POLICY
PAPER

The liberal smart city

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Imprint

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1. Global trend towards urbanisation

In almost every country in the world, urbanisation is proceeding apace. People are increasingly leaving the rural areas and moving to world's densely populated metropolises in search of economic opportunity. Currently, the worldwide urbanisation rate – that is the share of people living in towns – is about 55 percent. By 2050, it is expected to rise to 68 percent, according to calculations by the United Nations. Ongoing urbanisation, in combination with rising populations, means that about 6.6 billion people are expected to live in cities by 2050.[1]

In Germany and other industrialised countries, urbanisation is slowing down. The share of the population living in urban areas is expected to increase only very slowly. In contrast, dramatic increases are expected in the urban populations of Asian, African and Latin American nations. For China, the increase of the urban population is expected to be particularly dramatic[2] (see Fig. 1). There, the urbanisation rate is expected to reach 80 percent by 2050. As recently as 1980, not even 20 percent of China's population lived in cities. By 2050, the world's cities are expected to have 2.5 billion new residents, 90 percent of whom will live in developing countries.[3]

Fig. 1 | Urban population share, world (1950 - 2050)

Share of reported or forecast urban population in percent
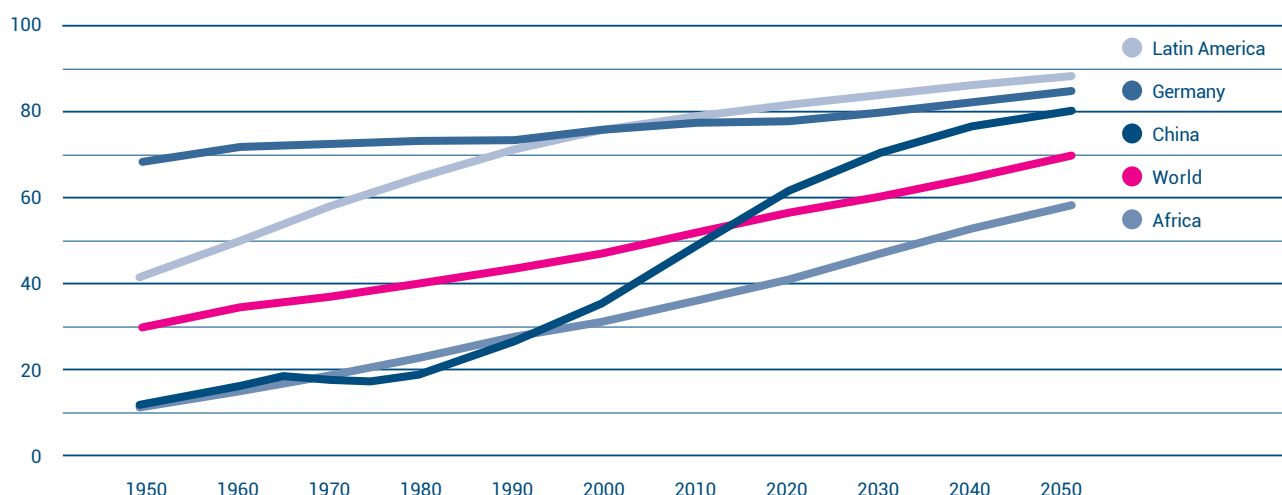
Source: United Nations, Department of Economic and Social Affairs, Population Division (2018)

The trend is associated with the emergence of new megacities, cities with populations greater than 10m people. Today, there are 33 megacities in the world (as of 2018). By 2030, that number is expected to rise to 43, with most of the new entrants being in developing countries.[4] As recently as 1990, there were only 12 megacities (see Fig. 2).

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[1]   https://population.un.org/wup/Publications/Files/WUP2018-KeyFacts.pdf
[2]   China's urbanisation process is supported by the government and promoted by infrastructure measures.
     https://www.economist.com/china/2018/06/23/china-is-trying-to-turn-itself-into-a-country-of-19-super-regions
[3]   https://population.un.org/wup/Publications/Files/WUP2018-PressRelease.pdf
[4]   https://esa.un.org/unpd/wup/Publications/Files/WUP2018-KeyFacts.pdf

Fig. 2 | Megacities, world (1950 - 2030)

