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The Power of Communities in Smart Urban Development

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Abstract

Concept of smart city highlights the community as an integral part of sustainable socio-economic urban development. By the example of medium-sized city Banska Bystrica in Slovakia, the paper investigates the structure, role and position of communities in the life of the future smart city. Data set contains six smart city characteristics broken down into 27 indicators and primary and secondary information reached from communities in the form of civic organizations, NGO´s, foundations and community centers. The main output of the paper is a definition of different communities' structures covering and integrating the various areas of life in the city within theoretical and conceptual framework of smart cities. Empirical research results reveal the power of communities in smart urban development. Paper outlines possible future steps in development of smart city co-created by policy and decision-makers, city authorities and all relevant stakeholders including communities.

Keywords: community; smart city: urban development

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1. Introduction

Urban development in a smart way is a path on which wish to walk urban planners, policy and decision makers, mayors and stakeholders all over the world. The Wealth Report 2012 analyzing the global economy and the tendencies till 2050 connects the urban smartness to the economic wealth, saying that cities that are hardly known now, will be able to participate in the global economy by 2050 because they are implementing strategies to become 'intelligent communities' (Knight, 2012). Area-based local community-led development approaches are focused on supporting endogenous development processes, i.e. stimulating development without external support, facilitating innovative local solutions. Unlike local authority-led initiatives, they build on a stronger role, commitment and engagement of the community itself and are not necessarily confined within administrative borders. As such they are able to take part on wider long-term economic development strategies (Cities of Tomorrow, 2011). Conceptual framework of the paper is based on smart urban development interconnected with community-led development approaches and inevitable role of communities in the concept of smart cities.

2. Literature review and conceptual framework

Smart urban development is based on the concept of smart city. Caragliu et al. believe the city is smart if it invests in human and social capital and traditional (transport) and modern (ICT) communication infrastructure that fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance (Caragliu et al., 2011). This definition is based on an operational notion, which relatively to medium-sized European smart cities has been proposed using six characteristics: Smart Economy, Smart People, Smart Governance, Smart Mobility, Smart Environment and Smart Living. As we can see in Figure 1, civic participation and communities are embedded into smart city development and directly or indirectly impact on all six smart city characteristics. Smart City is a city well performing built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens" (Giffinger et. al. 2007).

SMART ECONOMY (Competitiveness)	SMART PEOPLE (Social and Human capital)	SMART GOVERNANCE (Participation)
Innovative spirit	Level of qualification	Participation in decision-making
Entrepreneurship	Affinity to lifelong learning	Public and social services
Economic image and trademarks	Social and ethnic plurality	Transparent governance
Productivity	Flexibility	Political strategies & perspectives
Flexibility of labour market	Creativity	
International embeddedness	Cosmopolitanism/open-mindedness	
	Participation in public life	
SMART MOBILITY (Transport and ICT)	**SMART ENVIRONMENT (Natural resources)**	**SMART LIVING (Quality of life)**
Local accessibility	Attractiveness of natural conditions	Cultural facilities
(Inter)-national accessibility	Pollution	Health conditions
Availability of ICT-infrastructure	Environmental protection	Individual safety
Sustainable innovative and	Sustainable resource management	Housing quality
safe transport system	Creativity	Education facilities
		Touristic attractiveness
		Social cohesion

Fig. 1 Characteristics of smart city
Source: Giffinger et al., 2007

A core of creating smart city is a new and integrated design process, aiming at a new modulation of urban functions (both the traditional and the new ones appearing in everyday life) also thanks to the digital technology innovation. The word "smart" includes various features as technological and inter-connected, but also sustainable, comfortable, attractive, safe. It is a model of city on which governments are betting to provide a balanced urban development. Aiming at technological innovation to improve management of urban processes and quality of life of citizens, this is a direction followed by some local administrations in Europe that are starting projects, and setting agreements to re-draw cities. In relation to the objectives fixed by the EU, supported by 'pacts' and formal 'commitments', all cities are involved in this transformation process that should turn them in different ways in smart cities (Sansaverino et. al., 2014). Integrating citizen participation as a real part of smart cities policy at all levels of decision and implementation is a main ambition of The European Innovation Partnership on Smart Cities and Communities. It brings together cities, industry and citizens to improve urban life through more sustainable integrated solutions (European Commission, 2015). Rising from the practice, the smart city is especially a "do"-strategy, it is a collection of several projects, initiatives and actions, carried out both by public and private organizations. Therefore, as these initiatives are the result of spontaneous choices by different actors, depending on their own interests but also on the specificity of a city, the collections are very heterogeneous. To design a definition by observing one or several case studies means to write a definition describing a specific smart city, and not a standard (Hollands, 2008).

