-term concept of sustainable development implies constant economic growth which in addition to economic efficiency, technological progress, cleaner technologies, innovation of society and socially responsible business poverty, better long-term use of resources, improvement of health conditions and quality of life and reduction of pollution to the level that environmental factors can withstand, prevention of new pollution and preservation of biodiversity "(Government of the Republic of Serbia, National Strategy for Sustainable Development, p.1). According to numerous authors, such as Cooper & Vargas, 2004; Petrovic et al. 2012, p. 5-14; Ilić, 2018, p. 183, the basic principles of sustainable development include the following interrelated segments:

- *Ecological and economic integration* - economic development and environmental protection are integrated into planning and implementation processes;
- *Environmental protection* - more efficient exploitation of resources and application of other measures aimed at improving environmental protection;
- *Fairness* - a commitment to meeting moral and ethical norms and focus on improving the community;
- *Care for future generations* - care for the impact of current activities on future generations;

- *Quality of life* - improving people's health, education, and lifestyle;
- *Collective participation* - the development of people's awareness that sustainable development requires the participation of all stakeholders in society.

It is very important to point out that when adopting development strategies at both macro and micro level, the available resources, competencies, long-term goals, increasing opportunities of new technologies such as Artificial Intelligence and the Internet of Things must be taken into account (Ilić&Marković, 2016, pp.76-77), but also established principles and principles of sustainable development.

The other two terms that need to be explained in more detail in the introduction part of this paper refer to the terms "infrastructure" and "critical infrastructure". "Infrastructure" most broadly represents the constituent, i.e. integral parts of the system without which the system as a whole would not be able to function properly. In a narrower sense, the term infrastructure refers to the network of resources, i.e. "all built facilities and components of a technical nature that enable the social, political, economic and economic functioning of a society (Diaz, 2017)." Based on the notion of infrastructure, the notion of critical infrastructure is derived. "Critical infrastructure is property and services, a system or part of it that is necessary for the maintenance of key social functions, health, security, economic or social well-being, and whose disruption or destruction would have a significant impact on the functioning of the state" (Paragraph, 2018). Critical infrastructure today is considered to be the national infrastructure without which a modern state could not exist or function (Forcepoint, 2019). For example, the United States National Security Agency includes the following sectors in critical infrastructure: chemical; commercial; telecommunications sector; manufacturing sector (production of vital goods); dams; dedicated industry; energy; financial sector; agriculture, food production, and processing; government institutions; health care sector; information technology sector; nuclear energy management sector (nuclear reactors, materials, and nuclear waste); transport sector; water supply and wastewater treatment (Forcepoint, 2019).

The fourth term, which needs to be defined more closely in the introduction part of the paper, refers to the term Smart City. Most cities are defined as "classic cities" that operate according to different, but so far established principles, with more or less developed infrastructure. The moment a "classic city" reaches a certain level of excellence in certain areas according to the requirements of the Smart City concept, it can carry the epithet "Smart City". Thus, the city becomes a "Smart City" by introducing certain technical, organizational, and other measures aimed at harmonizing with the development goals and strategy of sustainable development (Ilić et al., 2020). Smart City is a term that is increasingly used to determine in one word the application of a wide range of technologies and solutions that support the sustainable development of urban units (Ilić et al., 2020).

Considering that this is a relatively new and extremely complex concept in the scientific and professional literature, there is still no single definition. This statement has just been stated, but also the growing importance of the Smart City concept in the direction of implementing a sustainable development strategy and initiated the authors of this paper to present several of the most current interpretations of this concept in the text (Table 1).

