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INSIGHTS ON URBAN TOMORROWS - EXPERT SURVEY ON FUTURES OF LIVEABLE CITIES

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"What is the city but the people?"

William Shakespeare

Coriolanus 3.1.199

ABSTRACT

Title: Insights on Urban Tomorrows – Expert survey on futures of liveable cities. ENCORE working paper 1/2016

Keywords: Urban futures, liveability, smart city, participation, urban governance

This paper presents the results of an international survey on futures of liveable cities conducted by Finland Futures Research Centre (FFRC), University of Turku, and the Helsinki Node of the Millennium Project. Seven experts combining both futures studies and urban studies were invited to answer a questionnaire. The aim of the survey was to feed insights to the foresight part of the ENCORE (2015–2016) research project. As the opinions on what is a liveable environment differed by contents, so did the insights on how a liveable city can be enabled. The responses are presented in this working paper with some related analysis by the project team at FFRC. The emphasis in creating liveable cities seems to lie on cultural, social, and environmental factors, technology featuring as an enabler. The changing social and power relations within the cities is also emerging as an interesting topic, calling for further interdisciplinary foresight study.

RESUMEN

Título: Observaciónes sobre Futuros Urbanos – El futuro de ciudades habitables según una encuesta de expertos. Documento de trabajo de ENCORE 1/2016.

Palabras clave: futuros urbanos, habitabilidad, ciudad inteligente, participación, gobernanza urbana

En este papel se presentan los resultados de una encuesta internacional sobre futuros de ciudades innovadoras que se llevó a cabo por Finland Futures Research Centre FFRC (Centro de Estudios de Futuros), La Universidad de Turku y Nodo Helsinki del Millennium Project (2015-2016). Siete expertos combinando ambos los estudios de futuro y estudios urbanos fueron invitados a responder un cuestionario. El objetivo de la encuesta era proveer ideas y entendimientos para la parte prospectiva del proyecto de investigación ENCORE. Mientras las opiniones sobre lo que es un ambiente habitable diferían en sus contenidos, también lo hicieron las ideas sobre cómo una ciudad habitable puede ser permitida. Las respuestas se presentan en este documento con unos análisis relacionados por el equipo del proyecto ENCORE de FFRC. El énfasis en la creación de ciudades habitables parece hallarse en los factores culturales, sociales y ambientales, mientras la tecnología aparece como una facilitadora. Los cambios en las relaciones sociales y del poder dentro de las ciudades están también emergiendo como un tema interesante, exigiendo un estudio más extenso de prospectiva interdisciplinaria.

EXECUTIVE SUMMARY

This paper presents the results of an international survey on futures of liveable cities, conducted by Finland Futures Research Centre (FFRC), University of Turku, and the Helsinki Node of the Millennium Project. The results from this expert survey feed insights to the ENCORE research project (2015–2016), with an aim to contribute to a successful and pro-active urban governance.

Seven futures-oriented urban development experts, mainly from different Millennium Project nodes, answered the questionnaire. The responses are presented in four intertwining themes, in which they were clustered during the analysis: 1) liveable urban environment, 2) smart city, 3) participation, and 4) governance.

In chapter 2.1 the insights on both *what* is a liveable environment, as well as *how* it could be enabled differed. Twelve cities or districts are mentioned as examples of liveable environment. According to the respondents, multiplicity of factors and layers of life make a city liveable. Instead of a universal and shared definition of what makes a city enjoyable, city is experienced in many ways. It can be thus claimed that city planning should not use narrow definitions when pursuing to increase the liveliness of a city, but to take into account different views, and engage citizens in the planning process.

Smart city is a central concept for urban development. The responses addressing the issue are presented in chapter 2.2. The role of smart city merely as one of many concepts addressing the lively city is emphasised. Although it is acknowledged that the paradigm is supported and enabled by ICT, the focus should be steered toward concepts such as sustainable, biophilic, renaturing, or compact city. This would further support the social acceptance of the concept, as well as the successful implementation. The suggested steps for enabling the implementation of smart city are the following:

1. Defining the smart city
2. Political leadership and urban/regional governance supported with foresight
3. Vision
4. Strategy
5. Implementation
6. Participation
7. Open resources (funds, tech, platforms, services, education, decision-makers, connections, information, and research)
8. Measuring/ follow-up

Chapter 2.3 addresses urban development from the bottom-up viewpoint. A general consensus on the increasing importance of the role of the citizens in future decision-making occurres in the responses. This will most likely result in more complex governance processes. Altogether, the coordinating role of city administration is considered necessary. Implementing ICT-enabled participatory approaches to the decision-making processes would allow the cities to be defined more accurately according the plethora of transactions existing within them.

Chapter 2.4 presents responses to customised questions regarding mainly the regional development and foresight processes. The responses indicate towards a hybrid of conventional and modern approaches, with traditional decision-makers '*at the helm of things'*, yet strongly supporting the needed citizen participation. The need for new skills, such as engaging citizens and mastering different platforms, to meet the coming participatory shift, is underlined.

Overall, this paper revolves around two themes related to urban futures: social relationships and technological development. ICT is seen as a key driver for better cities. However, there was no dissensus on the need to include social and cultural aspects in the smart city concept as well. Changing social and power relations are another key driver influencing the futures of cities. The results highlight the importance of balancing out between good governance and active citizen participation, and its enabling.

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1. INTRODUCTION

The attractiveness of city centres, as well as their spatial and functional quality, are essential goals for urban planning. Diverse political, economic, and spatial progressions together with the rapidly changing modes of housing, consumption, and work, are influencing the urban environment in unpredictable ways. As Ratcliffe & Krawzyk (2011) point out, the ever-faster process of urbanisation outpaces the capacity of city administration, planners, and governance. Simultaneously, the current rigid planning systems answer poorly to these transformations. Economically viable city centres and downtown areas require a reform of planning systems and concrete practices, underpinned by a systematic anticipation of emerging issues and by a deep understanding of the drivers of urban change.

This paper provides the results of an expert survey on futures of liveable cities. The survey was conducted in summer 2015 at the Finland Futures Research Centre (FFRC), at the University of Turku (UTU). The topic is approached by presenting questionnaire responses from seven futures-orientated urban development experts mainly from different Millennium Project[1] nodes. This paper aims to provide answers to the questions of ***what is a liveable city*** and ***how it could be enabled***. The responses to these questions are clustered to the following four themes;

1) lively urban environment,
2) smart city,
3) participation, and
4) governance.

Although the themes intertwine, each theme constitutes one subchapter of the analysis for clarity. The authors wish to thank all the participants and respondents for their contribution to the survey. Ms. Merja Lang, a Millennium Project Intern for Summer 2016 at FFRC Helsinki Office, helped us in the final editing work.

[1] The Millennium Project is a global think-tank and a non-profit organisation. See www.millennium-project.org

1.1 BACKGROUND FOR THE ENCORE RESEARCH PROJECT

The paper contributes to the research material of the foresight part of *Economically Viable City Centre and Urbanizing Downtown – ENCORE* (2014–2016)[2], a project that focuses on innovative and futures-orientated urban development. According to our predetermined assumptions, all development should improve social equity and the quality of the urban environment. The ENCORE project examines the future of urban planning of the cities through a three-part process (Figure 1). In the first part, a case study on the planning procedures of Lyon and Stockholm is conducted at Tampere University of Technology (TUT). In the second part, conducted by the Finland Futures Research Centre (FFRC), and what this paper is focused on, the change factors and their development paths in urban environments are anticipated with foresight methods such as horizon scanning and the identification of weak signals. The third part applies the results of the case study and deliberative foresight study to the planning processes of the Finnish cities of Turku and Tampere.

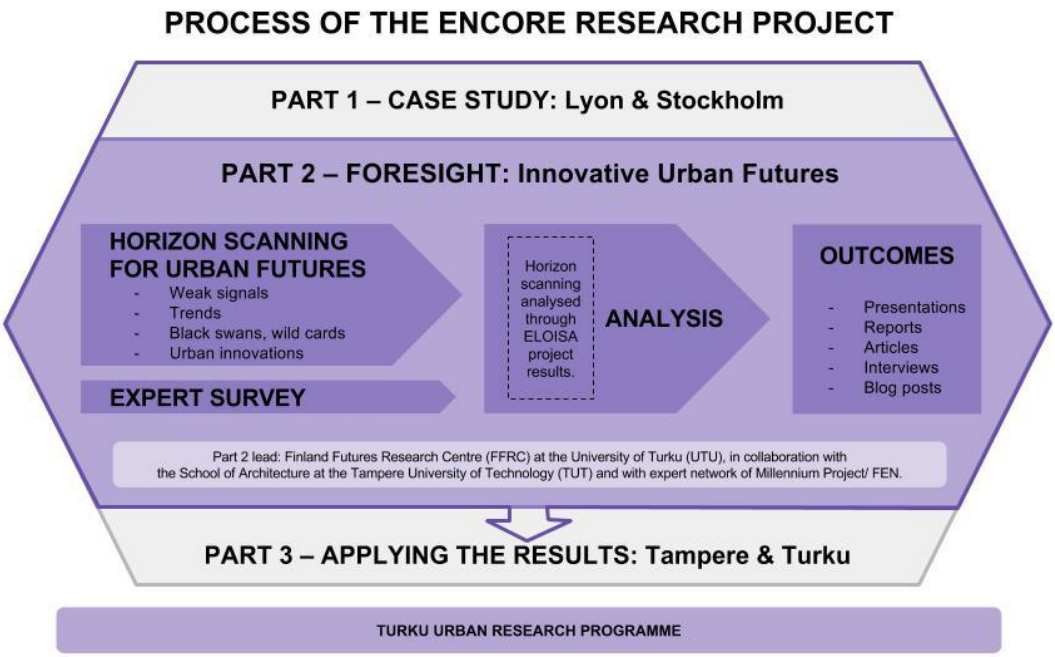

Figure 1. The process of the ENCORE research project.

[2] The ENCORE Project webpage: https://www.utu.fi/en/units/ffrc/research/projects/Pages/encore.aspx

In the foresight part of the research, futures studies methods are utilised to tackle the non-linearities, disruptions, and uncertainties of the changing world with an aim to support urban development and planning. The main research question of the foresight part of ENCORE project is the following:

> ***How can the interaction between different actors (citizens, city management, companies, and organisations) improve the attractiveness and liveability of a city?***

The research question is answered by exploring the innovative urban futures through deliberative foresight consisting of horizon scanning, this expert survey, and the analysis of the gathered data. These will be presented in the forthcoming final report of the foresight part of the project. Through adopting deliberative foresight approach, we focus on discussions that include the actors and stakeholders affected by those specific futures under observation (see Figure 2)[3].

