
2.1 Challenges Facing Cities

What do people expect when they move to a city? As diverse as their motives may be, they always have one element in common: *access*. Access to jobs, a livelihood, and perhaps even affluence,—market access; access to the necessities of life, such as water, food, housing, and health care services; access to infrastructures: to electricity, heating, sanitary facilities, waste disposal systems, etc.; access to information, knowledge, technological advances, and—with a lot of luck—education; access to other people, to a social, cultural, or religious life, to special groups or like-minded people and communities, or to anonymity; access to a place where people have rights and obligations controlled by institutions and defended by courts, if necessary; a place that offers a certain degree of security, stability, and predictability, including protection against threats such as natural or man-made disasters. Cities provide access to opportunities, to physical and potential social mobility, and in varying degrees to the big, wide world (e.g., via products, a movie theater, customer/supplier relations, tourists, or through a train station or an airport). The desire to seek access is apparently one of the reasons why urban populations are rapidly growing worldwide. Today, over 50 % of the world's population lives in cities, a proportion that the United Nations (U.N.) expects to increase to 66 % in 2050.¹

Even though the idea of “hoping to gain access” is often due to a lack of prospects for the future or, at the other end of the scale, due to superfluity, boredom, or a concentration of power, it naturally also implies the search. To be more specific, the search for access that could become attainable, which becomes the goal and needs to be earned and maintained at best. The search thus includes

¹ cf. UN/DESA (2014, p. 2).

the endeavor. And that endeavor represents the most fundamental form of urban dynamics—namely, that of the city dwellers. They seek self-preservation and self-fulfillment, or perhaps they seek to secure a livelihood for their families or wish to develop and improve their own living conditions or those of others. Yet they are not alone in pursuing those goals. Due to the population density in cities, urbanites face increased competitive pressure in all their endeavors. This aspect drives urbanites to pursue their endeavors more intensely, thus considerably accelerating urban dynamics. That dynamism gives rise to innovation that, depending on the overall situation, can have positive results, such as enhanced services and benefits, or negative results, such as more unscrupulous types of crime.

Cities are constantly changing. They are centers of learning and development. Thus, the first industrial revolution—the introduction of mechanical production processes, the use of steam engines, and the use of coal as an energy source—took place in cities located in countries that later became industrial nations. The second industrial revolution—automated and mass production in conjunction with the introduction of a centralized power supply and electrification²—also originated in cities; over time it has shifted, together with its inherent problems (environmental and social aspects), from the industrial nations to cities in less developed regions of the world. Advances in communication media ranging from telegraphy to telephones, radios, television, and the Internet also initially occurred in cities. And the “third industrial revolution,” the digital revolution, which is already under way, likewise began in cities: this includes (a) digitalization, (b) the virtual decentralization of production processes and our lifeworld, as well as (c) key stimuli for an energy transition (although in Germany the energy transition actually did have its origins in rural areas). It is not yet possible to determine which cities and regions will be the leaders in the third industrial revolution. However, the leadership roles will manifest themselves within the next few years.

Not only the city inhabitants and their government form the basis for developments of this kind, but also initially the natural environment in which a city is embedded. Whereas processes in nature are inherently a type of cyclical economy based on “life—death/decay—recycling/return to life,” this does not hold true for human production and consumption. This becomes vividly apparent when a city is viewed as an urban system. By overusing the available resources, urbanites exploit their natural environment, thereby destroying it and endangering their own basis of existence. As major polluters, cities foster climate change, the consequences of which they are particularly exposed to.³ At the same time, however, due to their

² cf. Schott, D. (2006, p. 255).

³ cf. Revi, A., Satterthwaite, D. E. (2014).

density and structure cities have the potential to manage their economic activities in an environmentally friendly and resource-efficient manner and to take suitable action to promote the protection of their natural environment. We need to quickly tap this potential.

Progressive urbanization, the third industrial revolution (including the obligatory energy transition), and above all the preservation and cultivation of their natural environment and thus their basis of existence are three major challenges that cities face. While cities in many parts of the world are growing, mature cities in aging and already urbanized industrial nations are stagnating or even shrinking in size. In Germany, for instance, especially cities in rural or economically underdeveloped and structurally weak regions have to contend with shrinking populations, or with the combination of growth and shrinkage. Urban development in industrial nations is essentially characterized by demographic trends in terms of a shrinking and aging population, the latter being a global phenomenon.⁴ In a broader sense, demographic change also includes aspects such as rising numbers of immigrants (heterogeneity) and a diversification of lifestyles (e.g., singularization/single-person households), two trends that likewise distinguish urban life worldwide.

