

Sustainable Development as a Basic Concept Development of Cities

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Abstract: The development of cities by their volume and dynamics generated many conflicting places in both conceptual as well as in the implementation part. The sensibility of our time, public sensitivity to the quality of life and environmental quality required in consideration of development concepts for the new approaches. A special dimension to the issue of giving and awareness of the scarcity of resources. The doctrine of sustainable development manifests itself as an epoch-making, and the only way out of the above dilemma. Dimensions that reflect doctrines are improving urban infrastructure and urban infrastructure, support the development of social services and civil society, support local development, energy efficient development - reducing CO2 emissions, preservation and development of cultural heritage, sustainable transport and networking, development cooperation, improving governance. It is necessary to find an answer to the growing needs of urban communities and local governments to take over the role of the driver of economic activity in their communities, organizers of social inclusion and advocate of environmental protection and the fight against climate change. In times of reduced fiscal capacity and growing obligations, the EU structural funds and investment funds are proving to be an important and accessible source of funding for a range of public needs at the local level.

Keywords: *sustainable development; resources; development policy; civil society; networking; local governments; structural funds.*

How to cite: Kandzija, V., Tolic, I., & Cudina, P. (2020). Sustainable Development as a Basic Concept Development of Cities. In I. Panagoreț & G. Gorghiu (vol. ed.), *Lumen Proceedings: Vol. 10. International Conference Globalization, Innovation and Development. Trends and Prospects (G.I.D.T.P.)* (pp. 134-144). Iasi, Romania: LUMEN Publishing House.
<https://doi.org/10.18662/lumproc/gidtp2018/16>



1. Introduction

The Smart City is a concept that seeks to improve the quality of human standards and better relationships with nature. A smart city does not have a universally accepted definition and that is for a good reason. The smart city encompasses different types of technologies that vary by size range and implementation mode. Their goal at the end is, however, the same, and that is the efficient exploitation of limited resources. This concept encompasses different technologies that can solve the current problems that cities are carrying and use more efficiently the limited resources that are described in the work.

Each city, state and resident has its own definition of a smart city and which technology should use. The concept can be described by different criteria, for example, by technology, from the citizen's point of view, the way of gathering information and using it, etc. The following definitions are just some of the ones used to describe a smart city in the UK.

The UK's Business Innovation and Skills Division (BIS) believe that the principle of a smart city goes signify more than transactional connection between citizens and service providers. This is in essence supporting and stimulating citizens to play a more active and participative role as members of the community, for example by reacting on the quality of services, the situation of the roads and the constructed environment, the adoption of a sustainable and healthy lifestyle, volunteering for social actions or support for minority category. In addition, residents need that smart cities are attractive for life, work and visit. Because this concept is not unchanging, there is no unequivocal definition of a smart city with no end point, process or sequence of steps, where cities become “alive” and resistant, and therefore able to riposte faster to new provocations. So, a smart city should facilitate every resident to deal with all offered services, both publicly and privately, in a way that best suits his or her necessities. It links hard infrastructure, social capital, as well as local abilities and community institutions, and (digital) technologies to impulse sustainable economic development and insure an interesting environment for everyone [3].

The British Standards Institute explains the term as “effective integration of a physical, digital and human system in the built environment to provide citizens with a viable, prosperous and inclusive future” [2].

IBM defines a smart city as “the one that allows the optimum use of all interlinked information available today to better understand and control its business and optimize the use of limited resources” [2].

Cisco defines describe cities as taking “scalable solutions” that utilize information and communication technology (ICT) to boost “efficiency, reduce costs, and improve the quality of life”. In the UK, citizens think that a smart city is clean, friendly and has good traffic links. Other terms that connect with a smart city are “technology”, “internet”, “connectivity” or “modern”. Manchester Digital Development Agency considers smart city means as “smart citizens” because inhabitants have all the information they need for doing their choices about the ways of life, work and travel. [2]

As we can see the first two definitions describe a smart city as a general definition without deeper analysis that technology uses the city. The following two describe it by data base, ie the data flow from the city to the central server in which the data is processed to produce a positive result for the community. The fifth definition looks at the concept of a civic perspective, as ordinary citizens perceive this concept.