Table 1 Different approaches to determining the concept and basics of the Smart City concept

Author&Institution	**The concept and basics of the Smart City concept**
Nam & Pardo	Smart City represents the organic link between the technological, human, and institutional components in cities.
Giffinger	Smart City is a concept that combines the following areas: smart living; smart people; smart governance, smart economy, smart environment, and smart mobility system.
Barcelona City Hall, Amsterdam City Hall	Smart City is a concept that combines several innovative technologies capable of creating a "self-sustaining and greener city".
Kourtit	In addition to the use of Information and Communication Technologies (ICT), Smart City also refers to the application of solutions from the knowledge economy within the city region.
Washburn	Smart City represents the exploitation of smart technologies in critical infrastructure, components, and city services including administration, education, public safety, health, and public health as well as utility services in a smart and connected way. In this way, Smart City can more powerfully integrate system components.
Caragliu	Smart City is a city that invests in people and social capital as well as in classic and modern ICT infrastructure to improve the quality of life and sustainable development.

Robert Hall	Smart City is a city that integrates all critical infrastructure including roads, bridges, tunnels, railways, subways, airfields, ports, communications, water supply, electricity, heating intending to optimize resource use while preventing the maintenance and monitoring safety levels. This vision of the Smart City concept includes monitoring and improving the quality of life of citizens.
Michi Kohno	Smart City is a "process" that we use to solve the problems of sustainable development at the regional, national, and global levels.
Thuzar	The Smart City of the Future is a city that is based on sustainable development and in which all citizens can live well. In these cities, human capital, as well as traditional and modern infrastructure, but also the management of natural and other resources is a way to achieve social, political, economic, and sustainable development goals.

Source: adapted by the author based on the literature Albino, V., Berardi U. &Dangelico, R.M. Smart cities: definitions, dimensions, and performance (online); Abbas, R. A. (2017), Comparison of Smart City Indicators for three top ten US cities, master thesis. Nam, T., Pardo, T. (2011). Conceptualizing smart city with dimensions of technology, people, and institutions, p. 282-291; Ilić, D., Marković, B. &Krasulja, N. (2020). Smart City: A contemporary concept of urban sustainable development, Ecoforum, Romania, Vol.9, Issue 1 (21) 2020.

2. SMART CITY CONCEPT AS THE BASIS OF SUSTAINABLE DEVELOPMENT STRATEGY

Considering that the Smart City concept is based on the application of a wide range of technologies that promote sustainable development of urban units through the management of "smart urban subsystems such as energy, water, transport, public safety, citizen services, city government, health, education, etc. "(Geospatialword, 2019), it can be stated that the concept itself is subject to the theory of complex systems. According to the stated theory, "a complex system consists of a large number of elements that are strongly interconnected and interacting, but also processes and agents whose understanding requires the development and use of new scientific methods and tools, nonlinear models, outside the equilibrium description of the system. and computer simulations "(Herbert, 1996, pp.183-184)". Herbert A. Simon

(1996, pp. 183-184) also views a complex system as "a system consisting of a large number of components that have intense interrelationships, and that the behavior of each component depends on the behavior of the other components of the system."

In the domain of analysis, the complexity of the system is important to emphasize its special feature called "emergence". Emergence is a concept that talks about how new levels of an organization are formed by assembling elements of the system (by merging elements due to connection, a new entity of a higher level of organization appears (emerges)), (Ladyman et al. 2011, p.8). If within a set the elements begin to connect with relations and act as a single whole, then we have the emergence of a new entity. For example, a car is not the same as the set of parts from which it originated because it represents a single entity of a higher level of organization. Also, a living organism is an example of a new level of organization of living cells (organization at the cellular level).

Complex systems, which include systems according to the Smart City concept (Pichler, 2017, p. 1), are becoming increasingly important in both natural and social sciences, and in a simplified way are based on the following determinants (Ladyman et al. 2011; Blignaut, 2018):

- Complex systems are adaptive (they can be organized and reorganized without the influence of an external agent);
- They consist of a large number of parts (elements);
- Many parts are distributed without centralized control;
- A local organization that connects with other local organizations can create a new phenomenon (entity or element);
- New entities are connected and organized into a new entity of a higher level of organization (this pattern is repeated);
- All elements of the system affect each other;
- It is not possible to completely isolate one level of organization, component or reduce the whole to one level (this is the primary source of complexity);
- A large number of levels of organization of elements and emerging entities;
- Self-organization of elements;

- The emergence of a new whole at a higher level of the organization - the emergence of emergencies;
- Nonlinearity, (1 + 1 ≠ 2, nonlinearity means that the combined effect of all parts is greater than the sum of individual parts (synergy);
- Complex systems have the possibility of phase change;
- The high sensitivity of complex systems to initial conditions;
- Complex systems are also defined by the connectivity of elements because the interactions between system elements are defined through the density and level of connectivity of system components, and the nature of these connections determines the properties of the whole.

