

Smart cities initiative - challenge for Serbia

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Abstract

The aim of this paper is to provide analysis of smart city concept that can fit into current and future Serbian strategies to develop more cohesive approach about EU standards. Also the paper will provide a list of good examples from EU smart cities which could be useful for Serbian cities.

Key words: *urbanization, smart city, strategy Europe 2020, Serbia.*

Introduction

According to Europe 2020 strategy the environmental service sector will make a great contribution to Europe's economic and social life. This sector will help in greening European industries and in achieving targets for environmental improvement and climate change. Today all European cities must face with the challenges of congestion, ensuring reliable and renewable energy supplies. On the other hand they also need to meet the diverse needs of citizens in terms of employment opportunities, social care and healthcare. The cities which are successful in achieving these requests are characterised as Smart Cities. They are defined by a number of factors including sustainability, economic development and a high quality of life. There are considerable opportunities for sharing experience around the concept of "smart cities" and significant market opportunities in global markets as urbanisation is increasing in the developing as well as developed world. The European Innovation Partnership for Smart Cities and Communities is good example of initiative for improvement of this concept. This initiative combines information and communication technologies (ICT), energy management and transport management to come up with innovative solutions to the most of

environmental, social and health challenges. Serbia's cities should follow this concept and learn from good examples.

Urbanisation and economic development in the world

Urbanisation and economic development are two deeply connected. In 1800 just 2% of the world's population was urbanised. By 1950 this had risen to 30%; in 2000 the figure had reached 47%; and in 2008 it passed 50% (Department for Business, Innovation and Skills, UK, 2013). On current trends it is estimated to be 60% in 2030; 70% or even 75% in 2050 (Figure 1).

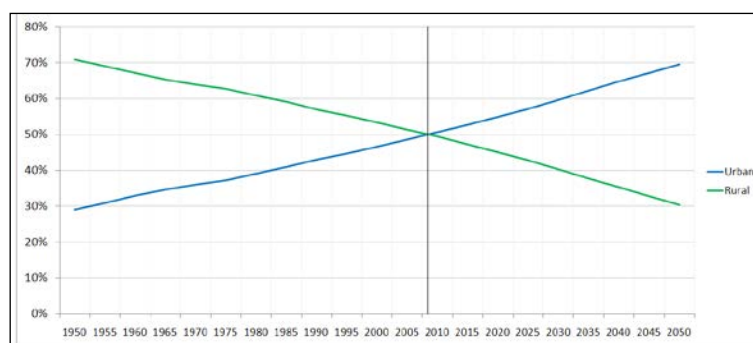


Figure 1. Historical shift of the urban/rural population ratio

Source: United Nations, Department of Economic and Social Affairs

According to the McKinsey Global Institute's extensive study of global cities only 600 urban centres generate about 60 percent of global GDP. Also, half of global GDP in 2007 came from 380 cities in developed-regions, with more than 20 percent of global GDP coming from 190 North American cities alone. Another fact is that 220 largest cities in developing-regions contributed another 10 percent. However McKinsey Global Institute estimates that by 2025, one-third of these developed-market cities will no longer make the top 600; and one out of every 20 cities in emerging-markets is likely to see its rank drop out of the top 600. By 2025, 136 new cities are expected to enter the top 600, all of them from the developing world and overwhelmingly—100 new cities—from China (Dobbs R. *et al.*, 2011).

Smart city concept

The concept of a Smart City provides deep relationship between citizen and service provider. Citizens are encouraged to become a more proactive and participative

member of the community. For example, they can provide feedback on the quality of services. Also, citizens need employment and “Smart Cities” are often attractive locations to live, work, visit and invest (Department for Business, Innovation and Skills, UK, 2013). Smart City should enable every citizen to engage with all the services on offer, public as well as private, in a way best suited to his or her needs. This concept brings together hard infrastructure, community institutions, social capital including local skills, and (digital) technologies to fuel sustainable economic development and provide an attractive environment for all (Department for Business, Innovation and Skills, UK, 2013) (Figure 2) The Department for Business, Innovation and Skills in UK tried to define and forecast the global market for smart city technology and associated products and services. They use different organisations researches which use different forecasting approaches. Collectively these figures aggregate to reach an estimated annual \$408 billion worldwide by 2020. (Department for Business, Innovation and Skills, UK, 2013).

