

# Smart Cities

New grids on the block

- What makes living, breathing, sustainable capitals so important?

- How smart cities use data to enhance daily lives

- Why AI-driven investing in smart cities could help future proof your portfolio



Lyxor's Thematic ETFs - March 2020

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SOCIETE GENERALE GROUP

# Preparing for change



Smart Cities



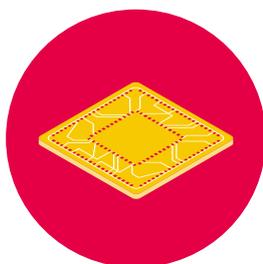
Digital Economy

Our world is changing. Technological breakthroughs, evolutionary economic forces and the climate emergency are reshaping reality for billions of people. **The question is: will your portfolio keep up?**

At Lyxor, we have identified a series of investment themes we believe will be at the forefront of this new revolution. To access these most powerful of megatrends, we've partnered with data powerhouse MSCI and a board of leading industry experts to build an innovative range of thematic ETFs:



**Future Mobility**



**Disruptive Technology**



**Millennials**

Each of these ETFs combines human insight, cutting edge data science and Artificial Intelligence techniques in a unique way to identify the companies that matter most, and ensure your portfolio stays one step ahead. We use low cost indexing to help maximise your return. And we screen our holdings based on their ESG impact on the world around them.

As a pioneering ETF provider with a history of innovation, we've gone the extra mile to build some truly state-of-the-art funds for a new state of mind. We're incredibly excited about this range and hope you can join us in preparing portfolios for change.



**Data is the backbone of Smart Cities. Sensors and the Internet of Things built into modern infrastructure help decrease congestion, reduce crime, manage waste more effectively, and lower emissions and pollution.**

**Chanchal Samadder**  
Head of Equities, Lyxor ETF



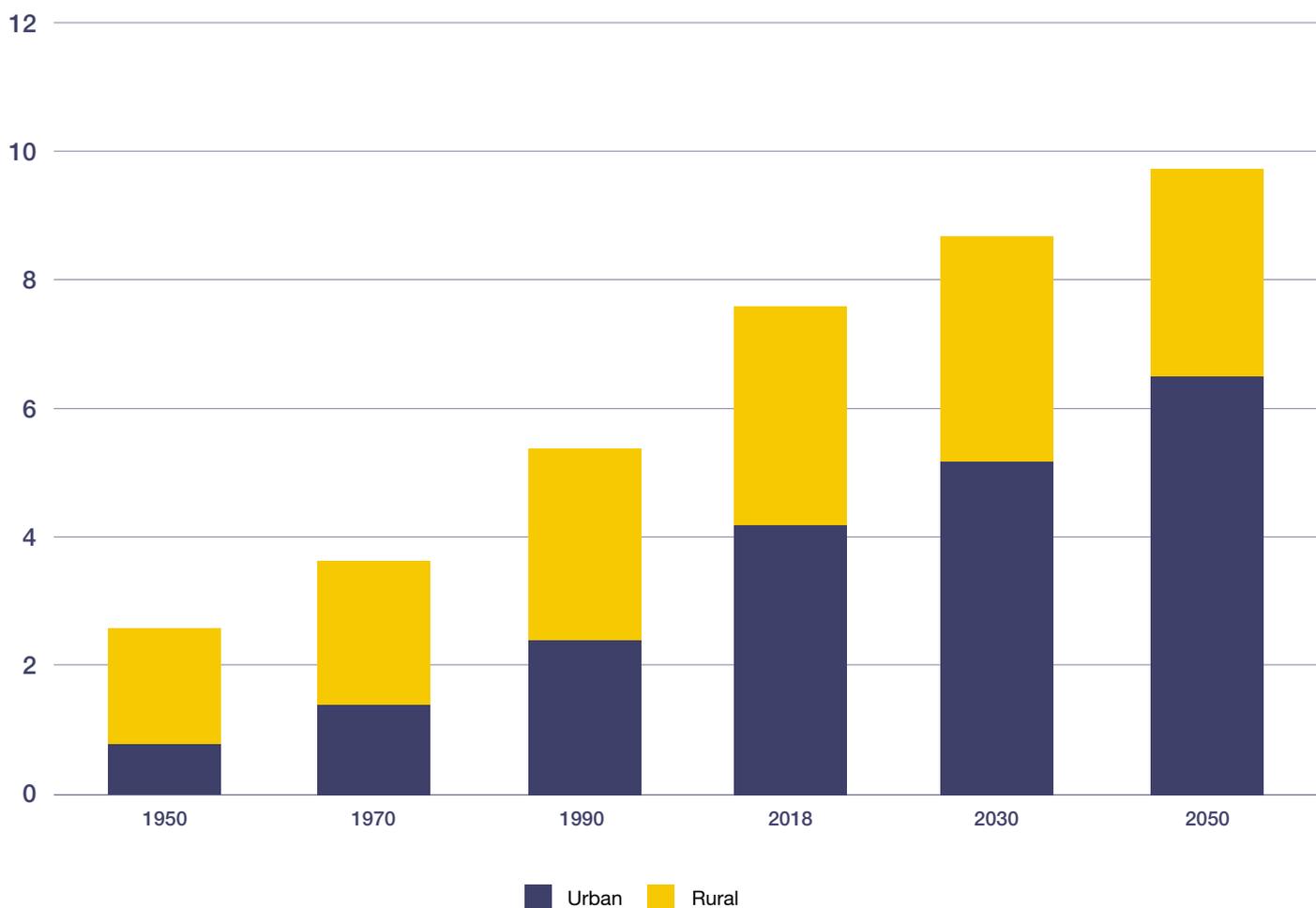
# Building better lives with Smart Cities