In the direction of further analysis of the Smart City concept, but also its significant role in the process of implementing sustainable development, it is necessary to determine its constituent elements. Considering that this is a relatively new and extremely complex concept in the scientific and professional literature, there is still no single position on the constituent elements, but the most common approach, is shown in the following figure:

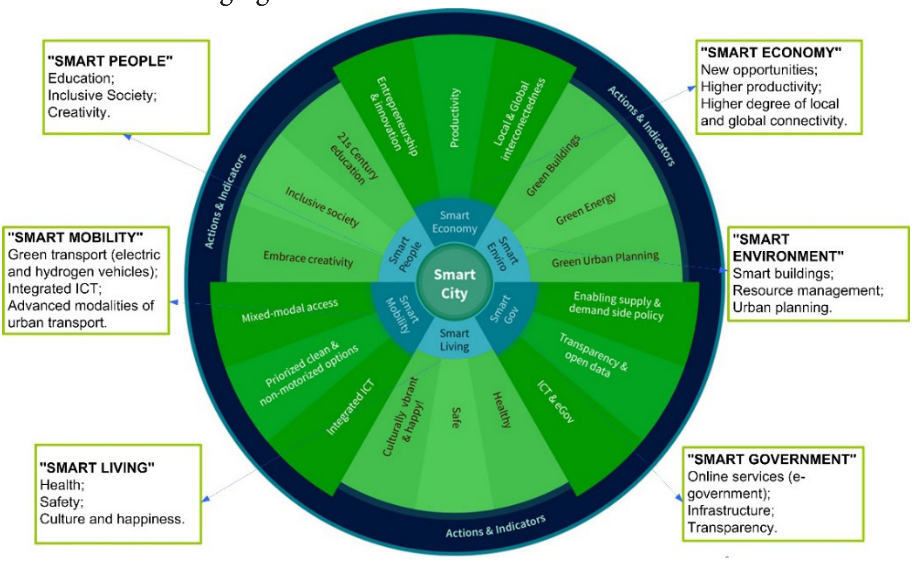

Fig. 1 An integral element and characteristics of the Smart City concept (Smart City Wheel)*Source*: adapted, Geospatialword (2019), (online); Pichler (2017, p.12).

It is important to point out that the "Smart City", or Smart City concept, through the theory of complexity can be determined as a complex adaptive system in which agents such as various institutions, individuals, city government, but also market factors. However, as shown in figure 1, in the direction of simplification, the basic elements and characteristics of the Smart City concept can be grouped into the following six segments (Nam & Pardo, 2011, pp.282-291; Pichler, 2017, p. 12; Geospatialword, 2019, Ilić et al. 2020):

- "*Smart Economy*" refers to the development of new opportunities through entrepreneurship and innovation, then to the improvement of productivity, but also a higher level and a greater degree of local and global interconnection and networking;
- "*Smart Government*" refers to the improvement of transparency in the decision-making of city authorities, focus on infrastructure development, ICT integration, as well as the development of online services and "e-government";
- "*Smart People*" refers to and develops the distinctive abilities, creativity, and innovation of people in an inclusive society with the development of modern education to adequately meet the needs and requirements of society in the future;
- "*Smart lifestyle*"i.e. Smart Living, implies a focus on improving lifestyle, happiness, level of culture, and health of people;
- "*Smart Mobility*" is a commitment to the development of "green transport", i.e. the development of electric and hydrogen vehicles, the integration of ICT into the transport system, and the development of various modalities of urban transport such as "car-sharing";
- "*Smart Environment*" refers to the initiative of development and wider exploitation of smart buildings, improvement of resource and waste management systems, as well as improvement of urban planning and design.