2.2 The Relevance of Cities

What are the reasons for the progressive *urbanization* in terms of “the expansion and intensification of urban lifestyles, economic activity, and culture” [author’s transl.]⁵ that is taking place? First of all, we need to note that the world population is rapidly increasing. In July 2013 the world population was 7.2 billion. Between 2005 and 2013 it rose annually by a figure approximately equal to the population of Germany. Taking into account the assumption that fertility rates will continue to drop, the U.N. nevertheless expects the world’s population to increase to 9.5 billion by 2050 and to 10.9 billion by 2100.⁶ Africa is projected to have the highest growth rates between 2011 and 2030. During that same period, Asia is expected to have

⁴ cf. UN/DESA (2013b, p. xviii ff.).

⁵ Bähr, J. (2011a, n.p.).

⁶ cf. UN/DESA (2013b, p. xviii).

the highest population growth by far in absolute numbers. The U.N. reports that the world population is growing especially in the developing countries.^{7,8}

An increasing proportion of this growing population lives in cities. Whereas the urbanization rate in the industrial nations (developed countries) is already almost 80% today and is expected to rise to 85.9% by 2050, it is projected to increase from 46.5% in 2011 to 64% in 2050 in the less developed (high growth rate) regions.⁹

The following examples serve to help illustrate these numbers. Let us take a look at India. According to U.N. estimates, an average of 21 people living in rural areas in India will move to metropolitan areas every minute within the next 20 years. In order to accommodate that massive inflow of people to urban areas India will need about 500 new cities during that same period. Between 2014 and 2050, India's urban population will increase by 404 million people and China's by 202 million (according to U.N. estimates).¹⁰ In Bangladesh the population of Dhaka grew by 3259% between 1955 and 2015 to 17.6 million.¹¹ These numbers defy the imagination of Europeans and present local administrative bodies with tasks that are practically impossible to accomplish.

Apart from (a) natural population growth, the reasons for progressive *urbanization* in terms of "the proliferation, spread, or growth of cities by number, surface area, or population both in absolute numbers and in relation to the rural population or nonurban settlements" [author's transl.]¹² are (b) migration from rural areas, and (c) the urbanization of rural areas, the latter—creation and reclassification of cities—tending to be a less significant factor.¹³

As a result of these trends, cities such as Tokyo with a population of 38 million and Delhi with a population of 25 million as well as sprawling urban zones with even larger populations already exist today. The number of megacities (cities with a population of more than 10 million) has increased considerably. In 1970 only two

⁷ "More developed regions comprise all regions of Europe plus Northern America, Australia/New Zealand and Japan. Less developed regions comprise all regions of Africa, Asia (excluding Japan), and Latin America and the Caribbean as well as Melanesia, Micronesia and Polynesia. Countries or areas in the more developed regions are designated as 'developed countries'. Countries or areas in the less developed regions are designated as 'developing countries'." Source: UN/DESA (2013b, p. vii).

⁸ cf. UN/DESA (2013b, p. xix).

⁹ cf. UN/DESA (2012, p. 4).

¹⁰ cf. UN/DESA (2014, p. 1).

¹¹ cf. UN/DESA (2002 and 2014).

¹² Bähr, J. (2011a, n.p.).

¹³ cf. Bähr, J. (2011b, n.p.).

megacities existed, whereas today there are already 28, a number that is expected to rise to 41 by 2030. Today, 12 % of the urban population lives in such metropolitan agglomerations.¹⁴ Despite the steep increase in the number of megacities, they are not an urbanite's first choice. The majority (almost 50 %) of the world's urban population lives in cities with a population of less than 0.5 million.¹⁵

The ongoing urbanization process naturally has a dramatic impact on the environment. To give a few examples, we could mention aspects such as the use of land (e.g., for transportation or housing), the use of natural resources (e.g., for water and energy supply systems), the contamination of natural resources (e.g., soil and water), air pollution (due to manufacturing, heating of buildings, traffic, etc.), and noise emissions. Urbanization often leads to an irreversible depletion of our natural resources, to the destruction of natural environments, and to a loss of biodiversity. Urban planning therefore needs to be aimed at creating compact cities whose economies use resources efficiently in order to ensure the viability of the city and its environment. This objective appears utopian in view of the many metropolises that routinely grow uncontrollably at random, yet it is crucial.

In brief it can be said that, irrespective of where in the world they are located and regardless of their size and underlying circumstances, what all cities have in common is the obligation to identify the needs of their inhabitants, adapt to the increasing demands placed on them, and transform themselves accordingly. The situation described above suffices to demonstrate the relevance of cities. Cities will shape the future and are markets of the future.

2.3 Goals for Cities

Once it has been acknowledged that a healthy environment, people's quality of life, and economic viability are inextricably interlinked and interdependent, urban developers generally try to incorporate the *principles of sustainability* in their urban planning projects. "Sustainable development means that environmental aspects and social and economic aspects receive equal consideration¹⁶ and that the needs of today's generation are met without jeopardizing the ability of future generations to satisfy their own needs and select their own lifestyle." [author's transl.]¹⁷

¹⁴ cf. UN/DESA (2014, p. 1).

¹⁵ cf. UN/DESA (2014, p. 1).