Smart Cities show how challenges such as urbanisation and climate change will be met by new technologies such as automation, the Internet of Things and smart grids – and how that will benefit far-sighted businesses and investors.



Cities already house half of all people on Earth, and another 2.5 billion people are expected to join them by 2050<sup>1</sup>. Ninety percent of this increase will be in Africa and Asia<sup>2</sup> – emerging-market regions that are rapidly growing their share of the global economy.

## World population (billions)<sup>1</sup>



Coping with this rapid urbanisation will not be easy. Cities consume two thirds of energy, generate 70% of greenhouse gas emissions<sup>3</sup> and thereby contribute to climate change and air pollution, as well as using up scarce resources such as water. But these problems can be solved thanks to technological breakthroughs that are already becoming a reality. These new technologies will affect every part of our lives – how we live, travel, work and relax.

<sup>1</sup>McKinsey Global Institute, June 2018, *Smart Cities: digital solutions for a more livable future*

<sup>2</sup>United Nations, *World Urbanization Prospects 2018*. <sup>3</sup>C40 Cities, [https://www.c40.org/why\\_cities](https://www.c40.org/why_cities)

# From homes to highways

Cutting-edge homes are already starting to make use of solar roofing, smart lighting and smart appliances. In future, smart buildings will be able to automatically adapt their heating, ventilation and air conditioning (HVAC) and LED lighting to sunlight and temperatures in a far more sophisticated way.

There's a great deal of scope to make our urban infrastructure more efficient. Smart environment, water and waste solutions can use sensors and analytics to track consumption, detect leaks, manage waste and monitor water quality. Smart energy can reduce urban power use through smart meters, dynamic electricity pricing, automated streetlights, as well as tools to monitor and change our behaviour. Songdo in South Korea offers a glance into the future, as this Smart City is already acting as a testbed for many of these technologies.

We're already seeing the arrival of smart mobility solutions in the form of e-hailing, bike sharing and car sharing. Real time traffic and transit information will deliver more responsive and flexible public and private transport, reduce congestion and lead to demand-based micro-transit (such as minibuses) replacing fixed timetables. In the long term, fully autonomous vehicles are likely to replace those driven by people once the remaining technical and commercial obstacles are overcome.

Better technology can mean big savings

25 - 80

litres/day water saved per person<sup>4</sup>

30 - 130

kg/year extra waste recycled per person<sup>4</sup>

<sup>4</sup>McKinsey Global Institute, June 2018, *Smart Cities: digital solutions for a more livable future*

