

# Megatrends

The forces shaping our future

A study looking at structural shifts in the global economy and how they affect our investment thinking.

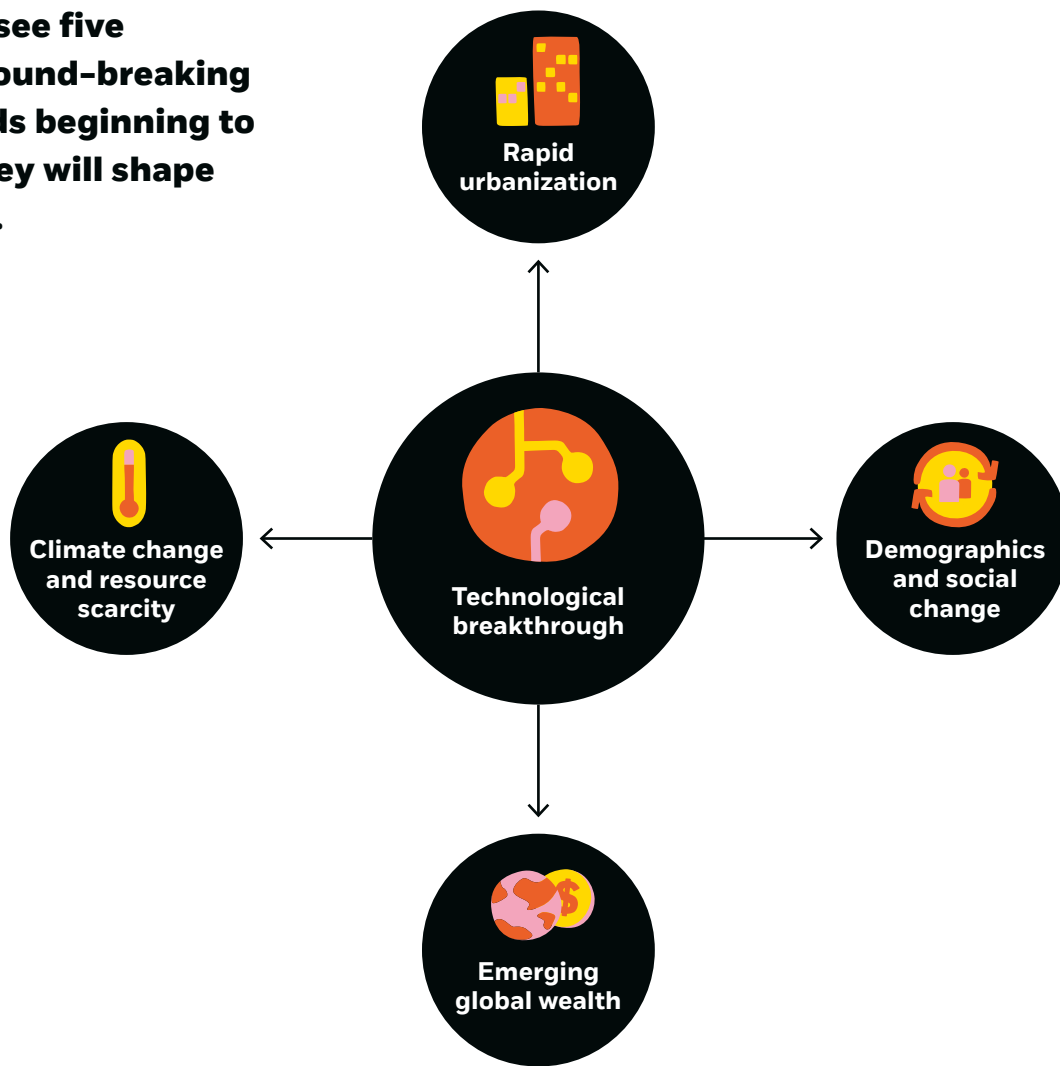


# **A confluence of global megatrends is prompting structural shifts in many industries and changing the drivers of corporate earnings.**

Most major economies are undergoing powerful shifts in their demographic profiles, while resource scarcity and climate change are coming under greater scrutiny. Rapid urbanization is pulling in significant investments and changing consumer behavior, especially in high-growth emerging economies. At the same time, the increasing ubiquity of technology is redefining business models in a host of industries and unleashing widespread disruption. These forces, which we call megatrends, are giving rise to a new set of powerful investment themes.

# Megatrends drive change in the world

Today, we see five equally ground-breaking megatrends beginning to unfold. They will shape our future.



BlackRock, "Megatrends: A Research Study", July 2018 – Based on original research in partnership with PWC, 2015.

The implications of these megatrends could be as significant as the invention of electricity, which sparked the Second Industrial Revolution in the early 20th century, or the advent of container shipping that later steered the globalization era. In both cases, the global economy experienced significant structural shifts, opening new growth opportunities in several industries and catapulting early adopters to global leadership.

# What are megatrends and why are they relevant to investors?

Megatrends are powerful, transformative forces that can change the trajectory of the global economy by shifting the priorities of societies, driving innovation and redefining business models. They can have a meaningful impact not just on how we live and how we spend money, but also on government policies and corporate strategies.

