CAPITAL EDITION

A FORCE FOR GOOD

Co-head of sustainable investment, Emily Woodland, on how social consciousness powers her vision and strategy

A REVOLUTION IS DAWNING

How the next, looming industrial revolution will have a rapid and transformative impact on the way we live, work and invest

THE HUMAN TOUCH

Being on the ground and client-centric is a non-negotiable for Craig Keary when working in Asia-Pacific

AIRPORTS OF THE FUTURE

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Letter from the Managing Editor

Welcome to the latest issue of Capital Edition. After the success of our inaugural edition, we look forward to engaging with you on a monthly basis, continuing to highlight AMP Capital's investments, people and ideas.

Front and centre this month is our cover story, a profile of Emily Woodland, AMP Capital's co-head of sustainable investment. Environmental, social and corporate governance (ESG) has now entered popular dialogue, but it's long been a professional and personal focus for Emily. She shares how her ethos, centred on environmental sustainability and social consciousness, has guided her life and professional choices, and how it led her to AMP Capital. Emily also gives insight to the global sustainability trends having a palpable, rapid impact on investment markets.

This month, we're also showcasing our investment and market insights with an analysis of the revolution sitting at the world's doorstep. The next industrial revolution, powered by 5G, looms so large it could eclipse the three preceding. The cyber world is set to be woven into our lives and jobs with unprecedented form and speed, having a transformative impact on how we live, work, socialise and invest.

AMP Capital takes a number of learnings and insights on the topic of 5G, shared through James Maydew, head of global listed real estate at AMP Capital, and Giuseppe Corona, head of global listed infrastructure at AMP Capital.

The complete impact of a functioning, interconnected and truly global 5G network is impossible to forecast, a bit like trying to predict in 2007 how smart phones would change the world. What we know now is that in just 10 years, society will have profoundly changed, and keeping your finger on the pulse as an investor is imperative.

Also in this issue of Capital Edition, we meet Craig Keary, AMP Capital's Asia-Pacific managing director.
Craig embodies the philosophy of AMP Capital in the Asia-Pacific region – he is on the ground, forward-facing and instinctively wired to connect to the human and social cores of investment markets. Craig's deep understanding of, and respect for, the cultural workings of the countries he visits and operates in are testament to that. He shares his professional learnings and insight, weaving in his personal mantras and philosophies.

I hope you enjoy Capital Edition and I'd love to hear your feedback.

Many thanks.

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5G: A revolution is dawning

An industrial revolution which looms so large it could eclipse the three preceding it is on our doorstep. The cyber world is set to be woven into our lives and jobs with unprecedented form and speed – and it will be powered by 5G.

Story by
GIUSEPPE CORONA,
Head of Global Listed Infrastructure

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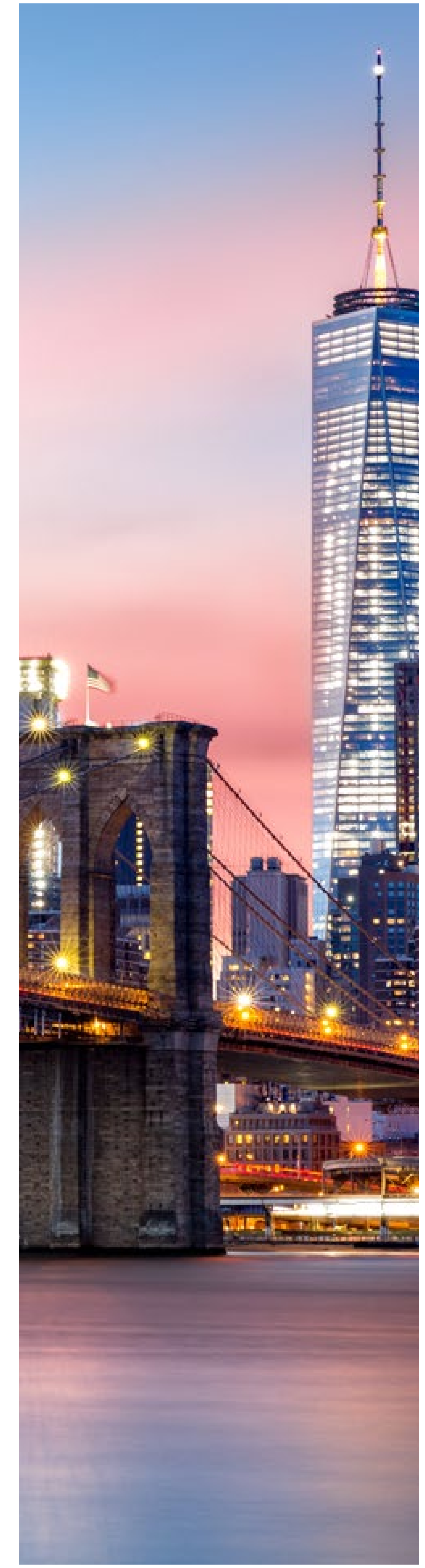
Head of Global Listed Real Estate