As can be deduced from the attached, all segments in front of the name have the attribute "Smart". This implies that the "Smart City concept" is based on initiatives to improve "intelligence, integration, efficiency and effectiveness, adaptability and attractiveness" (Pichler, 2017, pp. 12-13). The development of intelligence in this domain refers to the development of innovation and innovation with a higher intensity of development and wider application of ICT. Greater integration refers to the development of synergies between all six of the above segments with continuous improvement of effectiveness and efficiency. The term adaptability in the context of the Smart City concept refers to the development of the ability to adapt to change, but while maintaining optimal functionality, while the term attractiveness refers to the ability to attract new investments to improve the process of sustainable development (Pichler, 2017, pp. 12-13).

After determining the basic characteristics of all six segments of the Smart City concept, in the next chapter, it is necessary to explain in more detail the basis of the Smart City concept model.

2.1 Smart City concept model(SCCM)

In this chapter, special attention is paid to development initiatives in the field of Smart City concept models as well as the possibilities and limitations of digital transformation as a process of transformation from the current "classic" to the new "smart" model. The model represents a "simplified reality" (Karuović, 2012, p. 63), i.e. it represents a simplified (abstracted) representation of a phenomenon such as digital transformation or a single entity such as cities and regions. The Smart City Concept Model (SCCM) has become an important framework for urban development. Over time, it becomes the most important initiative and international standard in the field of sustainable development.

Today, we are witnessing that urban areas are growing rapidly because there is more intensive migration of people from rural areas to urban areas. One of the indicators that argue the above trend is the data that indicates that in 1950, 751 million people lived in urban areas, in 2018 4.2 billion, while in 2050 that number is expected to exceed 6.7 billion (Naden, 2019). It is the more intensive migration of people to cities that exposes the city administration to the challenges of providing all the necessary resources, but with respect for the basic principles of sustainable development. One of the ways to achieve this is to build urban systems that will mimic natural systems in their characteristics.

This requires the system to create "its nervous system, consciousness, and mind." Based on this idea, after the appearance of the first IoT models, a framework for the digital transformation of cities was formulated, which grew into the Smart City concept model. According to this model, the application of the theory of complexity is viewed as a series of complex adaptive systems from several levels in which at lower levels we have the appearance of agents and self-organization of system elements.

The management of such systems must be broken down into levels of consistent information (sometimes called levels of common paradigms with associated elements), which allow monitoring and management to be performed at that level, but also at a higher level of organization of elements and processes emerging from lower levels through self-organization. This leads to the establishment of a network topology that defines all elements, processes, and subsystems and extends through all levels of organization of Smart City devices and components (sensors, actuators, local process logic, network level, cloud, control logic, business logic, and presentation).

The division into system levels, i.e. the division of the organization of Smart City components by layers, represents the basic logic of the Smart City concept model. As the Smart City concept model evolves, there is an increase in the number of necessary system levels, i.e. levels of detail that define and describe a particular level. Today, there are different systems observed in terms of the number of system levels within the Smart City concept model, namely: three-layer, four-layer, five-layer, six-layer, and seven-layer. Since the four-layer system within the Smart City concept model is the most common, its graphic presentation is given below.