Number of cities with at least 10m inhabitants worldwide
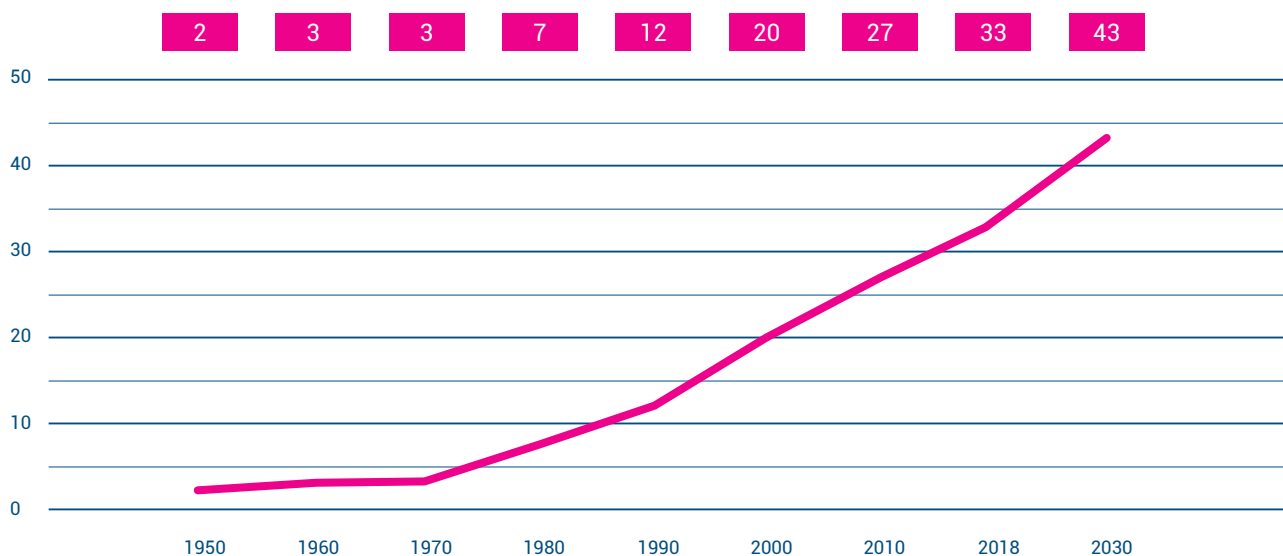
Source: United Nations, Department of Economic and Social Affairs, Population Division (2018)

2. The impact of urbanisation

The ongoing urbanisation trend poses new challenges to cities both in Germany and in the rest of the world. As urban populations grow, the number of problems cities and their inhabitants face also increases: present and future challenges include gridlocked streets, a lack of affordable living space, resource scarcity, logistical bottlenecks as well as air and environmental pollution.

Such problems are apparent in all of the world's cities, but they are most pronounced in the fast-growing settlements of developing countries and emerging markets. Such cities often offer the population great opportunities. But in developing countries in particular, the disadvantages of rampant urbanisation often outweigh the benefits. Apart from being economic hubs, they are also focal areas for poverty, disease and environmental pollution.[5]

Rising urban populations mean that these problems are gaining in global importance. On the one hand, growing numbers of urbanites are directly impacted by the disadvantages. On the other hand, the way urban regions develop impacts the entire world. For example, Chinese cities generate about 75 percent of China's total economic output. But they also produce about 85 percent of China's CO_2 emissions.[6] This means that cities are becoming more important – both in a positive and a negative sense.
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3. Smart cities

The challenges and issues described above can only be solved through intelligent, sustainable urban development, which will determine whether cities are able to achieve strong economic performance combined with a high standard of living. In this context, smart cities have become the subject of increasing public attention. The term refers to making cities smarter by deploying innovative digital technologies.

Smart concepts could potentially contribute improvements at all levels of urban living: smart mobility can help ensure freedom of movement for city dwellers while also cutting CO_2 emissions from transportation. Intelligent networking of businesses and supply chains can boost urban productivity and raise standards of living for urban populations. Digitalising administrative processes enables participative, transparent decision-making processes (smart governance) and can help accelerate processing times while also increasing customer friendliness. Smart power grids can enable the flexible, efficient, decentralised supply of electricity. Smart living technologies can raise living comfort, help reduce energy consumption and enable age-appropriate living. Smart town planning can help ensure barrier-free movement within the city for all inhabitants.

Holistic smart city concepts can have a positive effect on the economic, ecological and social aspects of urban living.

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[5]   Glaeser (2014): World of cities – The Causes and Consequences of Urbanization in Poorer Countries.
[6]   https://www.belfercenter.org/sites/default/files/files/publication/Emissions%202018.pdf

Choosing such a comprehensive approach is essential because the global trend towards increasing urbanisation means that putting our cities on a successful and sustainable development path is a precondition for the freedom and quality of life of later generations.

