Crea8

Smart Cities and Smart Homes

Thematic Investing

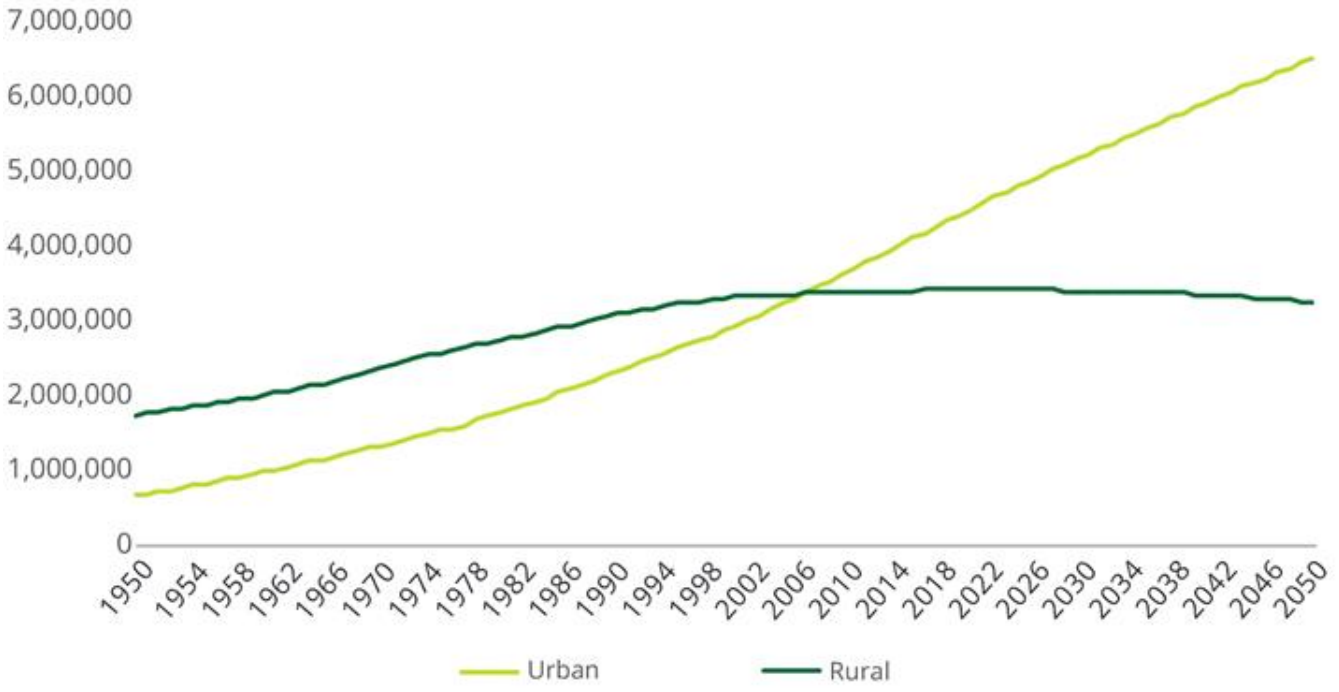
February 2021

With rising populations, scarce areas to develop, and deteriorating infrastructure, cities across the globe face extraordinary challenges that are only increasing in magnitude. The vision of "Smart Cities" and "Smart Homes" have been posited as the answer to such issues and have only become more prominent with the concept's implementation across the world.

Introduction

Currently, more than half of the world's population lives in towns and cities and more than 80% of the global GDP is generated in cities ("World Urbanization Prospects: 2018 Revisions" 2018). By 2050 the world population in cities or urban areas could swell to about 66%, adding more than 2.5 billion people to the urban population (Figure 1).

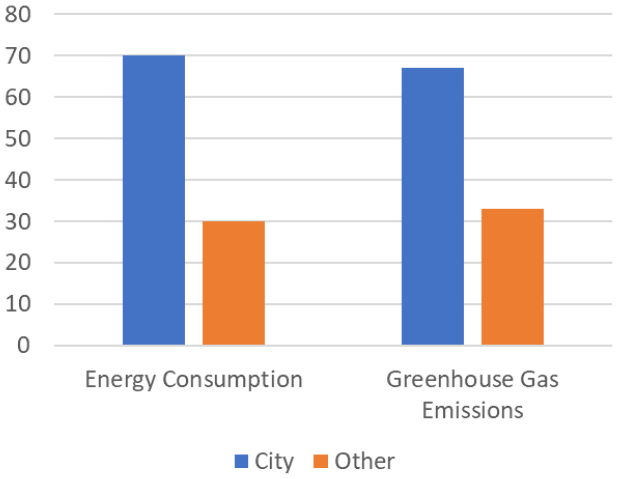
Rapid urbanization puts tremendous pressure on population centres and presents a challenge for cities to provide environmental sustainability and ensure the physical security and safety of residents.



