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# Cities and urban living at the crossroads

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**Abstract.** Cities need to relook at their approach for the evolution towards smart cities to addresses existing challenges of urbanization. This concept paper highlights the European approach along with the need for social, technological and economical innovation to make such an objective feasible and sustainable.

**Keywords:** Smart Cities, Urbanization, Public Policy, Governance.

## 1 THE URBANIZATION CHALLENGE

In 2014, for the first time in human history, more than half of the world's population lived in urban areas, a proportion that is expected to increase to 66% by 2050. Projections show that urbanization combined with the overall growth of the world's population could add another 2.5 billion people to urban areas by 2050. And, although this trend is global, almost 90% of the increase is expected to be concentrated in Asia and Africa [1]. In real terms, the number of urban residents is growing by nearly 60 million people every year. As the planet becomes more urban, cities need to become smarter. Major urbanization requires new and innovative ways to manage the complexity of urban living. It demands new ways to target problems like overcrowding, energy consumption, resource management and environmental protection, as well as to address issues like the social cohesion, wellbeing and prosperity of city inhabitants.

The seemingly irreversible trend of urbanization poses both immense challenges as well as fantastic opportunities for human and planetary development. We need to take a 'glass-half-full' optimist approach in order to successfully address these challenges, but without being blind to the many so-called 'wicked' problems that city growth and city life bring in its wake. The main reason for this optimism is that cities are, in principle, at the perfect 'sweet spot' balancing the myriad ways it is possible for populations to govern, organize and run their lives.

## 2 CITIES AT THE 'SWEET SPOT'

Why are cities at the 'sweet spot'? On the one hand, most cities are large enough to access and wield significant political power, financial and other resources together with the people, communities, firms and institutions located in them. They are also generally large enough to have resilience through their internal diversity, strength in depth and

adfa, p. 1, 2011.

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strategic competence. These attributes are essential for well-run human societies. On the other hand, however, and in contrast to central governments in all but very small countries, cities are at the same time geographically, culturally and historically close enough to these same actors to understand their needs, collaborate meaningfully with them and take and implement appropriate decisions on the ground. They are also generally small enough to be nimble, flexible, dynamic and responsive, certainly when compared to most national and international institutions. In many ways, therefore, cities can balance these two contrasting sets of attributes, thereby in principle functioning as the most efficient and effective form of human organization that we have yet devised for a global population now numbered in the billions.

It is important to underline that this is the potential of cities -- many if not most cities exhibit a large number of these qualities, whilst too many do not. The challenge, therefore, is to better understand and spread good ideas, and build knowledge about successful city development in a collaborative way across the globe as well as within countries and regions. Although every city is faced with a highly unique set of challenges and opportunities, mutual learning between cities in terms of good practices and how these might be adapted to fit specific contexts, is absolutely paramount. This is, of course, already happening on a large scale through a plethora of city networks and communities of practice.

### **3 RE-THINKING THE ‘SMART CITY’ LABEL**

The ‘smart city’ label, although currently the most prominent, is by no means the only game in town. There are, for example, networks and/or concepts focusing on digital cities, sustainable cities, innovative cities, intelligent cities, creative cities, open cities, energy cities, cities of tomorrow, as well as cities as launch pads for transformation. More recently, other city networks have also flourished, such as so-called Fab Cities, shareable cities, cities of nature, green cities, resilient cities, and not least the so-called C40 network of the world’s megacities committed to addressing climate change.

It would be mistaken to imagine that the ‘smart city’ label is an umbrella term that somehow embraces all the others. Many of these networks eschew the description of ‘smart’ as it might be perceived as being too technology-deterministic, whilst others see technology as an absolutely essential enabler if we are to live in well-functioning, fair and prosperous settlements. It is thus clear that mutual learning and cross-fertilization is essential to align such different views. Cities need to redouble their efforts to examine and compare the most important, striking and valuable developments and trends from many of the different strands of experience and discussion.