Identifying the potential for structural change and investing in expected transformations early can be a key driver of successful investing. This may be an opportunity for investors to position their portfolios for long-term growth potential. In other words, investing in the future may be key to securing their future.

Megatrends are long-term structural forces and we expect them to evolve over time. For instance, in 2016, the 'emerging global wealth' megatrend primarily focused on China's rise. But since then, it has broadened to incorporate the emerging middle class in India, southeast Asia and other developing economies. 'Rapid urbanization' has similarly incorporated the advent of smart cities and on-demand business models along with infrastructure needed to support emerging megacities.

# Why now?

## The future is here.

We are at an inflection point. The five megatrends are all accelerating today and we expect them to be important drivers of corporate earnings and equity returns. In this paper we delve into each of these five forces that propagate some of our most powerful investment themes.



### Technological breakthrough

This year, over half of the world's population is expected to have access to the internet for the first time.<sup>1</sup>



### Climate change & resource scarcity

18 of the 19 warmest years on record all have occurred since 2001. 2018 was the fourth warmest year recorded.<sup>2</sup>



### Demographics & social change

In two years, the working age population in advanced economies is set to begin shrinking for the first time in history.<sup>3</sup>



### Rapid urbanization

By next year, over 50% of Asia's citizens are expected to live in urban areas for the first time.<sup>4</sup>



### Emerging global wealth

Within the next four years, India is expected to overtake China as the most populous nation in the world.<sup>5</sup>

<sup>1</sup> International Telecommunication Union, various, 2018.

<sup>2</sup> Global Climate Change, NASA.

<sup>3</sup> United Nations World Population Prospects, The 2018 Revision.

<sup>4</sup> United Nations World Urbanisation Prospects, The 2018 Revision.

<sup>5</sup> United Nations World Population Prospects, The 2018 Revision.

# Technological breakthrough

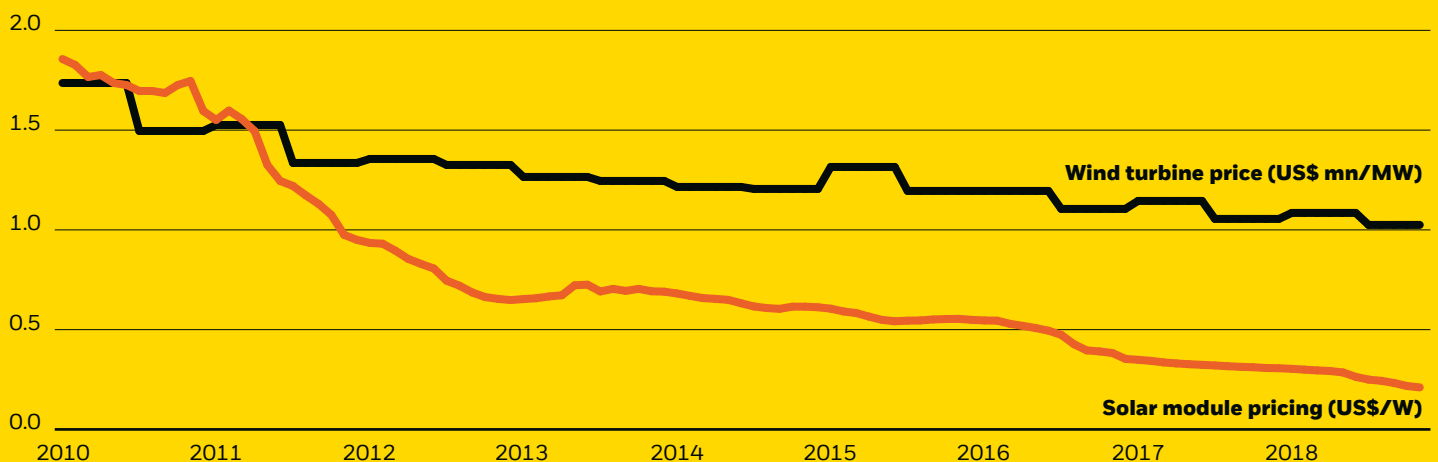


New technologies lie at the heart of resolving or accelerating the five megatrends. Breakthrough innovation is necessary to address large-scale challenges (e.g. aging economies, climate change), while new solutions are also targeting relatively minor problems (e.g. payments, streaming). This backdrop has created a fertile ground for disruptive innovation and Thematic investing.

## Where do we expect innovation?

Disruptive innovation is most likely to emerge in two scenarios; either (1) new solutions are developed to resolve a significant constraint or challenge or (2) new competitors are attracted to industries with large profit pools and high returns. Consider the advent of electric vehicles, e-commerce, solar panels, robotics, blockchain, cloud computing, streaming, smart grids and many other modern-day innovations. In each case, engineers and entrepreneurs are aiming to capitalize on the need for a new solution or a better alternative in existing markets.

### Clean energy unit costs



Source: US Energy Information Administration, Bloomberg.

# The future is getting here. Faster.

Breakthrough innovations have become more powerful in recent years thanks to globalization and the ubiquity of technology. Together, they have lowered entry barriers for new competitors and accelerated the adoption of new technologies around the world, thereby unleashing a wave of disruptive threats across industries and economies.