Though these are all different definitions, they are again linked to the main characteristics of what a smart city means. He uses Internet of Things to gain ground information that he then sends to the central database and is awaiting processing. Depending on the type of data that they have collected, they can be used for real-time (current) status monitoring and responding actively or being processed to determine trends. Residents who provide information and feedback relevant to optimum work also play an important role.

2. Technologies of the Smart City

Internet of Things (IoT) is a comprehensive part of the future Internet and can be explained as a progressive global network infrastructure with the capabilities of stand-alone configuration based on standards and cross-functional communication protocols. In this case, physical and virtual elements have identities, physical features and virtual personalities, use intelligent connection, and are very well incorporated into the information network.

The Internet of Things is the basis of a smart city. By using sensors that are connected we can get the information that is currently taking place.

It takes all the business and private processes to introduce powerful information and communication technology. Energy-less demanding products and services are achieved using ICT solutions in:

- production;
- transmission and distribution of electricity and increasing energy efficiency in buildings, households, industry and transport.

Using ICT solutions significantly reduces environmental pollution and emissions of greenhouse gases. In implementation, it is necessary to take into consideration the architecture of the ICT communication network and the data model that will meet the needs of different services [4].

A smart grid is a complex electrical network that provides high quality and reliable interconnection and ensures optimum functioning of all component elements, ranging from generators, transmission systems, distribution systems, smart metering systems, supply and demand matching systems, connectivity systems to network and all the way to the administrative system that is in direct communication with electricity consumers. Processes must be optimally guided by the use of modern ICT technologies to achieve maximum energy efficiency and minimal environmental pollution

Smart meters are used for measuring ie registering the electricity or gas consumed and sending the data automatically to the supplier via a fixed or mobile network. The benefits of smart metering are accurate data on spent resources, that is, accurate monthly invoices, and not as of now with estimated energy consumption. On home pointers, we can generally read consumption at any time, so there is a better chance of optimizing gas or electricity consumption over the year. Based on the resulting consumer profiles, suppliers can also offer individualized tariffs that will ultimately lead to more efficient consumption of energy resources with positive environmental and human health consequences [1].

Some of the technologies that make up the smart city are [6]:

- Smart energy management
- Smart water management
- Smart transport management
- Smart data
- Smart infrastructure
- Smart IoT
- Smart parking
- Smart system of waste
- Intelligent lighting
- Intelligent video
- Smart healthcare etc.

These items at first glance look like some exclusive items that do not have a link between them. As the smart city concept becomes more dominant so it becomes and the information integration is getting stronger in this branch as well.

Smart data is a technology that allows you to collect data from other technologies that a smart city has to quickly analyze and sort relevant information.

By using the crowded information and the weight of hourly traffic, cities will be able to use this information in the future to build adequate roads to minimize this problem and implement the required technologies to monitor their real-time status.

Internet of Things binder between the real and the internet world. These are sensors that enable us to measure relevant measures. With intelligent data, a great deal of information can be reduced to what we need to make conclusions and decisions.

Under smart transport management, we consider real-time crowd tracking, integration of buss position information, and data collection on problem areas and timeframes.

Smart parking uses sensors to determine whether the parking space is occupied. When the sensor detects that the space is empty, it sends the signal via the application to have free parking space for the car. This approach reduces the crowd that occurs when drivers are looking for a parking space and reducing emissions.

A large number of cars and other means of transport used by fossil fuels cause high levels of air pollution, greenhouse gas emissions, traffic jams and traffic nuisance, a large number of traffic accidents, and long waiting times in the tail causing longer trips or delays in work. One of the solutions that seeks to reduce these problems is the introduction of intelligent transport systems. ICT technologies apply to the vehicle manufacturing process, to improve the vehicle-to-vehicle communication vehicle (V2V), and to vehicle and infrastructure networks (V2I).

Since the application of intelligent transport systems in smart cities, it is expected in real time:

- optimize the traffic routes of yours
- enables easy and easy selection between different types of transport equipment;
- positively affect the production process of the vehicle where new functions will be built in line with the needs in smart cities and
- Increase the flow capacity of people and goods in traffic.