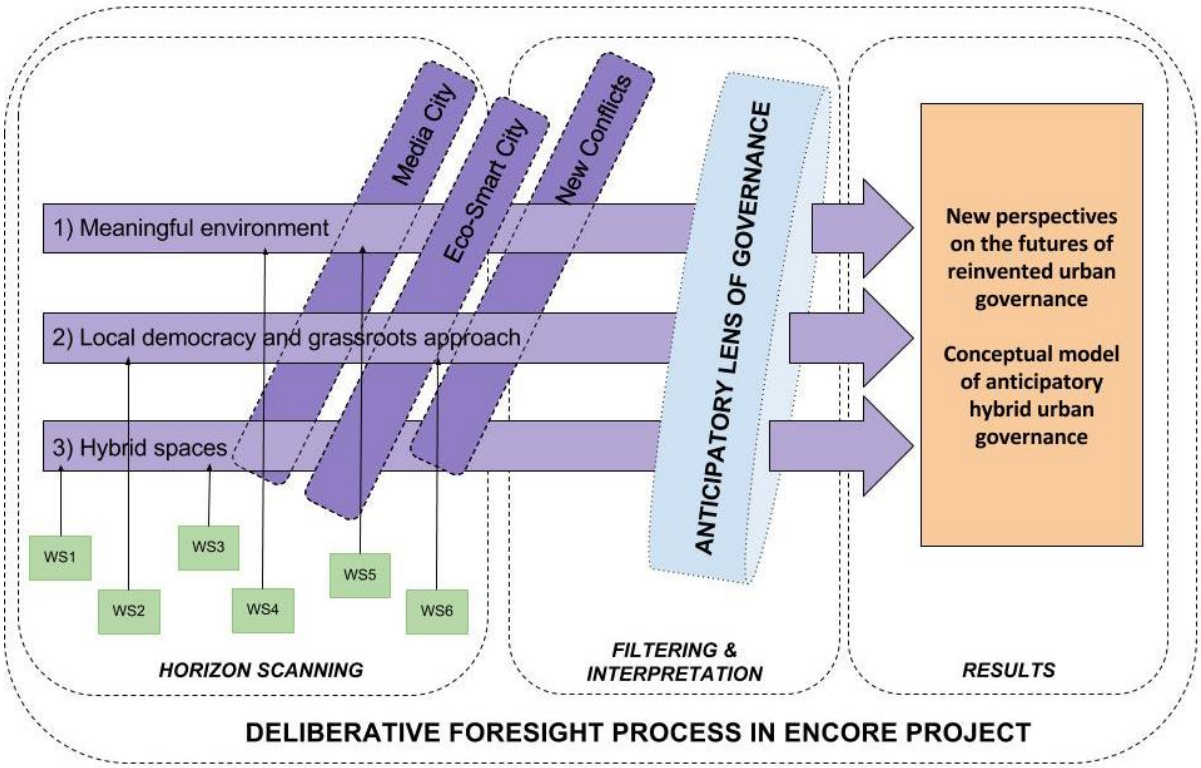

Figure 2. The process of the foresight part of the ENCORE research project

[3] For deliberative foresight, see more in Karjalainen & Heinonen (2016). For deliberation in citizen participation in general, see Rask et al (2012).

In the foresight part of ENCORE, the futures of urban transformations and the quality of city centres are explored in interaction with networks specialised in futures research, such as the experts of the Millennium Project in this survey. Altogether, the ENCORE project results will provide new perspectives and reflective frameworks that help decision-making, and encourage city planners and residents to shape and anticipate urban futures.

The consortium of the project consists of professors and researchers from the School of Architecture at the Tampere University of Technology (TUT) and from Finland Futures Research Centre (FFRC) at the University of Turku (UTU). The project is conducted within the Turku Urban Research Programme[4]. It is directed by Professor Panu Lehtovuori (TUT) and Professor Sirkka Heinonen (UTU). The foresight part of the project is supervised by the latter. There are three project researchers in the research team conducting the foresight part at FFRC/UTU: Joni Karjalainen, Marjukka Parkkinen, and Juho Ruotsalainen.

The results of this working paper will also be linked to the NEO-CARBON Energy project (2014–2019)[5], which explores the futures of renewables-based (especially solar and wind) energy system and the economic, social, cultural, and political changes related to it. The project probes how society and economy could be transformed, if energy production is decentralised and the methods of production are transformed, so that even materials based on fossil fuels will be replaced with synthetic ones. Urban governance has to prepare for emerging ecological, socio-cultural, techno-economic and political changes. This has to take place early when such management is still possible. Like with technology, acting late may be too late for re-designing (Guston 2014). As shown by our Neo-Carbon Energy research (Breyer et al 2015), the lowering costs of solar and wind can be supported by an enabling policy and market environment. Even 100% renewables-based energy system is plausible (Ibid.; Heinberg & Fridley 2016). Cities can be highly relevant actors towards renewable energy powered peer-to-peer urban futures (Mega 2010), but some present problems must be overcome. These range from difficulties to retrofit solar panels on building rooftops, or

[4] Turku Urban Research Programme is a joint intitiative consisting of the City of Turku, Åbo Akademi University, and the University of Turku. The web page of the programme: http://www.abo.fi/forskning/en/stadsforskning

[5] Neo-Carbon Energy Project web page: http://www.neocarbonenergy.fi/
Project on FFRC page: https://www.utu.fi/en/units/ffrc/research/projects/energy/Pages/neo-fore.aspx
See also reports: Heinonen et al 2015a, Heinonen et al 2015b & Breyer et al 2016.

even prohibiting citizens to produce their own energy in some countries. In these two examples, such issues could be strategically met with appropriate policies that address building standards, or by re-considering the arrangements with public utilities and county electricity companies. Such bottlenecks are often discovered when taking a holistic view to analyse the urban energy transition as a societal issue and the often siloed ways of governance. Multi-level solutions involving several actors are needed to make the most of an emerging technology – in a socially just manner (Swilling & Annecke 2012). Energy plays a crucial role in cities and has direct links to the attractiveness of a city in terms of health, safety, clean environment, and economic prosperity. As Mega (2010) points out, energy is often perceived rather as a "back of the mind issue". However, since - concerning energy - the protection of the environment and affordable prices for consumers are considered as top priorities for EU citizens, Europeans anticipate a fundamental swing towards the use of renewable energies.

1.2 COMPARATIVE REFLECTIONS BETWEEN FUTURES STUDIES AND URBAN FUTURES

Cities are complex, dynamic, interconnected, and multidimensional systems. Because of their various interacting dimensions and the rapid changes, they are increasingly unpredictable. (Ratcliffe & Krawczyk 2011.) Accordingly, city and the urban life are prolific futures studies topics. Both urban studies and futures studies represent ecosystems thinking (for the importance of systemic view on cities see e.g. Girardet 2015): it is crucial to observe the interconnectedness of different areas and issues instead of separating them as insular silos Systems thinking in cities is exemplified by the extended metabolism model proposed by Newman and Jennings (2008, 29), which suggests how cities can become more sustainable by reducing their resources and wastes while increasing their liveability.
Sirkka Heinonen has discussed the characteristics of futures studies and their relevance to urban futures and their research, illustrating the strong connection of the two (Table 1).

Table 1. Characteristics of Futures Studies in general and their relevance for/counterparts to urban futures (Heinonen 2013, 15)

FUTURES STUDIES	URBAN FUTURES
Long timeframe	Long term sustainabily of cities
Complexity, systems thinking, and holistic thinking – connectivity	City as a system City as a whole
Multidisciplinarity and multisectorality (breaking boundaries between different fields of study, industries, and actors)	City as crossroads of several activities, fields and actors
Critical thinking and constant questioning of the futures	Revisiting core assumptions about the 'city'
Proactivity (affecting and creating the future)	Goals for the good life in cities/multi-stakeholders
Participatory approaches	Citizen movements, grassroots action
Alternative thinking and scenario thinking	New narratives for urban development
Identifying discontinuities, disruptions, tipping points	City full of surprises, serendipity
Taking radical, unorthodox and unconventional views seriously	Open innovation for urban planning and crowdsourcing

Similar factors are presented in the list of the main purposes for adopting a futures-oriented approach in city planning created by the Futures Academy at Dublin Institute of Technology (Ratcliffe & Krawczyk 2011):

1. Extending thinking beyond the conventional and fostering more forward thinking as a result.

2. Forcing thoughts and stimulating conversations about the future.

3. Helping identify assumptions about the future that might require examination, testing and subsequent modification.

4. Encouraging people to have regard for the positive possibilities and opportunities that tomorrow might hold, as well as the potential threats and disasters.

5. Making more intelligent decisions today concerning the future by focusing the mind on the most important questions that must be resolved in order to formulate better policy.

6. Inspiring people to 'think outside the box'.

7. Widening perspectives and increasing the number of options available for exercising more deliberate decision-making towards positive change.

8. Preparing for, and managing change better by enhancing the capacity to learn.

9. Making response times to actual future events much shorter and reactions more relevant.

10. Fostering active participation in strategic thinking leading to decision-making.

The readers are encouraged to bear in mind these purposes for futures-orientated urban planning. Especially, this survey at the outset was concerned with combining futures research and urban studies, as well as aimed at forwarding the items 2, 4, 6 and 7 of the above Ratcliffe & Krawczyk's list.

The ENCORE research project contributes to theoretical discussions on urban planning from a viewpoint based on systems thinking, acknowledging the city as a complex entity, influenced, used, and experienced by a multiplicity of different actors (see e.g. Girardet 2015; Batty 2013). As the project acknowledges the continuous transformation of the urban environment—as well as the various possible alternative development paths—focus is given especially to discontinuities, and even unorthodox viewpoints. According to Michael Mehaffy the current research done regarding the urban environments and their dynamic behaviour echoes insights from more than a half a century ago. He underlines that the "*new science of cities"* confirms and extends Jane Jacobs' ideas of the city as an interrelated and complex system. (Mehaffy 2014.)

Grounded futures knowledge is needed to understand the city as such a complex system with interrelated elements. Futures studies helps us in thinking and creating alternative urban futures and supporting decision-making[6] , taking into consideration not only probable but also possible and preferred tomorrows for our cities.

[6] For strategic intelligence, foresight and its relevance for policy-making see e.g. Kuosa 2014.

2. INSIGHTS ON URBAN LIVEABILITY — QUESTIONNAIRE RESULTS

Within the ENCORE research project described in previous chapter, a semi-customised questionnaire on futures of liveable cities was sent to seven persons — mainly Millennium Project node members and especially Foresight Europe Network (FEN)[7] experts—at the end of June 2015. They largely represent the European nodes of the Millennium Project. Since the aim of the paper is to give an interpretative overall picture based on the material, the responses are presented without a connection to the respondant. The experts who participated to the survey are listed below in alphabetical order. For their affiliations, see Appendix 1.:

1. Hugo Cristiano Cagnin
2. Vicente Carabias-Hütter[8]
3. Blaz Golob
4. Geci Karuri-Sebina
5. Anna Sacio-Szymańska
6. Michaël Van Cutsem
7. Ibon Zugasti

Each respondent has expertise both in futures studies and urban development or urban studies, however, with different approaches and backgrounds. Because of the various proficiencies of the respondents, and in order to approach the urban development with a

[7] FEN web page: http://www.feneu.org/
Preliminary results of the ENCORE project and this expert survey were presented at the FEN meeting of the Millennium Project in San Sebastian, March 2016, as well as at the CIDEU conference (Heinonen 2016). Furthermore, the results were disseminated in the Millennium Project Planning Committee Meeting in Washington D.C. on 21 July 2016, in a report by the Node Chair of the Helsinki Node (see the link for Finland) http://www.millennium-project.org/millennium/mppc-0716.html#nodes. The preliminary results are also included in an oral presentation in the Urban Transition Summit in Shanghai in September 2016 (Heinonen et al 201b).