Welcome to the next revolution

Since legendary Apple founder Steve Jobs launched the first iPhone in 2007, the ubiquity of smart phones has triggered a huge change in how society operates. There has been an explosion of data over the internet. Video and streaming have become part of everyday life. Millions of apps have been developed from maps and flashlights to scanners, calculators and share-trading platforms. And that's before gaming is considered.

People work differently, family dynamics have changed, the main lines of communication between groups of people is now via social media. Retail has altered forever, connectedness has had a massive impact on health (good and bad), advertising, media and manufacturing. In just 12 years, the introduction of smart phones[1] has affected almost every facet of the economy.

It is about to happen all over again, but much more radically.

The 5G revolution is coming and it will transform the way technology is used in society, from buildings and objects through to mobile devices and even our bodies. Billions of people will be connected utilising unprecedented speed, processing power and storage capacity.

Fifth generation wireless networking architecture, or 5G, has the potential to, literally, revolutionise how we live, what we do, how we relate and how society operates.

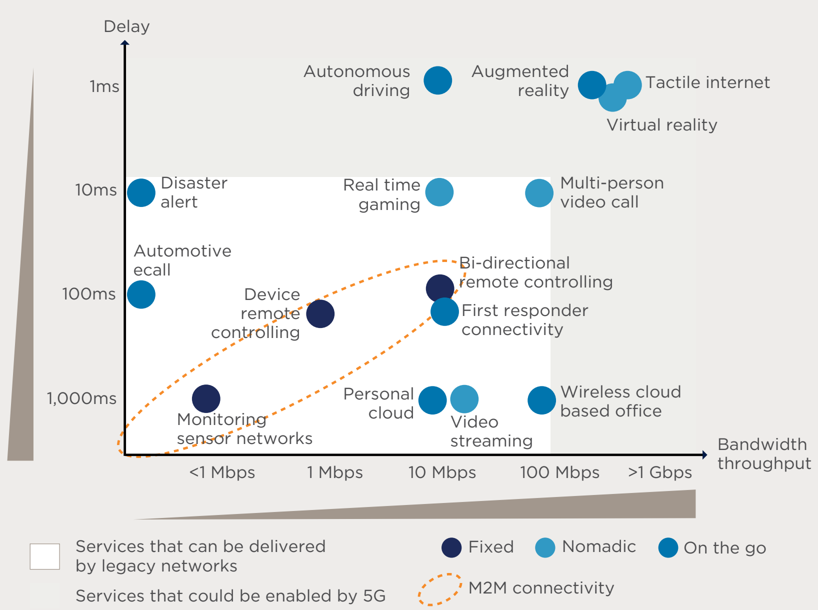
The new technology is already being rolled out in many countries including China, Japan, South Korea, Australia, the United States and parts of Europe. Huge amounts of money are being spent on networks. Mobile operators are forecasted to invest around $US370 billion in new 5G networks between now and 2025. Around half of that money will be spent in China[2] alone.

The enormous expense of the new network has already changed corporate behaviour. In Italy, Vodafone and Telecom Italia have decided to merge their network of towers to share 5G costs. The three main tower companies in China have done the same thing.

The introduction of the 5G network is akin to a fourth industrial revolution, after the previous steam, electricity and computing revolutions. But it will take time to deploy. Building the network needs technology and infrastructure to develop together.

For 5G to operate, it needs a critical mass of people and structures to be 5G enabled. For it to operate optimally, it needs everyone and everything to be 5G ready. Some economies and cities already have strategies and spending in place. Others will take decades to fully implement 5G technology.

Potential 5G use cases



Source: GSMA Intelligence, Understanding 5G: Perspectives on future technological advancements in mobile, December 2014.

