



Thinking Sustainable!

The smart city of the future

Our planet is home to more than eight billion people, mainly distributed between Asia (approx. 59.7%), Africa (approx. 17.9%) and Europe (approx. 9.4%)¹. The number of inhabitants has risen at a remarkable pace in recent decades: while the rate of change was fairly moderate between the end of the 18th century and 1950, the population has soared in the last few decades. According to the United Nations, it is likely to reach 9.7 billion by 2050. There has also been a significant growth process in cities at global level, known as urbanisation, which will continue in the years ahead, particularly in developing countries.

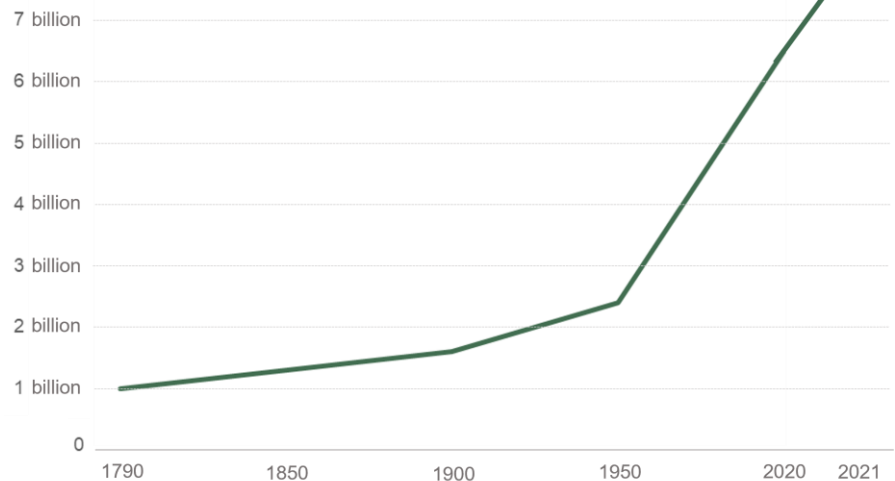
KEY MESSAGES

Constant population growth and the challenges to be overcome.

The challenges that lie ahead

The population has more than trebled since 1950.

Population in billion, 1790 to 2021



Source: HYDE (2017); Gapminder (2022); UN (2022)

In a context in which the urbanisation process and the development of new cities are ongoing, more and more companies are working to develop solutions that accommodate and bolster these trends as smartly and sustainably as possible. The focus is on everyday services and activities, improving citizens' quality of life, and the main challenges that every growing city has to deal with. These challenges include:

- *Space-related problems:* e.g. pressure on land and housing, efficient management of use of space and of urban expansion, mobility, etc.
- *Environmental problems:* e.g. pollution, water supply, energy production, noise, etc.
- *Public health and safety issues:* e.g. a commitment to ensuring optimum sanitation, food security, reducing crime rates, etc.

At present, over 100 cities worldwide are officially pursuing a smart city strategy. What does this actually mean?

¹ Distribution of the global population in 2022, by continent. Statista.com

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Technology plays an instrumental role in the European Commission's definition of smart cities.

The smart city concept

Its definition has evolved with the advent of new technologies and the continuous improvement of existing ones. These days, according to the European Commission's definition, a smart city is a place where traditional networks and services are made more efficient with the use of digital solutions for the benefit of its inhabitants and business. All this is made possible by the use of both tangible resources (such as transport and energy infrastructures) and intangible ones (such as education, knowledge and human capital). Therefore, the concept of the smart city goes beyond improving use of the available resources and reducing emissions.

In 2018, McKinsey² analysed some of the fields in which smart technologies can foster urban expansion:

- *Security*: concerns over crime seriously affect the well-being of citizens. Technology cannot solve this problem completely; however, data collection allows resources and staff to be assigned as effectively as possible to the areas where they are needed, thus enabling deployment of the emergency services (through smart management of traffic lights, for instance) and much more besides. Furthermore, real-time crime mapping makes it possible to carry out predictive policing operations.
- *Health care*: cities can use data and analytics to identify demographic groups with elevated risk profiles and target interventions more precisely and effectively. In addition, they can implement systems that are able to measure a person's vital signs and send them securely to doctors for assessment, thus reducing hospital admissions.
- *Mobility*: improving everyday travel by public or private transport is essential. In the event of delays, the use of mobile apps that deliver real-time information enables users to adjust their route quickly, and allows cities to take better decisions about changing the routes of the most widely-used buses. The smart apps also help to save time and stress while looking for parking spaces, pointing users towards those that are still available.
- *Energy, water and waste disposal*: environmental pressures have multiplied, and apps can help to reduce:
 - energy waste – through the installation of smart street lights or building automation systems;
 - water consumption – through advanced metering and the use of smart irrigation systems;
 - the volume of solid waste via digital payment for waste disposal or optimisation of collection routes.
- *Involvement and community*: new communication channels between citizens and local agencies make cities more responsive. Digital channels can allow residents to report any problems more quickly, gather data and opinions, or establish and strengthen relationships between neighbours more easily.