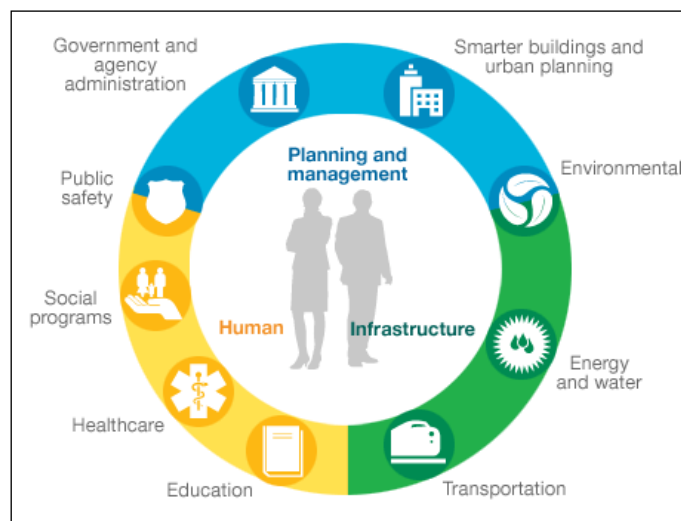


Figure 2 Smart city concept

Source: <http://www.ibm.com>

Smart city concept is, in first place, related to:

- Intelligent transport systems: Traffic monitoring and management, congestion management, road user charging, emergency response, public information systems, smart parking, and integrated traffic light management;
- Assisted or Independent Living: telehealth and telecare products and systems, and digital participation services;

- Water Management: Water system upgrades, consumption monitoring, wastewater treatment, environmental safety systems, and flood management;
- Smart grids or energy networks: Demand management, electronic vehicle support, energy efficiency program, and renewable energy integration;
- Waste management: Waste collection modelling and consistent supply to energy generation.

EU smart cities

The Europe 2020 strategy, adopted by the European Council in 2010, is the EU's agenda for growth and jobs for the current decade. It emphasises smart, sustainable and inclusive growth as a way to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity and underpin a sustainable social market economy (European Commission, 2013). It formulates five targets and focuses on seven flagship initiatives - Digital Agenda, Innovation Union, Youth on the Move, Resource Efficiency, Industrial Policy, Agenda for New Skills and Jobs, Platform against Poverty. All have a direct link to the Smart City, with most of them are in focus of the Smart City agenda (Egenhofer C., and Saritas Ö., 2013).

Some targets in Europe are:

- Employment: 75% of the 20-64 year-olds to be employed
- R&D: 3% of the EU's GDP to be invested in R&D
- Manufacturing industries account for 20% of GDP, up from 16% in 2012

Climate change and energy sustainability:

- Greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990
- 20% of energy from renewables
- 20% increase in energy efficiency

Education

- Reducing the rates of early school leaving below 10%
- At least 40% of 30-34-year-olds completing third level education

Fighting poverty and social exclusion

- At least 20 million fewer people in or at risk of poverty and social exclusion

In European Union there are more than 450 cities that have more than 100.000 inhabitants. Many of them, industrial centers and 28 capitals have a great number of daily migrations, traffic jams that make not only stress for people but emission of gases if we are talking about transportations on gas and fuel.

On the other hand there are examples of smart cities that show as model of responsible conduct towards nature, and energy savings.

For example, Copenhagen plans to be the world's first carbon neutral capital, by 2025. Sweden Växjö aims to be fossil fuel-free by 2030, Gothenburg and Stockholm aim for the same by 2050. Many cities have also set specific carbon-reduction targets, many of which are in the range of 40–80% reduction from 1990 baselines by 2050, with incremental goals to be met in 2025 or 2030. Other European cities such as Paris, Berlin, Amsterdam or London, aim to become “green” cities in the 2030–2050 time frame (Egenhofer C.,and Saritas Ö.,2013).