With new technologies come new challenges. For example, the adoption of automation is unlikely to be limited to economies with aging labor forces and wage inflation. As robots enter younger, emerging economies, the local workforce is likely to face a tougher job market. Similarly, as sensors and internet connectivity become more cost efficient and capable, data collection and analysis are set to explode. But with that comes concerns around privacy and cyber security. These challenges in turn will require more innovative solutions.

## Investment opportunities

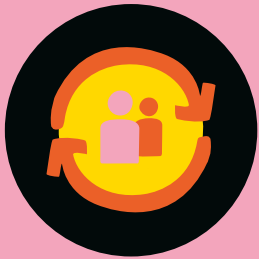
Firstly, we seek areas of the economy that provide the right conditions for breakthrough technologies – spending on research and innovation, supportive regulation, shifts in consumer demand and societal challenges that need to be resolved. We then aim to identify innovative companies with superior solutions that can boost long term growth. The flipside of innovation is disruption - we remain wary of industry incumbents with legacy products that face new competitive threats.

It is important here to assess the lifecycle of new technologies – to avoid hype and invest in reality, and to understand the bottlenecks for new tech adoption. In turn, we highlight firms that enable new technologies – e.g. lithium miners that power electric vehicle batteries or semiconductors firms which connect smart homes. Similarly, we also seek to invest in those that provide the infrastructure necessary for new technologies (e.g. 5G networks, smart grids).

“5G mobile technology has potential to accelerate the application of artificial intelligence across industries, leading to advances in driverless cars, smart cities, telemedicine and the Internet of things, to name a few”

**BlackRock Investment Institute, 2019**

# Demographics and social change



Changes in global demographics will bring significant challenges and opportunities for societies and businesses. The forces that underpin this megatrend include aging populations in advanced economies and China, the outlook for future jobs, immigration pressure, skills imbalance and the radically different priorities of younger generations.

## Most advanced economies are aging rapidly

Italy and Germany lead the way in Europe, with the median age of their populations at 47.9 and 46.6 years (only behind Japan at 48.2).<sup>6</sup> In Western Europe, 1 in 5 people are older than 65 and this is expected to rise to 1 in 4 in the next decade.<sup>7</sup> These trends are likely to slowly, but steadily change the outlook for household spending (towards older consumers), inflation rates, economic growth and government policy (the US already spends over 17% of GDP on healthcare).<sup>8</sup> Aging and the resulting decline in the labor force will hence require dramatic social and technological changes.

Consider the case of Japan; the combination of aging (about one-third of its population is over 65yrs) and low immigration has led to very tight labor markets; the jobs-to-applicant ratio in Japan stands at 1.63x, the highest level in 17 years.<sup>9</sup> A counter to this has been more Japanese women entering the workforce; between 2000-17, female workforce participation rose from <60% to 69.4%.<sup>10</sup> At the same time, Japan has been one of the largest buyers (and makers) of robotics; it employs 308 robots for every 10,000 human workers compared to 200 for the US.<sup>11</sup>

<sup>6</sup> United Nations World Population Prospects: The 2018 Revision.

<sup>7</sup> United Nations World Population Prospects: The 2018 Revision.

<sup>8</sup> OECD, 2018.

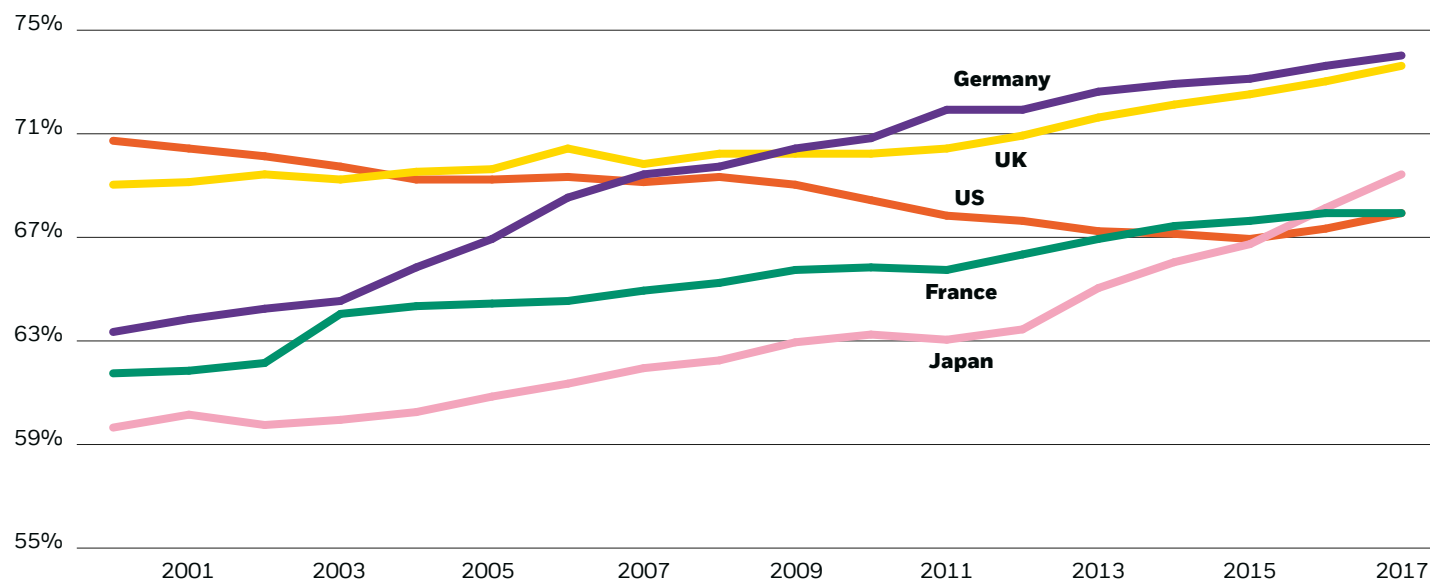
<sup>9</sup> The Japan Institute for Labour Policy and Training, 2019.