Source: UN

Figure 1: Urban vs Rural Population Globally

According to estimates by the World Economic Forum, in 2018, cities or urban areas accounted for up to 70% of total energy consumption and were responsible for more than 60% of total greenhouse gas emissions ("World Urbanization Prospects: 2018 Revisions" 2018).



Source: UN

Figure 2: Total energy consumption and greenhouse gas emissions (%), cities vs other areas in 2018

Enter the "Smart City" concept

The "smart city" is a concept of how cities can be fundamentally improved by integrating technology and data analysis to optimize resource management, drive economic growth, and increase quality of life.

A smart city is a city in which technologies such as the internet of things (IoT), artificial intelligence, sensors and communication systems are employed to enable various objects and entities to communicate with each other through the internet. It is designed to optimize resource consumption, improve adaptability, and address sustainability.

Everything from vehicles to security cameras, skyscrapers to garbage bins, homes to streetlights are infused with technology to communicate data, manage resources, and prioritize services.

The end-result is structures that are better able to manage its resources, mitigate congestion and crowding, and be tremendously more efficient than any other form of infrastructure.

The "Smart Home" concept would complement smart cities but at a household level

Smart homes in relation to the smart city concept, however, are set to become a much more common occurrence and much more powerful.

A smart home is a residence that uses internet-connected devices to enable the remote monitoring and management of appliances and systems, such as lighting and heating.

Smart home technology provides homeowners security, comfort, convenience and energy efficiency by allowing them to control smart devices, often by a smart home app on their smartphone or other networked device. Smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowners' preferences.

Examples of smart home technology include:

- Smart lighting systems that can adjust lighting according to the amount of daylight;
- Smart thermostats which allow users to schedule, monitor and remotely control home temperatures. Smart thermostats can also report energy use and remind users to change filters, among other things;
- Kitchen appliances of all sorts are available, including smart coffee makers that can brew a fresh cup automatically at a programmed
- time; smart refrigerators that keep track of expiration dates, make shopping lists or even create recipes based on ingredients currently on hand.

By integrating ICT within the structure, smart houses achieve what smart cities do at an individual level. Allowing individual households to reduce energy consumption wherever possible, minimize waste products generated, and generally enhance quality of life.

Smart cities and smart homes offer promising solutions to urbanization issues

Smart cities provide a solution for alleviating environmental externalities by more efficiently managing resources to create new economic efficiencies.

According to Siemens, smart cities can bring down the energy consumption of cities by 30% and substantially cut down on traffic ("Data-Driven Cities" 2020). McKinsey reports that it "could cut emissions by 10-15%, lower water consumption by 20-30%, and reduce the volume of solid waste per capita by 10-20%" (Woetzel and Remes 2018).

Some cities are already being equipped with "smart technology" to optimise resource use