Economic Effects	Human Health and Aesthetics	Water	Land and Biodiversity	Energy, Air and Climate
Higher taxes Decline of downtown business districts Increased unemployment in central city Loss of tax base in central city	Contaminated drinking water and air Noise pollution Sky illumination at night Traffic congestion	Increased runoff Increased surface water and groundwater pollution Increased use of surface water and groundwater Decreased storage of surface water and groundwater Decreased natural sewage treatment	Loss of cropland Loss of forests and grasslands Loss of wetlands Loss and fragmentation of wildlife roadkill Increased soil erosion	Increased energy use and waste Increased air pollution Increased greenhouse gas emissions Enhanced global warming Warmer microclimate (heat island effect)

3. The Problems of Smart Cities

The first problem with which a smart city to meet is financing. As mentioned earlier, IoT or sensors are the main foundation of smart cities from which the system gets information. For deployment of such sensors per city, for a number of reasons: buying these sensors and staff capable of installing them requires permission to install them, allocate the capital for hardware to process this information and people who will operate and maintain the system. There is a question of how to finance this project, because the costs, depending on the size of the project and the city, become extremely large.

There is no single standpoint associated with the definition of smart cities. Access refers to integrated cities where emphasis is placed on a smart economy, smart people, smart power, smart mobility, a clever environment and a clever life and their interconnectedness. The concept is somewhat different from the approach and the picture of the concept of a smart city is presented below.

After the implementation of this system there are other problems that could completely destroy all the work invested. One such example would be the employment of low-quality labor. We mentioned earlier that the smart city is in the hands of human lives in terms of smart health, their private data, and the like. Good training and employees are required to keep these data safe and use them only for the benefit of the city. When we talk about training, it should give the workers the moral ethics that they must adhere to when using such data and their protection and to understand the Internet security.



The standardization of individual components, processes and systems and interoperability between different manufacturers are a prerequisite for the successful realization of all segments of smart cities. This is trying to provide a broad space for innovations in making their own solutions because quality standardized interfaces enable successful communication with other parts of the system from different manufacturers. Regional and international standards play a major role and importance in investing in the development of smart cities. When it comes to building smart cities in Europe, the European standardization system supports the development of harmonized standards in line with relevant directives and mandates based on them, to help develop the European economy and strengthen the competitiveness of European companies.

International standards help build smart cities through:

- improving energy efficiency;
- increasing social security;
- planning of sustainable cities development;
- more efficient traffic;
- development of reliable transport networks;
- reducing environmental pollution and
- Good management of waste materials.

Due to the application of international standards, greater security of investment in the realization of new technologies and projects is achieved, and the adoption of clear regulations encourages efficiency and reduces consumption. It also comes to removing technological barriers to the establishment of energy-efficient services, and consumer confidence is gained when it comes to energy consumption and savings. One of the advantages of applying international standards is a better and better assessment of greenhouse gas emissions, which is an essential factor in today's modern society [1].

For the development and construction of cities, the ISO (International Organization for Standardization) norms play a significant role. They play the greatest role in areas such as:

- intelligent and sustainable buildings;
- Sustainable community development;
- energy management systems;
- clean air;
- saving energy in small, medium and business buildings;
- life cycle planning;
- social security;
- drinking water and waste water treatment systems
- traffic safety.

4. Framework Layers for the Realization of Smart Cities

Four framework layers make up a logical sequence that enables project stakeholders in smart cities to project and test their initiatives. For example, if the Mayor is eager to promote sustainability, it becomes the main objective of the first layer. It is assumed that the city by international transport has concluded that the bus travel system is not highly ranked, and this problem becomes the main goal of the second layer. In view of this information, stakeholders are discussing the city's initiative for a “bus fleet associated”, which is the third layer, and the stipulations for conceiving and implementing this system. Finally, city leaders can look for the best examples of comparable actions around the world, ways of financing and managing the system and to study the policy and regulatory frameworks needed to succeed as belonging to the fourth layer [5].

First layer: city goals

At a high level, most city debates focus on issues such as “the impact of money spent on transportation” or “stimulating jobs offer and economic growth”. Although these issues are commonplace by city leaders and it is commonly difficult to find answers, the viewpoint of stakeholders around the world may change depending on the role and perspectives of the person. In order to understand the functioning of the city, the framework should link city goals with projects.