Understanding 5G

The growth in the number of connected devices over the past decade has been astounding. Next year the number is expected to reach 50 billion according to Cisco, four times the number in 2010[3]. That's six connected devices for every person in the world, based on World Bank projections[4].

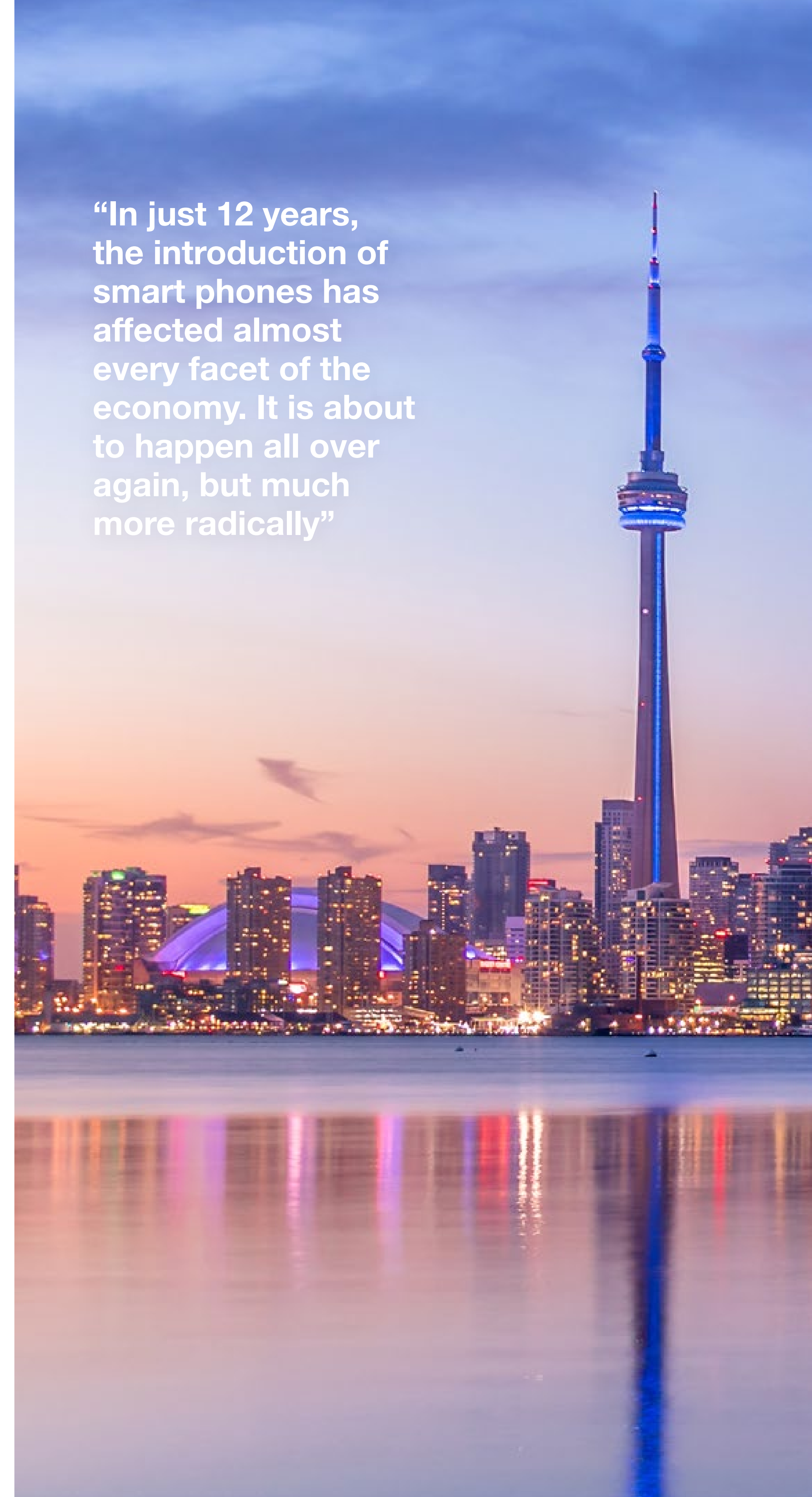
In short, the interconnected world has become very crowded.