[8] The questionnaire was addressed to Mr. Carabias-Hütter. The responses were collectively provided by Onur Yildirim, Mirjam Zwahlen and Vicente Carabias-Hütter reflecting their ZHAW Delphi-Survey on Smart Cities 2035. The total amount of respondents in the ZHAW Delphi-Survey on Smart Cities 2035 was 39. According to the providers of the Delphi results/questionnaire responses, the main focus of the first two rounds of the survey was on the understanding of the term “Smart City”, the goals of a smart city, and the first steps in the transformation process. For more information on the survey, see Yildirim, Onur & Zwahlen, Mirjam (2016). Smart Cities 2035: Delphi-Expertenbefragung III. Bachelorarbeit (Energie- und Umwelttechnik). Winterthur: ZHAW Zürcher Hochschule für Angewandte Wissenschaften.

wide scope, the questionnaires were partly customised. Customised and common questions are indicated in the text. Thus a set of six questions was posed for all respondents, followed by 2–3 questions customised according to the expertise of each person. One of these customised questions was posed to more than one respondent. No specific year or time for the futures was appointed in the questions.

The survey questions center around bigger themes related to urban development, such as liveability, the smart city paradigm, governance, and participation. The analysis aims to provide answers to two large questions; ***what is a lively city***, and ***how that city could be enabled***. Whereas the first question centers around the definitions of a good urban environment, the second one focuses on the practices, needed resources, and ways to organise in order to realise the desirable city. The four themes and the answers to these two questions intertwine.

The main objective of this working paper is to feed insights to the main question of the ENCORE project; *"How does the urban planning and governance of a city answer and react to structural changes and new phenomena?"* The responses are further analysed and discussed with some relevant literature. The reader is adviced to bear in mind that the themes and their responses intertwine.[9]

2.1 LIVEABLE URBAN ENVIRONMENT

In order to plan a good city, it is first necessary to define a good city. The respondents were asked to give examples on lively urban environments. *Liveliness* means e.g. activeness, stimulating, energetic, vividness or even resilience[10]. Liveliness of a city is used in this study as a synonym with liveability of a city. Resilience is an emerging theme regarded as a part of the concept of liveability[11], and it refers to the ability of different actors and systems to transform in a sustainable way in order to meet constant changes they are facing.

Cities are huge artifacts – among the largest artifacts ever produced by humans. Each city is also an environment – an artificial environment. For about half the world's

[9] Minor spelling mistakes of the quotes have been corrected by the authors.

[10] Liveliness | Definition of Lively by Merriam-Webster (2016). Retrieved 12 January 2016 from http://www.merriam-webster.com/dictionary/lively

[11] For resilience thinking in urban planning see Eraydin & Taşan-Kok (2013).

population, the city is the environment within which they live, act and behave. Through their action and behaviour, people constantly reproduce and change the environment. The globally growing number of urban population is a manifestation of one of the biggest megatrends – that of urbanisation. Cities are quintessentially about people and resources. In its framework of 15 Global Challenges, the Millennium Project addresses Population and Resources as Global Challenge number 3 (Glenn et al 2015).

The city is also a category – a cognitive construct in the mind of people that refers to the many instances that exist in the world (Portugali 2011). As the liveliness of a city is both central to this study, as well as ambiguous as a concept, the respondents were asked to give their personal opinions and arguments on good examples of enjoyable urban areas.

Common question

Can you give a good example of a lively urban environment? What makes it an interesting example?

The answers address multiple different environments and cities that respondents consider lively. The cities or districts of a city mentioned as examples of a lively urban environment are illustrated in table 2 in alphabetical order. The participants suggested cities and environments that are familiar to them, e.g. by inhabiting or having visited the city. Thus, it can be stated that in order to experience an area as a lively one, one needs to have a relationship to it. This idea is related to the experiential realism. From the cognitive science point of view, an intriguing question is “What is a city?” According to the school of embodied cognition – as opposed to classical cognition – the behaving human agents, and the city that is being reproduced by their action and behavious, is treated as a single cognitive system. Cities can also be studied from the point of view of experiential realism, according to which the cognition is embodied. (Portugali 2011.)

Table 2. Lively urban environments mentioned in responses to the question "Can you give a good example of a lively urban environment?"

EXAMPLES OF LIVELY URBAN ENVIRONMENTS
Berlin
Bristol
Copenhagen: Kødbyen 2015
Johannesburg
London: Olympic games neighborhood
Louvain-la-Neuve, Belgium
Ljubljana: BTC City
Lucerne: IG Industriestrasse
San Sebastian
Vienna: WU University Campus in Prater district
Winterthur: Mehrgenerationenhaus
Zurich: Greencity

Figure 3. Lively urban environments from Table 2 illustrated as a word cloud.

As the number of respondents was small, it is not surprising, that no city was mentioned twice. Next to cities, also specific areas were mentioned in the responses. The size of the cities mentioned varies greatly, scaling from Louvain-la-Neuve, a city of about 30 000 inhabitants[12] in Belgium to a neighbourhood in the City of London. Although no cities were mentioned twice, and they vary in size, the examples center on Europe, Johannesburg being the only example from other continents. Thus, the viewpoint of this working paper may be described mostly as 'the city of west'. Many of the cities mentioned here – Berlin, Zürich and Vienna for example – are also featured in liveable city rankings, which will be discussed later in the chapter.

As for the second part of the question, respondents suggest a myriad of factors making these environments lively. Table 3 presents the factors related to the liveliness of an urban environment. The factors are illustrated as a word cloud in Figure 4.

[12] There were in total 31.221 inhabitants in Louvain-la-Neuve in 31 December 2014 according to http://www.olln.be/fr/services-communaux/demographie/demographie.html
Page accessed 11 January 2016.

Table 3. Key words, concepts, and factors addressing the liveliness of an urban environment as responded to the question "What makes it [the city] an interesting example?" in an alphabetical order.

KEY WORDS, CONCEPTS, AND FACTORS ADDRESSING THE LIVELINESSS OF AN URBAN ENVIRONMENT	
Activated	Occupied
Active	Particularly beautiful
Bottom up approaches	People with different background, culture and income
Business park development zone	Political collective activities
Cheap apartments	Possibility to use the Olympic infrastructure by and for all, for free
Creative	Practical answer to risk of food shortages
Creativity	Prosperous and safe neighbourhood
Cultural activities	Public green spaces
Cultural collective activities	Quality of life
Economic collective activities	R&D investment
Economic perspective	Renewable energy production
Energy efficiency	Room for cultural and social activities
Environmental perspective	Security
European Capital of Culture	Services
European Green Capital	Smart citizens being initiative and innovative
Food production in cities	Smart city
Food waste production	Social cohesion
Fun	Social desirability for greener spaces
Gastronomy excellence	Social perspective
Green areas	Start-ups community
Green and sustainable approach	Sustainable self-supporting district
GDP per capita	Unique
Infrastructures	Uniting vegetable and food production with residential, office and retail
Interaction	University
Interesting	University campus
Intergenerational	Unusual
Integration of services and environmental sensibility	Variety of activities in a public space
Low car traffic living	Waste management performance
Mixed land use	Widely used by the local communities
Modern business & start-up area (converted from industrial areas)	

Figure 4. Key words, concepts, and factors from Table 3 illustrated as a word cloud.

The question on the liveliness of an urban environment was explicitly considered too general by one respondent, who stated being unsure of how to answer the question precisely. This statement of generality of the question is further supported by the plurality of the answers. Although some cohesion exists, it could still be stated that despite the similarities of the respondents, the large variety of over 50 concepts, keywords, and factors making a city lively represent the composite nature of liveliness. Indeed, one of the respondents commented that liveliness emerges from different factors in different cities. Instead of a universal and shared definition of what makes a city enjoyable, city is experienced in many ways. It can be thus claimed that city planning should not use narrow definitions when pursuing to increase the liveliness of a city, but to take into account

different views, and engage citizens in the planning process. As seen in Figure 3 and Table 2, seven respondents mentioned altogether twelve cities or districts of a city as examples of a lively urban environment. As examples of metropolitan areas, Berlin and Vienna were mentioned. The liveliness of Berlin is connected to creativity and the start-up community, whereas Vienna is invigorated by WU (Wirtschaftsuniversität) University Campus. Ljubljana is strongly developing its business park zone on a former industrial area, and Bristol is leading the way in smart city design. Thus, the aspects making a city lively vary from one place to another, and also according to the size of the city.

Different views and opinions on liveliness is acknowledged by the respondents firstly in the variety of answers when looking at the whole data, but also in explicit statements about different aspects and multiplicity influencing the liveliness of the urban environment;

> *"[…]Now it is a neighborhood with mixed land use, with people living in with different background, culture and income,[…]* [Questionnaire quote]

> *"[…]Other places might be lively because they are unusual / unique / just interesting, or because they are particularly beautiful, or active in the sense of variety of activities possible in a public space, or intergenerational, etc…."* [Questionnaire quote]

The choice of words in answers addresses the coexistense of varieties: of people and cultures, ways of using land, as well as paradigms and functions as well. The answers reflect Jane Jacobs' (1961) conceptions of liveable city districts, as she emphasises the importance of diversity in city and avoiding dividing the city into separate districts according to their specific functions. In this way the city reflects the richness of human life and ensures continuous use of the city space, instead of desolate and lifeless one-purpose areas (ibid.). These kind of city spaces could be described as hybrid spaces, serving to answer different needs and functions simultaneously. As an example of such a concept a Danish project, *Kødbyen 2025 – A Vertical FoodCity* was mentioned. Kødbyen 2025 is a self-supporting

district in Copenhagen, where food production is combined with residential, retail, and office space. Production is done with renewable energy and low waste.[13]

Living conditions are measured with different surveys by various organisations annually, such as Global Liveability City Index[14] or the Economist Intelligent Unit's (EIU) liveability ranking[15]. According to the Economist Intelligence Unit, the most liveable places tend to be "mid-sized cities in wealthier countries with a relatively low population density". This explains the low ranking of near-megacities like London and New York and goes some way to explaining Melbourne's continued place in the sun. Among the respondents' examples only one city - Vienna - was on this list.[16] Indicators were used as a reference to when arguing for a liveliness of an urban environment. Here the city of San Sebastian provides an example:

> *"[…]The current indicators show that it is in the top level at European level in the main development indicators such as: GDP per capita, social cohesion, R&D investment, cultural activities, waste management performance, energy efficiency, security, quality of life, infraestructures, etc."* [Questionnaire quote]

Interestingly the respondent further underlined San Sebastian's role as the European Capital of Culture in 2016 and as featuring a high level in gastronomic excellence. The response depicts the multifaceted relationship between indicators and experience, as both the rankings and the personal relationship to a city justify the liveliness of a city.