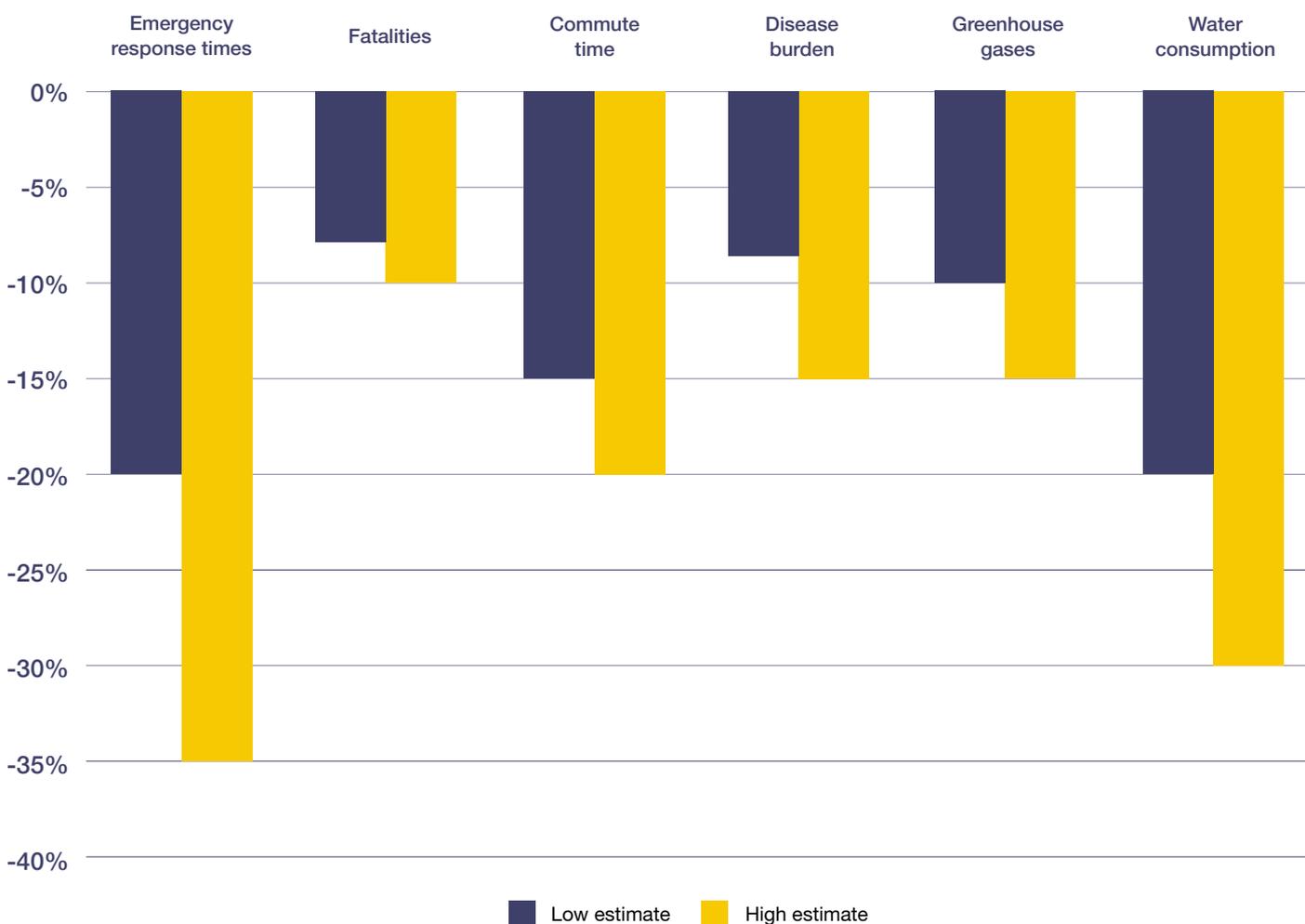
# Safer and healthier

Technology can also help us live safer and healthier lives. Smart security and safety systems will use surveillance data (perhaps gathered by fleets of drones) to map crime and incidents such as overcrowding or fires in real time. This will speed up response times and optimise the use of emergency-service resources including police, fire, accident and medical services. In early 2020 for instance, the Chinese government deployed drones to monitor the streets of Wuhan, epicentre of a coronavirus outbreak, and asked citizens to wear protective masks to help limit its spread.

Meanwhile, smart healthcare will help us move from curing towards preventing, via early warning alerts of air quality, sanitation problems, infectious diseases, or health problems identified by smart sensors attached to medical devices such as inhalers. Remote patient monitoring and treatment through telemedicine will reduce waiting times and increase coverage.