<sup>10</sup> OECD, 2018.

<sup>11</sup> International Federation of Robotics, World Robotics Report 2018.



## Female labor participation rate



Source: OECD.

## Automation a solution or a problem?

Smarter machines are a solution for countries with shrinking labor forces; but they are likely to trigger challenges for younger economies, by disrupting jobs and limiting wage growth. Automation and greater use of tech will require tomorrow's workforce to develop new and more advanced skills; take the case of the UK, where less than 20% of the population had a university degree in 1990, but in 2000 that rose to 33% and reached 42% in 2017.<sup>12</sup> As the competition for highly skilled labor heats up, companies will need to spend more resources to attract, train and retain talent.

## Investment opportunities

As economies age, healthcare is likely to become a bigger share of household and government spending. We expect firms that address age-related diseases to benefit, along with innovative companies that provide technologies and new solutions to provide better care at lower costs.

Secondly, demographics will be a key driver of structural shifts in consumer spending. For example, people over 60 account for about half of all household spending in Japan versus approximately 13% for people under 40.<sup>13</sup> As spending power shifts to older households in western economies, companies seeking growth will need to cater to their unique demands.

On the other hand, younger consumers are growing up with distinctly different spending priorities versus their parents and grandparents. This will be reflected in what they eat (healthier, fresher) and how they spend time (streaming, gaming) to how they save money (sharing, low cost travel) and how they invest (sustainability).

<sup>12</sup> National Committee of Inquiry into Higher Education, UK government, Higher Education Statistics Agency, UK.

<sup>13</sup> Japan National Statistics, 2018.

# Emerging global wealth



In the last twenty years, developing economies have been lifted by the rising tide of globalization and manufacturing shifting to Asia. The emergence of a sizeable, aspirational middle class, particularly in China, has made it an important destination for global companies. We continue to expect emerging markets to offer significant growth potential for domestic and multinational firms.

## China: A force to reckon with

Two decades of unprecedented growth has lifted China's per capita GDP from a meagre 8% of US per capita GDP in 2000 to roughly 30% this year.<sup>14</sup> This rapid growth has been enabled by significant infrastructure investments, support for an export-focused manufacturing base and increased spending on innovation. In turn this has resulted in persistent growth in household incomes; the World Bank notes that China alone is set to add one billion people to the global middle class between 2005-2030. It is not surprising then that China has been a key source of growth for companies exposed to Chinese consumers (e.g. luxury brands, autos, smartphones).

China's significant economic progress has coincided with its foray abroad. Consider the approximate \$1 trillion Belt and Road Initiative as China seeks to invigorate infrastructure and trade routes across south Asia and other parts of the emerging world. A new breed of Chinese companies are increasingly capturing market share at home and venturing overseas. This is a natural progression of an economy that has been steadily moving up the value curve in infrastructure, manufacturing and technology sectors (see chart).