Inclusiveness and accessibility were considered as key factors making an urban environment lively. However, the inequality between different economic classes or groups

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[13] Kødbyen 2025 (n.d.). Retrieved 2 March 2016 from http://mutopia.dk/projects/urban/kodbyen2025/. There is also a movement "edible city" where highlighting the multitude of local food sources growing on public lands. By pointing out such places, a better connection to urban environment becomes available. Users anywhere can map out publicly available edible plant sources, track fruit that is in season, and share information about specific trees and shrubs. Retrieved 18th July 2016 from http://www.ediblecities.org/about.html

[14] Giap, T.K., Thye, W.W. & Aw, G. (2014). A new approach to measuring the liveability of cities: the Global Liveable Cities Index. In *World Review of Science, Technology, and Sust. Development,* 11(2), 176–196. Retrieved 29 October 2015 from http://lkyspp.nus.edu.sg/aci/wp-content/uploads/sites/4/2013/12/FINAL-A-New-Approach-to-Measuring-the-Liveability-of-Cities-The-Global-Liveable-Cities-Index-GLCI.pdf

[15] http://www.vancouvereconomic.com/wp-content/uploads/2015/08/EIU-Liveability-Ranking-Aug-2015.pdf

[16] http://www.economist.com/blogs/graphicdetail/2015/08/daily-chart-5

of people is an existing challenge for socially sustainable and smart cities, which is also anticipated to increase in the future;

> *"For instance, the neighborhood where the Olympic games[17] took place in London is a good and recent example. It used to be a degraded area that now is widely used by the local communities and Londoners alike for fun, interaction and creativity.[…]"*
> [Questionnaire quote]

Accessibility and inclusiveness are related to possibilities to influence one's surroundings, which were all seen important. As a demonstration of successful bottom-up initiatives, one of the respondents mentions an area in Lucerne. The area was supposed to be sold by the city to investors, but because of citizen initiative, it transformed to a non-profit housing project instead.

As a conclusion, it can be pointed out that the liveliness is experienced in various, individual ways. Furthermore, the liveability of an urban environment stems from plurality of functions, cultures, and people. When observing the responses with an environmental scanning tool such as PESTEC table in mind, the answers can be said to address all the dimensions of urban life; political (P), economic (E), social (S), technological (T), environmental (E), and cultural (C). However, there is a distinct emphasis on social, cultural, and environmental aspects. The factors considered making an urban environment lively fit the three-fold framework utilised in the horizon scanning process of ENCORE project (Heinonen et al 2016a). The framework is originally derived and customised from ELOISA – Resilient Suburbs project[18]. The framework is based on the notion that liveability of cities can be connected to the following three themes;

[17] Mega (2010) points out that unique events may bring special opportunitied for cities. For example, the first Olympic Games after the end of the Cold War were organised in 1992 and they were a key catalyst for the transformation of the city of Barcelona.

[18] ELOISA project explored how the life span of residential areas as well as their "spatial capital" could be added through increasing the versatility and livability of the areas project web page: http://eloisa.urba.fi/english

1) *meaningful environment,*

2) *grassroot approaches,* and

3) *hybrid spaces*.[19]

When looking at the responses to the liveability of urban environments, all factors fit in the aforementioned categories.

2.2 SMART CITY

As *smart city* is a central concept for, and a strongly evolving paradigm in urban development, this chapter observes urban futures related to the topic. The concept of smart city has been in use since the beginning of the 1990s. It refers to a conceptual model of urban development based on human, collective, and technological capital for the promotion of the urban development (Angelidou 2014). It describes a paradigm of urban planning, policymaking, and living, which is connected to various sectors within it. The concept is utilised in multiple ways, and the meaning of the concept has not been agreed upon. Albino et al. (2015) state that among the definitions used by cities calling themselves smart, no unity exists. Popular descriptions utilised for a smart city often include words such as sustainable, connected, liveable, intelligent, innovative, and resilient (Shark 2014, 1). Albino et al. underline that the idea of smart city is no longer limited to ICT solutions. Instead, the aspects of sociality and information are also included. (Albino et al 2015.) Furthermore, Vuolteenaho et al. (2015, 1–4) suggest that there has been a broader shift towards the investigation of the ICT systems within urban studies, characterised by a very optimistic mood, and perhaps not a wide enough perspective. Reflecting the problematique of defining the concept as well as the need for a critical examination, the respondents were asked to consider the social and cultural liveability of a smart city.

[19] In the foresight part of the ELOISA, the livability of future suburbs was observed through three themes, which were formulated on the results of the first futures clinique: 1) *meaningful environment,* 2) *local democracy and grassroots approaches,* and 3) *hybrid spaces*. This framework is further utilized in the horizon scanning part of the ENCORE project (Heinonen et al 2016a), from which this working paper is a result . For more information about ELOISA project and the origins of the framework, see Heinonen & Ruotsalainen 2013; 2012; Heinonen et al. 2011. This framework is also used when presenting the results of the project in Urban Transitions Conference in Shanghai, China, September 2016.

Two questions related to the topic of smart cities were posed to all of the participants: one considering the conceptual side of the issue, and the other the implementation of smart city paradigm in practice.

Common question

Cities are developed towards the discourse of Smart City that revolves around information and communication technology. How can we ensure that smart cities of the future are also developed to be socially and culturally livable and aesthetically attractive?

How could "smart city" enhance such liveability of cities?

The questions juxtapose the ICT and social and cultural sustainability of urban environments when considering the paradigm of smart city. This was done in order to discuss smart city paradigm in a provocative and critical manner.[20] Whether provoked by the question or not, most of the respondents agreed with the notion of smart city paradigm being centered around information and communication technologies.

> *"As confirmed by the Delphi experts, social aspects are so far rather neglected in the smart city discourse, although they play an equally relevant role as ICT do."* [Questionnaire quote]

Furthermore, it was agreed that the concept has to address aspects beyond technological ones. Here the respondent underlined that in reality the true smartness will include all the aspects of liveability and functionality, connotating the systems oriented view on cities:

> *"[…]I don't think smart cities of the future are going to simply be cities were there is ubiquitous technology; it will be cities that work for their circumstances and that the*

[20] Our claim explicit in the question is that creating a smart city is not just about technology, or about developing technological innovations. It is a challenge of eco-systems thinking and holistic approach. In addition, bottom-up approach to create smart cities is emerging. The Dutch city of Breda is a pioneer in this sense, named as the Nethrelands' Smartest City Centre. They have wi-fi in the centre and plan to extend it to the whole city. The city plans to install charging stations for phones in street lights, bus stops, and to provide bins that indicate whether they are full so that sanitation department can cut down unnecessary driving. Loohuis (2016). A culturally smart city experimentation took place in Helsinki a few years ago where the attractiveness of bins was realised by delivering poems (audio) from the bins whenever citizens threw trash into them.

social, cultural, etc. issues are fundamental to that – both in terms of functionality and livability." [Questionnaire quote][21]

"The focus only on ICTs is not enough to build aesthetically attractive and livable cities, with green areas and collective spaces for community interaction and leisure, and that stimulates culture." [Questionnaire quote]

One of the core issues stemming from the central role of ICT over other aspects of sustainable city could in the future be a situation of sectorised information:

" So far there have been so many debates, forums, policy creations, projects initiatives about ''Smart Cities'' that are driven by ICT industry today. This leads to many silo oriented results which do not bring sustainable, tangible, inclusive, horizontally acceptable (internal city actors) results." [Questionnaire quote]

In an additional comment the respondent also suggested that this situation could be avoided by long-term co-creational processes, managed by for example the mayor of the city. The process ought to include cultural and aesthetical aspects, too. The asset in including various stakeholders and citizens is the representativeness of viewpoints, experiences, and values:

"Along with capturing and debating technological developments related to the concept of a smart city the focus should also be on methods/actions that would capture the VALUES and FEELINGS of citizens towards their cities and specific development projects.[…]." [Questionnaire quote]

Accordingly, one of the respondents stated that without societal acceptance for smart city planning, measures and implementations, realisation of these ideas would be difficult. It was suggested that a succesful process of smart city development could follow the principles of good governance defined by UN. This kind of decision-making includes the

[21] The underlining of the quote added by the respondent.

following aspects [Questionnaire quote]:

- “Consensus Oriented
- Participatory
- Following the Rule of Law
- Effective and Efficient
  Accountable
  Transparent
- Responsive
- Equitable and inclusive”

Furthermore, the central role of the smart city paradigm was questioned with an argument underlining the bigger need for ICT to connect people in rural areas rather than in dense cities. In rural areas the attention could be drawn into directions from those in the cities, reflecting a more connected with a holistic smart city paradigm:

> *”Actually, I do not see why it is in cities that information and communication technology are more helpful. Physical work on public space, the creation of a lively environment, entertainment should be much more effective for achieving the goals mentioned. I would prefer ‘smart rural’ where ICT are indeed a plus for connecting people.”*
> [Questionnaire quote]

Although the question was posed rather provocatively, juxtaposing the roles of ICT and more holistic sustainable thinking, the role of ICT was also advocated. ICT can ensure a socially and culturally livable and attractive smart city, when used in a right way, i.e. in collecting the public opinion in real-time.

> *”Ad hoc and continuous collection of feedback and opinions is an important element for enhancing livability of cities (nonetheless, it can offer new jobs).”* [Questionnaire quote]

The respondent further addessed two relevant ways, in which ICT can enable a lively city. Firstly, policy makers may include citizens or stakeholders in the decision-making process

utilising ICT. Culturally, socially, and aesthetically desirable areas could be better designed according to the public consultation from a broader public. Secondly, after the decision-making process, ICT can enable a feedback system for citizens to use interactively when using an urban space or a service. This feedback could be used in the future to improve or to resolve occurring inconveniences. It was also underlined, that the *smartness* of smart city derives from and refers to the city's needs to be more efficient.

One example of smart city development is the initiative called *Bristol is Open,* which is expected to change the city of Bristol into a smart city of the future through an experimental and interlinked network system. The initiative is described as a technological sandbox, and it utilizes various data sets. Although the platform is mostly used by engineers, researchers, and architects, it is designed to make the everyday of an ordinary citizen better by solving questions related to air pollution or traffic congestion. Interestingly, the project is described as "*an operating system for the city*".[22] As a result, applying ICT in city planning and management can enable sustainable approaches. Conclusively, foresight was seen necessary for the smart city concept in several responses, ideally combined with co-creative and participatory processes:

> *"[…] The best way to ensure a real comprehensive sustainable development strategy at all the dimensions (environment, social, economic and governance) is to have a successful long term strategy based on a foresight approach.[…]"* [Questionnaire quote]

> *"Therefore participatory foresight processes and bottom-up creativity platforms are key to smart city developments in order to benefit from the idea richness available within all stakeholders."* [Questionnaire quote]

Conclusively, the role of smart city as merely one of many concepts addressing the lively city was emphasised in the responses. Instead of the dominance of the concept, the focus should be steered toward concepts such as sustainable, biophilic, renaturing, or compact city. However, the topic was approached with contradictionary opinions as well. Rather than

[22] Sources: Deek, Russell (2015). Welcome to the wired, wired west. *Focus* 289, 61–65.
Temperton, James (2015). Bristol is making a smart city for actual humans. Wired 17 March 2015. Retrieved 14 March 2016 from http://www.wired.co.uk/news/archive/2015-03/17/bristol-smart-city

deeming the smart city concept as technocratic and ill-functioning, the responses point out the need to discuss the idea to the next level. This would further support the social acceptance of the concept, as well as the successful implementation.

With the following question, the respondents were asked to point out the most vital steps to enable the implementation of smart cities.

Common question

What are the most important steps needed to enable the implementation of smart cities?