Sales figures from the Eco industry association show that the smart city is becoming increasingly important in Germany in economic terms. For the period 2017 to 2022, average annual turnover growth of 16.5 percent has been forecast for smart city technologies. This corresponds to a growth in sales from 20.4 billion euro in 2017 to 43.8 billion euro in 2022.[7] According to international projections, smart cities are expected to generate business opportunities to the value of over $2 trillion by 2025.[8]

But although the smart city concept is gaining in currency, it lacks definitional clarity. In recent years, the term "smart city" has increasingly become a marketing catch-all for cities and tech companies, which the interested parties change as required and use as they please.[9]

Although there is no single, commonly accepted definition of what a smart city is, there is agreement on two core aspects, according to Saebisch (2019)[10]: firstly, smart cities are based on collecting and analysing data generated by city dwellers. Secondly, the data are analysed with the aim of designing the city's recurring procedures and organisational and decision-making processes to be as intelligent as possible. In the ideal scenario, the information collected is used to raise the quality of life of the city's inhabitants.

4. Characteristics of a liberal smart city

IIn Germany, the vague definition of what a smart city is has resulted in unusual agreement across almost all party lines: political parties of almost every ideological persuasion now identify with the smart city concept, which can be shaped and moulded at will to fit one's convictions and concepts.

The truth is: although liberals have always concentrated on the special significance of innovation and technological progress for improving quality of life in the long term, no political camp can claim the smart city for itself. If that is the case, then there are several questions which liberals need to answer: What exactly is the liberal value-add when it comes to smart cities? What defines a liberal smart city? What makes a liberal smart city different from a green or conservative smart city?

In the following, we therefore propose a list of characteristics which form an integral part of the liberal smart city. In some instances, such properties may be supported by other political groupings, but liberal smart cities are characterised by their simultaneous presence.

4.1 Liberal smart cities adapt to their inhabitants

Depending on the political ideology, different priorities may be chosen in dealing with smart cities: for example, a "green" smart city tends to focus on goals such as sustainability, the conservation of resources or energy efficiency. The conservative vision of a smart city may instead concentrate on fighting crime and promoting internal security. A social democratic party could pursue a vision of a smart city that prioritises justice, equality and combating poverty.

The particular issues faced by individual cities mean that all of these visions have their place. But in a liberal smart city, such goals are not pursued for ideological reasons. The goals of a liberal smart city are oriented exclusively towards the concrete needs of its inhabitants. In a liberal smart city, all innovation is directed towards these concrete needs. To put it differently: in a liberal smart city, goals such as energy efficiency, combating crime or reducing poverty are at the focus of attention whenever achieving the goals means a significant improvement of the quality of life of the city's inhabitants. This means that the focus of a liberal smart city may well differ from city to city.

Cities are identified by their populations, by the totality of their inhabitants. People form the essence of any city and therefore have to be at the centre of the liberal smart city. All decisions and digital innovations therefore have to be directed at improving the quality of life of urban citizens as a whole. Care must be taken to ensure that all population groups have a voice and are heard. When cars were first introduced, a set of rules had to be gradually introduced and developed through signage and traffic regulations to make road traffic work for as many people as possible. Similarly, the development of the smart city should be seen as a macroeconomic task aimed at increasing the quality of life of inhabitants.

As liberal smart cities are designed to continuously improve the quality of life of their inhabitants, they have to be viewed as a process and not a state. According to this way of thinking, smart cities are not like projects that can be finalised by bringing them to a successful conclusion. The implication is that incremental improvement in cities in developing countries are as much a part of the liberal smart city concept as large-scale and technologically advanced innovations in cities in industrialised countries. In both cases, the measures form part of a process that aims to improve the quality of life of city dwellers.

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[7] https://www.eco.de/presse/eco-und-adl-veroeffentlichen-bislang-umfassendste-smart-city-studie/
[8] https://ww2.frost.com/news/press-releases/frost-sullivan-studie-smart-cities-werden-weltweit-bis-2025-einen-2-billionen-dollar-markt-schaffen/
[9] Dies gilt auch für politische Parteien (siehe Kapitel 4).
[10] Unveröffentlichter Buchbeitrag von Steffen Saebisch (2019).

4.2 Liberal smart cities arise from the creativity of their inhabitants

Liberal smart cities not only adapt to the needs of their inhabitants, but are created by their knowledge and creativity. It is the intelligence of inhabitants that transforms liberal cities into smart cities. For this reason, liberal smart cities often tend to on digital innovation that leverages the skills and experience of inhabitants.

This brings with it the implication that liberal smart cities cannot be imposed from above. When such a top-down approach is chosen without involving citizens at an early stage, it ignores the skills and knowledge of inhabitants instead of making productive use of them. Liberal smart cities emerge from the contest between creative ideas contributed by the city's residents. People on the ground know best which concrete problems need to be solved in their area. This means that in a liberal smart city, all stakeholders of the urban society need to be involved: residents, local government, the municipal administration, associations, and start-ups and established companies.