## Other EMs come to the party

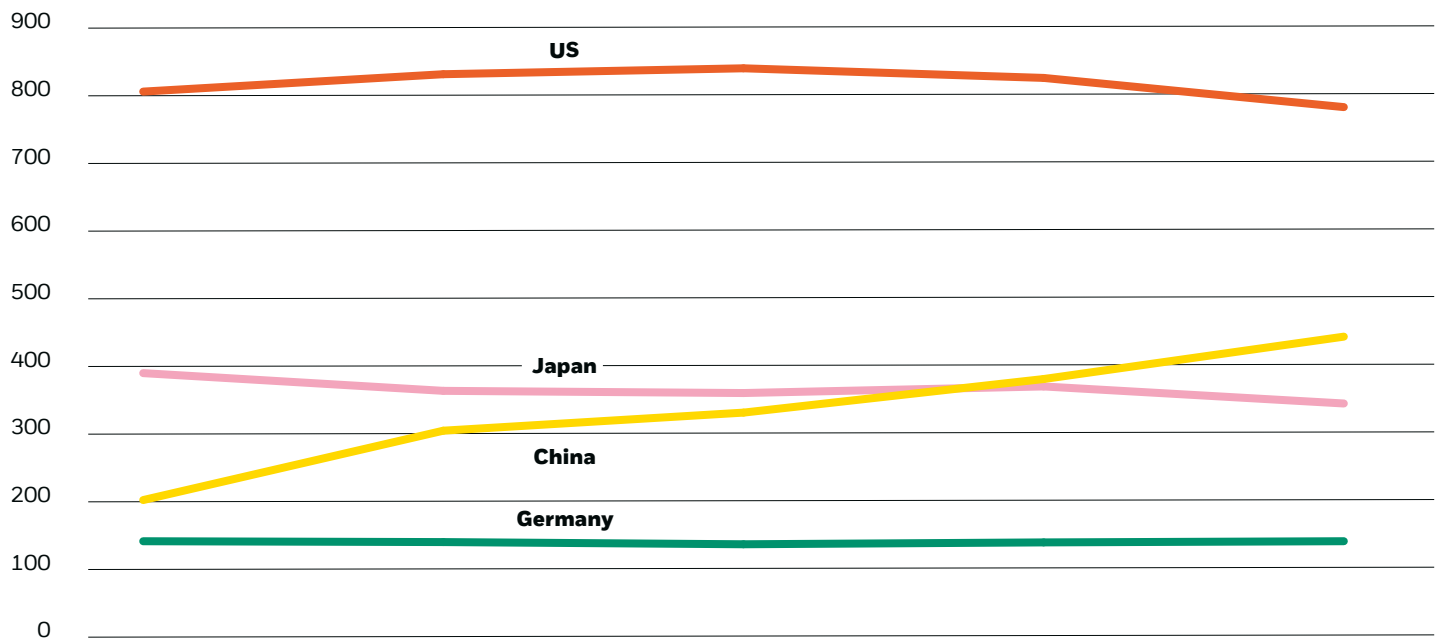
Elsewhere, genuine reform can unlock potential in India, which benefits from an expanding labor pool (the working age population is set to grow by almost 14% by 2030E, compared to a -3% decline for China).<sup>15</sup> As cost inflation in China pushes manufacturing jobs elsewhere, neighboring southeast Asian economies are benefiting (e.g. Vietnam, Bangladesh). Another advantage for emerging markets is the ability to lead from advanced economies and adopt cheaper and better technologies to boost productivity (e.g. clean energy, communication). For instance, Mexico's mobile penetration is at 90% while fixed-line penetration has plateaued at 16%.<sup>16</sup>

<sup>14</sup> IMF World Economic Outlook Update, January 2019.

<sup>15</sup> United Nations World Population Prospects: The 2018 Revision.

<sup>16</sup> International Telecommunication Union, 2018.

## Number of companies in the top 2,500 R&D spenders globally



Source: European Commission, data from 2013–2017.

## Investment opportunities

An increasing number of domestic emerging market companies are on the cusp of a new phase of value creation. Cost leadership is giving way to technological expertise. Regional players are turning into national dominators. Suppliers to global companies are building their own brands. We see opportunities in identifying local winners and innovators with exposure to growing themes.

For investors who are unable to access domestic EM markets, there are opportunities to consider among global firms that can cater to local tastes and compete effectively with local competition. Primarily, the emerging middle class is poised to drive demand for global brands most consumer categories – from toothpaste and diapers to luxury bags and apparel.

Elsewhere, opportunities may arise for companies that solve structural constraints: these economies need commodities, infrastructure and access to new technologies. They need to satisfy rising demand for food, clean energy, cheaper healthcare, faster telecom networks etc. and global companies will likely be part of the solution.

# Climate change and resource scarcity



An expanding population and the rising demand for food, energy and materials continue to strain the finite resources of the planet. The need for solutions that improve energy efficiency, lower food waste and provide alternatives to scarce resources has never been greater. Underlying these trends is the persistent increase in global emissions which has led to intensifying debates around climate change and how we can resolve it.

## The earth in the hot seat

In 2018, global emissions continued their march higher growing 1.7% yoy.<sup>17</sup> In turn, the US National Climate Assessment report noted that sea levels are now rising twice as fast as 25 years ago, while re-insurance company Swiss Re estimated recently that natural catastrophes and extreme weather events caused \$146bn in damages in 2018. The social and economic consequences of climate change are substantial. How can this be slowed?

Investing in energy efficiency and renewable energy is an important step. The good news is that clean energy today is cheaper than it has ever been. The average price of a solar module has fallen 88% since 2010, while the cost of wind turbines has declined by over 40%.<sup>18</sup> In some countries, clean energy sources are comparable to natural gas and coal power in terms of unit costs and rely less on government subsidies each year.