Although the responses presented a variety of suggestions with different emphasis and width for implemention steps, connections can be made throughout the data. Reflecting the hardships to define the concept of smart city, many respondents pointed out the necessity to start the implementation by defining the meaning of the concept:

> *"Contextualised definition of what it means (i.e. for that city); Conceptualisation of what is to be done; […]"* [Questionnaire quote]

The adaptation of the defined concept to support the needs of the exact city under planning was defined vital. During this step the goals are also determined. Margarita Angelidou (2015) underlines that the system of smart city stakeholders is very complex and thus driven by different interests. Accordingly, the definition of the meaning of the concept for the city is needed. Another respondent stated that it is necessary to define "*the longterm vision for the city alongside with alternative scenarios for the decades to come".*

The emphasis on the people enabling the process was seen throughout the responses, and several groups of people needed to make the shift happen were appointed. Firstly, there is a need for political support and acceptance. One respondent emphasised that the implementation of the smart city concept needs to begin with establishing of a *clear political leadership.* Secondly, the inclusion of key city stakeholders and decision-makers in the design of the smart city was seen crucial;

> "*To identify stakeholders' projects & smart city industry digital and other industry*

solutions for co-creating the Smart City (narrowing the costs of city services & providing sustainable income and economic & social activities). Every project or industry solution should have value proposition included." [Questionnaire quote]

The emphasis on dialogical process in the answers — i.e. "*Bring the key decision-makers together (coordinated by the city administration)"* as a step mentioned —addresses importance for the interaction and societal dimension of the planning – once againa, a systems oriented view on city planning. Although the administration was considered as the main enabler, the inclusion of citizens was seen as a highly important step. However, efforts will be needed to include the public into decision-making processes. Designing and conducting educational campaigns and awareness in general for this purpose was considered a necessary part of the implementation.

"*Local Authorities should try to engage directly citizens and support as much as possible any spontaneous urban requalification activity promoted by the citizens, according to the developed general vision of the envisaged Smart City of the future*." [Questionnaire quote]

Innovative technologies are at the core of enabling the smart city concept. ICT as a tool for realtime feedback and communication could offer *"human scale perspective"* to the decision-making processes. Regarding to the role of ICT in the process, the importance of opennes and accessibility of technologies as enablers of a networked, interopareble and systemic smart city were underlined:

"Money to invest, open platforms and apps instead of proprietary ones that benefit only a handful firms, access to and availability of mobile technologies, interconnection and interoperability of services (e.g. health, transport, energy, water, etc.), among others." [Questionnaire quote]

The suggested steps for enabling the implementation of smart city according to the responses can be summarised in eight points as follows:

1. Defining the smart city[23]
2. Political leadership and urban/regional governance supported with foresight
3. Vision
4. Strategy
5. Implementation
6. Participation
7. Open resources (funds, tech, platforms, services, education, decision-makers, connections, information, and research)
8. Measuring/ follow-up

As smart city paradigm is connected with sustainability and wise use of resources, a common question concerning emission-free cities and tools to enable the transition was posed:

Common question

Which future-oriented tools can help minimize carbon emissions in cities, and how should they be used?

Next to multiplicity in the viewpoints on liveliness of the urban environment and the concept of smart city, also the question on the future oriented tools minimising carbon emissions resulted in a large variety of answers. As one of the respondent stated, all the tools can help,"*if they are used in a ways what mobilise actors, participants, users in a result-oriented process in which they believe and are therefore convinced".* The responses featured methodological, conceptual and procedural recommendations. Reflecting the responses presented in previous chapter about Smart City, one respondent further reminded about the relationship of humans and machines:

> *"They [different foresight method practices] should be used in the process of inclusion of citizens and city stakeholders and also as management techniques for city mayor and city leaders. As I mentioned before, ICT and foresight methods are only enablers."*
> [Questionnaire quote]

[23] This is an essential step. For example, Albino et al 2015 highlight the difficulty of measuring a smart city.

Overall, solving the carbon emissions challenge is a complicated process. Innovations connected to energy, transportation, living, measuring and communication were offered as solutions, or as parts of the solution. The following responses depict the wide range of solutios connected to low-carbon futures:

> *"There are a number of technologies and tools related to energy generation, distribution, consumption and storage, or to individual and collective mobility, to name just a couple of sectors/themes that can contribute to reducing or eliminating carbon emissions." [Questionnaire quote]*

> *"electric cars […], renewable energies […], car sharing and sharing platforms for other devices, green buildings […], urban gardening […], introducing new and more flexible working models (e.g. working at home), smart grid […], smart metering […], smart phones to be used as passepartout for instance for mobility services"*
> [Questionnaire quote]

Many of the responses reflected on the methodological solutions for minimising carbon emissions in the city. On a general level, a combination of "*quantitative and qualitative tools"* was suggested; quantitative for prediction and illustration of risks and trends, and qualitative tools for imagining the possibilities. The relevance of technologies and tools related to energy generation, distribution, and storage, as well as mobility for the reduction of carbon emissions were also seen as core enablers.

Regarding the foresight methods, scenario building was mentioned as a powerful tool to assess the possible impacts that climate change poses on the urban environment. Scenario processes have the possibility to engage, inform, and imagine through scenario process:

> *"At the beginning "scenarios" are needed in order to engage the citizens, as representatives of interests and as privates, to ask them how they see the future of their city and to make them aware of the main fields the zero-carbon emission target will tackle."* [Questionnaire quote]

As an example of an interactive process engaging citizens *Dreams of a Low Carbon Future*—a graphic novel examining the climate change and ways to adapt to a sustainable, low carbon future—was mentioned.[24] Roadmapping method was suggested to be used alongside with scenario approaches. Roadmapping suits the planning process towards low carbon emission cities. The development of *behavioural foresight* was suggested by one respondent. Next to foresight tools, a variety of approaches, including smart city platform, KPIs[25], European Green capital criterias, alongside with different foresight methods and practices were addressed as helpful tools in enabling the smart city concept. The role of indicators in measuring the smartness of the city could ensure better decision-making:

> *"Forecasting models could be helpful to measure the environmental impacts of all the city policies, specially if they are linked to better decision-making processes towards sustainable development.[…]"* [Questionnaire quote]

Customised question

You conducted a Delphi expert survey, where various stakeholders expressed their opinion on issues related to "Smart Cities 2035". How consensually was the vision of Smart Cities of the future shared among different stakeholder groups?
What were the most interesting differences?
Were there any surprising findings?

According to the respondent, a fairly consensual vision of 2035 Smart City was shared by the various stakeholders who answered the Delphi questionnaire used as a reference. Social aspects and the role of ICT in the implementation of the smart city concept were both advocated.

[24] The novel was the final result of a course aiming to develop engineering researchers' communication skills at the Royal Academy of Engineering. The novel can be accessed here: https://www.engineering.leeds.ac.uk/dtc-low-carbon-technologies/research/DreamsofaLowCarbonFuture.shtml
[25] Key Performance Indicators

> *"Basically, these results were not surprising, even though the experts confirmed that smart cities should support the increase of quality of life while at the same time reduce energy and resource consumption."* [Questionnaire quote]

However, some differences occurred. Whereas the rest of stakeholders considered the first necessary step to be the involvement of the most relevant decision-makers, R&D representatives disagreed. Instead, they saw the support of innovative business models more important. The R&D representatives also considered the *implementation of ICT* and *enabling access to knowledge in order to support* innovation less important than other groups. Interestingly, there was no consensus among the ICT promoters about the most important technology to begin the transition towards the smart city with. According to the respondent, three topics gained a notable amount of mentions in the comment section of the questionnaire: 1) sustainable mobility, 2) ICT, and 3) involvement of citizens. The most relevant sub-topics for sustainable mobility were *"less individual transport, innovative traffic planning, more non-motorized transport, reduction of emissions caused by traffic and a highly improved transportation infrastructure".* Furthermore, the experts of the 2035 Smart City Delphi survey addressed the need/possibility to combine mobility management with ICT and energy administration. As already stated, ICT is a core, yet debated, part of the transformation towards smart city. Respondents further addressed two issues related to information and communication technologies; data security problems and the lack of acceptance from the citizens. As solutions e.g. campaigns promoting the paradigm, enhanced data protection laws, and Open City Data Platform initiatives were suggested. Interestingly, the respondents were reported to support the limitation of the participation processes of the citizens, underlining the importance of administration and top-down projects in the enabling of the smart city:

> *"According to the experts, the most important stakeholder in the implementation process is the public authority – and not the citizens. Citizens should be informed about new smart city projects and should be given a possibility to participate in these projects."* [Questionnaire quote]

The smart city paradigm is also aligned with sustainability. Generally the core idea of *sustainable* is something that can be maintained over time (Heinberg 2012, 1). Although alternative descriptions exist, sustainability is often considered to consist of three overlapping aspects; environmental, economical, and social sustainability (Dillard et al 2012, 7). The following customised questions address sustainability especially from environmental and economic perspectives.

Customised question

You have studied water, energy and food security nexus. What are the biggest challenges connected to these sectors when looking at urban environments?

How could these questions be taken into account better when planning for urban environments?

According to the respondent, the nexus is a key aspect for global and urban development in the future. As the concept of nexus suggests, the different factors are connected in ways that cross-influence each other, and they cannot be developed or treated as separate parts of sustainability. For example: "*the massive use of biofuels could negatively affect water management and food security in the medium and long term."* According to the respondent, a holistic consideration of the topic demands a systemic and committed approach:

> *"Having a long-term urban sustainable development strategy is the best way to take into account these questions when developing the urban planning."* [Questionnaire quote]

Customised question

How will entrepreneurship change or modify the urban environment and the urban economy?

According to the respondent, entrepreneurship—and especially social entrepreneurship—promotes new activities and services and thereby transforms the urban economic structure. If the novel services are designed in a way that decreases their environmental impact, they

become core enablers of sustainable development. Social entrepreneurship can be described as an entreprise aiming to alter a socioeconomic situation, combining social goals with financial constraints. Thus, the ventures are often hybrids between business-oriented entrepreneurship and government initials.[26]

To sum up this chapter, smart city was seen as a desirable state of an urban environment, despite the (perhaps provocated) criticism presented towards the concept. However, it needs to be stated that the attention of the respondents was steered to the debated role of ICT within the smart city concept. The suggestions on the steps to implement the smart city also depict a more holistic and systems oriented approach to smart city, beyond the mere focus on the technological aspects. However, the paradigm is enabled by ICT. Vuolteenaho et al. (2015) discuss the digitised urban condition addressing the spectacular facet of the topic. The smart city concept as a part of global fashion of ranking cities according to their knowledge-intensive economic performance is an indication of top-down spectacularization strategies. Moreover, as a lexicon of different futuristic and high tech associated labels has started to dominate the academic, governance, and business discourses, it is worthwhile to ask, what to call a city that is not re-branding itself as a smart one. Brands aside, Alan R. Shark (2014, 1) somewhat humorously states that "*no mayor wants to be the leader of a 'dumb' city".*

In the following two chapters the focus is on social dynamics. Chapter 2.3 presents responses concerning participation. In chapter 2.4 the results on the topic of governance are illustrated.

[26] Osberg, S.R. & Martin, R.L. (2015). Two Keys to Sustainable Social Entreprise. *Harvard Business Review*. Retrieved 14 March 2016 from https://hbr.org/2015/05/two-keys-to-sustainable-social-enterprise

2.3 PARTICIPATION

Successful cities always have a wealth of human energy that expresses itself in different ways and defines its own idiosyncratic space. All successful cities do have something in common. To thrive, cities must attract smart people and enable them to work collaboratively. There is no such thing as a successful city without human capital. (Glaeser 2011.) David Harvey has stated that one of the most precious yet most neglected human rights is the right to the city. Rather than a right to access the resources of a city, it is a right to reinvent and change the city according to our wishes. According to Harvey, the right to the city is a collective instead of an individual one, and thus it depends on cooperative effort. (Harvey 2013.) This chapter addresses urban development from the bottom-up viewpoint. Inclusion of citizens, participatory approaches, and grassroots approaches are getting ever more important in the urban development. Goldschmidt et al. (2012, 89) state that participatory and deliberative methods are increasingly notified by governmental, non-governmental, and private organisations.