The rapid development of new information and communication technologies (ICTs) promises to transform urban governance into 'smart city governance', since these ICTs enable city governments to carry out their tasks more effectively and efficiently (inter alia Walravens, 2012; Hoon et al., 2013). Most of smart cities are based on a very strong digitalization of services for the inhabitants and all other stakeholders. In this matter, smart communities are understood as "a collection of interdependent human-cyber-physical systems, where ICT represents the sensing and actuating cyber-infrastructure to estimate the state of human and physical systems and assist in adapting/changing these systems (Nahrstedt et al. 2016).

In the paper we would like to go beyond the digital of smart cities and to investigate the role of different communities in smart urban development. According to European Parliament (2014), successful smart cities include active participation of citizens to create a sense of ownership and commitment, local level coordination to ensure the integration of solutions across the portfolio of initiatives and participation of local government in networks to share knowledge and experiences. In brief, the precondition of smart cities' creation is to establish a relational network of actors, small and medium-sized enterprises (SMEs), schools, housing, corporations, non-governmental organizations (NGOs), local governments, local transport, etc. and the interaction among these urban actors constitute urban governance. Local governments in smart cities are called to be key actors to create an interactive-, participatory- and information-based urban environment with the ultimate aim to produce increasing wealth and public value, achieving higher quality of life for citizens. Smart governance should encapsulate collaboration, cooperation, partnership, citizen engagement and participation (Coe et al. 2001). According to International Electrotechnical Commission (2014) a smart city cannot be imposed by decree, as the city is shaped by a large number of individual decisions and social and technological changes cannot be fully accounted for. Citizens are increasingly becoming providers of city services and not only users. A good development plan requires the participation, inputs and ideas from a wide range of stakeholders within the city. This means that city planning needs to allow for bottom-up processes of modernization. The role and impact of citizens and communities in smart city development we investigate in the city Banska Bystrica in Slovakia.

3. Methodology and research results

Data mining is based on primary and secondary research. The primary data mining was realised through interviews with the representatives of the communties and NGO´s in the city Banska Bystrica. Primary data was supplemented by the relevant data publised on their websites and annual reports. Secondary data are based on results and methodology of PLEEC project financed by 7th Framework Programme of EU aimed on evaluation smart, or potentially smart city profiles. Secondary data set contains smart city characteristics of Banska Bystrica according to

results of PLEEC project. PLEEC project researches an integrative approach to achieve the sustainable, energy–efficient, smart city. It includes 18 partners from 13 European countries. The main output of the project is to develop a general model for energy efficiency and sustainable city planning (http://www.pleecproject.eu/, cit. 18 .3 .2016). During the stage of project analysis, the evaluation of city profiles was designed. In 2014, it included 77 medium-sized cities from the European countries. The research was oriented on six main characteristics of smart city: economy, people, governance, mobility, environment and living. They are broken down into 27 relevant factors together with the selection of 81 components/indicators from publicly available databases (EUROSTAT, URBAN AUDIT, EUROBAROMETAR, ESPON) which reflect of the most important aspects of every (smart) key characteristic (Giffinger, et al. 2014). For comparison of different indicators, the PLEEC project team used standardization of values. Linear z-transformation in the form $z_i = \frac{x_i - \bar{x}}{s}$ was used to transform all indicator values into standardized values with an average 0 and a standard deviation 1. This method has the advantages to consider the heterogeneity within groups and maintain its metric information. Furthermore a high sensitivity towards changes is achieved (http://www. pleecproject.eu/, cit. 18 .3 .2016).