Second layer: city indicators

City goals are essentially linked to existing indicators that measure cities using defined and specific methodology. A different set of indicators is needed for different cities. Some of the indicators measured by cities are GCIF (Global City Indicators Facility), Mercer Quality of Living Survey, and Green City Index. If city goals are related to financial issues, then the Green Cities Index will not be a suitable solution, and if the city's goals are sustainable, Mercer's Quality of Life or the Green City Index may be pertinent. In the ideal world there would be only one set of city indicators, but given the complex situation of the cities and the different priorities and goals, cities will naturally strive for a city index whose methodology of tracking the indicators is aligned with their goals [5].

Third layer: city components

In a detailed view of city property, most smart city development initiatives are manifested in city physical locations (eg train stations) and the industrial sector (eg transport). This layer details the physical components of a city such as communal services, transportation, property and general services. Components are correlated to city aims, indicators, and content. The contents are at the highest level and the hierarchy is used to penetrate the core of each podium. An example is in case of transportation that includes four parts: air, rail, road and logistics [5].

The fourth layer: city content - mapping goals

The layer covers how to deploy smart solutions. It is directly linked to the first and the second layer because it furnishes information and allows the detection of information applicable to the first layer (city goals). Most of the city's content depicts already-developed innovative ideas, but content is formulated and registered in different ways, without the right structure for comprehension and reproducing the development of smart cities or sharing content. For example, online search by "keywords" does not bring some relevant information. The way information is presented is lacking in coherence and precision, thus replicating the best solutions and policies from other cities turn into a problem.

The lack of consistent methods for reporting on successful solutions to smart cities results in confusion and a large amount of unproductive work that delayed deployment. Objects like botany have a classification system for more than 100 years, and measurements of ecological sustainability and general criteria have progressed significantly in the last ten years. A structured and well-established guide of best practice and policy enables

cities to detect and re-use information on stakeholder tasks, political demands, and business models. It would be essential to point out that stakeholder roles need to be identified before the development of the plan, as they have the greatest impact on city initiatives and operations [5].

5. Conclusions

It has been our aim to improve the quality of life in our cities by taking into account all issues (ie ecological, cultural, political, institutional and economic) without affecting future generations. The cities strong and healthy are insured by healthy environments, a vigorous economy and long-term employment opportunities.

The focus of this work is more on sensitizing the issue on sustainability considering the problems of the urban poor than on capacity building. Almost half of world population live in towns or urban areas densely populated, brought by the interest of a better employment or a better life.

Cities could insure jobs, housing, entertainment, a better life in general, and freedom from the different kind of conflicts (religious, racial, political) that village cannot control. The poverty, the lack of land or employment, the famine or even the war push the people to move to the cities.

On the other side, problems generated have been lower energy efficiency; augmented urban flooding; devastation of arable lands, forest, and open spaces; and longer travel time.

Sustainable city is that one who can respond to the essential needs of population with appropriate infrastructure of civic utilities, health and medical aid, housing, education, transportation, employment and good governance to all sections of the community without discrimination. Ecological sustainable thesis requires ethics of care, respect & responsibility.

The 4 components of livability are

- (a) Social well being
- (b) Economic Vitality
- (c) Infrastructure availability
- (d) Environmental quality

There must be a balance between the 4 components and it should be monitored regularly. Sustained development is more a process rather than an end point. Effective governance and different levels with a coordinated effort becomes important. Living environments are deteriorating & all major cities are posing a serious threat to healthier & happier living conditions

No control in urban fringe area developments and green belts are vanishing and industries are penetrating and cities have become faceless, anonymous & monotonous and losing their identities and aesthetic qualities.

The process of revitalization requires a careful inventory, popular perception, advocacy, motivation, sound physical and financial assessment along with professional and political commitment as a pre-requisite.

Regarding the good governance, it should be reinforced in order to insure the ability of local governments to furnish equitable services and infrastructure to all inhabitants in accordance with future growth. Also, the capacity of provincial and national authorities must be enhanced to guarantee their critical normative roles, to adopt policies for public services and environment, and to eliminate corruption from land markets and to supply the legal system (since the property rights are essential for sustainable approaches to modernisation).

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