Common question

How do you think the people and organizations influencing the urban environment in the future will differ from the ones who influence it today? Do you see citizens having a greater role than today, and what could it be?

A general consensus on the growing importance of the role of the citizens in future decision-making occurred in the responses. Although participation is already happening, including the citizens in decision-making processes concercing the urban environment was seen as a central factor making the futures of urban planning better functioning and transparent.

> *"I believe that governance systems will be more inclusive and participatory, and that several movements we already see today (e.g. grassroots) will increase in quantity and diversity exerting pressure on governments for quality services, transparency and responsibility."* [Questionnaire quote]

> *"The main role of the citizens influencing policy making process and also influencing city affairs will be much greater in the future than is today. This influence will also be more*

transparent. Citizens will have much greater role either as individuals or being presented throughout different representative groups." [Questionnaire quote]

"Experts agree that smart cities should inform more their citizens about new projects on a regular basis in order to obtain their acceptance. Furthermore, citizens should get the chance to initiate and implement on their own smart city projects."
[Questionnaire quote]

The imperative for the participation of the citizens in the decision-making is linked with the urbanisation and the complexity stemming from the multiplicity of different actors. The rise of the urban population may alter the macro-economic dynamics and growing inequality in both inter and intra state levels. For example, the urban population in Africa is estimated to rise from 470 million (40% of the population) in 2015 to 1.3 billion (56% of the population) in 2050, making it the fastest urbanising region with Asia (UN 2014)

"Under these circumstances, the nature of urban governance and governability will change (and is already changing) from more bureaucratic approaches and current power relationships (driven by strong, "old" economic interests) to a more complex interplay between multiple actors and power-bases." [Questionnaire quote]

As stated before, the role of ICT is central in enabling the participatory urban development. The participation and sociopolitical engagement take place in public and virtual space. The agile technology may further make the decision-making process more interactive, continuous, and flowing:

"Citizen control on public activities will be wider and citizens will be able to participate in the decision making process not only in the moment of the political vote, but continuously through their activities on social media[…]" [Questionnaire quote]

Areal decision-making as a natural entity between active citizens and macro-regional structures of governance (such as EU or UN) was estimated rise in importance, as state

nations start to loose their power. This participatory shift will pose new kinds of challenges to organisations:

> *"[…]In parallel, urban areas will experiment growing demands and requests for better services from a more critical citizenship."* [Questionnaire quote]

One respondent stated that as participation becomes a stronger paradigm within the urban development: "*Policy makers will depend much more from a direct contact with the citizens to develop and support their policies."* The assets and the required skills of politicians also change along the power structures;

> *"The presence of politicians on social media and their ability of engaging directly citizens will be a major element of political success."* [Questionnaire quote]

Furthermore, the participatory turn will not happen, if cities are developed in a passive and deterministic processes, as one respondent reminds. Instead, a transition towards active approaches is needed, along which "*citizens shall definitely play a more important role in the future as they can create lively cities with a high quality of life from bottom up through activities like urban gardening, sharing economy, repair cafes, food waste initiatives, etc".* Respondent, however, reminds that the city administration needs to be the coordinators.

Common question

What role in smart cities do you see for "grassroots" technologies such as smart phones and social media applications?

Smart phones and social media are commonly used as tools for the different kinds of movements to self-organise, as well as for producing, organising, and consuming local and agile urban culture. Thus they can be called "grassroots" technologies, although they are used for several other, than merely grassroots purposes. The different meanings and ways of use of communication technologies are endless, and thus the issue is here approached from urban perspective, which is still a wide topic, due to "*multifunctional characteristics"* of smart phones, as one respondent put it. It is exactly because of this variety of purposes

together with mobile technology being at the core of urban lives for many that the topic calls for further discussion.

The respondents underlined the role of these technologies and communication systems to be first and foremost connected to participation. Firstly, these technologies have the potential to strengthen the engagement of citizens to planning strategies.

> *"Within the creativity platforms and through smart phones, stakeholders could share their (project) ideas to accelerate and foster smart city developments."*
> [Questionnaire quote]

Concrete areas of such strategies could be e.g. energy, waste management, and mobility. Also, the importance of continuous evaluation and reflection of decision-making was raised:

> *"It is mainly through such technologies that the citizen participation to the constant evaluation of the urban environment (through surveys –on social media applications- and autonomous feedbacks –Smart City apps on smartphones-) will be supported."*
> [Questionnaire quote]

> *"A social media account could be the "mobile identity" for authentication processes but also an entry point to creativity platforms and to participatory processes."*
> [Questionnaire quote]

The latter response also underlines the identity enhancement made possible by mobile technologies. These characteristics connect interestingly with measuring and monitoring functions. The previous comments aligns the notions on the importance of grassroots tools and technologies with the identified steps for the implementation of smart city concept in chapter 2.2. Returning to the critical discussion over the ICT centered concept of smart city, digital tools are merely enablers and necessary tools for the lively environment and good quality of life. Mobile technologies can also enable a better urban environment by making the access to different resource-efficient services and products easier. A respondent suggested smart phones or applications to function as a *"'master key' for various mobility services".* However, they also enable a more future-oriented and creative approach:

"[…]Besides, when exploring the potentials of ''digital'' it opens a new avenues of creativity and future thinking." [Questionnaire quote]

Conclusively, the potential for interaction and communication resulting to inclusive decision-making was seen as the core possibility enabled by the so-called grassroots technologies. In the designing of a good urban environment, ICT is indeed needed. One of the respondents stated that these technologies are a buffer, that*"[…]allow the city to adapt to citizens […] and vice-versa."*

Customised question

What is the role of participation in city planning and the implementation? What are the main challenges and possibilities of participational planning?

Although the importance of participation and including citizens in the decision-making processes is acknowledged in fully agreement, the implementation of new processes is not merely a question of the availability of technological solutions. It is connected to cultural, political, and economic entities. Participation was seen as critical for ensuring appropriate and legitimate plans, in the process of negotiating as well as in mitigating contestations. As the main challenges conserning the participational processes the respondent identified the following:

"[…]diversity of perspectives, contestations, issues and imbalances of power (economic, political, social, gender, etc. etc,), issues of capacity, credibility of process, expectations, etc. etc." [Questionnaire quote]

When reflected on the statement about the need for the ability for the politicians to engage citizens in the future, the aforementioned list of challenges illustrates further needs for the city officials, once participation becomes more important in urban development. Furthermore, participation demands different kinds of skills and activity from citizens as well. The respondent addressed the danger of imbalanced power structures also in participative decision-making.

South African City Futures project was mentioned as an innovative city planning solution. The project combines research with radical co-operation in order to encourage cities and neighbourhoods in South Africa to visualise their futures in 2030[27]. One of the findings in the projects has been that the participants are very interested in their environment and its development[28]. Following this example, the important questions to pose considering participation and decision-making may be connected to the ways in which the co-operative or participational modes of urban planning can be supported, and initially, what are the demanded skills needed for different actors (i.e. citizens, tech developers, politicians).

To summarise the chapter, respondents consensually regarded the role of actively participating citizens important for urban futures. The governing process of cities thus becomes more complex, as the power is at least to some extent shared. Here, the support of smart technologies are at the core of the transformation. Cities are not just growing larger, but also becoming increasingly complex through the multiplying layers of interaction enabled by the information technology. According to Michael Batty (2013), patterns emerge from the actions of individuals. The responses supported Batty's idea of layers, as ICT and social media were seen as as drivers towards a more participatory futures by enabling the interaction between citizens and more established decision-makers. Furthermore, they promote communities and interaction, and function as information and creativity sources. Batty suggests viewing cities as patterns of networks and flows, acknowledging the systems thinking approach and complexity theory. Instead of regarding cities as "*sets of spaces, places and locations"* he further proposes that they ought to be defined as actions, interactions, and transactions. (Batty 2013.) The responses support the idea of the future of more participatory governance and the importance to include citizens to decision-making. Reflecting Batty's idea on flows and networks, implementing participatory approaches even more to the decision-making processes would allow the cities to be defined more accurately according the plethora of transactions existing within them. In other words, the decision-making regarding the cities would align better with the existing patterns of these cities. At

[27] South African City Futures (2016). Retrieved 11 January 2016 from http://cityfutures.co.za/
[28] FINDINGS | South African City Futures (2016). Retrieved 11 January 2016 from http://cityfutures.co.za/findings

this point of the paper the intertwining of the themes of liveability, smart city solutions, and the people in the midst of it all has already become evident.

2.4 GOVERNANCE

The concept of governance comes from the Greek words '*kybernan'* and 'kybernetes', referring to '*to steer and to pilot or be at the helm of things'*. According to Juval Portugali governance refers to responsibility to both political and administrational functions. (Portugali 2011, 250.) The ENCORE project explores the futures of urban development that improves social equity[29] and the quality of the urban environment. As stated, cities are experiencing big transformations, and the governance cannot follow the pace at an adequate speed. The questions in this chapter addressed the possibilities and challenges of urban governance in the future, mainly regarding the regional development and foresight processes. As the expertise of the respondents is ample, there was no focus on a specific form of governance. The questions featured in this chapter were mostly presented as customised questions to individual respondents. The first question was posed to two persons.

Customised question for two respondents

Urban environment is becoming increasingly complex.
How could this complexity be considered in regional foresight and development?
What are the main challenges and possibilities of regional foresight processes?

The role of foresight was seen central when answering to the question of how the complexity in regional foresight and development could be better considered. A *"deep analysis of trends and changes*", together with the foresight processes in general, was seen necessary in identifying the challenges and changes. Promoting innovations that improve the quality of an urban environment was also considered a critical task. Again, it was underlined that technologies as such cannot enable these processes alone. Technical smart city is not a sufficient premise.

[29] Mega (2010) even claims that social justice is a prime criterion for judging urban sustainability.

According to one respondent, complexity could be tackled with fragmentation, where instead of considering areas as an overall entity, they could be divided into "cells". Although the foresight activities could be based on the same model, each area would envision their own futures according to their own specific needs and reality. These foresight processes would happen alongside with regional processes, cities and rural areas working in co-operation:

> *"When each city will have its own model of urban sustainability, a wider scenario of mutually useful co-operation between the city and the rural area will be developed, in order to define the "cell life standard"."* [Questionnaire quote]

Importantly, it was questioned whether the urban context really is more complex than before. For example it was stated that the arrival of cars has influenced the urban life widely, underlining cities have experienced transformations throughout history. Regional foresight—similarly to any other type of foresight—was seen as a robust tool to tackle complexity, conceptualise future in a structured matter, and involve actors. The technological emphasis on the development paradigm is raised as an important—but not the most important—problem.

> *"[…]One challenge is the technological bias induced by the smart concept and ICT. Other challenges are as much if not more important: carbon footprint, sustainable 'growth', public health, reduction of powerty, smart mobility…"* [Questionnaire quote]

Customised question

What are the main challenges for good governance?

The respondent pointed out two main challenges for good governance. The first one is the gathering of relevant and suitable information considering suitable and good governing principles, and the second one is the commitment to the knowledge, decisions, and vision:

> *"[…]This means that what is promoted in a declaratory manner is also practiced in a daily governance & management of the city."* [Questionnaire quote]

Customised question

What is the role of innovation policies in regional development?
What are the main challenges and possibilities of these policies in regional development?