Three Slovak cities are included in the list of medium-sized smart cities. In the competition of 77 smart cities from EU countries took Banska Bystrica the rank 56 in 2014. It was the best rank from Slovak cities, the city Nitra reached rank 61 and Košice 62 (for more details see http://www.smart cities.eu/index.php?cid=6&ver=3&city=65). Smart city characteristics of Banska Bystrica are elaborated in figure 2.
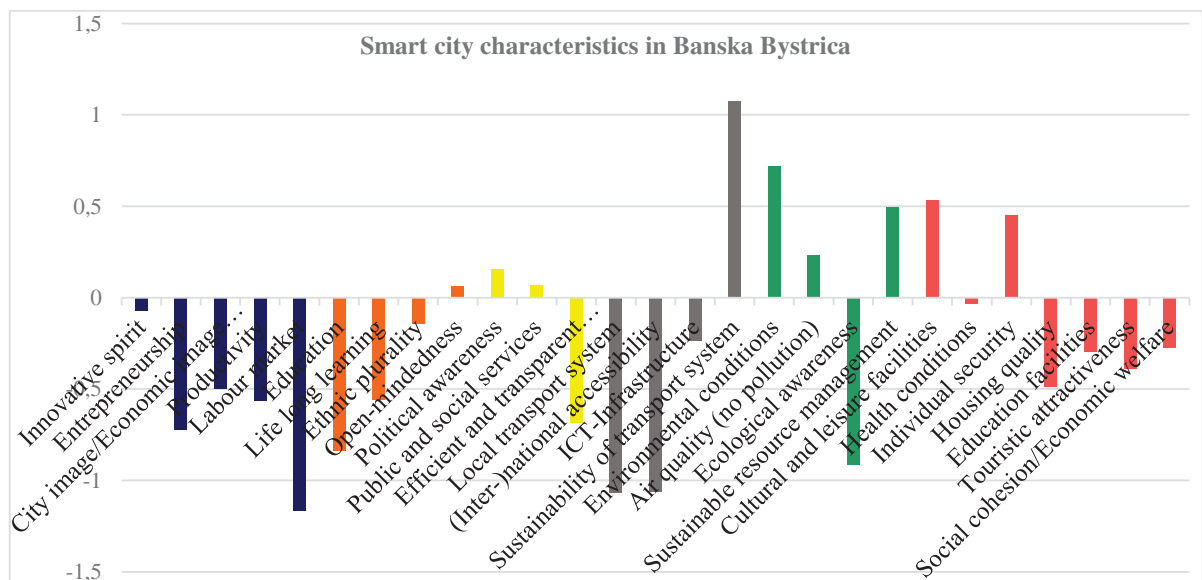
Fig. 2 Smart city characteristics in Banska Bystrica
Source: http://www.smart-cities.eu/index.php?cid=6&ver=3&city=65

In the category of medium-sized Slovak cities, the best ranking achieved Banska Bystrica in overall average score and also in four partial characteristics – economy, people, governance and living. The way how Banska Bystrica is becoming a smart city, is very natural and during last years the "smart" activities were developed by the communities and citizens without conceptual support of municipality or other institutions. Despite this fact, we can find several good examples and practices how this city is becoming smart city in time.

The project research results we supported by the primary data reached through in-depth interviews with representatives of communities and NGO´s in Banska Bystrica. We focused on communities and NGO´s that impact on smart cities characteristics and smart urban development.

In Banska Bystrica are located several higher education institutions – Matej Bel University, Academy of Arts and branch of Slovak Medical University. Thanks to these institutions Banska Bystrica is a city of students (number of

students is more than 10 000 what represents approx. 10 % of overall inhabitants) with all needed facilities and equipment for valuable life of students, including sport, culture and leisure time facilities.

In Banska Bystrica is operating Guild of cafés, taverns and pubs. The guild was established in 2011 and has 15 members. The origin of this idea comes from the period of Middle Ages where the guilds operate as an societal and economic component. The guild has its own status and guild master. Its main purpose is to bring culture-social activities back to the central city zone. The long term goal is to promote cafes, taverns, restaurants and pubs in the city centre through organization of common events and common economic and marketing strategy of subjects included in the guild.

Banska Bystrica is the third Slovak city which introduced participatory budget. From 2014 citizens are allowed to make decision how part of public money (in 2014 - 19 455 €) from the city budget will be used. Participatory budget is redistributed on the basis of public evaluation of project proposals. The thematic priorities of the project call are a community life, culture, youth, green environment and life style. The aim of the participatory budgeting is to involve citizens in to the public affairs, to increase the transparency and effective allocation of public expanses (Murray Svidroňová et al. 2016).

Banska Bystrica is one of the first cities in Slovakia, which implemented and now fully operates the system of electronic services in the form of application – imesto (icity) from 2013. The citizens and legal entities can order or claim more than 36 different public services (e. g. social services, various kinds of confirmations, tax payments etc.).

Banska Bystrica was during the Soviet time one of two main centers of sport in Czecho-Slovakia (second one was Prague) and still citizens of the city are very active and ready to use environmental friendly ways of transport, despite the fact the city is hilly. The city managers have prepared the plan of building six new cycle paths connecting the city centre with the residential areas of the city. In surrounding of the city already exist 13 cycle paths with overall lengths 294 km.

In the city live active citizens and artists that create unique culture and community point – The Garden – Centre of an independent culture. It is a non-profit organization, which firstly existed as an informal community of artists, cultural managers and volunteers. The premises where the Garden is located went through several phases of reconstruction, mostly managed by volunteers. Common grounds in the historical town centre serve as a multifunctional theatre studio with an open dramaturgy as well as a relax zone in form of the town park in care of volunteers. The garden park offers the possibility of organizing various events and leisure outdoor activities. The main organizational objective of The Garden is to provide the space for recent local art in form of theatre and dance performances, concerts, festivals and exhibitions as well as own artistic production (The Theatre in the Garden) and education. The Garden is also the home scene for the town theatre – The Theatre from the passage established in 1995 as the only professional local theatre working with mentally disabled people (and recently also with minorities, Roma minority, immigrants and people coming from socially disadvantageous environment, etc.). The Garden is a seat of the association named "SKOK!"- information and residential centre for modern dance and physical theatre (http://www.zahradacnk.sk/o-zahrade).