The prize for these radical changes will be huge improvements in quality of life: “Smart technologies can reduce fatalities by 8–10 percent, accelerate emergency response times by 20–35 percent, shave the average commute time by 15–20 percent, reduce the disease burden by 8–15 percent, lower greenhouse gas (GHG) emissions by 10–15 percent, and reduce water consumption by 20–30 percent,” according to analysts at McKinsey Global Institute.<sup>4</sup>

## How Smart Cities could improve our quality of life<sup>4</sup>



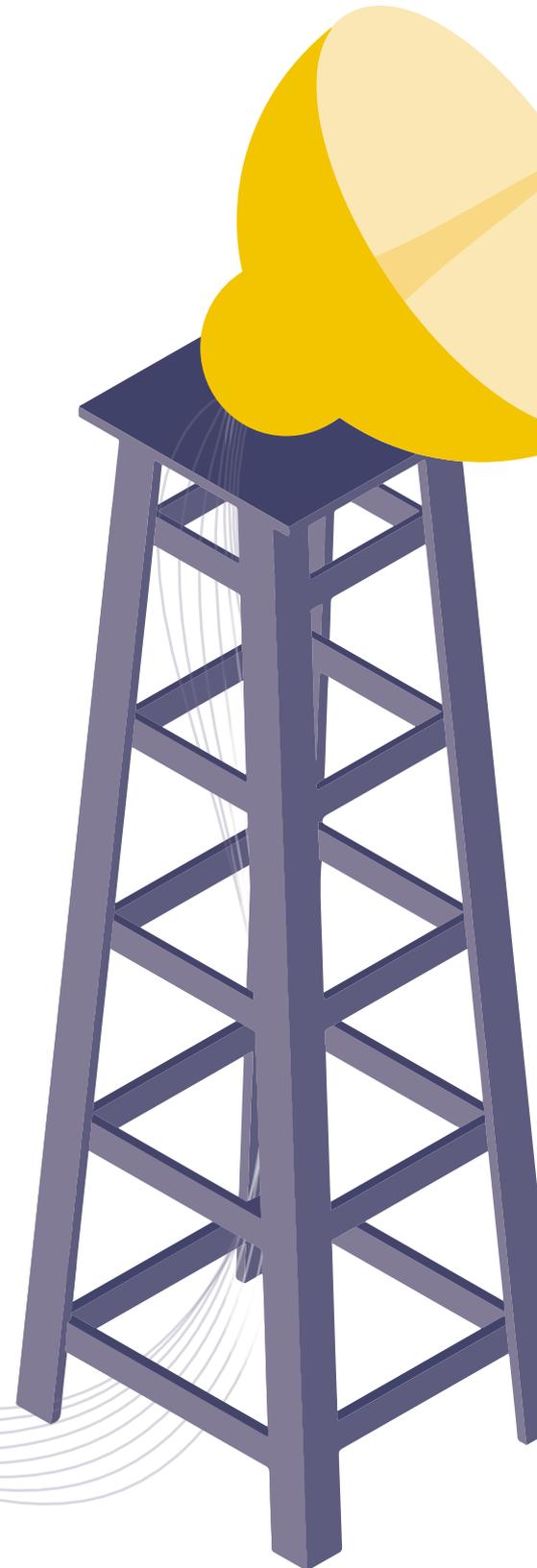
<sup>4</sup>McKinsey Global Institute, June 2018, *Smart Cities: digital solutions for a more livable future*

# A revolution built on data

It will take years of well-coordinated efforts, partnering private companies with the public sector, to realise this vision. The foundation for harnessing these technologies is strong infrastructure: broadband and wireless networks, smartphones, and the networked devices that will make up the Internet of Things, which is forecast to include more than 20 billion devices in 2020<sup>5</sup>.

The data that will flow over these networks will be gathered through sophisticated sensors that transmit real-time data on traffic flow, public transit systems, energy demand, crime incidents, waste disposal, noise, weather patterns, and outbreaks of infectious disease.

Much of this information will need to travel wirelessly, since it will be generated by autonomous vehicles or from mobile gadgets and sensors. That will result in a vast increase in the amount of traffic on these networks, meaning that companies will need to invest in much faster 5G wireless communications networks.



<sup>5</sup>Gartner, *Leading the IoT, 2017*



# The companies powering the revolution

The digital highways in our smart cities will be provided by firms such as Broadcom, a US giant semiconductor and software-infrastructure group. Broadcom's products are widely used in networking, communications and data centres, meaning that it should see its core markets grow as Smart Cities put in place the infrastructure needed to collect, store and process the vast amount of data that they require.

