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Summary of activities on smart cities

Summary

In 2012, UNECE Committee on Housing and Land Management decided to include the topic of “smart cities” as one of its priority activities in the Committee’s programme of work 2014 - 2015 under the cluster “Sustainable urban development”.

In May 2014, a project on “Sustainable urban solutions for transition and developing countries” was launched. This project includes activities on smart cities.

This informal note provides a summary of on-going activities under this project and proposals for future steps under the Committee’s work programme.

I. Introduction

The region covered by the United Nations Economic Commission for Europe (UNECE) houses less than a fifth of the world's population but is characterized by high levels of urbanization. Urban residents represent more than 73 per cent of its population and by 2050 the figure is estimated to rise to 85 per cent. This high level of urbanization presents serious challenges for sustainable development and climate change adaptation and mitigation. Urban areas are in fact responsible for a considerable portion of the world's energy consumption and greenhouse gas net emissions¹. This situation could become critical and irreversible if not acted upon soon. At the same time, approaches to urban development, if aptly and timely rethought and put into practice, have the potential to become a driving force for sustainable development.

In the UNECE region, much attention has been devoted in recent years to the topic of "smart cities". Several programmes have been carried out successfully in large cities in Western Europe, including Amsterdam, London and Vienna. However, no structured programmes have yet been developed in cities in Eastern Europe and Central Asia.

In 2012, the UNECE Committee on Housing and Land Management decided to include the topic of "smart cities" as one of its priorities in the Committee's programme of work 2014 - 2015 under the cluster "Sustainable urban development". The decision to direct more attention on the topic of smart cities is a result of the Committee's survey on Challenges and Priorities in Housing and Land Management in the UNECE region. As a matter of fact, the "smart cities initiative, which addresses information, communication and technology" ranked second among the activities to which respondents from member States' gave highest priority. At its 73rd session in 2013, the Committee also recommended that studies should be conducted and pilot projects, which aim at applying the smart cities concept, especially in the transition countries, should be developed.

To follow up on the Committee's recommendations, the secretariat conducted a review of existing smart city projects and networks; and organized consultations with other organizations – potential project partners. Based on the information collected, the secretariat elaborated a proposal for a project on smart cities. The UNECE project "Sustainable urban solution for transition and developing countries" was launched at the joint Committee's and its Working Party on Land Administration workshop "Land administration systems for smart cities", which was held in May 2014 as a part of the Global Geospatial Forum. To ensure coordination within the UNECE, an UNECE interdivisional working group on sustainable urban development was created, which included representatives from the Environment, Economic Cooperation, Trade, Land Management, Sustainable Energy and Sustainable Transport divisions. The interdivisional group is conceived to develop a holistic approach to urban development and human settlements, including an integrated approach to planning and building sustainable cities and human settlements.

¹ Data source: *The United Nations Department of Economic and Social Affairs*.

Definitions

The concept of “smart city” is broad. The main focus of this concept is directed to the use of innovative approaches, first of all, of information and communication technologies (ICTs), to the management of urban systems.

The European Commission identifies six main dimensions of “smart cities”: smart economy, smart mobility, smart environment management, smart people, smart living and smart governance.² A city is ‘smart’ when investments in social capital and communication infrastructures, both traditional and modern (transport and ICTs, respectively), fuel a sustainable economic growth and a high quality of life, along with a wise management of natural resources and through a participatory governance.³

Possible definitions of the concept of “smart city” were debated also at the UNECE smart cities workshop “Land administration systems for smart cities”; this discussion could be summarised as follows. A city is smart when it is dynamic in implementing sustainable and innovative initiatives. It is a city, which is able to grant affordable and healthy housing, and reduce its consumption of energy and emission of pollutants. It is a city which supports green, inclusive, healthy, compact, smart and resilient human settlements; promotes investments in its different sectors; and effectively manages its financial resources. It presents an integrated approach to planning and building, while encouraging environmentally clean, affordable public transport, higher air and water quality and efficient waste management. It embraces a sustainable management of urban land as well as transparent land and property registration.⁴ Its efficiency is improved by the use of innovative technologies and ICT within the different sectors. Furthermore, it reinforces the cooperation of different stakeholders operating in public and private sector, national and local authorities, academia, NGOs, and cities’ inhabitants.

III. The project objective and expected outcomes

The overall objective of the UNECE project “Smart urban solutions for transition and developing countries” is to promote exchange of best practices between countries and cities engaged in implementation of smart city activities and to strengthen the capacity of national and local authorities to develop and implement policies on sustainable urban development.