## Getting more out of less

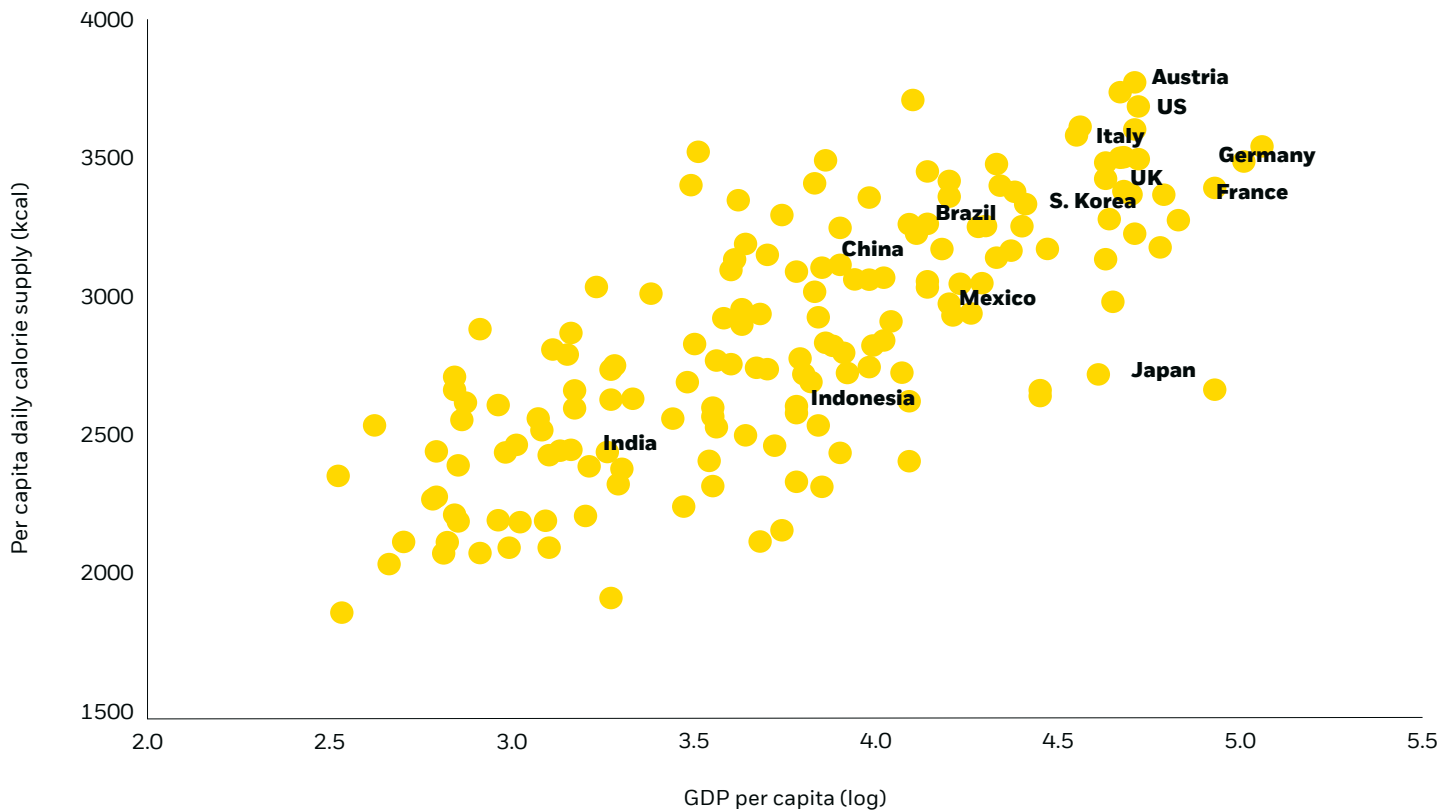
Similar solutions are needed in agriculture as the need for nutrition rises with per capita GDP in large emerging markets. This greater demand will have to be satisfied with fewer resources too; worldwide, land area dedicated to agriculture has not increased in the last 20 years, while agriculture's share of employment has dipped to about 25% from 42% just 30 years ago.<sup>19</sup> To produce more with less, productivity improvements need to be relentless.

<sup>17</sup> Global Energy & CO2 Status Report, The International Energy Agency, March 2019.

<sup>18</sup> Bloomberg, December 2018.

<sup>19</sup> World Bank, March 2019.

## Per capita food demand v GDP (US\$, log), 2013



Source: World Bank: The Food and Agriculture Organisation of the UN.

## Investment opportunities

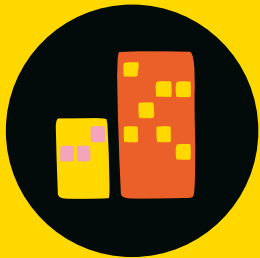
We strive to identify innovators who provide solutions to climate change including producers of solar panels, wind turbines and electric vehicle technologies. We also seek substitutes to scarce materials, especially those used in new, essential technologies such as batteries and smartphones. Better recycling practices are part of the solution and can also reduce material pollution. This is an increasingly important theme as consumers and regulators turn their attention towards single-use plastic and sustainable packaging.

Finally, the need for increased productivity in food production presents opportunities to chemicals and fertilizer companies, to machinery producers who reduce the need for human labor, as well as new technologies such as drones, predictive weather analytics and precision agriculture that are necessary to increase yield across the world.

“Many see climate change as a long dated future risk, however, our findings show that compared to the 1980’s, there are measurable GDP impacts in the market today”

**Brian Deese, Global Head of Sustainable Investing at BlackRock.**

# Rapid urbanization



Cities have always been hubs for talent, capital and innovation. In the last decade, hundreds of large cities have been built in emerging economies, attracting significant infrastructure investments. Large cities such as San Francisco, London, Paris and New York have also been the ideal launch pads for entrepreneurs given their large, dense populations. Understanding the advantages and challenges of future cities can help us identify the next sources of growth.