However, it won't just be the biggest tech firms that benefit. Austria's AMS is a specialist in advanced sensors that are used in automobiles, healthcare, machine vision, wearables and more. Its strength lies in creating sensors that are small, have low power needs yet are still highly effective – exactly what's needed when embedding a huge network of sensing devices all around the cities of the future.

And the roll-out of 5G wireless devices should benefit firms like Taiwan's Win Semiconductors. Its products include power amplifiers and radio frequency chips made using compound semiconductor technology in which silicon – used in conventional chips – is combined with other elements to improve performance.

# Transforming traditional industries

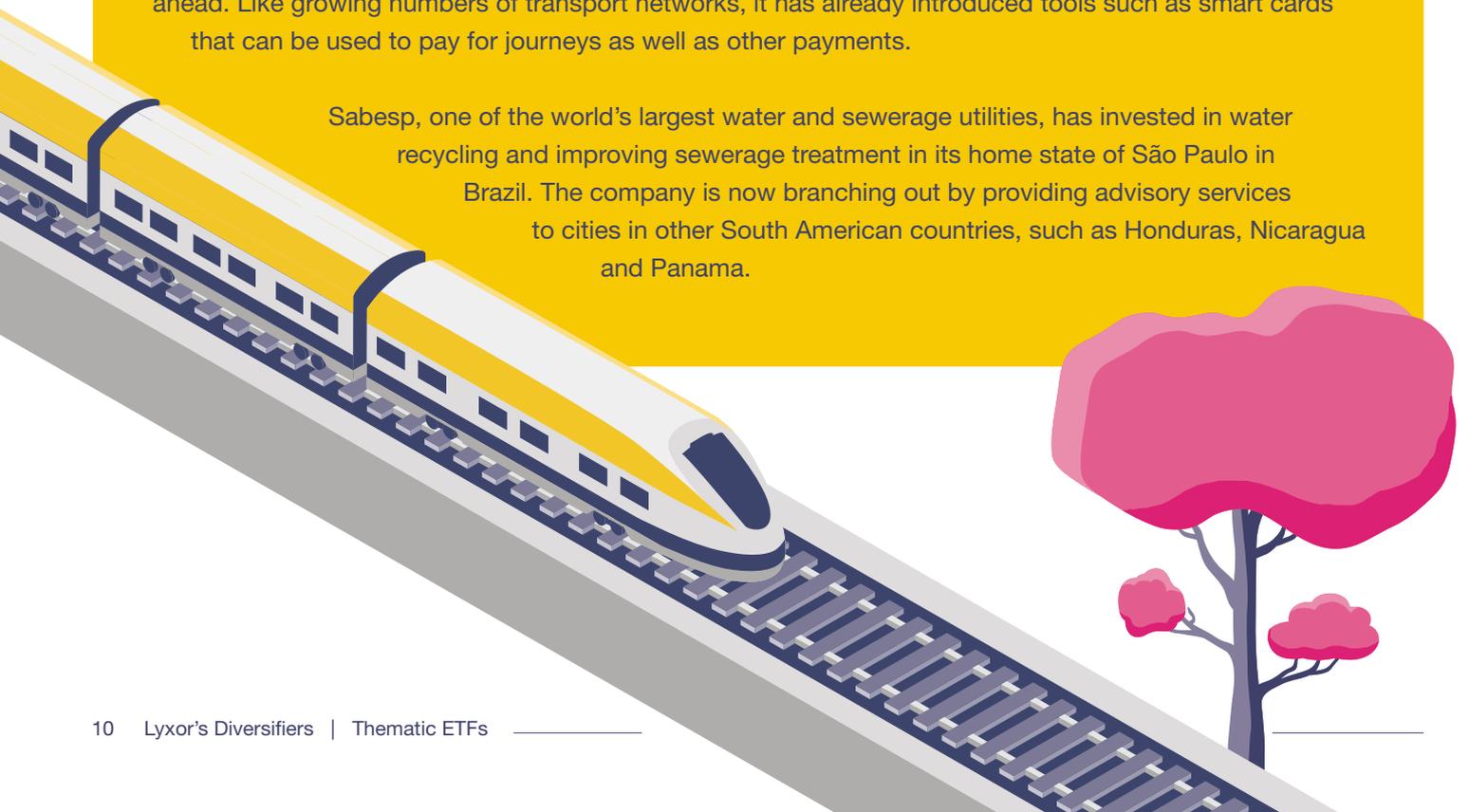
However, the Smart Cities story is about more than just technology – and any investment that aims to capture the full potential of these shifts needs to be more than just a simple technology fund. Investors need to consider how traditional industrial firms, transport companies and utilities are embracing the building blocks of Smart Cities and how this will change how they operate.

