

# Amsterdam



The things that make Amsterdam unique are its governance model and inclusive policy. The city offers a good example of decentralization of municipal authority undertaken in a collaborative spirit. Amsterdam's leading position in smart city development stems in part from its international collaboration within the [City-zen project](#).

If we compare Amsterdam's performance along the eighteen dimensions to the six cities' average scores, we see that it obtained above-average scores in all but five dimensions, namely: Basic Sanitation, Information on Local Government Decision Making, Welcoming of Minorities, Cultural Activities, and Data Management. We recognize that some cities may be proactive

on some of these dimensions but ultimately communicate little about their achievements. Overall, and as will be shown in our detailed analysis of Amsterdam (Chapter 2), our profile for Amsterdam indicates that the city's team and its stakeholders are proactive.

Note: In the radar charts in this section, the blue line corresponds to the numerical scores along the eighteen dimensions that we assigned to a specific city (in the chart above, Amsterdam), while the orange line corresponds to the average scores along the eighteen dimensions for the six selected cities.

By developing and implementing real-life solutions, Amsterdam has promoted an open-source model that allows users to connect with

one another, share ideas, and create potential synergies and collaborations that can be implemented at a neighborhood level.

Mobility provides an example of this collaborative process at work. For many observers, Amsterdam is now the bicycle capital of the world. The center of Amsterdam certainly seems to be owned by cyclists. However, at the metropolis level, it is harder to promote biking. Nevertheless, mobility has been significantly improved in Amsterdam through a widespread switch to electric vehicles among the local population; the city has encouraged that switch in order to reduce pollution and so improve health and breathing conditions in the city. Amsterdam deserves to be identified as a **Collaborative City**.

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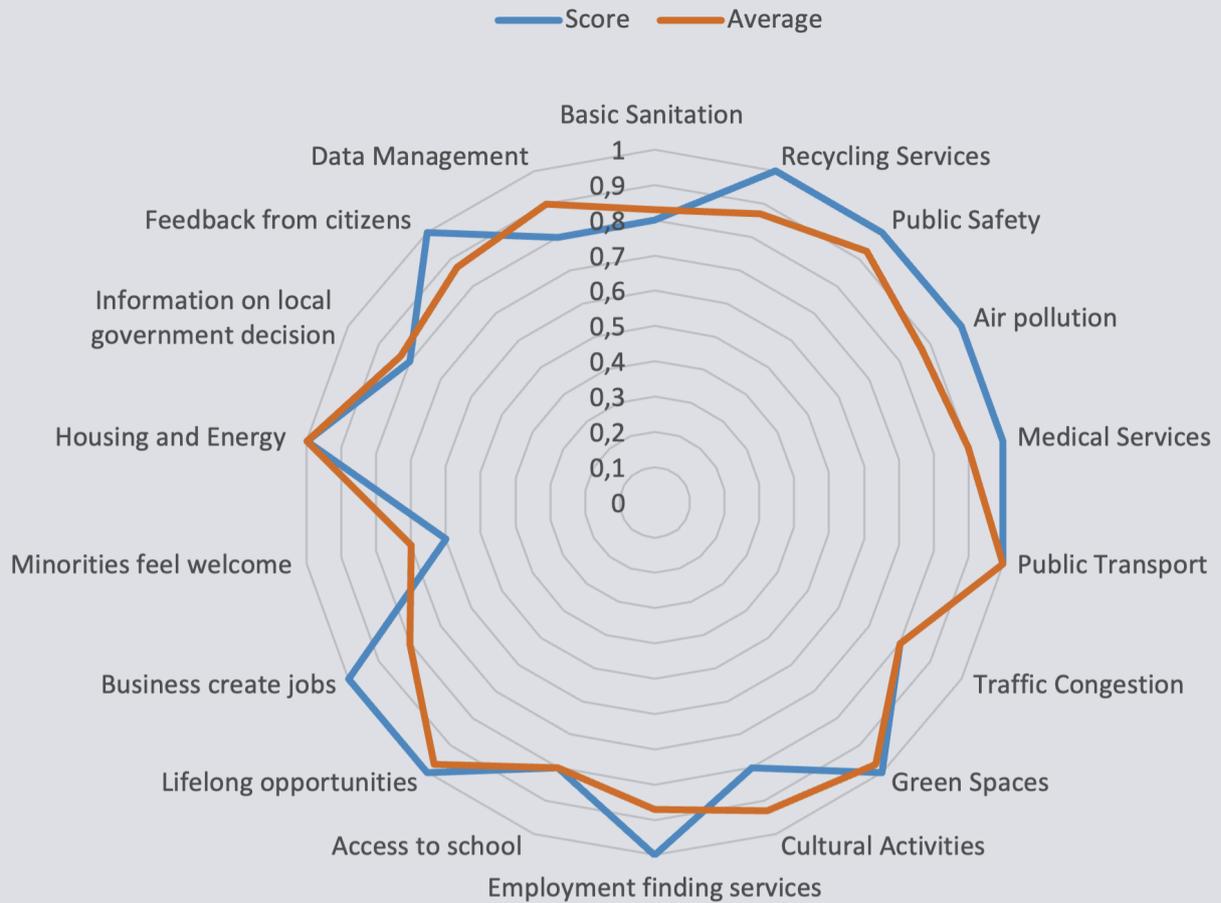