The project will contribute to enlarge the number of cities actively implementing innovative and cost-effective urban development solutions and adapting to climate change and natural disasters as well as it will result in opening new markets for sustainable technologies.

The project will establish partnerships and cooperation between diverse stakeholders, including national and local authorities, public and private sector and international organizations in the region, and promote exchange of best practices on sustainable urban development. All stakeholders will be, hence, engaged in cross-cutting efforts to develop new urban systems that will be able to integrate all the

² Caragliu, A. ; Del Bo, Ch.; Nijkamp, P. Smart Cities in Europe. In *Journal of Urban Technology*, Vol. 18(2), 2011. pp 65-82.

³ Piplas, H.; Popović, D. 2014. Opportunities and challenges of multiscale Smart City concepts in former centrally planned economies of the CEE region. Research concept note (unpublished).

⁴ UNECE. 2014. United Nations Economic Commission for Europe input to the High-Level Political Forum on Sustainable Development and the ECOSOC Annual Ministerial Review, E/2014/CRP.1, June 2014 at <http://sustainabledevelopment.un.org/content/documents/4329CRP1%20ECE.pdf>

relevant aspects of the urban environment. This will substantially improve the inhabitants' quality of life and make the most efficient use of the resources at the disposal of municipalities through front-line and sustainable technologies. These technologies would, finally, leave the cities with additional financial resources generated by savings and will also generate employment.

Furthermore, the project will extend the concept of smart cities to low- and medium-income economies and showcase examples of sustainable urban development principles and practices, including new business models, that can attract capital, technology and managerial skills to meet the challenges of today's society.

IV. The UNECE “smart cities” project approach

One of the key issues in promoting smart urban solutions is the integrated and comprehensive approach to city management. “Smart cities” initiatives aim at improving key dimensions of cities such as urban environment (buildings, transportation, water, waste, energy services, and information and communications technology); social capital (education, social and gender equality); governance (cooperation between national and local authorities; involvement of all key stakeholders); and economic conditions (poverty reduction and employment generation).

“Smart city” initiatives cover, therefore, several elements, which include among others:

- a. Introduction of energy-efficient and health-friendly ways of working, travelling and building;
- b. Urban resilience to changes in environment and demographics;
- c. Compact and effective city planning;
- d. Opening of new markets for sustainable products and services;
- e. Greening public transportation and smartly organized traffic flows;
- f. Planning and building for an ageing society; and
- g. Integrating information and communication technologies in the urban environment;
- h. Promoting an inter-sectorial approach to city management, engaging national, regional and local authorities and stakeholders; private business, academia, civil society and inhabitants.

V. On-going and planned project activities

As mentioned above, the project “Smart urban solutions for transition and developing countries, was launched at the workshop “Land administration systems

for smart cities” held in May 2014.⁵ After the event, the concept paper of the project was drafted whose main points are presented in this document.

Due to the main goal of the project of supporting cities in developing and transition countries to implement more sustainable initiative and become “smarter”, Environmental Agency Austria (EAA), one of the project’s partners, shared the methodology they elaborated for the evaluation of cities and development of smart city initiatives. This methodology, which was already tested in Austria for twelve cities, includes a series of indicators on cities’ economic, environmental and social development. Within these three main areas, twelve development fields such as production, natural hazards, education, etc. have been identified⁶. The smart city profile methodology will be further developed to be applicable to the international context and will take into account the diverse political, economic and social situation and needs of cities in the UNECE region and beyond.

A network of pilot cities, which will take part to this study, is being established. They will provide the project’s team with data in order to evaluate the city’s current state and prepare its smart city profile by identifying priorities and issues to address. The smart cities profile will help the city’s stakeholders to understand the needs of the city for becoming “smarter” and to be supported through clear recommendations in this process.

After this evaluative stage, the cities will be invited to implement the recommendations described in the smart city profile. Due to the constant monitoring of the implemented initiatives both on the field and by data provided, the results obtained through the process will be measured and analysed to evaluate the effectiveness of the changes made.

In parallel with the implementation activities in the pilot cities, a wider network of cities, which already have solid experience in promoting smart city approaches and which can share their experiences, will be also set up. This network will be supported by an online platform where cities can showcase their results and exchange best practices and lessons learned.

Finally, in order to foster cooperation, share experiences and support local authorities and stakeholders to understand the smart cities concept and implement sustainable initiatives, a series of events will be organized in the involved countries.