That's why you'll also find many of these firms in our Smart Cities ETF. Businesses that embrace new approaches may find their expertise opens new opportunities – even in fields such as water and waste, which may sound like unadventurous stocks on the surface.

## Old businesses, new technology

Thailand's BTS Holdings operates the Bangkok BTS Skytrain system, a modern above-ground railway that represents the kind of infrastructure needed to reduce urban traffic congestion, especially in the already-crowded emerging market cities that are likely to see the biggest increase in population in the decades ahead. Like growing numbers of transport networks, it has already introduced tools such as smart cards that can be used to pay for journeys as well as other payments.

Sabesp, one of the world's largest water and sewerage utilities, has invested in water recycling and improving sewerage treatment in its home state of São Paulo in Brazil. The company is now branching out by providing advisory services to cities in other South American countries, such as Honduras, Nicaragua and Panama.



# Investing in the urban revolution



The inclusion of these different types of companies building the cities of tomorrow shows why our ETF follows a very different approach compared to other thematic funds. Partnering with data powerhouse MSCI, we use cutting-edge artificial intelligence techniques combined with advice from experts in the field to identify companies that are in a prime position to exploit these trends. We also include an ESG filter to build a more responsible exposure.

The result is a fund that avoids the common trap of being concentrated in a few well-known large-cap stocks. In fact, more than 75% our Smart Cities ETF is invested in small and mid-caps,<sup>6</sup> meaning you get access to more companies with high growth potential compared to more traditional market cap-weighted ETFs.

Our unique investment process helps us identify the companies that can change the world, and make obsolescence a thing of the past. To make sure your investments remain as future-proof as the cities of our near future, we believe our ETF represents an ideal solution.



<sup>5</sup>Gartner, *Leading the IoT, 2017*. <sup>6</sup>Lyxor International Asset Management, as at 28/02/2020.