Chart type designed to plot 18 factors translated into values over multiple quantitative variables. Blue line is about the city and Orange line is the average value for the six selected cities. It should be used with care.

## Executive summary

In 2014, a large study mapping smart cities in Europe, conducted on behalf of the European Parliament's Committee on Industry, Research and Energy (Manville et al., 2014), identified Amsterdam as a leading smart city, along with Barcelona (see Chapter 3), Copenhagen (see Chapter 4), Helsinki, Manchester, and Vienna (see Chapter 7).

At that time, Amsterdam had been achieving top position in various rankings of smart city programs. With the launch of its virtual digital city initiative, *De Digitale Stad* (DDS), back in 1994, Amsterdam was one of the first cities in Europe to adopt a smart city strategy.

Amsterdam's official smart city program was launched in 2009. It addressed issues relating to the economy, the environment, government, mobility, healthcare, waste management, education, and energy. Its flagship project is the Amsterdam Smart City web platform. This project facilitates citizen participation as well as partnerships between public and private sectors. Actors involved in it include universities and other types of research institution.

Amsterdam is located in the province of Noord-Holland. This large city is the economic capital of the Netherlands. There are about 875,000 inhabitants within the city itself; 1.6 million people live in the urban area, and more than 2.5 million live in the metropolitan area. Amsterdam has a population density of 4,500 people per square kilometer, which is considered to be quite high. Immigration has been an important historical feature of Amsterdam. In 2005, 48.3 percent of the city's inhabitants were immigrants. In 2020, 41.1 percent of Amsterdam's population comprised first- or second-generation immigrants of non-European origin (excluding Turkey); for residents aged under twenty-one specifically, that figure stood at 48.5 percent.

*Amsterdam Smart City* (ASC) has been designed to be walkable, cohesive, and pleasant to live in. Moreover, Amsterdam is seen as healthy, sustainable, and attractive, and it has a reputation as an innovative environment. The city has a solid foundation for the digital future, and it is pursuing its growth potential in order to compete globally. Smart city-related initiatives in Amsterdam address a broad spectrum of themes that are relevant to all six characteristics of a smart city (economy, mobility, governance, people, living,

and environment).<sup>1</sup>

This smart city is the only one of our selected six whose program covers the whole range of smart city characteristics that we identified. ASC is frequently seen as a model for facilitating bottom-up projects within diverse fields (Manville et al., 2014; Noori et al., 2020). Similar initiatives are now being developed in other cities, and so what now makes Amsterdam unique are its governance model and inclusive policy.

In terms of governance, ASC can be considered a two-tier initiative. The first tier (known as the "program level") came about through the interaction of a limited number of founding partners. They are responsible for the overall development of the initiative, as well as for its funding and management. The second tier is the "project level," within which additional actors interact in order to implement projects.