In France, urban population is 85% of total population. Cities represent today 22% of the whole territory, with 47.9 million inhabitants, i.e. 77.5% of the French population. Densely-populated area 12.4 % in 2012 (Capital city with 10.3 million inhabitants, 31 cities with 200 to 2000k inhabitants, 22 cities with 100 to 200k inhabitants, more than 2000 smaller cities). In order to make smart city concept vivid, France has created Data.gouv.fr portal in December 2011; the site now has over 350.000 data sets. The inter-ministerial mission Etalab, which is now a service of the French Prime Minister, is responsible for creating and populating the data.gouv.fr open public data portal. In terms of opening up data, the pioneering French local authorities were Rennes and then Paris in 2010. Montpellier and a number of other Cities, Regions and Departments also followed (European Commission, 2014).

Cities like Amsterdam and London have very expensive tickets for reaching city center by car (parking in Amsterdam and ticket for reaching London city center), so citizens rather use bicycles or tube to reach central zones. This is more efficient for environment and energy saving (diminishing CO2 emission) and making these most visited points of cities easier reachable.

The United Kingdom is 90% urbanized and had total population of 63.7 million in 2011 (UN world development indicators – 12th of 195) which from, 4 Cities had more than 1mln population (London, Birmingham, Manchester, Glasgow, Liverpool), and 63 Cities had population more than 100,000.

UK has moved from behind on 'smart cities' over the past 2 years to a position in the leaders. The Technology Strategy Board (TSB) initiative on Future City Demonstrators (a competition that attracted 30 bids) developed considerable momentum. This granted £24mln funds to Glasgow; and £1mln to London, Bristol; and Peterborough. The TSB incubator program will provide support for innovation and SMEs. Sustaining this momentum will present ongoing challenges. London has established a 'Smart London Board' comprising leading academics; also specific boards to address infrastructure and other key domain plans, all to support 2020 ambitions (European Commission, 2014).

Smart city concept - challenge for Serbia

Challenges that are driving change in Serbia's cities:

- economic restructuring and privatisation has raised levels of unemployment, particularly among young people;
- the urban infrastructure has grown rapidly and rising urban populations are putting pressure on housing, transport, environment and other government services;
- in concerns about climate change cities have a key role in improving energy efficiency and reducing carbon emissions, while promoting energy resilience in terms of security of supply and price;
- the paradigm shift towards online entertainment and online retail/consumer services;
- an ageing population is a growing commitment to adult social care.

Crises of and problems of political turmoil makes this challenges in Serbia more slowly, but there are some examples that drives some of Serbia's cities towards model of smart cities concept.

There are some examples of changing Serbia's cities according to the online services (most cities eg. Belgrade, Novi Sad, Zrenjanin, Vranje, Niš, and Leskovac) have online services for application for personal documents.

As Energy efficiency is the area of the rule is seen as related to sustainable development and protection of the environment, and rarely as related to energy, regardless of the solution of the laws and other regulations (Law on Energy in Serbia was made in 2011). An example, in the municipality of Paracin is savings of 75%

per year, from 2009 as it was made replacing fuel and building boiler room in a building that is shared by municipal government, the court and the police department. New boiler, which uses natural gas instead of natural fuel oil, was built in late 2008 and cost 3.5 million obtained from the municipal budget. One year after the start of heating the gas, the data on energy consumption before and after the investment shows that the previous year for the purpose of heating the building purchased with the average of about 23 tons of fuel oil and were paid an average of about 1.5 million. din. per annum, while the gas in the 2009 was paid a total of 350,000 dinars(thus realized a savings of as much as 75%commercial potential of energy efficiency) (Palgo centre, 2011).

As a capital Belgrade has a widespread tram network, and the second city Novi Sad used to have it, and there is project of its reactivation, but more then € 90 milion, so mach more citizans of Novi Sad use bicucles as a way of transportation.

Conclusion

European cities that can improve their environmental performance will benefit from having a healthier, more productive populace that lives a better quality of life. Faster services, clean air, clean water, and low risk facilitate the development of human capital for the young and increase the likelihood that they will make productive adults.

Good examples of European smart cities initiatives are models for Serbia to become more efficient and ready to fulfil targets of European strategy 2020. This is not only suggestion, but obligation for countries that would like to become members of the European Union, as well.

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