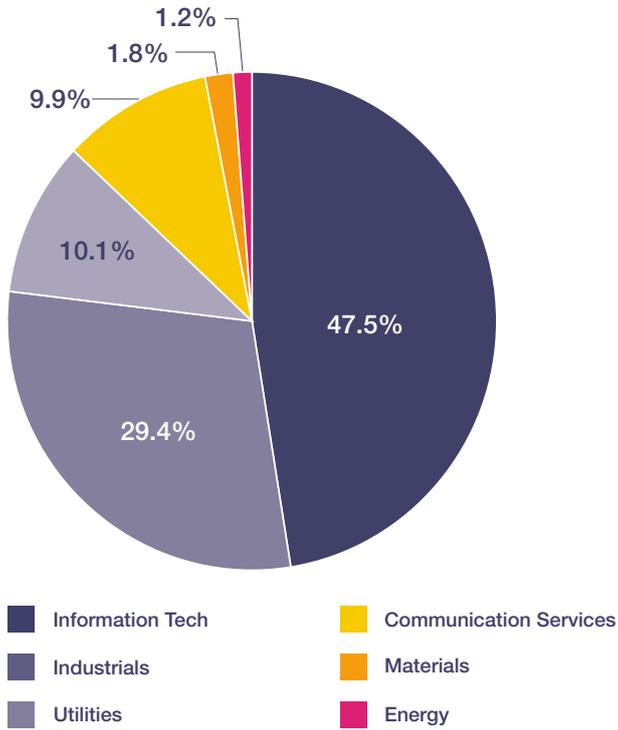
# Digging into the data



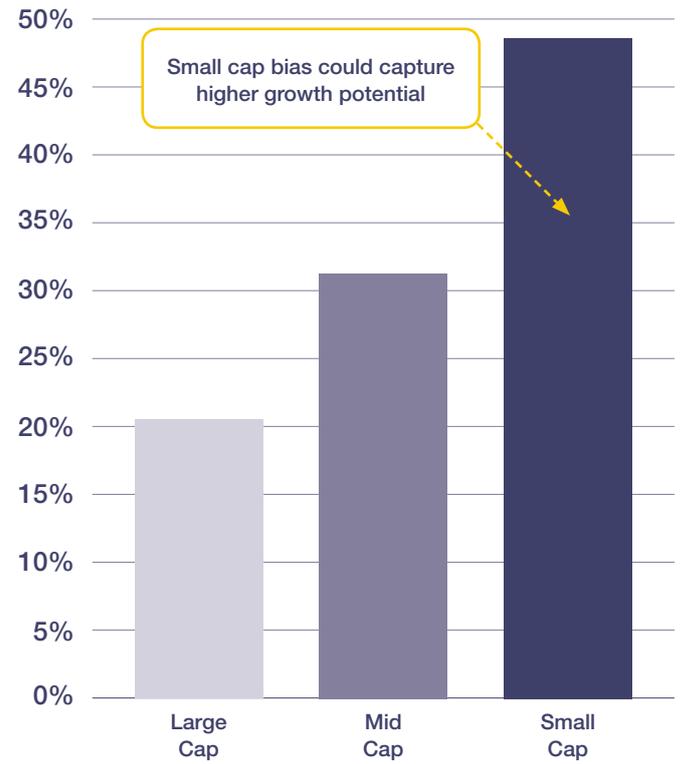
## Related concepts, products and services

- Smart Buildings
- Smart Homes
- Smart Mobility
- Smart Connectivity (IoT)
- Smart Safety & Security
- Smart Waste & Water Management
- Smart Energy & Grids

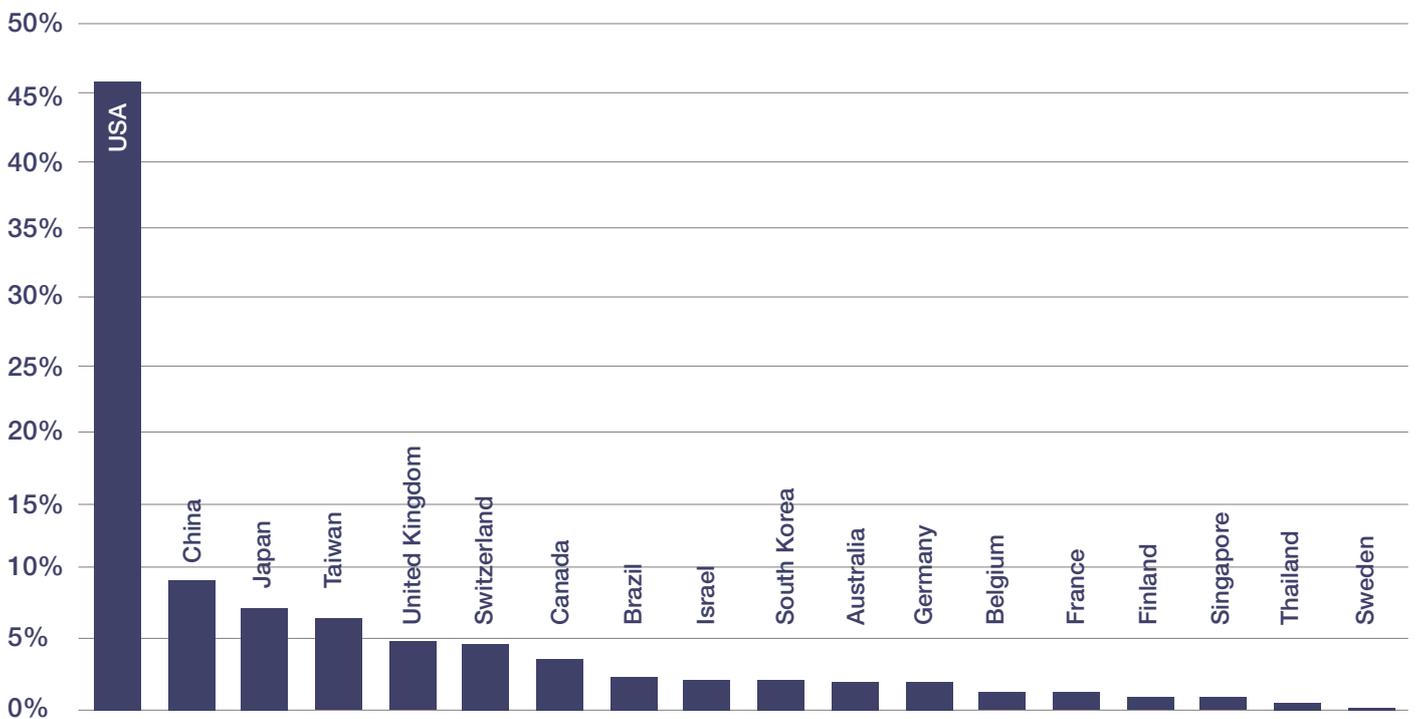
## Sector breakdown



## Market cap breakdown



## Country breakdown



Source for all data: Lyxor International Asset Management, MSCI, as at 28/02/2020.