5G technology addresses the two biggest challenges in the 4G network – congestion and latency – in three ways:

1. 5G will use wider bandwidth channels of spectrum than previous technologies, effectively clearing the path for data transmission.
2. In a 5G world, latency is expected to decrease by 50 times, falling to one millisecond.
3. Each cell site using 5G technology will handle at least one million devices per square kilometre, compared to around 2,000 wireless devices under 4G.

Until now, connected devices have operated in the 3KHz to 6GHz frequency spectrum. 5G utilises high frequency millimetre waves which are broadcasted between 30GHz and 300GHz. Currently those frequencies are utilised by satellite operators and radar systems. It's akin to a freeway shifting from four lanes to dozens of lanes.

Using these frequencies will allow huge amounts of data to be transmitted. Connected devices will operate as designed without the latency experienced under 4G. For example, 5G will enable a high definition video to be downloaded in seconds and enable HD television channels to be streamed without interruption.



1 Some information taken from Vox; https://www.vox.com/2017/6/26/15821652/iphone-apple-10-year-anniversary-launch-mobile-stats-smart-phone-steve-jobs
2 https://www.gsma.com/r/mobileeconomy/
3 Cisco, The Internet of Things 2011
4 http://datatopics.worldbank.org/world-development-indicators/

How does 5G work?

5G uses new technology and communication techniques to deliver ultra-fast data across devices. There are several critical factors that, combined, allow for the delivery of 5G communications and the benefits that accrue from that.

Millimetre waves

Frequency refers to the number of waves generated in a set period of time and is measured in hertz (Hz). One hertz means one wave per second, while 1MHz (or megahertz) is one million waves per second, and 1GHz (or gigahertz) is one billion waves per second. Each wave carries data (or information).

Since the launch of the First Generation of mobile networks, connected devices have been operating in the 3KHz to 6GHz frequency spectrum, which is now very congested. A critical underpinning of 5G is the use of high frequency millimetre waves which are broadcasted at frequencies between 30GHz and 300GHz. These high frequencies allow a significant amount of data to be broadcasted with very low latency (or delay).

The trade-off is the range and potential for interference from obstacles. High frequency doesn't work as well when it is blocked by building walls, or nature including humidity and rain. That's why people talk about line-of-sight paths for 5G.

Massive MIMO

Massive Multiple-Input Multiple-Output (MIMO) technology enables multiple signals to be transmitted and received over the same radio channel. Massive MIMO systems can have 100 antennas, compared to the two to four on standard MIMO networks. The main advantage of massive MIMO is a significant increase in the capacity of a wireless network without using additional spectrum.

Like millimetre waves, there's a trade-off. Massive MIMO systems are more susceptible to interference. Technologies such as 'beamforming' have been developed to minimise interference.

Beamforming

Most radio devices send out a signal in multiple directions at once. This isn't particularly useful in the 5G ecosystem, because the use of millimetre waves and massive MIMO creates potential for much greater interference.

Beamforming is a technology that identifies the most efficient route to transmit data from a radio base system, while also reducing interference. Beamforming technology focuses a signal in a concentrated beam that points in the direction of the user. The technology is a key pillar of the 5G ecosystem.

Small cells

Small cells have been around for many years. They are low powered mobile radio access nodes with a short range of up to a few kilometres designed to handle a few simultaneous calls or sessions. So why are small cells so important in 5G? Because they are small.

They can be put almost anywhere with relatively little effort. Small cells can be attached to traffic lights, in office ceilings or atop buildings. They will play a significant role in expanding the mobile network coverage through reducing interference and ensuring millimetre waves are travelling an acceptable range. Small cells are critical to delivering high speed, low latency data.

Full duplex

Among the biggest constraints in radio frequency technology to date has been that a transceiver is not able to transmit and receive signals at the same time using the same radio frequency. The signals interfere with each other. It means using double the frequency spectrum – half for transmitting and half for receiving - or taking turns transmitting and then receiving.

Full duplex technology can solve this conundrum by allowing signals to travel around each other. Its adoption would double the frequency band and increase the wireless capacity by a factor of two.