The first round of the ASC program ran from 2009 until 2011. During this period, sixteen pilot projects were developed. The main goal of this first phase was to test both technical solutions and forms of collaboration. Amsterdam exhibits different types of resident participation. The governance model deployed—whether at program or project level—is a hybrid that involves a mix of public, private, and civic organizations. The relationship between this governance and the different typologies of citizen participation at project level is interesting because of the level of decentralization: projects are developed either autonomously by other partners or in collaboration with one of the founding partners.

The ASC has categorized the projects that have been developed by its partners according to five themes:

- *Living*: increasing energy efficiency in residential buildings in order to contribute to a reduction in overall CO<sub>2</sub> emissions;
- *Working*: fostering innovative practices within the work environment, either through sustainable buildings or through new modes of working;
- *Mobility*: finding innovative ways to reduce CO<sub>2</sub> emissions from transport;
- *Public Facilities*: improving the sustainability of public services through the implementation of new technologies or new organizational models;
- *Open Data*: making raw data from the City Council and its

[1] <https://amsterdamsmartcity.com/> (accessed on 19 November 2020).

departments and agencies publicly available in order to increase transparency and devise new services.

To test ASC's pilot projects, three parts of the city were selected for use as urban living labs, with each of the three having a specific focus:

- *Nieuw-West*: this is a mostly residential area that offers a good representation of an average Amsterdam neighborhood. Initiatives piloted here mostly focus on the development of new models for energy generation and consumption, making use of the smart grid deployed in the area.
- *Zuidoost*: this area, characterized by the presence of large commercial and recreational estates, is used by ASC when it needs to test out the scaling-up of projects.
- *IJburg*: this area, sited on reclaimed land, is a recent expansion of the city. It is used to test out projects that make use of fast fiber optic connections.

Many other ASC projects have been developed outside of Amsterdam, including in neighboring cities such as Almere, Haarlem, and Zaanstad. Since its inception, ASC has helped to manage more than 150 projects, and it has involved 2,300 members and two hundred organizations. ASC has initiated this large number of innovative projects to create a more sustainable and energy-efficient city. This smart city program has provided opportunities for businesses located in IJburg, Nieuw-West, and Zuidoost to test new products in a real-life setting known as an "urban living lab." Amsterdam is now experimenting with a large-scale application of photovoltaic roof panels in one of its newly built areas.

The Metropolitan Region Amsterdam (MRA) consists of multiple authorities, but it is a single city.<sup>2</sup> It is easier to understand the numerous initiatives that have been launched in the MRA by organizing them according to the specific topics, analytical categories, and dimensions from our study's three-layer framework. (For a description of that framework, see the Executive Summary of this ebook.) An alternative approach would have been to separate the direct initiatives undertaken by the city government (such as the different MRA plans, the functions of the Economic Board, and the recent appointment of Amsterdam's chief technical officer (CTO) from more "private" startups and

for-profit initiatives. Unfortunately, dividing up the initiatives in this way is not easy, because many startup initiatives are initially funded by government projects, even if most of them are still thought out by citizens. Amsterdam's configuration of initiatives is difficult to accurately delineate. Indeed, the volume of initiatives and projects Amsterdam is undertaking emphasizes the importance of how Amsterdam's public sector (as well as the Dutch public sector more broadly) has helped to create a private sector that works for the benefit of everyone. This relationship between public and private and the smart moves made by the city government have directly contributed to the progress that the city has made.

The most important outcomes of Amsterdam's smart city projects are summarized below.

**Recycling services:** The Great Bubble Barrier, a Dutch startup, is using existing technology, namely an underwater device that blows bubbles toward the water's surface and is commonly used to contain oil spills and reduce underwater noise levels, for a completely new purpose (Hutt, 2019). In Amsterdam, the technology is being used for waste collection. Bubbles are blown to the surface of canals to make waste float toward one area before it reaches the sea so it can easily be collected (Hutt, 2019).