The gathering, availability and analysis of large volumes of data that improve services in real time and enable ever more efficient management of the urban fabric is therefore emerging as the common denominator in every aspect of development of a smart city. As well as being an urban centre characterised by innovative and sustainable technologies, a smart city is also a city that aims to reduce its own environmental impact and improve the well-being of its citizens. Therefore, the centrality of inhabitants, sustainability and inclusion are also important elements of the definition of a smart city.

² *Smart cities: Digital solutions for a more livable future*. McKinsey & Company. June 2018

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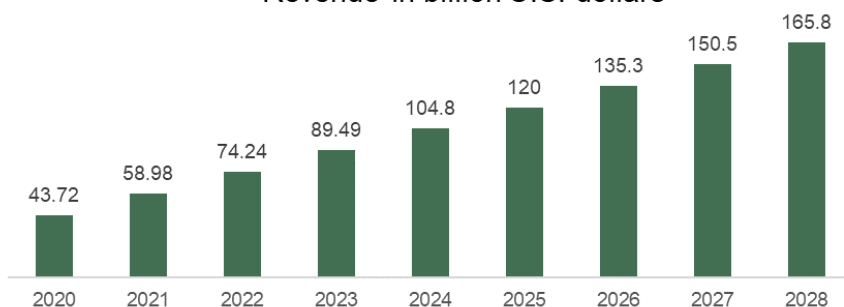
Smart cities create opportunities for companies that operate in the technology sector.

An opportunity to be seized?

For many companies operating in the technology sector (and others!), smart cities present a great opportunity. A smart city must be able to make the best possible use of technology to involve its citizens efficiently. To this end, all interested parties – public authorities, transport organisations, business and non-profit partners, citizens and local communities – must be involved in creating, delivering and monitoring the various elements (mobility, health, security, water, energy, communication and exchange systems). Companies operating in the technology sector have a fundamental role in helping urban leaders to achieve their own objectives.

In view of this, the global revenue of technologies, products and services for smart cities is expected³ to reach USD 89 billion in 2023, with further growth forecast in subsequent years.

Revenue in billion U.S. dollars



Source: Statista.com

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Zurich, the smartest city in 2023.

Examples of smart cities

In 2019, the *IMD World Competitiveness Center (WCC)* launched the *Smart City Index* to assess the economic and technological aspects of smart cities as well as their “human dimensions” (quality of life, environment and inclusion). The index gathers a mixture of hard data and survey responses to gauge the smartness of cities across the globe, with an emphasis on how inhabitants see the city. The methodology was improved in 2023, when the fourth edition of the Index was published⁴.

The top ten locations of the current year are listed below:

1	Zurich	6	London
2	Oslo	7	Singapore
3	Canberra	8	Helsinki
4	Copenhagen	9	Geneva
5	Lausanne	10	Stockholm

Source: IMD Smart City, Index Report 2023

Zurich topped the rankings in the most recent report on account of its ability to be a global hub and a liveable city with strong, citizen-focused policies. It all started with a street light project: the city introduced a series of street lights that adapted to traffic levels using sensors, which increase their brightness or dim accordingly. The project enabled an energy saving of 70%. Since then, Zurich has installed smart street lights across the city and established a range of sensor technologies that can collect environmental data, measure the flow of traffic and act as a public WiFi antenna. The smart building management system, which connects the city’s heating, electricity and cooling, has also been shown to be highly effective.

Another example of a role model city is Singapore, which topped the list for many years. In 2014, it launched an initiative to make the city smart by introducing smart technologies in its public and private sectors (*Smart Nation Initiative*). The aim was

³ Projected revenue generated by companies in the global smart city from 2020 to 2028. Statista.com

⁴ www.imd.org/wp-content/uploads/2023/04/smartcityindex-2023-v7.pdf

to create a city powered by digital innovation and technology that meets the ever-changing requirements of citizens. Contactless payment has been widely adopted to efficiently direct the movements and payments of the 7.5 million passengers who use public transport. From a medical perspective, a digital health system has been introduced along with wearable devices for monitoring patients.

Opportunities

- *Contribution to the sustainable functioning of cities: investment in companies that provide solutions or services for the development and efficient and sustainable operation of infrastructures.*
- *Participation in a rapidly growing trend: share prices benefit from growing demand from investors.*

Risks

- *Market fluctuations: depending on market phases, shares are subject to major fluctuations in their value, both upwards and downwards.*

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