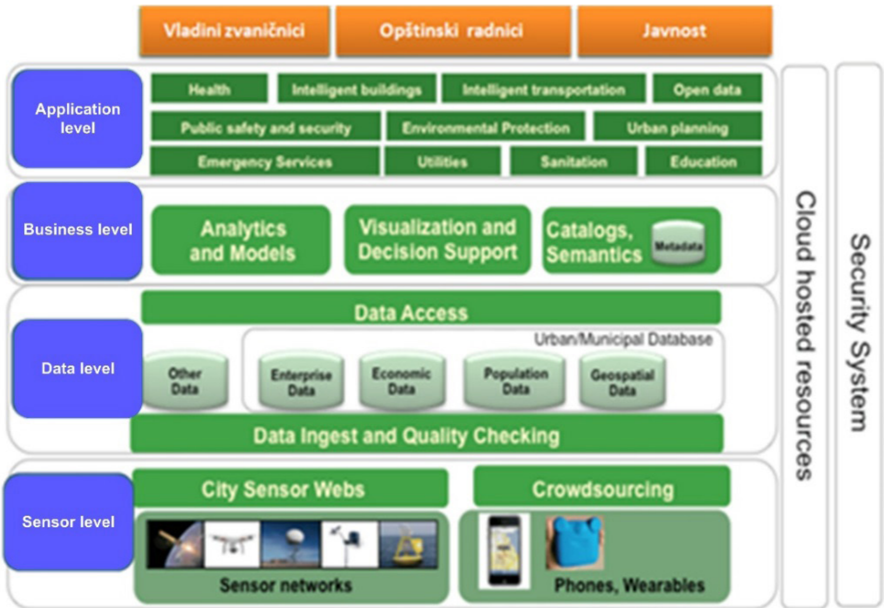

Fig.2 An example of a four-layer system infrastructure within the Smart City concept model. *Source*: adapted, Geospatialword, 2019 (online).

The most commonly accepted division into system levels is the one that follows the functional affiliation of the elements of the Smart City system and includes the following four levels (Figure 2), (Geospatialword, 2019; Ilić et al. 2020):

1. *Sensor level* - a level that continuously monitors the parameters and indicators of the Smart City environment; provides information on the state, state change, and rate of state change of the system. This layer includes a network of dedicated devices, sensors, IoT devices, and human sensors (collection of information and data is based on citizens' posts on social networks or web portals).

2. *Data level* - represents the level that collects, stores, and processes data and stores them in data pools and/or databases so that they can get insight and form action commands, but also reports that are presented to citizens and system operators. From a security point of view, this is a critical layer of the system because it contains collected and often integrated information and sensitive data about the system and/or system elements.

3. *Business level* - contains models relevant to analytics, data visualization, business logic, semantics, metadata, so in terms of development they are free and economic entities can develop it according to their needs and market requirements.

4. *Application level* - consists of several applications that are specifically designed for citizens, municipal authorities, administrators, and providers of city services. The application-level represents the first layer in which citizens feel some benefit from the introduction of the Smart City solution (citizens do not have direct access to the lower layers, which are reserved for city services and city service providers).

As part of the analysis of the Smart City concept model, it should be noted that the introduction of several legal regulations and restrictions arising from the "General Data Protection Regulation" (GDPR), significantly tightened the procedure for handling and managing personal data of citizens. This means that the data layer within the Smart City concept must be additionally provided with a security layer. These procedures have led to an increasing number of cities starting to implement the Smart City concept model striving to standardize and centralize their data pools and databases as well as to place them exclusively under city control. This strategy has yielded good results. Also, this strategy is in line with data protection requirements because it reduces the complexity of the system, i.e. reduces the number of individuals and institutions that come into contact with sensitive data, but also the personal data of citizens (Figure 3).