¹⁶ cf. Rat für Nachhaltige Entwicklung (n.d.), n.p.

¹⁷ Lexikon der Nachhaltigkeit (n.d.), n.p.

Based on those principles, common goals emerge that many different types of cities focus on to a greater or lesser extent, depending on the underlying circumstances. These goals include:

1. protecting (in the interest of preserving) the natural environment, the climate, and resources, i.e., the urban living conditions,
2. maintaining the urbanites' quality of life, or promoting the social development of the city, and
3. maintaining the city's competitiveness, or promoting its economic development,
4. ... for current and future generations.

None of these goals can be kept alive without taking the others into consideration. Consequently, in a healthy city none of these goals may be neglected. In the following, we will refer to sustainability requirements as urban "*meta-goals*."

But what is it like in cities in reality? The initial years of the new millennium were generally characterized by economic stagnation and recession primarily due to the prolonged financial and economic crisis. Even emerging markets are currently no longer growing at the rates they achieved in the past. It can furthermore be noted that economic growth no longer necessarily entails job creation and social progress.¹⁸ The increasing decoupling of capital growth from productivity has resulted in a more rapid accumulation of wealth and greater poverty. Due to structural changes, a large portion of the population has been driven out of the labor market or forced to accept low-skilled and low-paying jobs and/or precarious employment.¹⁹ This part of the workforce has lost its middle-class status (in industrial nations) or has started to work in the informal sector, which accounts for a significant share of the economic output in less developed countries. Apart from all the anguish associated with the informal economy, it does in part enable urban life in places where state or municipal support is unavailable.

When people lose their means of existence (e.g., in the agricultural or industrial sectors, or because of climate change, terrorism, or war), fear, poverty, a lack of prospects for the future, and unemployment lead to international migration or to internal migration from rural to urban areas. In cities, random, uncontrollable urban growth results in inner-city segregation, i.e., in social and geographical division. This trend adversely impacts a city's "manageability," lowers the quality of life of the city's residents, encourages environmentally detrimental behavior, and jeopardizes the city's economic success because of the enormous subsequent costs.

¹⁸ cf. COM GD REGIO (2011, p. VI).

¹⁹ cf. COM GD REGIO (2011, p. VI).

This is a self-accelerating, systemic process that has the potential to cause cities to deteriorate and turn into uninhabitable behemoths or to give rise to no-go areas where people do not feel safe. In this context, the question arises as to what happens to people who—in hopes of gaining access—leave their homes to move to a city to find work, but end up without any prospects for the future or are mercilessly exploited.

In order to call attention to these kinds of interdependencies that enable in-human and environmentally destructive production processes on which modern consumption is based and to point out that due to globalization “future consumers” in developing countries will also want everything considered to be standard and a status symbol in Western industrial nations, we have added another dimension to the sustainability requirements. This dimension defines a requirement that can hardly be met but, just like the other three dimensions, could set a trend and serve to raise awareness regarding human consumption patterns. The author is of the opinion that the sustainability requirements are no longer adequate in view of globalization, an increasing focus on economic aspects, and the progressive destruction of the environment. Therefore, the requirement to be *generalizable* has been added to the municipal meta-goal system as shown in Fig. 2.1. This means that approaches, decisions, or actions and their consequences should be assessed as to whether they are still sustainable and tenable if they are repeated in different contexts by different and/or numerous stakeholders.

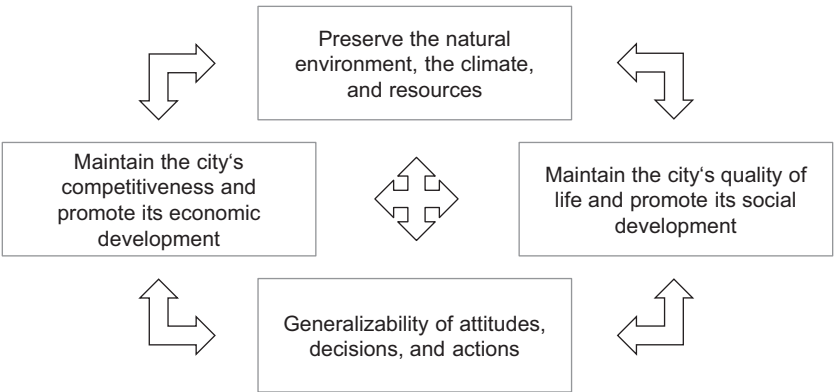


Fig. 2.1 The municipal meta-goal system, including the requirement for generalizability. (Source: author’s own graphics)

Taking the above into account, a city should pursue a clear, (if possible) participatory written, individual *vision* to which all urbanites and stakeholders feel committed. It should include all residents and their basic necessities as well as the preservation and cultivation of the living and natural urban environment and should give consideration to both global sustainability goals and the city's specific underlying circumstances.—However, the top municipal goal uniting all cities has not yet been addressed.

Smart City – Future City?

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