VI. Possible further steps

The list of indicators included in the methodology to develop the smart city profiles are being evaluated and commented by our partners and internally within relevant divisions. The outcome of this process will be a list of selected indicators which will be used to evaluate the current status of the pilot cities and suggest recommendations for improvement. This list will be discussed and approved at the next Committee meeting.

Furthermore, as mentioned before, several workshops and events will be organized for capacity building and achieving visibility. The scheduled ones are listed below:

⁵ See more at <http://www.unece.org/index.php?id=34473&>

⁶ Prokop, G.; Schwarzl, B.; Thielen, P. 2014. Guideline for a flexible indicator set for smart cities, EAA

- Capacity building workshop in Yerevan, Armenia, 13-18 October 2014 on urban planning, housing and disaster risk reduction
- The Ministerial and municipal panel on smart cities at “Urban Future” global conference, Graz, Austria, 18-19 November 2014
- “Rakvere Smart House conference”, Rakvere, Estonia, 25-26 November 2014
- The workshop “Land Management for Smart Cities” at the Middle East Geospatial Forum, Dubai, U.A.E., 16-17 February 2015
- The Geospatial World Forum 2015, Lisbon, Portugal, 25-28 May 2015.

VII. Project partners

The partners of the project are listed below.

a. United Nations Economic Commission for Europe (UNECE)

The project coordinator for the UNECE region is the UNECE Housing and Land Management Unit, which also serves as a secretariat of the Committee on Housing and Land Management. Representatives of other UNECE divisions will also participate through the UNECE interdivisional working group on sustainable urban development.

b. Organization for international Economic Relations (OiER)

OiER was established as international NGO in 1947 by the Austrian government to act as a business platform facilitating international trade and investments. OiER has since developed in both scope and geographical outreach. OiER is a particular advisory and intermediary service organization working especially to align public interest and the offerings and requirements of the private sector. Boosting a vast network worldwide, its main programs and projects are related to energy and environment, urban development and smart cities, health, education and vocational training. Since 1970, OiER has had consultative status to ECOSOC and since 2011 to United Nations Industrial Development Organization UNIDO. OiER will coordinate project activities with private sector and activities in the Middle East.

c. Dubai Real Estate Institute

Dubai Real Estate Institute (DREI) is a real estate learning center in the Middle East and the educational arm of the Dubai Land Department. DREI is in partnership with the National Association of Realtors (NAR), which has over 2 million professionals amongst its coveted CIPS (Certified International Property Specialist) designation holders. In addition, DREI is the only training body which works with the Real Estate Regulatory Agency (RERA) in licensing the real estate professionals in the Dubai market, through providing annual training and examinations relevant to the current needs of the market. All the Dubai Real Estate Institute’s courses are accredited by ARELLO and MENARES, and have strong ties with International real estate Federation (FIABCI) and the International Real Estate Society.

d. Environment Agency Austria (EAA)

The Environment Agency Austria - Umweltbundesamt - was founded in 1985 and is strongly involved in the EU Twinning accession assistance programme. At national level, the Agency co-ordinates environmental monitoring and reporting in cooperation with the nine provincial authorities, and operates the related national environmental registers and databases on hazardous chemicals, wastes, contaminated sites, air, water and soil quality etc. At international level, one of the key legal functions of the Agency is to assure national cooperation with the European Environment Agency. Due to the variety of its activities in different environmental sectors (e.g. nature conservation, forest, agriculture) and media (soil, air, water), the Environment Agency Austria carries out a wide range of projects in the field of low carbon society, cleaner production, biodiversity and natural resources, sustainable consumption, and information management. The Agency is responsible for further developing methodology and organizing studies on smart city profiles.

e. UN – Habitat

UN-Habitat is the United Nations programme working towards a better urban future. Its mission is to promote socially and environmentally sustainable human settlements development and the achievement of adequate shelter for all. Mandated by the UN General Assembly in 1978 to address the issues of urban growth, it is a knowledgeable institution on urban development processes, and understands the aspirations of cities and their residents. UN-Habitat Moscow office coordinates project activities in cities in the Commonwealth of Independent States – CIS.

f. International Society of City and Regional Planners (ISOCARP)

The International Society of City and Regional Planners is a non-governmental association of experienced professional planners. It was founded in 1965 in a bid to bring together recognised and highly-qualified planners in an international network. The ISOCARP network brings together individual and institutional members from more than 80 countries worldwide. Members are planners and other stakeholders involved in the development and maintenance of the built environment. ISOCARP encourages the exchange of professional knowledge between planners, promotes the planning profession in all its forms, stimulates and improves planning research, training and education and enhances public awareness and understanding of major planning issues at a global level. ISOCARP will be involved as an expert body in developing city profiles and in capacity building activities.