## Supercities: Economic melting pots

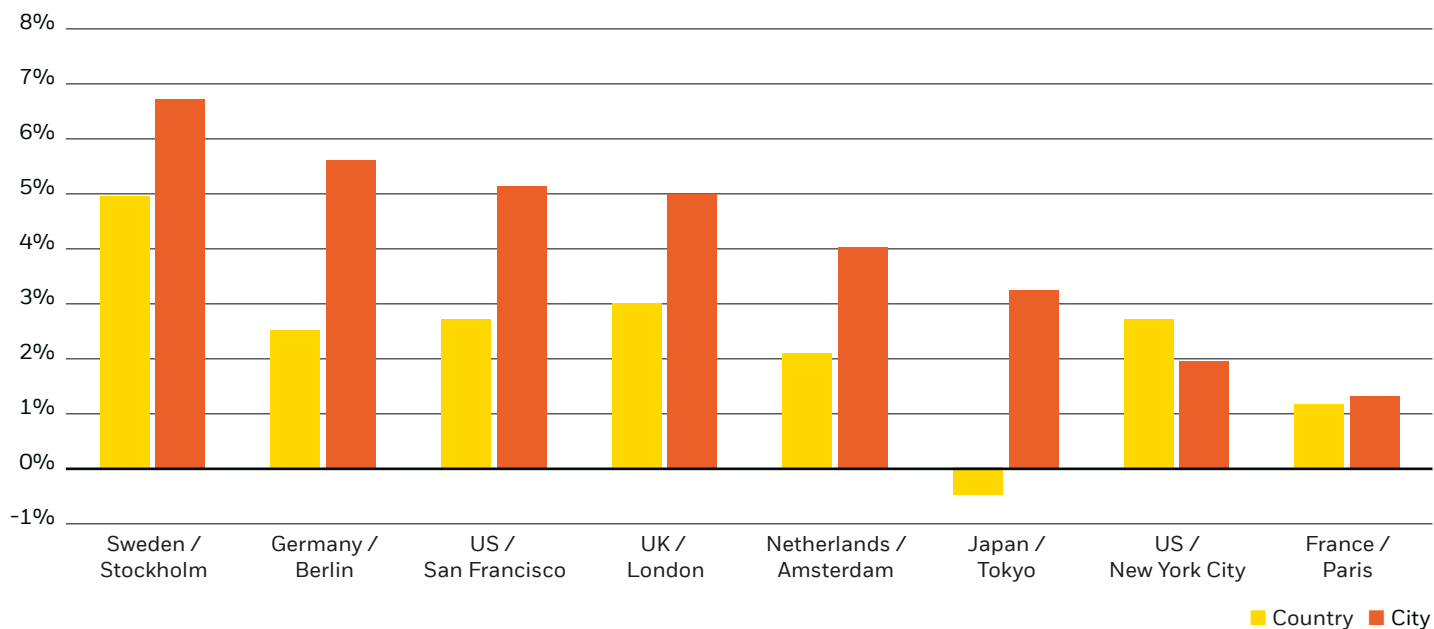
With more people in the world living in cities than ever before, cities' share of global growth is rising. According to McKinsey as of October 2018, the top 50 cities account for 8% of global population, 21% of world GDP, 37% of urban high-income households and are home to 45% of firms with more than \$1 bn in annual revenues.<sup>20</sup>

As cities grow large, they require significant infrastructure, including communication networks (e.g. 5G, fiber), transit and transportation (e.g. metro, bridges), social infrastructure (e.g. hospitals, schools) and housing. This was a key driver of commodity demand and fixed investments in the last 10-15 years as China and other developing economies industrialized rapidly and millions of people migrated to cities. This story is likely to continue as other emerging markets follow China's lead (as discussed in the previous section).

Large cities that offer good infrastructure, greater convenience and attractive job opportunities typically attract global talent. This leads to higher population densities and younger consumers with higher disposable incomes: the perfect ingredients for innovation and entrepreneurship.

<sup>20</sup> McKinsey Global Institute: 'Superstars': The dynamics of firms, sectors, and cities leading the global economy, October 2018.

## Population growth between 2014-2018



Source: Eurostat, US Census Bureau, Japan National Statistics.

## Investment opportunities

Young and developing cities, especially in emerging markets, require basic infrastructure and construction (i.e. hard commodities, diggers, concrete etc.). But as they grow in size, opportunities emerge in middle class consumption exposure (housing, appliances, cars). Inevitably, demand for leisure and media grow too, as do services such as waste management and logistics. We seek to understand how cities in major economies are evolving to identify which businesses are the most attractive to invest in.

As cities become even bigger, large scale transport infrastructure, airports and bridges become essential. As electric vehicles become more prevalent, cities will need to invest in charging infrastructure and grids too. Smart cities that link up crucial infrastructure using high-speed connectivity may well become the norm in many economies.