According to the respondent, innovation policies function as the most important system of incentives to support scientific research, which offers answers to urban issues. Thus, good innovation policy enhances scientific research and steers it towards local problem solving. As the policies enhance the synergy between research, industry, and citizens, by creating dialogue they also create conditions to find most socially desirable ways to solve problems. The respondent considered innovation policies to be an important part of regional development. From this perspective, the main challenges are posed by the amount of vision possessed by decision-makers, measuring and adapting the policies, and region's capacity for social support system as well as the attractiveness for experts and researchers outside the area. The main possibilities according to respondent are:

- "Enhance the local industry through specialisation in the region;
- Create new job opportunities through the implementation of new technologies and innovative systems;
- Create a virtuous cycle of cross-fertilisation between scientific fields and a fruitful dialogue between science and society, to ensure an RRI approach to scientific activities and their results;
- Reform/enhance educational offer towards smart city development."
  [Questionnaire quote]

Customised question

You are talking about the potential of creative cultures in overcoming the differences between city bureaucracy and flat-networked actors such as business and academia.

Can you please mention current examples depicting this change?

The respondent sees mayors as the key players of the future of urban governance[30], as they could perform as managers of the city:

> "A good example is the City of Ljubljana and its mayor that invited citizens to define projects and co-create vision of the city. He used EU indicators such us European Greeapital to upgrade the vision of the city and define objectives. […] After three years of being involved in competition with the greenest cities in Europe, Ljubljana the capital of Slovenia became a winner for 2016 (European Green Capital 2016)[…]" [Questionnaire quote]

The shift could be reinforced with ICT solutions, futher reinforcing the creative and sustainable urban development. Again, Bristol was mentioned as a case:

> *"The other good example is Bristol UK where city enables enlightenment of entrepreneurship in the area of creative industry supported by digital solutions. Incubators, technology parks, accelerators, innovation parks are environments at which the city with its active role could stimulate other stakeholders to meet and benefit their agendas."* [Questionnaire quote]

Cities can be perceived primarily as places of creativity. Peter Hall (1998) claims that *"every great burst of creativity in human history"* can be classified as an urban phenomenon.

Customised question

Can you briefly describe the success story of Bilbao revitalization? What made it happen? Is it still going strong?

The analysis and this chapter are concluded with a question addressing the revitalization of the city of Bilbao. Bilbao effect addresses the idea that a cultural institution—Guggenheim museum in Bilbao's case—transforms a city into place that also attracts investments,

[30] In this context the authors wish to point ou that the XXII CIDEU (Ibero-American Centre for Urban Strategic Development) Network was an example of a congress addressed to mayors and other representatives of urban governance. The preliminary results of the ENCORE project were presented at the event (Heinonen 2016.

tourism, and more cultural activities[31]. The topic closes the thematical circle between the subchapters of the analysis, bridging the theme of governance with the theme of liveliness that the analysis started with. The respondent stated that the two main success factors behind the vitality of the city of Bilbao are political leadership together with cooperation between different institutes such as city, province, region and central governments. The respondent further points to the interconnectedness of the process in other factors beyond governance:

> *"The vision to transform the industrial city into a service oriented city started with the well-known project of the Guggenheim Museum, but the success of the story is linked to other intangible factors such as an excellent city management, citizens engagement, international cooperation, etc."* [Questionnaire quote]

The Bilbao effect is relevant as a topic, as the intended Guggenheim museum plan in Finland has raised expectations of a similar kind of revitalization. The director of Bilbao's Guggenheim has stated that the success is not depended on Guggenheim, but the vision of the city. Thus, the phenomenal success cannot be copied by merely copying the building.[32] The statement alongside with the questionnaire response address the need for holistic urban planning, that is not restricted to a single actor or building.

Customised question

You are suggesting a novel foresight approach to sustainability to support policy work. The approach enables communities to perform better in sustainability and builds upon framework of continual learning. Could it be applied to city planning, and if so, how?

> *"Yes, because a city must be planned for the people who live in it, their needs and desires, today and in the future."* [Questionnaire quote]

[31] Michael, C. (2015). The Bilbao Effect: is 'starchitecture' all it's cracked up to be? A history of cities in 50 buildings, day 27. *The Guardian.* Retrieved 14 March 2016 from http://www.theguardian.com/cities/2015/apr/30/bilbao-effect-gehry-guggenheim-history-cities-50-buildings

[32] Saarikoski, S. (2015). Bilbaon Guggenheimin johtaja: Museon oltava osa Helsingin tulevaisuusvisiota, jotta se onnistuisi – Kulttuuri – Helsingin Sanomat. Retrieved 14 March 2016 from http://www.hs.fi/kulttuuri/a1305964988513?ref=hs-art-kulttuuri-7

This response can be directly reflected to futures thinking, which embodies the idea of learning from the future. This means that we must not only learn from the past (mistakes), but also from the biased or rigidly conventional ways of looking into the future: instead of prediction or linear trend extrapolation, alternative and out-of-the box approaches and solutions have to be sought for. (Nováček & Schauer 2010.)

Customised question

Can you identify examples where urban planning gives instruments or elements that promote common understanding and respect?

> *"Participatory budgeting, accountability, bottom-up planning, web and mobile platforms, online consultation, dashboards, community and city public meetings, etc.."*
> [Questionnaire quote]

To conclude, we wish to point out that this chapter presented responses to a scattered set of questions around the topic of governance. Although there is a strong tendency for the role of citizens to become stronger in urban planning in the futures, there was a consensus among the respondents that it will not happen without functioning administration. This supports the statement by Portugali (2011, 243) that cities have always functioned as signs of central authorities capable of planning and control. This was seen throughout the questionnaire and within the three other themes beyond this chapter. Nevertheless, the necessity to include all citizens was pointed out as well. Instead of aiming to present a cohesive interpretation of urban governance, this final chapter ties together the multi-dimensional aspects of a liveability of a city and how to enable it, as the responses intertwine with the other themes of this working paper: concepts of an ideal urban environment (chapter 2.1), smart city paradigm (chapter 2.2), and participation (chapter 2.3).

Since the enhancing of the future urban governance is at the core of the ENCORE research project, the focus is on the current best practices as well as their future

developments. As the city changes, the governance needs to change as well. If citizens are considered as key change makers of the city, it is necessary to ask, what will the new role of urban governance stemming from and answering to this change be? The responses indicate towards a hybrid of conventional and modern approaches, where traditional decision-makers still exist and are '*at the helm of things'*, yet strongly supporting the needed participation. The responses further underlined the need for new skills to meet the coming participatory shift. In the future it is vital to be able to communicate using different platforms and engage citizens. The ENCORE project aims to conceptualise a new governance model.[33]

[33] The preliminary results will be presented at the Urban Transition Global Summit in Shanghai, China, 5 – 9 September 2016. See Heinonen et al 2016b.

3. CONCLUSIONS

This report depicted the answers to a variety of questions on the topic of urban futures, with the aim to provide insights to the questions of *what is a liveable city* and *how it is enabled*. The questionnaire was sent to seven futures-orientated experts on urban topics. The responses were clustered in four loose themes: 1) liveable urban environment, 2) smart city, 3) participation, and 4) governance. The contents of the four themes overlapped and intertwined largely. Overall, this paper has revolved around two themes related to urban futures: social relationships and technological development. This of course results from the questions posed to the respondents, some of which provoked for a technocratic critique. However, the urban interplay between technology and human is indeed at the core of liveability, and this balance alongside with the power-relations will be one of the most important ones concerning the futures of cities. Finally, the question is about the better quality of life in the future cities.

According to the respondents, multiplicity of factors and layers of life make a city liveable. When considering the factors making a city liveable, all dimensions of urban life were referred to. Political, economic, social, technological, environmental, and cultural factors all constitute to a good urban environment. However, the emphasis was on cultural, social, and environmental factors. The lack of technological factors was interesting considering the consensus on the need of ICT. However, technology can be seen as the enabler behind many aspects of liveability, even though it was not explicitly appointed.

As the opinions on *what* is a liveable environment differed, so did the insights on *how* a liveable city can be enabled. Yet, there were no loud opinions on tools or processes that were ill-functioning. As stated, ICT is a key driver for better cities. However, there was no dissensus on the need to include social and cultural aspects in the smart city concept as well. According to Margarita Angelidou, the smart city paradigm is shaped by four forces; the strands of urban futures and knowledge economy as well as technology push (supply-driven smart city) and application pull (demand-driven smart city). Angelidou states, that both technology and knowledge are needed to realise a truly successful spatial development. However, supply-driven development often stays disconnected from the social context, making the more demand-driven smart city approach more successful.

(Angelidou 2015, 104.) Interestingly, technology may also contribute not just on the quality of urban life, but also the appreciation of it. Joel Kotkin states that the demand for a place to be attractive may grow, as the technological solutions free us from being in one specific location (Kotkin 2000, 7).

Another driver influencing the futures of urban environments are the changing social and power relations within the cities. The enduring strength of cities reflects the profoundly social nature of humanity. Our ability to connect with one another is the defining characteristic of our species. We built civilizations and culture together, constantly learning from one another and from the past. (Glaeser 2011.) The results highlight the importance of balancing out between good governance and active citizen participation, and its enabling. Although the role of ICT will be central in the participatory shift that can be anticipated to happen, responses strongly indicate, that the discussion beyond technological aspect is needed. Andrew Orke (2010, 83) states, that there is a need for a profound commitment to '*social creativity*'. Following this idea, participatory decision-making will also call for changes in the skills of politicians, citizens, and administrators, as well as ways of communicating. Orke reminds us that it is difficult to think outside and beyond the paradigm in which one finds oneself. He states that "civilization" itself is a paradigm that few as yet have been able to step outside of to view it for what it is. If we consider cities as civilizations, they must be looked at as not just an interesting subject of study for specialists, but a huge, deep, complicated system of ideas, values and attributes that shape what we are, in a decisive manner. If we cannot see what we are, we are unlikely to be able to control the forces that drive us, that make us what we are. (Orke 2010.)

For five thousand years or more, the human attachment to cities has served as the primary forum for political and material progress. It is indeed in the city, this ancient confluence of the sacred, safe, and busy, where humanity's future will be shaped for centuries to come. (Kotkin, 2006.) The subtle differences within the answers and approaches towards the most liveable city possible, as well as the means to enable it further, support the need for interdisciplinary and dialogical research on urban environments and their futures. Furthermore, systemic use of holistic foresight knowledge is critical for understanding emerging urban futures. As suggested in Table 1, the city as a crossroad for multiple activities and actors can be efficiently supported with futures studies

as a multidisciplinary approach. The results from this expert survey will be further utilised in the final report of the foresight part of the ENCORE project, with an aim to contribute to a successful and pro-active urban governance.

REFERENCES

Albino, Vito; Berardi, Umberto & Dangelico, Rosa Maria (2015). Smart Cities: Definitions, Dimensions, Performance, and Initiatives. Journal of Urban Technology, 22:1, 3–21, DOI: 0.1080/10630732.2014.942092

Angelidou, Margarita (2015). Smart cities: A conjuncture of four forces. Cities 47, 95 – 106.

Angelidou, Margarita (2014). Smart city policies: A spatial approach. Cities 41, 3 – 11.

