

ESG in Depth

March 26, 2018

Dawn of the Urban Epoch

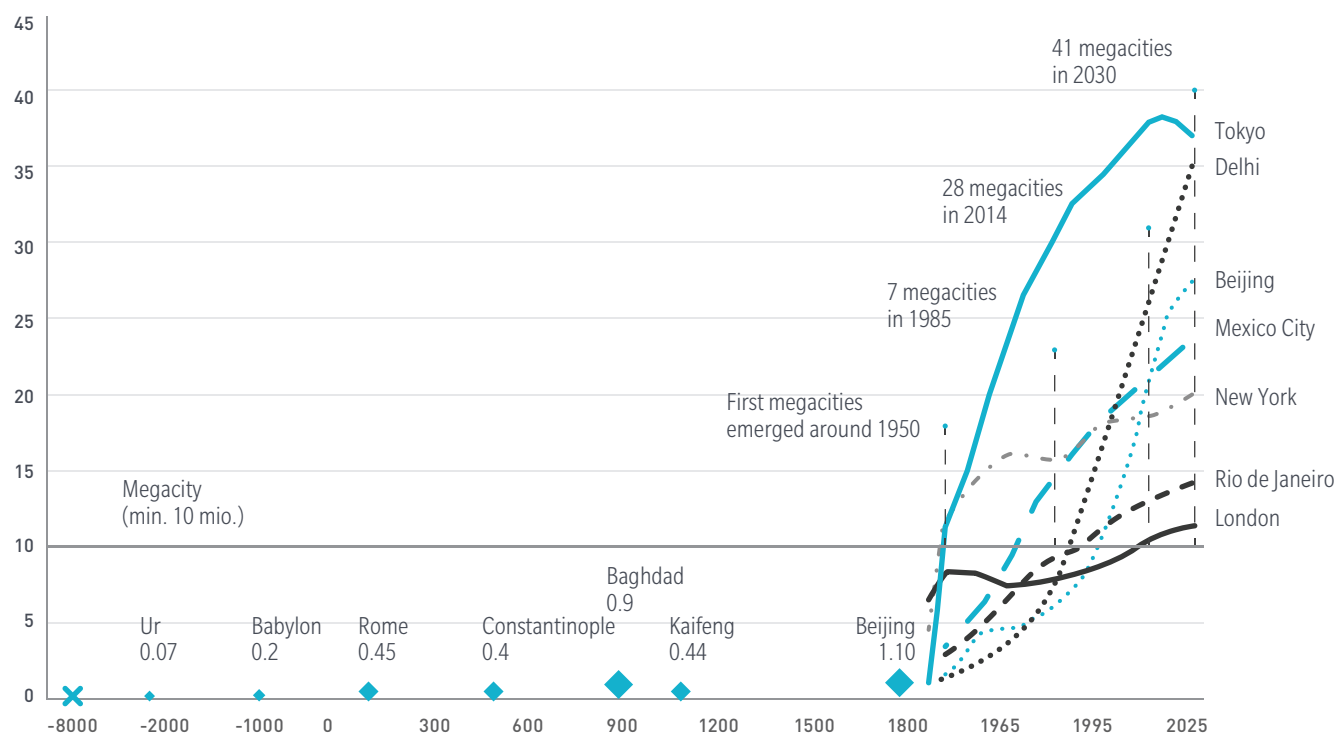


- **Problem:** For the first time in human history there are more people (55%) living in urban areas than in rural areas, placing tremendous stress on resources, infrastructure and the human psyche. By 2050, 70% of the world's population is expected to be urban, but already 80% of the world's cities display signs of fragility.
- **Development:** To meet these challenges, city planners and corporations are increasingly incorporating "smart city technologies" to better organize and manage resources (Boston's use of sensors and real-time data feeds to manage traffic) and "wellness" design to satisfy human needs (Facebook's proposed Willow Campus/Village).
- **Materiality:** An investment of \$78 trillion is needed in the next 10 years alone to accommodate this unprecedented transition in lifestyle and living standards.
- **Impacted sector(s):** All, with an emphasis on technology and materials.
- **Next steps:** Identify companies with exposure to the increasing urbanization of the world populace. By 2050, 37% of the world's 2.5 billion urban citizens will be from China, India and Nigeria. Does your company have exposure to these regions?

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The Rise of the Megacities (8000 BCE to 2030 E)



Source: OECD 2015

Problem

For the first time in human history there are more people (55%) living in urban areas than in rural areas, placing tremendous stress on resources — cities account for 75% of resource consumption — infrastructure and the human psyche. By 2050, 70% of the world's population is expected to be urban, but already 80% of the world's cities display signs of fragility (BAML). According to the United Nations, 1.4 million people are added to the global urban population each week and an area the size of Manhattan is added every day. The magnitude and velocity of this transition is stunning, with megacities (those with 10 million people or more) first appearing on the map only in 1950 (OECD). In the course of 100 years (1950–2050) the urban population is expected to increase from 29% to 70%. There is no historical precedent for such a radical

change in lifestyle or living standards. The countries expected to have the largest urban populations in 2050 are China, India, the United States and Nigeria.