## Top 10 holdings

Security name	GICS Sector	Country	Weight
WALSIN TECHNOLOGY CORP	Information Technology	Taiwan	2.60%
CIA SANEAMENTO PARANA UN	Utilities	Brazil	1.85%
SPRINT CORP	Communication Services	USA	1.79%
CHENGDU XINGRONG A(HK-C)	Utilities	China	1.68%
CHINA CONCH VENTURE	Industrials	China	1.53%
BOINGO WIRELESS	Communication Services	USA	1.47%
PLUG POWER	Industrials	USA	1.46%
AAC TECHNOLOGIES (CN)	Information Technology	China	1.45%
SEVERN TRENT	Utilities	UK	1.42%
SWITCH	Information Technology	USA	1.41%
<b>Total</b>			<b>16.65%</b>

ETF name	Replication type	Bloomberg tickers	ISIN	Current temporary TER*	Target TER*
Lyxor MSCI Smart Cities ESG Filtered (DR) UCITS ETF	Physical	IQCY, IQCT	LU2023679256	0.15%*	0.45%*

Source for top 10 holdings data: Lyxor International Asset Management, MSCI, as at 28/02/2020.

\*Source: Lyxor International Asset Management, as at 10/03/2020. Target TER is 0.45% but has temporarily been decreased to 0.15% until September 2021.

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# A note on investing in megatrends

Time horizons are long, and portfolios may be concentrated



- ▶ Megatrends take time to shape the world; your investment horizon should be **long term**



- ▶ Thematic indices are more narrow than traditional cap weighted indices
- ▶ As a result of this increased concentration, **volatility may be higher**



- ▶ Unconstrained by traditional allocations based on countries and sectors, thematic ETFs could be used as '**satellites**' to strengthen the core of your equity portfolio

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# Knowing your risk

It is important for potential investors to evaluate the risks described below and in the fund prospectus on our website [www.lyxoretf.com](http://www.lyxoretf.com)

## Capital at risk

ETFs are tracking instruments: Their risk profile is similar to a direct investment in the Underlying index. Investors' capital is fully at risk and investors may not get back the amount originally invested.

## Replication risk

The fund objectives might not be reached due to unexpected events on the underlying markets which will impact the index calculation and the efficient fund replication.

## Counterparty risk

With synthetic ETFs, investors are exposed to risks resulting from the use of an OTC swap with Société Générale. In-line with UCITS guidelines, the exposure to Société Générale cannot exceed 10% of the total fund assets. Physically replicated ETFs may have counterparty risk if they use a securities lending programme.

## Underlying risk

The Underlying index of a Lyxor ETF may be complex and volatile. For example, when investing in commodities, the Underlying index is calculated with reference to commodity futures contracts exposing the investor to a liquidity risk linked to costs such as cost of carry and transportation. ETFs exposed to Emerging Markets carry a greater risk of potential loss than investment in Developed Markets as they are exposed to a wide range of unpredictable Emerging Market risks.

## Concentration risk

Thematic ETFs select stocks or bonds for their portfolio from the original benchmark index. Where selection rules are extensive it can lead to a more concentrated portfolio where risk is spread over fewer stocks than the original benchmark.

## Currency risk

ETFs may be exposed to currency risk if the ETF is denominated in a currency different to that of the Underlying index they are tracking. This means that exchange rate fluctuations could have a negative or positive effect on returns.

## Liquidity risk

Liquidity is provided by registered market-makers on the respective stock exchange where the ETF is listed, including Société Générale. On exchange, liquidity may be limited as a result of a suspension in the underlying market represented by the Underlying index tracked by the ETF; a failure in the systems of one of the relevant stock exchanges, or other market-maker systems; or an abnormal trading situation or event.

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