Boano, Camillo & Kelling, Emily (2013). Towards an Architecture of Dissensus: Participatory Urbanism in South-East Asia. Delft Architecture Theory Journal, issue 13, Autumn 2013. http://abe.tudelft.nl/index.php/footprint/article/view/769/945

Breyer, Christian; Heinonen, Sirkka & Ruotsalainen, Juho (2016). New Consciousness: A societal and energetic vision for rebalancing humankind within the limits of planet Earth, Technological Forecasting and Social Change. Article in review process.

Breyer, Christian, D. Bogdanov, K. Komoto, T. Ehara, J. Song and N. Enebish (2015). North-East Asian Super Grid: Renewable energy mix and economics, Japanese Journal of Applied Physics, 54 (2015) 08KJ01, http://dx.doi.org/10.7567/JJAP.54.08KJ01

Dillard, Jesse; Dujon, Veronica & King, Mary (2012). Defining Social Sustainability. In R. Heinberg & D. Lerch (eds.) The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 7–8. Retrieved 14 March 2016 from http://www.postcarbon.org/publications/what-is-sustainability/

Eraydin, Ayda & Taşan-Kok, Tuna (2013). Resilience Thinking in Urban Planning. Dordrecht: Springer.

Girardet, Herbert (2015). Creating Regenerative Cities. Abingdon, Oxon: Routledge

Glaeser, Edward (2011). Triumph of the City. How Urban Spaces Make us Human. London: MacMillan.

J. Glenn, E. Florescu, and The Millennium Project Team, 2015-16 State of the Future. (2015). Millennium Project, Washington D.C, 2015 http://www.millennium-project.org/millennium/201516SOF.html.

Goldschmidt, Rüdiger; Hennen, Leonhard; Knapp, Martin; Quendt, Christiane; Brachatzek, Nadine & Renn, Ortwin (2012). Deliberating or Voting? Results of the Process Evaluation of the German WWviews. In M. Rask, R. Worthington & M. Lammi (eds.) Citizen Participation in Global Environmental Governance, 89 – 106. Abingdon, Oxon: Earthscan

Guston, D. H. (2014). Understanding Anticipatory Governance. Social Studies of Science, 44: 2, 218-242.

Hall, Peter (1998). Cities in Civilization. Culture, Innovation, and Urban Order. London: Pantheon.

Harvey, David (2012). Rebel Cities: From the Right to the City to the Urban Revolution. London: Verso.

Heinberg, Richard (2012). What Is Sustainability? In R. Heinberg & D. Lerch (eds.) The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 1–9. Retrieved 14 March 2016 from http://www.postcarbon.org/publications/what-is-sustainability/

Heinberg, Richard & Fridley, David (2016). Our Renewable Future. Laying the Path for One Hundred Percent Clean Energy. Post Carbon Institute, Washington.

Heinonen, Sirkka (2016). Weak Signals for Emerging Urban Planning Trends and Innovations. Presentation at XXII CIDEU Network (Ibero-American Centre for Urban Strategic Development)

Ibero-American Congress. Session: Neo-Governance Towards a New Model of Cooperation. San Sebastian, 16 March 2016.

Heinonen, Sirkka (2013). Neo-Growth in Future Post-Carbon Cities. Journal of Futures Studies 18(1), 13–40.

Heinonen, Sirkka; Karjalainen, Joni; Parkkinen, Marjukka & Ruotsalainen, Juho (2016a). ENCORE Weak Signal Analysis. Forthcoming.

Heinonen, Sirkka; Parkkinen, Marjukka, Karjalainen Joni & Ruotsalainen, Juho (2016b). Energising peer-to-peer urban futures – challenges for urban governance. Presentation forthcoming at Urban Transitions Global Summit 5 – 9 September 2016, Hefei, China.

Heinonen, Sirkka; Balcom Raleigh, Nicolas; Karjalainen, Joni; Minkkinen, Matti; Parkkinen, Marjukka & Ruotsalainen, Juho (2015a). CLA Game Report : Causal Layered Analysis Game on Neo-Carbon Energy Scenarios. Available in https://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eBook_12-2015.pdf

Heinonen, Sirkka; Karjalainen, Joni & Ruotsalainen, Juho (2015b). Towards the Third Industrial Revolution : Neo-Carbon Energy Futures Clinique I. FFRC eBook 6/2015. Turku: Finland Futures Research Centre. Available in https://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/FFRC-eBook-6-2015.pdf

Heinonen, Sirkka; Kurki, Sofi; Laurén, Leena-Maija & Ruotsalainen, Juho (2011). Elämykselliseen yhteisöllisyyteen : Elävä esikaupunki -hankkeen tulevaisuusklinikka ”Perspective” 27.20.2011. Tutu e-julkaisuja 12/2011. Turun yliopisto: Tulevaisuuden tutkimuskeskus. Retrieved 11 January 2016 from https://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eTutu_2011_12.pdf

Heinonen, Sirkka & Ruotsalainen, Juho (2013). Kuviteltu kaupunki : Elävä esikaupunki -hankkeen 3. Tulevaisuusklinikka ”Solutions” 24.9.2013. Tutu e-julkaisuja 7/2013. Turun yliopisto: Tulevaisuuden tutkimuskeskus. Retrieved 11 January 2016 from https://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eTutu_2013-7.pdf

Heinonen, Sirkka & Ruotsalainen, Juho (2012). Ihmisten kaupunki 2030 : Elävä esikaupunki -hankkeen 2. tulevaisuusklinikka ”Opportunity” 16.4.2012. Tutu e-julkaisuja 7/2012. Turun yliopisto: Tulevaisuuden tutkimuskeskus. Retrieved 11 January 2016 from http://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/eTutu_2012-7.pdf

Jacobs, Jane (1961). *The Death and Life of Great American Cities.* Random House, New York.

Karjalainen, Joni & Heinonen, Sirkka (2016). Using Deliberative Foresight to envision a Neo-Carbon Energy Innovation Ecosystem – Case Kenya. In review process for African Journal of Science, Technology, Innovation and Devevelopment.

Kotkin, Joel (2006). The New Geography : How the Digital Revolution is Reshaping the American Landscape. New York: Random House.

Kotkin, Joel (2006). The City. A Global History. New York: Random House.

Kuosa, Tuomo (2014). Towards Strategic Intelligence. Foresight, Intelligence, and Policy-Making. Dynamic Futures. Helsinki.

Loohuis, Kim (2016). Netherlands needs ”bottom up” approach to create smart cities. Retrieved 8 August 2016 from http://www.computerweekly.com/feature/Netherlands-needs-bottom-up-approach-to-create-smart-cities

Mega, Voula P. (2010). Sustainable Cities for the Third Millennium: The Odyssey of Urban Excellence. New York: Springer.

Mehaffy, Michael (2014). 5 Key Themes Emerging From the 'New Science of Cities'. The Atlantic Citylab 19 September 2014. Retrieved 12 July 2016 from http://www.citylab.com/design/2014/09/5-key-themes-emerging-from-the-new-science-of-cities/380233/

Newman, Peter & Jennings, Isabella (2008). Cities as Sustainable Ecosystems : Principles and Practices. Washington, D.C.: Island Press.

Nováček, Pavel & Schauer, Thomas (2010). Learning from the Futures. Palacký University, Olomouc.

Orke, Andrew (2010). The Four Invisible Horsemen of the Apocalypse and Poetic Thought. In: P. Nováček & T. Schauer (eds) (2010). Learning from the Futures. Palacký University, Olomouc.

Portugali, Juval (2011). Complexity, Cognition and the City. Heidelberg: Springer.

Rask, Mikko; Worthington, Richard & Lammi, Minna (2012). Citizen Participation in Global Environmental Governance. Abingdon, Oxon: Earthscan.

Ratcliffe, John & Krawczyk, Ela (2011). Imagineering city futures. The use of prospective through scenarios in urban planning. Futures 43, 642–653.

Shark, Alan R. (2014). What Makes Smart Cities Smart? In A.R. Shark, S. Toporkoff & S. Lévy (eds.) Smarter Cities for a Bright Sustainable Future : A Global Perspective 1 – 9. Washington, D.C.: Public Technology Institute.

Swilling, M., Annecke, E. (2012). Just Transitions: Explorations of Sustainability in an Unfair World, United Nations University Press; Tokyo

Vuolteenaho, Jani; Leurs, Koen & Sumiala, Johanna (2015). Digital urbanisms: Exploring the spectacular, ordinary and contested facets of the media city. Observatorio (OBS*) Journal, Media City: Spectacular, Ordinary and Contested Spaces, 001–021. Retrieved 16 March 2016 from http://obs.obercom.pt/index.php/obs/article/view/970

UN (2014). 2014 Revision of World Urbanization Prospects. United Nations: New York. https://esa.un.org/unpd/wup/

APPENDIX 1. RESPONDENTS IN ALPHABETICAL ORDER

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APPENDIX 2. QUESTIONNAIRES

There were altogether six questions posed for all of the seven respondents. Next to these, individual questions were posed for each expert according to their core competences. All of the questions are presented here. First the common questions are enlisted, followed with the customised individual questions. One of the customised questions was posed to two different respondents.

General questions posed to all respondents

- Which future-oriented tools can help minimize carbon emissions in cities, and how should they be used?

- How do you think the people and organizations influencing the urban environment in the future will differ from the ones who influence it today? Do you see citizens having a greater role than today, and what could it be?

- Cities are developed towards the discourse of Smart City, that revolves around information and communication technology. How can we ensure that smart cities of the future are also developed to be socially and culturally livable and aesthetically attractive? How could “smart city” enhance such livability of cities?

- What role in smart cities do you see for “grassroots” technologies such as smart phones and social media applications?

- What are the most important steps needed to enable the implementation of smart cities?

- Can you give a good example of a lively urban environment? What makes it an interesting example?

Individual questions to the respondents

- What is the role of innovation policies in regional development? What are the main challenges and possibilities of these policies in regional development?

- Urban environment is becoming increasingly complex. How could this complexity be considered in regional foresight?

- What is the role of participation in city planning and the implementation? What are the main challenges and possibilities of participational planning?

- You are suggesting a novel foresight approach to sustainability to support policy work. The approach enables communities to perform better in sustainability and builds upon framework of continual learning. Could it be applied to city planning, and if so, how?

- Can you identify examples where urban planning gives instruments or elements that promote common understanding and respect?

- You emphasize the importance of good governance principles. What are the main challenges for good governance?

- You are talking about the potential of creative cultures in overcoming the differences between city bureaucracy and flat-networked actors such as business and academia. Can you please mention current examples depicting this change?

- Could you mention some innovative city planning solutions in South Africa?

- You have studied water, energy and food security nexus. What are the biggest challenges connected to these sectors when looking at urban environments? How could these questions be taken into account better when planning for urban environments?

- How will entrepreneurship change or modify the urban environment and the urban economy?

- Can you briefly describe the success story of Bilbao revitalization? What made it happen? Is it still going strong?

- What are the main challenges and possibilities of regional foresight processes?

- Cities are shaped by many different interests and values that can be contradictory and even conflicting (such as different language groups and lifestyles, or i.e pedestrians vs. cyclists vs. car drivers). How could city planning answer to these challenges?

- You conducted a Delphi expert survey, where various stakeholders expressed their opinion on issues related to “Smart Cities 2035”. How consensually was the vision of Smart Cities of the future shared among different stakeholder groups? What were the most interesting differences?

- In the above mentioned Delphi expert survey, were there any surprising findings? Please give some examples.

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