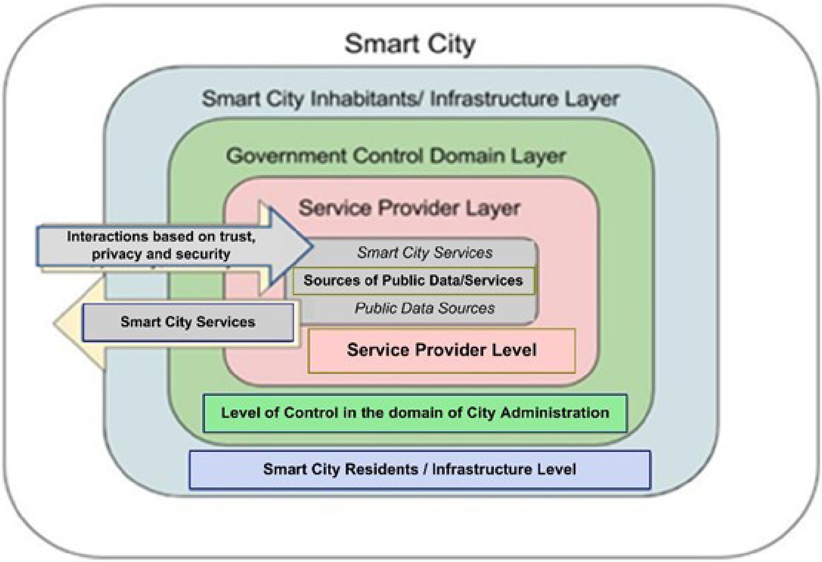

Fig. 3 Three-tier security architecture proposal for Smart City services

Source: Brown, T., Fung, B.C.M. Iqbal, F & Shah, B. Security and Privacy Challenges in Smart Cities, Elsevier Sustainable Cities and Society, Vol. 39., May 2018. (online).

Another important determinant of the Smart City concept relates to the degree of accuracy of the Smart City solution. The term "accuracy of Smart City solution" means the level of reliability of monitoring at the level of measurement (measured values correspond to the real situation), but also at the level of all transformations of measured values. The reliability of the monitoring process depends on several factors, the most important of which are the following:

- Reliability of the measuring chain that directly depends on the degree of correctness, sensitivity, and correct calibration of the sensor at the measuring point;
- Number and character of measured values and power of system status indicators that these values show.

- Latencies of the measuring signal and the required system control speed, which directly depend on the permitted internal oscillations of the subsystem and the limit values of these oscillations when one of the systems collapses.

Within process management, monitoring, and infrastructure management of urban services according to the Smart City concept model, a very important feature of the network system (together with the sensor subsystem) is signal latency and processing time (signal processing) because depending on how many processes can be managed by the centralized eccentric controller. The higher the signal latency, the greater the possible consequences on any of the processes. Also, the larger and longer the deviation of the measured value from the control, the longer the process of returning the system to normal will have and have more severe consequences in the financial and physical meaning of the word.

Considering that we have defined the infrastructure and basic determinants of the system within the Smart City concept model, it is necessary to explain in more detail the application of diagrams of causal relationships in this domain as well as in the domain of sustainable development.

3. APPLICATION OF DIAGRAMS OF CAUSAL CONSEQUENCES IN THE SMART CITY CONCEPT MODEL

As we have already pointed out, according to the theory of system complexity, Smart City can be described as an adaptive system in which free agents such as institutions, individuals, city administration, city companies, but also numerous market factors operate. This statement is of crucial importance from the aspect of sustainable development because with the help of a system of diagrams of causal relationships, the design, and management of such complex systems can be significantly improved.

In this paper, the "generic cause-effect diagram of the city of Vienna" is presented as the initial diagram of cause-and-effect relationships. The city of Vienna has been chosen as the "best city in the world" in terms of the quality of life of its citizens for ten years. The selection was conducted according to the criteria defined within the ISO 37120 standard. The mentioned standard is a document that prescribes a set of the most important indicators as well as the methodology used in measuring, evaluating, and managing the performance of city services, quality of life as well as other strategic frameworks and initiatives (ISO, 2018). Considering that, based on the criteria from the mentioned standard, the city of Vienna has been chosen as the best city in the world for ten years in a row, as an example of a generic cause-and-effect diagram, the city has just been taken as the bestmark of the best world practice. A generic diagram of causal relationships on the example of the city of Vienna is shown in the following figure (Figure 4).

