



Sustainable Smart Cities: The Role of Telecoms in Shaping the Future

Telecoms operators and vendors have helped realise several initial projects for sustainable smart cities. With that, the transformation of our cities can start addressing some of humanity's key challenges.

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Sustainable smart cities are key to keep our planet habitable

Flash floods in cities like Houston and London are now a regular occurrence. While cities will no doubt bear a major burden of a hotter and more polluted planet, they are also one of the main causes. That's because 56% of the world's population already lives in cities today, a proportion that will rise to 70% by 2050, equivalent to 6 billion people. Sustainable smart cities will be a big part of humanity's answer to this problem.

What is a sustainable smart city?

Smart cities leverage advanced technologies to enhance the quality of life and improve the efficiency of services. Sustainable smart cities are a wider concept that is not just about technology, but also about people, governance and culture. They aim to balance economic, social and environmental objectives while ensuring the well-being and participation of their residents. Sustainable smart cities ultimately help to use resources efficiently, reduce emissions and waste, improve public services and infrastructure, and foster innovation and collaboration.

Telecommunications are a vital ingredient in sustainable smart cities

Telecommunications play two major roles in developing sustainable smart cities. The first is in providing the infrastructure backbone that allows most elements of a city to communicate in real-time. This backbone can be public 5G and fibre networks as well as private networks. The second is in delivering technologies and applications, for instance edge computing and enterprise cloud, which make the best use of that infrastructure.

Taken together these can create a smart city network infrastructure which allows for applications such as smart traffic management. 5G is used to connect vehicles, traffic lights, cameras and sensors in the road while edge computing allows for fast computations on the traffic authority's cloud to optimise car routing and traffic light patterns in real-time. The result is reduced energy consumption, improved air quality, reduced traffic congestion and improved public safety.

Another example is water management. Sensors in waterways and at water treatment plants are connected to the cloud of the city's water management company via public and private 5G networks. A suite of applications running on this cloud manages a system of floodgates in response to live water levels, monitors the water quality while pinpointing potential polluters, and controls the water treatment plants remotely. The result is reduced pollution and flooding of the city's waterways.

To enable complex use cases within sustainable smart cities, authorities and entities running public services could increasingly look to telecommunication providers for the right

infrastructure, technology and applications. However, this requires telcos to position themselves accordingly.

Ranking sustainable smart cities can empower change

Rankings are useful in many ways: they help identify cities that can serve as role models, introduce an element of gamification and competition, and make for great publicity to advance a topic with the public. While numerous rankings exist for sustainable, innovative and smart cities, no single one can truly represent the myriad of efforts across different domains. Consequently, an aggregation of 11 such rankings by Disruptive Technologies can be helpful in identifying the top sustainable cities in the world. These included assessments range from overall sustainability rankings to specific metrics such as kilograms of waste per inhabitant and air quality. In this aggregation, Copenhagen tops the list, followed by Oslo, Zurich, London, Stockholm, Singapore and Amsterdam.

Case study: Zurich as a sustainable smart city

Zurich is projected to grow its population by 25% in the next twenty years. It faces the task of sustaining this expansion while limiting resource consumption, maintaining the high quality of life and equality of opportunity, and ensuring attractiveness for business – a challenging and complex ambition. To achieve this ambition, the city set out a smart city strategy in 2016 which it has started delivering on.

Several lighthouse projects are live. “My Account” is the citizen’s gateway to all of the cities’ administrative services in a single login, which reduces time and effort for citizens and administrative staff alike. Participatory budgeting is run in the city district of Wipkingen, in which citizens submit and discuss ideas to improve their district, and then decide online how to allocate an initially small budget among these ideas. Innovation within the city’s administration is furthered through an intrapreneurship programme as well as the Smart City Lab.

The smart city network infrastructure enabling these changes comprises a central data centre infrastructure, a fibre optic network operator, an open data platform and a citywide LoRaWAN. Thus telecoms operators and technology vendors have already played a significant role in enabling Zurich as a smart city.

Going forward, the City of Zurich is planning to roll out smart waste management that uses sensors and data analytics to optimise waste collection and recycling. The city is also looking to roll-out smart lighting that replaces traditional streetlights with energy-efficient LEDs that can be controlled and monitored remotely. Other future initiatives include smart water management, self-driving electric buses and urban agriculture. All these initiatives will

draw on existing and additional smart city network infrastructure such as 5G and edge computing.

Operators and vendors need to change perceptions to realise opportunity

Telecoms operators and technology vendors can play a significant role in realising sustainable smart cities by co-creating solutions with cities around the world, a topic that will only grow in importance given the challenges humanity faces. However, the onus is on them to make sure city councils don't just perceive them as connectivity but as solution providers with a holistic proposition, vertical expertise and the right partners in place. Get in touch if you want to learn more about how STL Partners could help you realise this opportunity.

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