In the last few years, new business models that rely on online platforms and dense populations have sprung up in many countries. Examples include online takeaways, last-mile delivery, the sharing economy, e-scooters and electric vehicles. Many of them originate in large cities before they gain scale and expand elsewhere. The UN projects that by 2030, the world will be home to 43 megacities with over 10 million inhabitants.<sup>21</sup> If that is true, there will only be more breeding ground for innovation-fueled growth.

<sup>21</sup> United Nations, 2018 Revision of World Urbanization Prospects.

# When themes collide

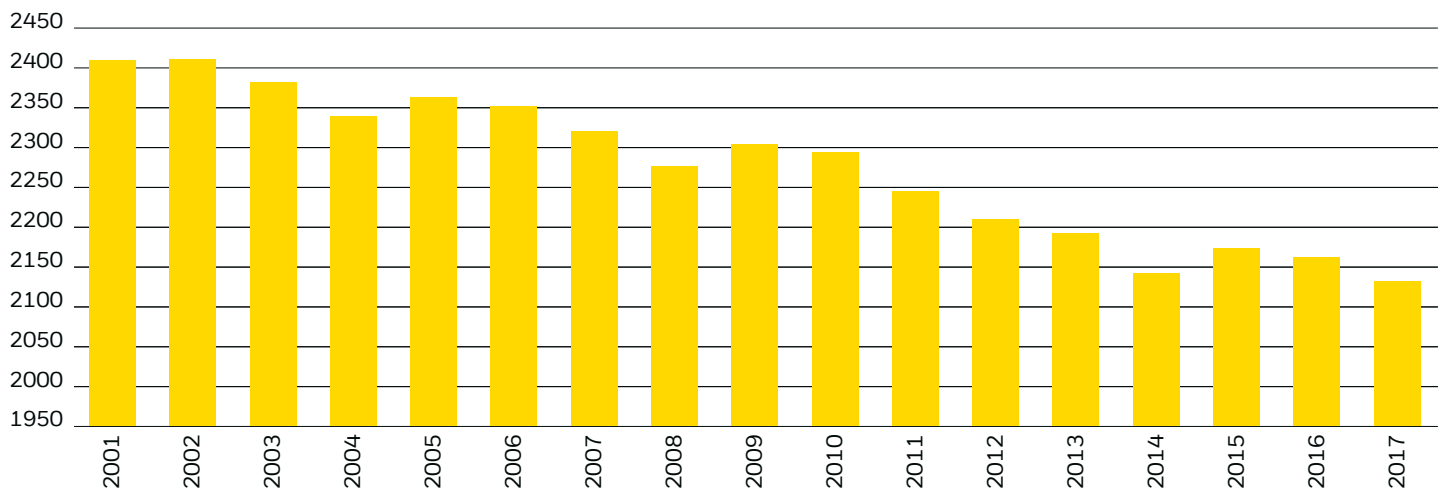
## How do megatrends translate into themes?

Our five megatrends form the genesis of our Thematic investment platform. Our most powerful investment themes are drawn from the intersection of two or more of these megatrends.

For example, consider the impact of demographic and social change as well as the proliferation of new technologies on eating habits. On one hand, rising healthcare costs have led to greater regulatory intervention on food products (e.g. introduction of a sugar levy in the UK in 2018). On the other hand, greater consumer awareness has led to a gradual decline in calorie consumption in the West. More recently, companies have innovated in low-calorie alternatives and plant-based options that mimic meat. This theme of transforming nutrition should have an enduring impact not just on food producers, but also on food retail, beverages, restaurants, staples, consumer tech, brands and healthcare companies.

Similarly, rapid urbanization and the rising scrutiny on pollution and climate change have together accelerated investments in electric vehicles in both advanced and emerging economies. By the end of this year, global auto manufacturers are expected to have launched 132 electric vehicle models up from just 33 in 2012.<sup>22</sup> The ripple effects of this theme are being felt not just by auto manufacturers, but also component suppliers, tech hardware firms, commodity suppliers as well as infrastructure providers.

### Average intake per person per day, UK, in calories, ex-alcohol



Source: UK Office of National Statistics.

<sup>22</sup> Bloomberg New Energy Finance, July 2018.



# The bottom line

**To identify the next major theme, it is essential for us to study the evolution of these megatrends. As they accelerate, so do investment opportunities.**

**For more information on how we invest in megatrends and to learn about our product range, visit [iShares.com/megatrends](https://www.ishares.com/megatrends).**

## Authors

Sumana Manohar

Head of Thematic Research for  
Fundamental Active Equities

[sumana.manohar@blackrock.com](mailto:sumana.manohar@blackrock.com)

## Contributors

Elga Bartsch

Head of Macro Research of the  
BlackRock Investment Institute (BII)

Brian Deese

Global Head of Sustainable Investing  
at BlackRock

Rob Powell

Lead Strategist for the Thematic Fund  
Range in EMEA

[rob.powell@blackrock.com](mailto:rob.powell@blackrock.com)

Jeffrey Spiegel

US Head of iShares Megatrend and  
International ETFs

[jeffrey.spiegel@blackrock.com](mailto:jeffrey.spiegel@blackrock.com)

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