The proactive approach of citizens was recognized by the municipality, which help to the local communities to establish two official community centers. Both centers present the place for community meetings, discussion, leisure time activities, but also the place for offering the public services and building closer relationship with the municipal representatives. The centers contribute to initiate and strength the citizen participation in the local life, to educate them and develop their awareness. To the popular activities of centers among citizen belong community gardens (revitalization of abounded public spaces); local library; courses of hand-made crafts or discussion of municipal strategic documents and problem issues of local life (Borsekova et al. 2014).

Many smart initiatives are enhancing by the communities influencing all six smart city characteristics. In the city is officially registered and working more than 155 NGO´s, civic associations and communities in the area of culture, sport, education, volunteering, environmental issues, health care and social affairs. Following figure 3 shows how community driven activities, represented by the biggest or the most influential community organization, influence six smart cities' characteristics and impact on smart urban development.
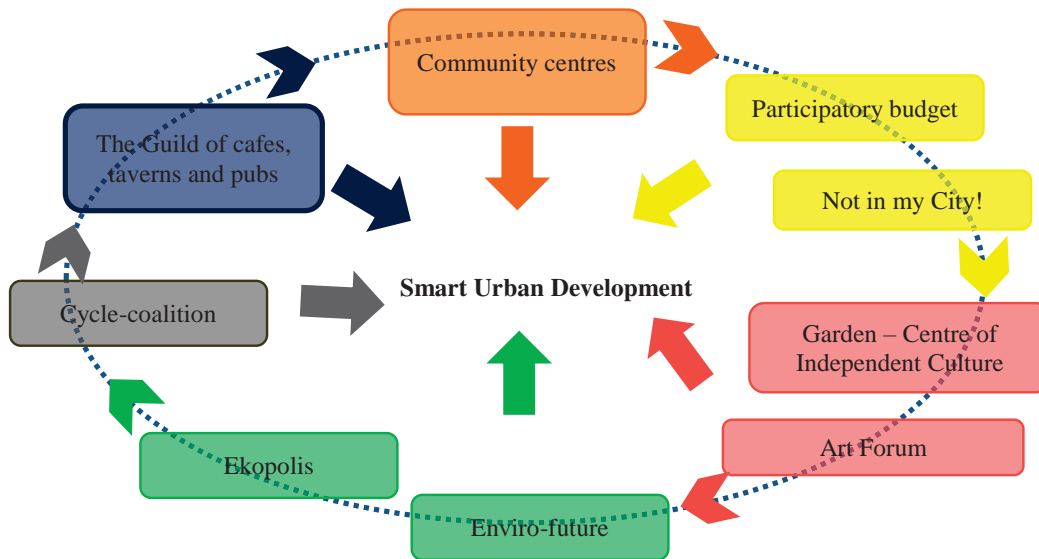
Fig. 3 Impact of communities on smart city characteristics and smart urban development

4. Conclusion and future steps

Well-working local communities are crucial in smart urban development. Communities in form of NGO´s, civic organization, community centers and volunteer's organizations are able to deal with market niche and in many cases to substitute the role of city and its representatives. Their power is in effective co-creation of economic, cultural, social and sport environment, and the special influence in strategic development questions and public affairs. Communities form the public opinion and citizen awareness and have the power to negotiate those aspects of citizen's life that are beyond the interest of politicians. At the same time they are able to act as counterbalance representing communities and society interests in the decision making process run by official representatives on the local, regional and national level.

The local communities through participatory budget and political awareness are able to influence policy and decision making. They are directly involved in redistribution of public finances and in increasing the transparency of public spending. Representatives of cities, policy and decision makers should accept the power of communities and better try to cooperate with them; to understand their needs with aim to reach consensus in the society and smart urban development.

The current situation in Banska Bystrica indicates the implementation of initial activities based on the bottom up approach that create suitable starting positions for the smart urban development. Active citizens, especially united in the formal groups, are a very strong and inevitable element in spatial development and in some public affairs even more accepted by the public. Their influence in Banska Bystrica is still increasing and fruitful integration with the other smart cities' characteristics is a question of short time period.

The step forward might be a deeper cooperation with IT companies located in Banska Bystrica (e. g. Pantheon, Softip, Gamo, Posam etc.) in the area of development local community driven products and services. In the area of smart economy it appears also the first activity to join and mobilize the creative people in the form of co-working centers and to boost their own business activities (e-incubator).

Many various "smart" activities are realized in the same time. For efficacy of smart city development in Banska Bystrica it will be inevitable to create the common collaborative platform that will coordinate all local communities, actors from the public, private and non-profit sector to make the transformation process to smart and modern city smooth and successful.

Acknowledgements

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