g. Royal Institution of Chartered Surveyors (RICS)

The RICS is an international professional body with over 100,000 members which represents everything professional and ethical in land, property and construction. It regulates and promotes the profession; maintains the highest educational and professional standards; protects clients and consumers via a strict code of ethics; and provides impartial advice, analysis and guidance. The association accredits professionals whose expertise covers property valuation and management; the costing and leadership of construction projects; the development of infrastructure; and the management of natural resources, such as mining, farms and woodland as well as from environmental assessments and building controls to negotiating land rights in an emerging economy. With offices covering the major political and financial centres of the world, their market presence places them to influence policy

and embed standards at a national level. They also work at a cross-governmental level, delivering a single, international standard that will support a safe and vibrant marketplace in land, real estate, construction and infrastructure, for the benefit of all. RICS will be involved in capacity building activities.

VIII. Participating cities

The criteria for the selection of the pilot cities and their responsibilities in the project include the city's size (up to 1 million inhabitants in the UNECE region), the ground for cooperation between national and local stakeholders, financial support for the development of the project, the submittal of data for the preparation of the city profiles, a clear commitment to implement the city profiles recommendations and the availability to organize a workshop to show the achievements of the city and promote the project. Furthermore, the cities were selected to ensure good geographical representation across the project region.

Currently, the following cities have expressed their interest to join the project "Smart urban solutions for transition and developing countries" as pilot cities for the study⁷:

In the UNECE region:

- Armenia with the city of Goris
- Austria with the city of Graz
- Belarus with the city of Turov
- Estonia with the city of Rakvere
- Italy with the city of Rimini
- Ukraine with the city of Vinnitsa

Furthermore, cities in other countries, including Kazakstan, the Russian Federation and Tajikistan in the UNECE region, have also expressed their interest in joining the project.

Finally, the cities which have already been selected to join the wider network of cities with already well developed sustainable urban activities are: Amman (Jordan), Astana (Kazakhstan), Dubai (United Arab Emirates), Vienna (Austria). This mentioned network of cities is expected to grow rapidly and, together with the network of the pilot cities, will become a wide platform of cities which share a more sustainable growth and a more transparent and efficient use of their resources. These cities will promote smartness and innovation and will grant their inhabitants better living conditions.

IX. References

EU and Interreg IVB, Smart Cities Project Guide. (2014). Available at <http://www.northsearegion.eu/ivb/projects/details/&tid=84>

Caragliu, A.; Del Bo, Ch.; Nijkamp, P. (2011). Smart Cities in Europe. In *Journal of Urban Technology*, Vol. 18(2), 2011. pp 65-82

Piplas, H.; Popović, D. (2014). Opportunities and challenges of multiscalar smart city concepts in former centrally planned economies of the CEE-region". Research concept note (unpublished).

⁷ The network of cities is expanding. It is not to be excluded that when this notice will be presented, the participating cities will be more.

UNECE (2014). United Nations Economic Commission for Europe input to the High-Level Political Forum on Sustainable Development and the ECOSOC Annual Ministerial Review. E/2014/CRP.1, June 2014. Available at sustainabledevelopment.un.org/content/documents/4329CRP1%20ECE.pdf

Prokop, G.; Schwarzl, B.; Thielen, P. (2014). Guideline for a flexible indicator set for smart cities. European Environment Agency.

X. Further readings

Allwinkle, S.; Cruickshank, P. (2011). Creating Smart-er Cities: An Overview. *Journal of Urban Technology*, Vol. 18(2), 2011. pp 1 – 16

Coe, A., Paquet, G. and Roy, J. (2001). E-governance and smart communities: a social learning challenge. In *Social Science Computer Review*, 19 (1), 80-93

Hollands, R. G. (2008). Will the real smart city please stand up?, *City*, 12 (3), 303-320

Komminos. N. (2002). *Intelligent cities: innovation, knowledge systems and digital spaces*. London: Spon Press.

Leydesdorff, L.; Deakin, M. (2011). The Triple-Helix Model of Smart Cities: A Neo-Evolutionary Perspective. *Journal of Urban Technology*, Vol. 18(2), 2011. pp 53-63.

Shapiro, J. M. (2008). “Smart cities: quality of life, productivity, and the growth effects of human capital,” *The Review of Economics and Statistics*, 88 (2), 324-335.