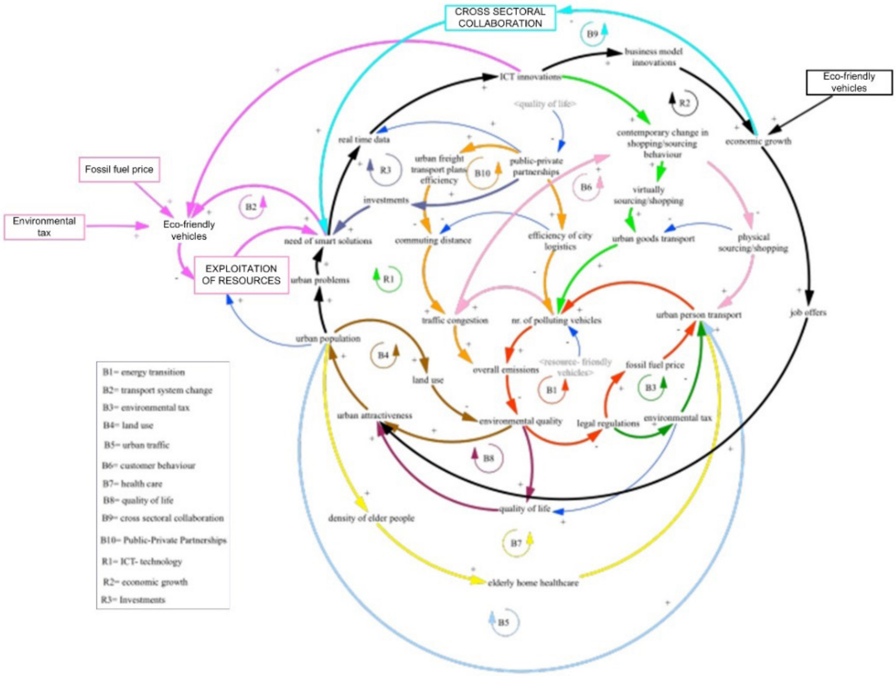

Fig. 4 Generic cause-and-effect diagram: example, the city of Vienna; simplified case study. *Source*: adapted, Pichler, M. (2017). Smart City Vienna: System Dynamics Modeling as a Tool for Understanding Feedbacks and Supporting Smart City Strategies, master's thesis, UniversidadeNova de Lisboa, 2017, p.41. (on the network).

As shown in the simplified generic cause-and-effect diagram of the city of Vienna, the basic dynamics of the city, i.e. the Smart City concept model, is shown through 13 Feedback loops representing 13 different sectors (Pichler, 2017). pp.41-42).

As shown in figure 4, the return loop B1 represents the energy transition. The mentioned loop refers to the adoption of legal regulations, an increase of taxes and environmental taxes, as well as raising the price of fossil fuels, to limit, i.e. reduce the growth of the number of pollutants, especially vehicles with internal combustion. These measures, as well as other subsidies, would increase the number of more environmentally-friendly vehicles. In this way, i.e. the energy transition would reduce the level of environmental pollution (Pichler, 2017, pp.41-42).

Stimulating the use of internal combustion vehicles by stimulating and supporting the wider use of hybrid vehicles, electric vehicles, hydrogen, etc., should be accompanied by "development and wider application of smart solutions" that integrate ICT, all to transform the urban transport and reduction of environmental pollution as shown by loop B2 (Pichler, 2017, pp.41-42). Problems related to defining the amount of environmental tax are presented by loop B3, while loop B4 refers to a higher level of land exploitation in urban areas, which harms the attractiveness of the city and the overall ecosystem (Pichler, 2017, pp.41-42). Loop B5 determines the transformation of urban traffic according to the already mentioned approach, which is based on discouraging the use of own vehicles in the direction of wider use of "eco-friendly" vehicles as well as public transport. Loop B6 refers to the change in the behavior of consumers who are increasingly using the Internet and the delivery of goods instead of physically going to stores (Pichler, 2017, pp.41-42). Loop B7 refers to the transformation of the health system and medical care, while loop B8 shows the mechanism of improving the lives of citizens through the introduction of innovations and new technologies in everyday life (Pichler, 2017, pp.41-42). Loops B9 and B10 show the tendency and mechanisms of stimulating economic growth through cross-sectoral cooperation (B9) as well as through the implementation of fundamental projects based on public-private partnership (B10), (Pichler, 2017, pp.41-42).

