



CAPITAL & ECONOMICS

Can Today's Cities Meet The Needs Of Tomorrow?

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OVERVIEW

By 2045, as many as six billion people are expected to inhabit urban areas, an increase of 150 percent on today.

With such a rapid and vast growth, there are a number of key areas where the strain is most likely to be felt. Take London as an example. By 2050, demand for public transport in London is set to increase by 50 percent and for energy by 20 percent, while demand for water will already exceed supply by 10 percent by 2025, according to the office of the Mayor of London. Meanwhile, half a million new homes will need to be built every year to house the rising population – but current planning restrictions mean that the city is running out of space to build.

If these rising challenges are not met, there is a growing danger that some cities may cease to function, which could have serious implications for the global economy. Overloaded transport systems will lead to gridlock. Energy shortages could lead to blackouts. Lack of water to disease.

McKinsey estimates that just 600 urban centers generate 60 percent of global GDP, while rising urban areas in the developing world have been driving 35 percent of global growth. If these economic powerhouses are hit by shortages in key areas, the world could be plunged into one of the worst recessions it has ever seen.

This is not a distant challenge – many of the problems are already being felt today with overloaded public transport systems, rising urban rents, and water shortages in cities across the world. With the complexity and cost of urban infrastructure projects, governments and businesses need to plan for and act on these emerging risks today to meet the needs of tomorrow. Below, we run through some of the challenges and proposals in some of the key areas where urban areas are set to feel the strain. But this is far from an exhaustive list.



IN DEPTH

Transport

Without effective ways to move people and goods through urban areas, transport systems become effective blocks to rather than facilitators of commerce. But transport infrastructure projects are among the most complex, expensive and lengthy to undertake. In urban areas such projects become even more difficult. Adding new or expanding old routes may involve buying and demolishing existing properties, and serious disruption to existing infrastructure during the construction work.

The London Transport network (not including private journeys by car or bike) hosts around 24 million journeys a day. Projected to increase rail capacity by 10 percent, the city's Crossrail project is expected to be fully operational in 2019. Yet by 2030, the city is expected to have a population of 10 million – an increase of 16.3 percent. Despite being Europe's single largest construction project – costing over \$22.5 billion and taking over a decade to complete – Crossrail still won't be enough to meet the city's needs. Simply building more railways and roads may not be enough to keep our cities moving.

To reduce congestion, some cities, like Oslo, are thinking of banning private cars from their roadways . Through a one-day trial in September 2015, Paris found that alternative types of transportation such as biking could reduce air pollution. Would the reduction in traffic lead to sufficient benefits for the population as a whole, or simply make cities more inconvenient for individuals? This may work in small, compact urban areas – but it's by no means a solution for everyone. This is why some cities, like Sao Paulo and Athens, have also introduced systems to prevent the use of some cars on certain days. But as cities sprawl and populations rise, limiting cars on roadways might not be a simple answer to the needs and complexity of the transportation systems of the future.

Utility and Food Supply, Waste Disposal

Growing enough food for a global population expected to hit 10 billion by 2050 is tough. Add in the need to get this food to the people who need it in urban areas often far away from the food's place of production, and the challenge is compounded further.

Reducing road traffic in cities by banning private cars may increase the ability of commercial trucks to deliver food to shops – but getting the food to those cities in the first place remains a serious challenge. Many major urban airports are nearing capacity, while skies are more congested than ever – despite flight path efficiency and coordination improvements such as those driven by the European Union's Single Sky project.

Larger cities will need more airports, more shipping, and more (or more efficient) transport links from airports and seaports to those cities. To provide water for drinking and industry, new and bigger reservoirs and expanded networks of pipes will need to be constructed – assuming there is the rainfall to fill them, which is far from certain. And it's not just about getting material to cities – the volume of waste products will also vastly increase. Packaging will need to be collected and taken away for recycling, incineration, or alternative disposal, the increased volumes of human waste will require more sewers and more sewage treatment plants. Some solutions aim to tackle two problems at once – turning household waste and even human waste into electricity. Meanwhile, many cities, including London, are investigating recycling water – feeding used water back into the system after treatment.

Increased electricity needs could be met by efficiency improvements in energy generation, or by building more power stations (projects that can take years). But some are proposing a radical rethink: moving away from the concept of urban energy grids into more localised power generation. Emerging technologies like solar roadways and solar cells that double as windows, or even maximizing the energy of waste heat from machinery and electronics, combined with improvements in battery storage, could bring energy generation to the point of use and reduce the need for nation- or citywide power networks. While many offices and factories already have back-up generators for emergencies, some hope that the right combination of alternative electricity sources, including from on-site waste, could enable them to become off-grid and self-sufficient permanently.

The End of the City?

With cities growing at such a rapid rate, is there a simpler solution to the challenge: Moving away from the city?. This could solve the added problem of the increasing lack of housing in urban areas, while creating jobs in areas that traditionally have lower costs of living.

With the prevalence of ecommerce and increasingly robust home delivery options, there is no longer a reliance on the "city" for commerce as in times passed. This could also help meet the rising demand for better work-life balance and flexible working.

As telecommuting options are embraced by more employers and workers, justifying a traditional "office" environment becomes harder. Combine this with the increasing strains on urban infrastructure and rising costs of maintaining office buildings, perhaps a shift to home offices could solve three problems at once: reduce the pressure on urban areas, improve workers' quality of life, and cut costs for businesses.

There are no easy solutions. But as businesses seek to maintain their competitiveness and attract the workers they need to adapt and evolve, it is becoming increasingly essential to consider not just what your organization does, but where – and how – it should be doing it. Do you have plans in place to cope with the emerging challenges of urban living and working?

TALKING POINTS



"By 2050, the world will have grown by 2.5 billion additional urban dwellers, with almost all of this growth occurring in cities in the developing world... the world will need to invest about \$50 trillion in infrastructure every year for 15 years to keep up with demand." – Aniruddha Dasgupta, Global Director,

World Resources Institute Ross Center For Sustainable Cities



"The question of how to enhance mobility while at the same time reducing congestion, accidents and pollution is a common challenge to all major cities in Europe. Congestion in the EU is often located in and around urban areas and costs nearly EUR 100 billion, or 1 percent of the EU's GDP, annually." – European

Commission



"This is not a third-world problem alone. Nice icons of sustainability, like Portland... have combined sewer outlets. They do get floods on their streets, and sometimes they are made up of sewage as well as rainfall. It's an under-the-rug kind of issue that people in charge don't talk about. We're here to say that everything is not OK... We need to find a way to build a new approach to an old problem." – Mikhail Chester, Assistant Professor, Arizona State University School of Sustainable Engineering and the Built Environment

FURTHER READING

Investing in Infrastructure for a Growing Economy – European Investment Bank, October 9, 2015

Water Resilient Cities: How is Business Building Them? – The Guardian, October 27, 2015

Amid Historic Drought, Conservation and Water Innovation Investments, Patents on Rise – MarketWatch, November 5, 2015

'Urgent Response' Needed for Urban Waste – Resource magazine, September 9, 2015

Urban Waste Could Supply Millions of African Families With Much-Needed Electricity, New Study Shows – Nature World News, October 15, 2015

I've Seen the Future City – and It's Electric! – UK Government Office for Science Blog, October 28, 2015

Where Cars Fit in the Future – Information Week, September 28, 2015

6 Big European Cities With Plans to Go Car-Free – The Atlantic City Lab, October 20, 2015

The Future of Making Cities – The Economist Intelligence Unit, August 13, 2015

Aon Infrastructure Solutions – overview