### **4 THE EUROPEAN APPROACH**

The European approach reflects these complexities and the emergence of new city concepts and networks. A recent study on smart cities in the EU for the European Parliament [2] concluded that the smart city concept has emerged not just as an innovative modus operandi for future urban living in Europe but as a key strategy to tackle poverty

and inequality, unemployment and energy management. Despite much discussion and debate on the value, function and future of smart cities, as a concept it resists easy definition. At its core, the idea of smart cities is rooted in the creation and connection of human capital, social capital and Information and Communication Technology (ICT) infrastructure in order to generate greater and more sustainable economic development and a better quality of life. The European approach to smart cities is further defined along six axes or smart dimensions [3] related to: economy, mobility, environment, people, living and governance. The coordination of policies along these dimensions reflects the positive feedback between city development and urbanization; cities attract people whilst the availability of populations and infrastructure facilitates economic and societal development. But this feedback alone and the growth to which it gives rise are not sufficient to produce the hoped for benefits, as the problems associated with the uncontrolled growth of many mega-cities amply demonstrate [4]. The linkages between economic, societal and environmental development are not easily scalable as cities expand and are difficult to predict precisely, let alone control. Their beneficial evolution must therefore be facilitated by a combination of framework conditions and ICT infrastructures. In this way a platform needs to be provided on which governments, businesses and citizens can communicate and work together, and track the evolution of the city.

**The move towards an increasingly smart, green and sustainable city agenda.**

During the preparation for and in the run up to the UN's global agreement on the Sustainable Development Goals (SDGs) in September 2015, including SDG11 on 'inclusive, safe, resilient and sustainable cities', and not least the Climate Change Agreement in December of that same year, both research and policy attention has turned to the green and sustainable agenda. It would be a mistake, however, to perceive this as purely about environmental protection, as the 'sweet spot' which the city occupies is increasingly understood as the most effective crucible in which environmental concerns can be successfully wedded to social, economic and governance imperatives to provide wins across all four dimensions. Indeed, it has been the large number of medium-sized and large cities in the USA which have declared that their President's withdrawal from the UN Climate Accord will have no affect on their climate agendas. These cities have their own resources and powers to continue to implement their chosen initiatives, regardless of the policies of their federal government.

In Europe, the 'Fab City' agenda and network, developed in Barcelona in 2016, has an ostensibly technological, economic and manufacturing purpose but proposes and develops its raison d'être also on the basis of its social and environmental credentials: "Newly created cities and the urbanization process in rural areas replicates a lifestyle based on consumerism and the linear economy, causing destructive social and economic impact, while compromising the ecological systems of the planet. We are losing livelihoods through both offshoring and automation, and this in turn leads to the demise of dynamic hubs of practical and cultural knowledge, where things are made. Extreme industrialization and globalization have turned cities into the most voracious consumers of materials, and they are overwhelmingly the source of carbon emissions through both direct and embodied energy consumption; we need to reimagine the cities and how they

operate.” [5] Since its launch in 2016, the Fab City network has grown to sixteen practicing cities, encompassing all continents, with the following objectives:

- To move from current linear industrial production, i.e. importing raw materials and products and exporting waste and pollution
- To move to spiral innovation ecosystem: i.e. where materials flow within cities whilst information and data on how things are made circulate globally
- To move from centralized mass production to decentralized distributed manufacturing and mass customization.

The Fab City concept is perhaps the most ambitious, as well as most recent, attempt to join up new forms of inclusive and low carbon economic growth based on the knowledge economy through the deployment of ICT. However, Barcelona’s experience has not been without its challenges, the most intractable of which is how such strategies are inserted into the wider political economy and, in particular, the political ecology of urban transformation. Despite the undoubted benefits that Barcelona’s smart and Fab City endeavors have brought, the smart city utopian discourse, intentionally or unintentionally, is seen by some as having been mobilized in ways that serve to depoliticize urban redevelopment and environmental management. There is some evidence that the techno-political language adopted has made it difficult for ordinary citizens to participate, let alone understand what is going on. There are calls to repoliticize the smart city discourse and “put citizens back at the center of the urban debate” [6]. This is of course not just an issue in Barcelona, but one which pervades most attempts to develop smart cities.

#### **The need for smart cities based on social as well as technological and economic innovations.**

The European Commission is reflecting such calls to put citizens back at the center in some of its recent research and innovation programmes, most notably the science with and for society initiative [7] and the nature-based solutions for inclusive urban regeneration initiative [8]. The latter cites the “growing recognition and awareness that nature can help provide viable solutions that use and deploy the properties of natural ecosystems and the services that they provide in a smart, 'engineered' way.” “Furthermore nature-based solutions, by reshaping the built environment, can enhance the inclusivity, equitability and liveability of the cities, regenerate deprived districts, improve mental and physical health and quality of life for the citizens, reduce urban violence, and decrease social tensions through better social cohesion particularly for the most vulnerable groups e.g. children, elderly and people of low socioeconomic status.”