Loops R1, R2, and R3 represent the tendency and mechanisms of economic growth, but also the improvement of citizens' lives through the introduction of innovations and ICT in all segments of the city, business ecosystem, as well as the lives of citizens (Pichler, 2017, pp.41-42).

The diagram shown in figure 4 can serve as a model for future interdisciplinary and scientific research, but also as a crucial model for the further development of the Smart City concept.

Based on the above diagram, it is possible to more accurately conduct a situational analysis, but also to improve other activities of the strategic process such as formulating the implementation, evaluation, but also modification of the sustainable development strategy. In addition, a generic cause-and-effect diagram is an effective tool used by urban architects and urban planners, but it can also be used as an effective tool for defining policy and standardization decisions, and can also be used to evaluate compliance of operations and legislative and standardization practicesorientation within Smart City initiatives and projects.

CONCLUSION

Migrations as a term refer to "spatial mobility of the population", i.e. "represent a temporary or permanent change of place of residence in a certain time interval" (International Organization for Migration et al. 2016, pp.18-25). Migrations are a natural phenomenon that occurred years ago, but has intensified in recent times and is gaining in importance (Daugeliene, Marcinkeviciene, 2009. p.49). In recent years, migrations from rural to urban areas have become especially important. This trend, as already pointed out in this paper, is supported by the following data and projections. Namely, in 1950, there were about 751 million inhabitants in urban areas, in 2018 about 4.2 billion, while according to the projection in 2050, over 6.7 billion inhabitants will live in urban areas (Naden, 2019). Intensifying migration of the population from rural areas to cities additionally exposes the city administration to the challenges of more efficient exploitation of the necessary resources for the smooth functioning of the city and the lives of the inhabitants, but with respect for the basic principles of sustainable development.

These challenges and trends have initiated that more and more significant efforts are being made in the process of transformation of "classic cities" (using the process of digital transformation) into "smart cities". The main goal of the transformation of "classic" into "smart cities" is reflected in the more adequate fulfillment of the needs of modern society and economy, i.e. it represents efforts to bring the model of functioning of cities as close as possible to the optimal model of sustainable development. To achieve this goal, it is necessary to restructure the urban environment according to the modern Smart City concept. According to the modern Smart City concept, the restructuring of cities implies its transformation by introducing digital infrastructure and services so that through them digitalized city services can be defined and put into operation. Concerning the efficiency and quality of providing city services steadily, digitized city services are significantly more efficient, demand fewer resources and less energy, but are also more adaptable to the demands of citizens and the economy. The situation with "new urban units" is somewhat different from previous practice because urban planners are now required that Smart City projects must be structured and defined according to already achieved or planned levels of Smart City services.

This means that through urban planning, the project is now viewed through the next five levels, namely:

- Level of real estate development (first level),
- Level of basic infrastructure development (second level),
- Smart infrastructure (third level),
- Life services and services (fourth level),
- Culture, art, tourism (fifth level).

Today, the attractiveness of urban space is assessed by the citizens by assessing the previous levels, i.e. the content that is related to them. In the past, urban planners linked the development of cities to a general or spatial plan and focused their work primarily on the first level (real estate and architecture development), while today urban planners are expected to engage in the development of all the above levels. The previous allegations point out that the Smart City concept shifts the focus from the "city concept that urban planners, architects, and engineers wanted" to the "future citizen-tailored city concept".

At the very end of this paper, it is necessary to emphasize once again that the implementation of the Smart City concept transforms cities and regions in the direction of achieving more efficient local government, higher quality of life, reducing energy consumption, and reducing the negative impact of many actors on the environment. However, for the mentioned strategic transformation of "classic cities into smart cities" to give the desired results in a real environment, i.e. for the Smart City concept to be the main lever of sustainable development, the concept and the entire infrastructure related to this concept should be determined from the following two attributes: the attribute "smart" and the attribute "open". The "Smart" attribute represents a comparative advantage achieved by the application of modern management methods that include information technology, while the "Open" attribute refers to the ability of the system to be easily and smoothly upgraded while respecting all basic principles of sustainable development.

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