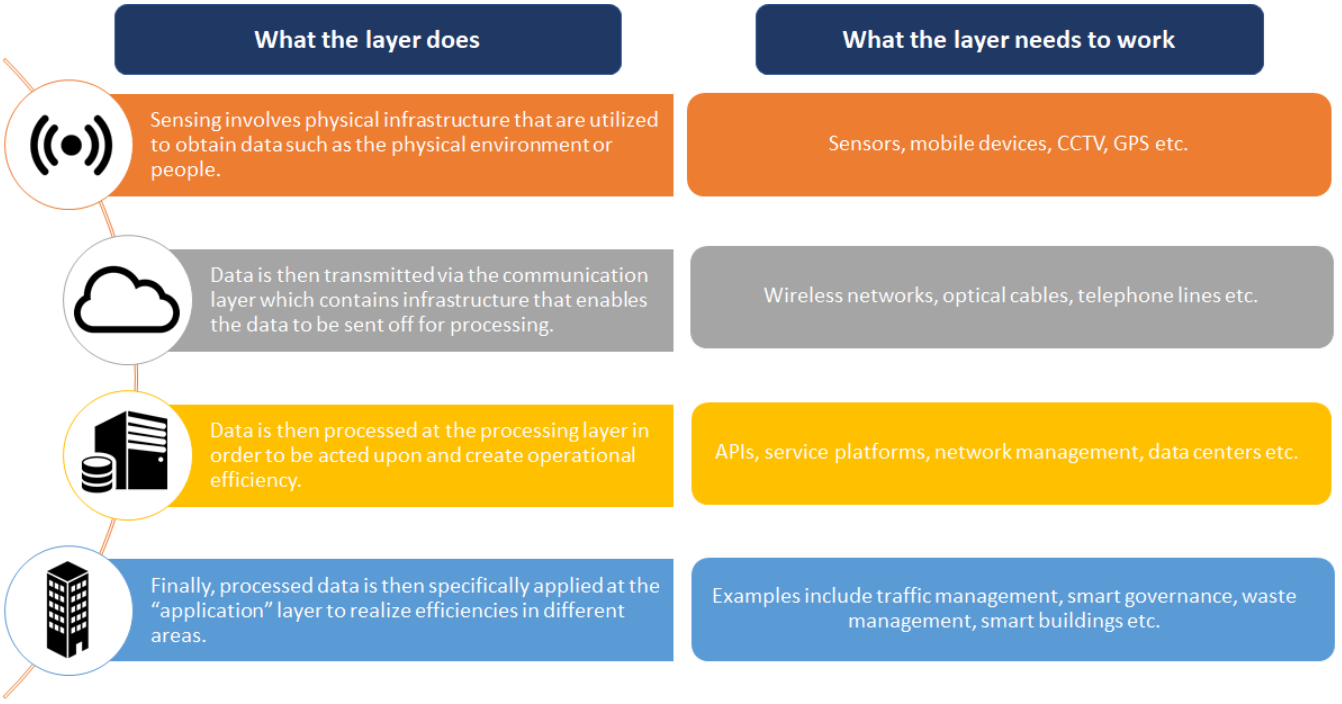
In Amman, Jordan, for example, the city has adopted a data-driven approach to streamlining the waste management process (Zgheib 2017). City officials can now monitor factors such as waste tonnage per district and complaints resolved, and track vehicles through a new fleet management system. Garbage trucks that once returned nearly empty are now redirected to routes where full trucks have skipped collections.

Further, the city of Barcelona has adopted smart technologies by implementing a network of fiber optics throughout the city, providing free high-speed Wi-Fi that supports the IoT (van den Bosch 2018). By integrating smart water, lighting and parking management, Barcelona saved EUR 75 million of city funds.

What do the Smart City and Smart Home market encapsulate?

The architecture of a smart city encapsulates a range of different services, technologies, and actors to collect data and enable processing to optimise operational efficiency.

While there are many ways to possibly visualise how such components are connected and utilised, it is perhaps best visualised in its simplest form as a 4-layered architecture of sensing, communicating, processing, and applying as described in Figure 3.