Such approaches are clearly top-down policy pushes, part of a number of strategic initiatives in response to the UN’s SDG and the Climate Change agendas. But there are also a large number of genuine examples and practical approaches taking place on the ground developed by individual city authorities, social and commercial organizations in response to local demands as well as market forces, many of which are also linking up through some of the city networks cited above. For example, the ‘new Nordic scalable model for city development’, implemented at various sites around Copenhagen and developed by a small Danish architectural company [9]:

- Attempting to move away from tackling climate change issues, such as water, using bigger sewers, harder surfaces and technological ‘fixes’, but instead focusing on the intricate design of topography, soil, trees, flowers, vegetation, natural seepage and drainage woven into the urban fabric
- Focusing on inter-linking three extremely site-specific circuits: the hydrological, the biological and the social
- Deploying social innovation approaches and methods, like co-creation, dialogue and humanistic nature-based solutions, through continuous collaboration with residents, school children and local civil organizations, where the results are claimed to be greener, happier, more sensuous and varied local cultures that promote neighborhood identity and empower inhabitants.

## 5 SMART CITIES AND SOCIAL INNOVATION

The above policies and examples illustrate attempts to apply both ecological and social innovation concepts and approaches to the smart city bandwagon. In a 2014 blog for an open source European project [10], the author pointed out that the focus of the smart city movement to date, in which the city authorities and other organizations deploy sensors, networks, data and data analytics to improve the efficiency and effectiveness of urban systems (like transport, utilities, etc.) and services, is indeed only half the story. From this perspective on its own, there is the danger of a one-size fits all, top-down view of urban development. The diverse needs of the inhabitants as individuals, households, neighborhoods, communities, organizations and businesses that bring the city to life are just as important.

Thus, any adequate model for the smart city must also focus on the smartness of its citizens and encourage the processes, and especially social innovation processes, that make cities important: those that sustain very different – sometimes conflicting – activities. Cities are, by definition, engines of diversity, so focusing solely on streamlining utilities, transport, construction and unseen government processes can be massively counter-productive. This is in much the same way that the 1960’s penchant for social-housing in tower blocks, based on their apparent economic efficiency in Le Corbusier style, was ultimately found to be socially and culturally unsustainable and highly damaging. Instead, “smart cities will be smart because their citizens have found new ways to craft, interlink and make sense of their own and each other’s assets, data and other resources” [11].

The 2014 European Parliament study showed that currently one of the most common types of so-called smart city initiatives across Europe is, in fact, about ‘smart neighborhoods’, and is especially concerned with using data and coordinating local assets of all types to improve the lives of local inhabitants in terms of improved physical environments, mobility as well as community cohesion to tackle many of their own problems. Indeed, the conclusions of this study are that inclusion and participation are important targets for successful smart city programmes to avoid polarization between the urban elite and low income areas. The study’s case studies highlight that it is often inspiring leaders (‘city champions’) behind many successful initiatives, many of whom

are local activists. In the most successful cases, citizens are being empowered through active participation to create a sense of ownership and commitment, so it is important to foster participative environments that facilitate and stimulate citizens, businesses and the public sector to contribute.

The strategic objective of the most successful smart neighborhood projects in Europe to date is to develop better public services hand-in-hand with community cohesion. This is based on input from citizens obtained by providing digital so-called ‘ideation platforms’ to develop a better city (e.g. the Amsterdam Smart City Platform), or competitions to take advantage of open public data to develop apps, useful data mash-ups or new services. This includes ICT-enabled citizen participation open data strategies, crowdsourcing and co-creation platforms. For example, the city of Helsinki, Finland, is finding new ways to encourage developers to exploit open data in order to create digital services and useful applications for and with citizens. One underlying theme of the Helsinki project is transparency of city decision-making and enabling better feedback from citizens to civil servants. Smart city services are thereby tested in the Helsinki Metropolitan area as part of people’s everyday life.

**A ‘smart city’ has both everything and nothing to do with technology.**

Smart cities started out as wishing to exploit the power of new ICT to improve the efficiency and effectiveness of city performance and wellbeing, and did so with notable success. Like many other areas it soon realized that technology is not a panacea and can have negative consequences, even sometimes with dystopian overtones, both for the environment as well as the conditions of human life, if the human dimension does not become an integral part of any urban strategy -- indeed it should be the driving force of such strategies. “Whether smart cities descend into a dystopian fantasy or forge a new cooperative relationship between the human and the non-human world” is a critical issue going forward [6]. Indeed there is much research already which demonstrates, empirically as well as conceptually, that much better results are achieved when people and technology work together, than when operating on their own [13]. This applies as much to so-called smart cities as in every other aspect of human life.

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