**Mobility:** With approximately nine hundred thousand bikes for over eight hundred thousand citizens, Amsterdam has more bicycles than it does people (Dam, 2017). In Amsterdam, biking is the most common form of transport, with a daily mode share of 48 percent (Sutton, 2017). Dutch city planners have become experts in the "classic" mobility feat of creating excellent street design and cycling infrastructure. Still, they are open to new services that further improve biking mobility, including bike sharing, a global innovation now available in over 712 cities (Shaheen et al., 2015). The city has a "carless agenda" grounded in twenty-seven measures that aim to remove cars from the city center and expand bicycle and pedestrian infrastructure; it has been estimated that the cost of implementing this agenda will be between five hundred million and seven hundred million euros by 2025 (Deloitte City Mobility Index, 2020).

**Green Spaces:** Amsterdam has set various objectives to

[2] According to the website of the MRA, "The Metropolitan Region Amsterdam (MRA), known in Dutch as *Metropoolregio Amsterdam* is comprised of 32 municipalities, two provinces (North Holland and Flevoland) and the Transport Authority Amsterdam. Around 2.5 million people—more than 14 per cent of the Dutch population—live within the MRA. It is the country's most robust economic region and the MRA also performs well on the international stage." <https://www.metropoolregioamsterdam.nl/about-mra/> [Accessed on 30 April 2021].

expand its climate-proofing strategy (Amsterdam Green Agenda 2016-2018). These objectives, most of which have now been met, include:

- Installing fifty thousand square meters of green roofs with a thick layer of plant growth to absorb water;
- Implementing green spaces in industrial areas and car parks to reduce the possibility of new constructions;
- Increasing biodiversity by creating ecological connection routes and more ecofriendly buildings.

**Lifelong opportunities:** ASC programs follow the “age-friendly city” concept developed by the World Health Organization, which aims to promote healthy and active aging. This concept is based on the fact that “according to United Nations estimates, the number of older persons (60+) will double from the current 600 million to 1.2 billion by 2025, and again, to 2 billion by 2050” (World Health Organization Website, 2020).

**Welcoming of minorities:** Amsterdam is known in Europe as a “hyperdiverse city.” Home to over 180 different nationalities, and with 45 percent of its population belonging to an ethnic minority, it is one of the most diverse countries in Europe (City of Amsterdam Website, 2020). The City Council states that its strategy is to focus on inclusion rather than on diversity (City of Amsterdam Website, 2020: [World Population Review](#)).<sup>3</sup>

**Housing and energy:** In the Amsterdam 2040 Energy Strategy, the municipality states the importance of a transition to sustainable energy and outlines critical targets in this area. Amsterdam is aiming for a 40 percent reduction in CO<sub>2</sub> emissions by 2025, and a 70 percent reduction by 2040, compared to 1990 levels (The City of Amsterdam, 2015).

**City-zen project:** This project was granted EU funding “to develop and demonstrate energy-efficient cities and build a methodology and tools for cities, industries, and citizens to reach the 20-20-20 targets” (City-zen Smart City, 2019). The project, which began in 2014, focused on two main cities: Amsterdam and Grenoble. It was involved in twenty pilot projects with no fewer than twenty-eight partners, including Waternet and the Amsterdam Economic Board; these projects collectively aimed to save fifty-nine thousand tons of CO<sub>2</sub> every year (City-zen Smart City, 2019).

**Governance:** The Amsterdam Smart City online platform is the main focal point of the city’s strategic approach. This platform is the outcome of a partnership between twelve public, private, and research partners. It serves as a forum where collaboration is at the heart of project development.

**Citizens’ feedback and decision making:** ASC’s bottom-up approach to creation through its online platform helps citizens, the main actors in Amsterdam’s transformation, to relate to the smart city transition. Indeed, the opportunities that local residents have to set the agenda for innovation based on the issues they face add value to Amsterdam’s development, engaging people with companies and the government in a common goal. The role that citizens play here creates a more resilient city where technology helps to increase and optimize certain processes while keeping human collaborations at the heart of transformation.

In this chapter, our analysis and discussion of the main decisions and projects of the city of Amsterdam, as well as the scope, enforcement, adaptation, and limitations of those projects, are organized according to the principal topics and themes summarized above.

[3] Accessed on 19 November 2020.