In the direct process of building a liberal smart city, the state has a relatively minor role to play. At the local government level, it mainly serves as a platform that brings together creative stakeholders and their ideas in the context of the city. At the national level, the state should focus on creating a climate that promotes innovation and on ensuring that start-ups and established companies have the freedom grow. But the core role of the state begins much earlier: in providing the best possible education. Liberal smart cities can only be smart when their inhabitants think for themselves and take responsibility for their actions, are familiar with digital technologies and able to innovate. For liberal smart cities to become reality, our education system needs to teach precisely these skills. Education should not be thought of as ending at university. To ensure that all population groups can contribute to shaping the smart city and benefit from its advantages, we need a concept that focuses on life-long learning.

4.3 Liberal smart cities strengthen their inhabitants' freedoms

Data streams and networking can be used to bring processes in smart cities ever closer to perfection. But care has to be taken not to allow excessive regulation by algorithm. City dwellers must be able to live their daily lives without massive restrictions. If hair dryers may only be used at night because that that is when electricity is cheapest, this would be a violation of the liberal concept of freedom. Driving bans during certain weather or traffic

conditions are another form of restrictions that limit the individual freedom of citizens. That is why a smart city always prefers solutions that work without prohibitions. Instead of overregulating, one should first check if other solutions are feasible. In the case of traffic, this could mean: if the integrated transportation concept of a city is attractive (smart) enough, then residents will forego their cars voluntarily. The focus should always be on the individual needs and freedoms of citizens. Whenever this can be achieved using a smart approach, the added value of the smart city is a given. The power to make decisions has to remain in the hands of individuals. Digital solutions are always a means to an end, never the executive.

An excess of networking and regulation by algorithms limits citizens' freedom. It also increases the risk of excessive reliance on existing regulations. Democratic processes rely on empowered citizens who contribute to society independently and liberally. Smart solutions can strengthen democratic processes, but they cannot replace them. E-government and digital participation processes can help increase citizens' buy-in into democracy. They boost participation and improve transparency. For example, digital elections can help the elderly avoid having to physically go to a voting station or the post office. Digital participation also means that all residents have the digital competence to understand smart solutions and integrate them in their daily lives. Nobody should be excluded from digitalisation because of their age or social background. It is only through the life-long learning of digital skills that a city's inhabitants can become "smart citizens" who benefit from a smart city's liberal nature instead of being controlled by digitalisation.

4.4 In liberal cities, data privacy and transparency are a top priority

Large-scale networking means that smart cities continuously generate large amounts of data that are stored in the cloud. In smart cities, the data gathered on residents form a fundamental part of the technical infrastructure. When such data are generated at home or by a car, they represent personal information which can be used to gain insights into the personal habits of individuals. That is why they deserve special protection in liberal smart cities, which should not allow movement profiles to be used to create "transparent citizens". When personal information is not protected adequately, it can result in new forms of discrimination. In liberal smart cities, all technologies should be designed in a way that protects the privacy of users throughout the entire lifecycle. This is why personal information should ideally only be captured once (e.g. at registration) and afterwards not be used or processed in any form. For non-personal information, the open data principle should apply, allowing such data to be

used by all residents of the liberal smart city.
Smart city concepts from China show that using
movement profiles can lead to an Orwellian surveillance
state. The country is planning to introduce a nationwide
and ubiquitous "citizen scoring" system by sometime
during 2020. Helped a senior citizen cross the road? Your
account gets credited. Dropped litter on the road? Your
account gets debited. The system is based on linking
facial recognition and intelligent video surveillance
systems with an algorithm-based scoring system. The aim
of the system is to make all citizens behave as "good
citizens" in the eyes of the state. It means that citizens
sacrifice a large part of their individual liberties. In a liberal
smart city, the opposite should be the case. Here, digital
technologies should maximise the experience of individual
freedom. Such approaches can be found in some
European cities (e.g. Barcelona or Vienna), where the
interests of citizens are prioritised.

5 Conclusion

The smart city idea represents a dilemma for liberalism.
Liberals have long championed innovation and
technological progress as drivers of long-term quality of
life improvements. No other political grouping is as open
to new technologies and the future as liberals are. The
affinity to the idea of the smart city is almost automatic.
But without collecting and analysing data, there can be no
smart city. This is the heart of the dilemma which liberals
have to solve. From a liberal perspective, the individual
freedom of citizens should be maximised.

This conflict of objectives makes it possible to derive the
characteristics of a smart city: (1) As with every
technological innovation, the first priority of liberal smart
cities is to boost the quality of life of citizens. (2) For this
reason, liberal smart cities ideally emerge from the skills,
knowledge and experiences of the city's inhabitants,
because they know best which problems need to be
solved. (3) The problems cannot be solved solely through
prescriptions and prohibitions. This is why ideas which do
not limit citizens' freedom are always prioritised in liberal
smart cities. (4) Protecting these individual freedoms
means that personal information requires special
protection.