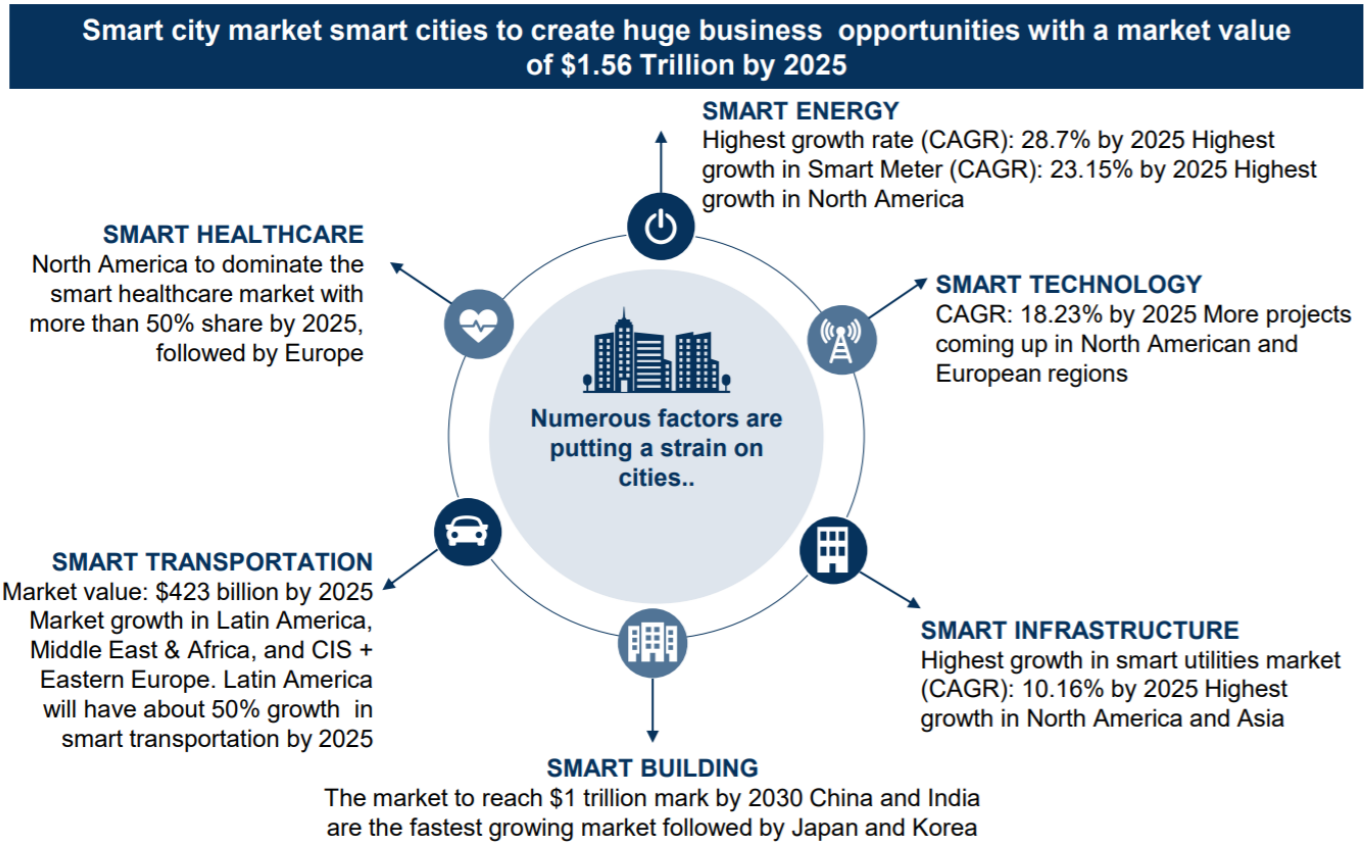
Source: Deshpande, 2021

Figure 3: Architecture of "Smart Cities" and "Smart Homes"

As more and more cities and homes globally become “smart", demand for these applications will grow

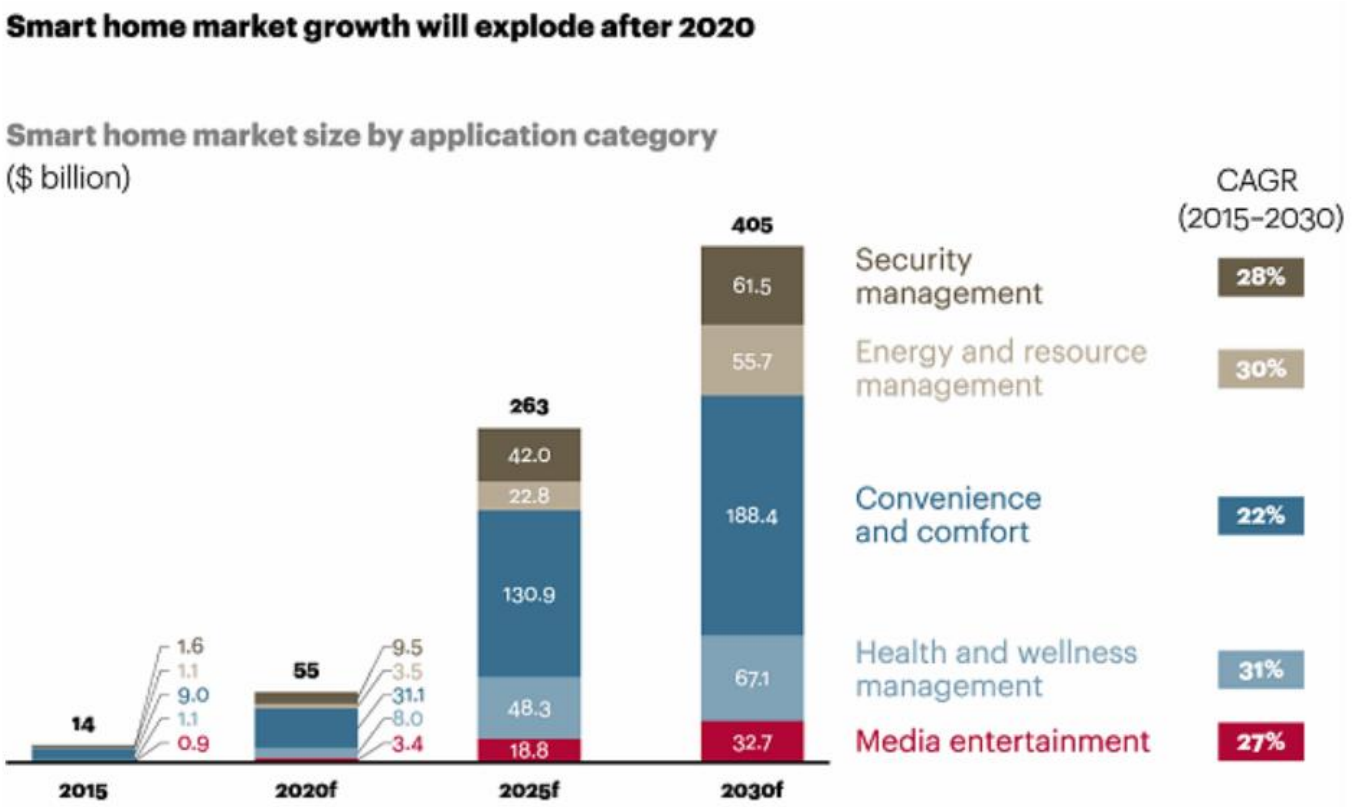
According to a report by Frost and Sullivan, global spending on smart city projects by public and private organisations is expected to grow to from USD 600 billion in 2019 to over USD 1.5 trillion in 2025 (Jawad, Nalcioglu and Vaninetti 2019).