Development

“The City is what it is because our citizens are what they are.” – Plato
 The basic nature of cities has not changed much since the days of Plato; however, our technological capabilities and understanding of the human condition continue to evolve and influence its shape. Engineering advancements in construction and transportation during the industrial revolution birthed the scale of megacities. By the turn of 20th century, however, years of unchecked expansion and a failure of governments to establish basic building codes and

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services had resulted in an environment broadly viewed as chaotic and unsanitary, pushing a disillusioned populace to progressive political organizing to combat sharp economic inequality. These conditions led to the first comprehensive urban planning effort, the [City Beautiful movement](#), whose adherents believed design could not be separated from social issues and turned their efforts towards the creation of public parks to address congestion, pollution, poor sanitary conditions and mental strain.

The echoes of this movement still reverberate today as we see many of the challenges faced at the turn of the last century beginning to reappear. Rising inequality is polarizing politics and in some cases hamstringing government institutions. Infrastructure is inadequate for growing populations while pollution, disease, organized crime, terrorism and mental strain remain concerns. Only history can judge whether the “smart city” or “wellness” trends will one day be defined as proper movements, but urban planners seem to be coalescing around these themes, and the opportunities are significant. Advancements in computing power, communication and health care brought about by the digital revolution offer new insights into, and solutions to, today’s problems.

Facebook’s recently proposed [Willow Campus](#) is essentially a mixed-use village that integrates many of the aspects of wellness design such as closer proximity to natural environments, access to active lifestyle opportunities and more community-focused buildings.

Boston recently began receiving real-time traffic feeds from Google/Waze to better understand the flow of traffic. Based on this data, the city has begun to experiment with various traffic-routing changes designed to reduce overall congestion levels. There is still room for improvement here, but the system has enabled the city to more quickly respond to hazards, such as potholes and broken signals, as user input has proven far more effective than 311 (non-emergency hotline) calls. As part of its [Smart Streets](#) initiative, the city has installed a variety of cameras and sensors, which feed data to a cloud-based platform at one of the city’s major intersections. Dozens of variables are captured to better understand how various parties interact as they navigate the intersection.

Smart Cities



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Materiality

An estimated investment of \$78 trillion is needed in the next 10 years alone to accommodate the unprecedented transition in lifestyle and living standards brought about by urbanization (BAML). While there will certainly be the need for traditional brick and steel infrastructure, where possible, sustainability strategies will be implemented to make “smarter” use of the infrastructure already in place. A digital layer will be added to accomplish this, including wireless broadband/5G, a network of sensors/IoT (Internet of Things), an estimated 10 billion connected sensors by 2020, big data (200 million gigabytes of data per day per million people in a city by 2020), cloud access and AI (predictive insights, voice assistants). This infrastructure will enable the more efficient use of energy and water and a decrease in traffic because of more intelligent routing, proactive building and infrastructure maintenance and much more. It also lays the foundation needed for the implementation of new technologies such as cybersecurity, surveillance/drones and autonomous vehicles/fleet communication. BAML estimates for the total available market (TAM) for these segments are as follows: smart infrastructure — \$712 billion by 2020, smart safety/security — \$226 billion by 2021, smart energy — \$137 billion by 2024, smart building — \$101 billion by 2021 and autonomous vehicles/fleet communication — \$1.5 trillion by 2030.

While these technologies will ultimately be used to improve the decision making of institutions and the effectiveness of city services, advancements in cognitive science have resulted in a stronger understanding of the link between the “built environment” and general health and well-being. According to the [Global Wellness Institute's Global Wellness Economy Monitor](#) from January 2017, the global wellness economy totaled \$3.7 trillion in 2015, and the market for residential, hospitality and mixed-use real estate was one of the fastest growing real estate segments from 2013 to 2015, growing 19% to \$118.6 billion. Some of the common elements found in wellness design include a focus on indoor air quality, temperature control systems geared to the individual, exposure to natural light, proximity to nature or natural elements, noise control and access to a gym or other exercise opportunities. Employers have found buildings designed with wellness in mind have lower staff turnover, higher productivity and fewer absences. Accordingly, buildings with WELL certification, indicating a design focused on comfort, health and wellness, often command a premium in the market.

Next Steps

- Identify companies with exposure to the increasing urbanization of the world populace.
- By 2050, 37% of the world's 2.5 billion urban citizens will live in China, India and Nigeria (BAML). Inquire with management as to whether they have exposure or plan entry into these markets.
- Address any additional questions to ESG specialists.

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