

Smart and sustainable

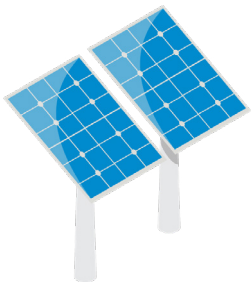
Greening the intelligent urban jungle

Few policymakers or technologists would dispute the need for green smart-city solutions. These initiatives should contribute to reduced carbon emissions and improve the long-term liveability of the physical urban environment. When government officials publish smart-city agendas, the use of green technologies in areas such as renewable energy or sustainable transport occupies a prominent spot. Yet according to Gary Grant, an environmentalist and director of the London-based Green Infrastructure Consultancy, the chasm between city leaders' intentions and actual practice is seismic. The problem, he says, is that initiatives are too often driven by the technologies that are available rather than the outcomes that are needed. "City leaders and citizens need to articulate what it is they want from the city of the future, and then challenge technology providers to help make that happen."



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Gary Grant, Green Infrastructure Consultancy



The Economist Intelligence Unit surveyed over 7,700 citizens and business executives in 19 cities around the world on the most-desired outcomes of smart-city programmes when it comes to environmental sustainability.¹ In the survey, which was sponsored by Nutanix, both citizens and businesses—particularly those in developed-world cities such as Stockholm, Frankfurt, San Francisco and Copenhagen—make it clear that enhancing sustainability should be among the top priorities.



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¹ In summer and autumn 2019, The Economist Intelligence Unit surveyed 6,746 citizens and 969 business executives resident in Amsterdam, Copenhagen, Dubai, Frankfurt, Hong Kong, Johannesburg, London, Los Angeles, Mumbai, New York, Paris, Riyadh, San Francisco, São Paulo, Singapore, Stockholm, Sydney, Tokyo and Zurich. For more details on the survey demographics, see <http://bit.ly/urbanintelligence>

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Olga Algayerova, UN Economic Commission for Europe

Clean power to the people

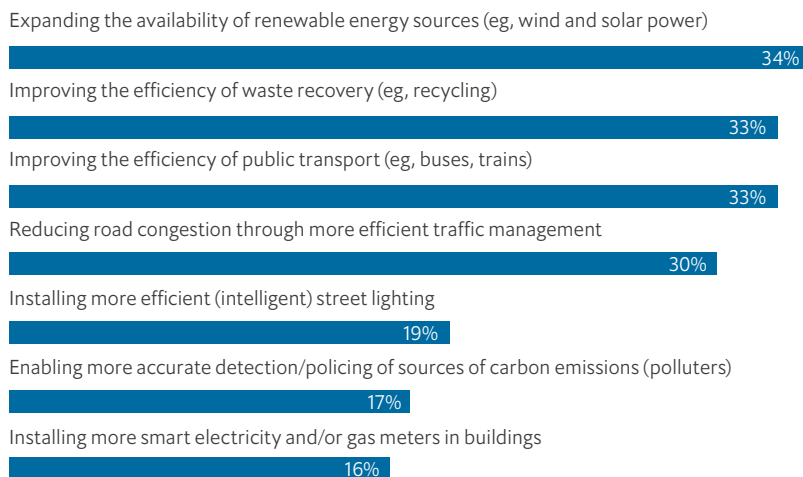
At the top of citizens' priority list is expanding the availability of renewable energy sources, including solar and wind-generated power. Nearly as important is more efficient waste recovery, including the increased use of recycling. These two priorities are especially prominent among residents of emerging world cities such as Johannesburg, Dubai, São Paulo and Mumbai. Citizens in wealthier cities focus on greener transport solutions; their top priorities include improving the efficiency of buses, trains and other means of public transport, and reducing road congestion (residents of San Francisco and Los Angeles are by far the most vocal about the latter).