Meanwhile, spending on smart home technology is also set to grow from USD 55 billion in 2020 to USD 405 billion by 2030 (Menon and Dobberstein 2017).



Source: Frost and Sullivan

Figure 4: Projected growth of “Smart City” application by 2025



Source: A.T. Kearney

Figure 5: Projected growth of "Smart Home" market by applications by 2030

A range of companies are set to benefit from this...

Players in the market range from small start-ups to international giants spanning from telecom operators and network vendors to software companies, device manufacturers and connectivity players.

Qualcomm

One notable company pushing the trend forward is Qualcomm. The company produces platforms, chipsets and software, that are applied in smart technology to create smart homes and smart cities.

Qualcomm's products play a key role in smart infrastructure projects due to their interoperability, processing capabilities, and foundational nature within the smart city vision.

Cisco

Further, Cisco's networking technologies are also key to driving this trend forward. The company's specialization in networking hardware, software, telecommunications equipment, and other high-technology services and products make it key to realising smart infrastructure projects.

Cisco's main product within the sector is their "Cisco Kinetic IoT data platform." Cisco Kinetic is designed to connect, automate, and scale a city's network of IoT devices through advanced data management and edge computing.

Amazon

Amazon's Alexa is one of the most recognisable demonstrations of the smart home concept.

Connecting lights, power sockets, fridges, smart doorbells, and other devices to the internet to provide users greater control and convenience over their home. The Alexa suite of products interfaces with other smart home networks (e.g. Google Home) to improve general quality of life by making daily functions more convenient while limiting energy consumption.

Investing in the "Smart City and Home" trend with Crea8

The market for smart city and smart home applications is set to explode over the coming years. Companies within these sectors are thus set to see above average earnings. Consequently, portfolios invested in these companies would likely outperform the general market

Through Crea8's Factor Based Thematic Investing Service, you get the opportunity to invest in the "Smart City and Smart Home" trend.

Put your own spin on things

Crea8 allows you to adopt our professionally built strategies, such as "Smart City and Smart Home", and put your own spin on things.

If you are concerned about sustainability, Crea8 has also incorporated Environmental Social and Governance (ESG) factors into our portfolio construction, thereby, ensuring that your portfolio is consistent with your ESG principles.

Alternatively, with Crea8's Analytics, you can use our screener to identify other stocks to add to the strategies, while Crea8's Advisory allows you to use our algorithm add factor tilts to these strategies.

We monitor your plan to ensure you can sleep easy

When you set up an investment plan or strategy with us, your investment plan or strategy is rebalanced automatically, or we will send you a reminder to do so. This way, you can relax knowing that your investment plan is diversified and on track to meet your goals.

Crea8 offers free and automatic portfolio monitoring

In between the rebalancing date, we suggest that you enter cut loss and take profit orders. By using smart algorithms, we aim to cut your losses and let your profits run. Hence, you can sleep well knowing that your portfolio is monitored and up-to-date.

Backtest your strategies with 'what ifs' before investing

For any of the investment plans or strategies that you create, we let you backtest them and evaluate 'what-ifs' before committing your capital.

Crea8's Suite of Thematic Strategies

- FinTech and Digital Security
- Ageing Society
- Electric Vehicles and Driving Technology
- Smart Cities and Smart Homes
- Millennials and Sharing Economy
- AI and Blockchain
- Smart Factory

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