Olga Algayerova, executive secretary of the UN Economic Commission for Europe (UNECE), understands citizens' desire for more renewables and recycling but doesn't believe this will be enough to achieve the carbon reduction targets set by the Paris climate agreement.² Her organisation is pushing cities to sign on to targets for

so-called high-performance buildings. "Buildings consume most of the electrical power generated in cities, and they account for nearly half of carbon emissions," she explains. "More energy-efficient buildings will reduce carbon emissions and reduce hazards to citizens' health."

Mr Grant points out that urban sustainability is about more than carbon reduction. Supporting biodiversity—by, for example, increasing the area given over to trees and plants—is just as vital to sustainability, he says. Mr Grant believes technology can play a direct role in meeting this challenge, for instance by mapping, measuring and monitoring a city's ecological resources. "In the past this has been done by experts in several different municipal departments using site visits," he says. "When it comes to green roofs, artificial intelligence (AI) can do this today using remote sensing at close to 90% accuracy. The algorithms just keep doing it until they get it right. Soon AI and sensors will measure an entire piece of geography in a city."

Figure 1: Green is the new black
How citizens want smart-city initiatives to enhance sustainability
(overall and top choice per city)



Source: The Economist Intelligence Unit

² The Paris agreement is a commitment by governments representing the majority of the world's countries, struck in 2015, to limit the increase in global temperature to "well below 2 °C above pre-industrial levels". © The Economist Intelligence Unit Limited 2019



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Olga Algayerova, UN Economic Commission for Europe

Figure 1: Green is the new black (continued...)

Country	Expanding the availability of renewable energy sources (eg wind and solar power)	Improving the efficiency of waste recovery (eg recycling)	Improving the efficiency of public transport (eg buses, trains)	Reducing road congestion through more efficient traffic management
Amsterdam		x		
Copenhagen			x	
Dubai	x			
Frankfurt			x	
Hong Kong	x			
Johannesburg	x			
London	x			
Los Angeles				x
Mumbai		x		
New York			x	
Paris		x		
Riyadh	x			
San Francisco				x
São Paulo			x	
Singapore		x		
Stockholm			x	
Sydney		x		
Tokyo			x	
Zurich	x			

Source: The Economist Intelligence Unit

Building the business case for sustainability

Based on the survey responses, enhancing sustainability is an even higher priority for businesses than it is for citizens: just over one-third of surveyed executives cite it as a key smart-city objective, compared with 29% of citizens. The business importance of a more sustainable environment differs little between developed and emerging-world cities. Executives in São Paulo (44%), Hong Kong (43%) and San Francisco (41%) view this imperative particularly strongly, alongside their peers in Dubai, Mumbai and Zurich.

“There is most certainly a business case for sustainability in cities,” says Ms Algayerova. Among other benefits, she says, a cleaner environment makes it easier for companies to attract and retain talent. Confirming her point, business respondents in Tokyo, Paris, New York and Copenhagen say that improved environmental quality (including cleaner air and water) is more important to their ability to attract talent than other non-financial factors.



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Mr Grant sees growing evidence that companies are taking sustainability seriously. “Many companies now have sustainability officers, and publicly-listed ones report regularly on progress in meeting specific green targets. The consequences of these initiatives often extend further than they may have expected, for example to higher productivity and lower staff turnover. Many employees place great store in the green measures their employers are taking.”

Striving for solutions

Our study of the smart-city priorities of businesses and citizens makes clear that municipal authorities should strive to set ambitious sustainability targets and meet

the expectations of their residents and businesses, lest unmet hopes weaken public trust. When it comes to sustainability, according to Mr Grant, a frequent obstacle to this is the fragmented governance of different sets of initiatives. “City governments work in silos,” he says. “Different departments often have their own sustainability initiatives, complete with their own targets and budgets. The use of smart technologies, such as AI-based algorithms, can help break such silos down through expanded data sharing.”

However it is achieved, joined-up thinking within city governments between those responsible for sustainability and those responsible for smart-city initiatives will help governments gain a better understanding of what their constituents want them to achieve in overlapping areas. Then authorities can begin to provide a clearer picture to the public about how achievable their expectations are, within what timeframes, and how the government’s smart-city initiatives can meet them.