"Significantly, smart cities can have huge benefits to the environment. BCG forecasts that digital solutions could generate reductions of up to 30 per cent in carbon dioxide emissions, and energy and water consumption"

How 5G will change the world

The Internet of Things is a phrase first coined by British technologist, Kevin Ashton, at a Proctor & Gamble conference in 1999. It refers to a network of physical devices, vehicles, buildings and objects that are embedded with electronics, software, sensors and network connectivity to enable the collection and transmission of data. For the past two decades it has been an aspiration, but the roll-out of the 5G network will allow for the Internet of Things to come into fruition, creating a very different society.

Smart cities

Urbanisation is a seemingly inevitable by-product of progress. According to leading management consultancy BCG, by 2030 more than 5 billion people will live in cities. By that year, roughly one-sixth of the world's population will live in 41 very large cities of more than 10 million people[5].

The strains this will put on cities is enormous and unprecedented. Technology, and particularly the introduction of 5G, will help redeploy resources more effectively and create a healthier urban environment. It is already happening. Municipalities including Vienna, London, Chicago and Singapore have long-term strategies and are spending billions of dollars to become "smart cities"[6]. What they need is a fully functioning 5G network to drive the concept of a smart city.

What these cities have, which all municipalities will eventually need, are governments and large businesses working together to create the 5G network. Such a large infrastructure roll-out needs both government and private enterprise support. The pay-off will be enormous – higher quality and standard of living for the citizens who live and work in a smart city.

There will also be large costs. Get ready for decades of debate around the use of data and privacy, neophobia, real estate changes and stakeholder engagement challenges. It's why governments need to lead the way to grasp the long-term opportunities from the 5G network.

While the challenges are significant, there are successful case studies of smart cities. Johns Creek, Georgia in the United States, population 85,000, has worked with Amazon to allow Alexa, the company's virtual digital assistant, to answer more than 200 questions regarding city operations and services.

Environment

Significantly, smart cities can have huge benefits to the environment. BCG forecasts that digital solutions could generate reductions of up to 30 per cent in carbon dioxide emissions, and energy and water consumption[7].

Individuals will know exactly how much power they use, the best time to access it and how to minimise carbon outputs. Buildings and cities can operate to minimise loads on electricity grids and optimise green power.

Transport

If a vehicle is connected to other vehicles on the road, to traffic lights, to roadwork and accident notifications, even to pedestrians, the potential of 5G is enormous. Long distance trucks could drive in convoy at times of the day when traffic is light. Fleets of cars could travel very close to each other at identical speed during rush hour, with traffic lights changing depending on the exact number of vehicles on the road. Road safety should improve, traffic flows should become more efficient, transportation costs should decrease as should pollution.

The potential is enormous and 5G is the key enabler. Self-driving vehicles demand very low latency to effectively communicate. Even milliseconds of latency could result in fatal collisions.

Healthcare

The roll-out of 5G will significantly improve the quality of people's health and healthcare. 5G technology will enable real-time monitoring of an individual's health and will allow humans and machines to interact in real time. There is the potential to perform complex medical procedures by a surgeon on the other wide of the world.

5 https://www.bcg.com/en-au/publications/2018/digital-answer-urbanization-biggest-problems.aspx
6 https://www.rolandberger.com/en/Publications/Smart-City-Strategy-Index-Vienna-and-London-leading-in-worldwide-ranking.html
7 https://www.bcg.com/en-au/publications/2018/digital-answer-urbanization-biggest-problems.aspx

Education

A fully interconnected world has the ability to democratise all forms of education. Students living in poorer cities would have the opportunity to 'attend' universities on the other side of the world. Higher learning, and particularly universities, remain locked into real estate. How institutions have interacted with students has been based on location. But in a 5G world, location becomes much less relevant. Like e-commerce has disrupted retailing, a 5G network would disrupt education.

The opportunity to attend university will increase significantly. Students from all corners of the world will be able to benefit from quality education. Of course, it remains to be seen whether universities will be open to new models of operation, or if new players will enter the landscape and pose a challenge to the towering incumbents.

Buildings

Smart cities, enabled by a 5G network, are all about interconnectivity of multiple devices to improve the flow of people and traffic, to minimise pollution and maximise productivity and hopefully increase quality of life. The data flowing from a building will be a critical piece of the 5G data network – how many people are inside, what air conditioning is needed and what power output is demanded.

Buildings will need to change if they are to generate the data necessary to allow a 5G network to operate. New buildings are incorporating the potential for the 5G network, but anything built more than five years ago will need retrofitting, and that could be a slow process.

Virtual and augmented reality

Virtual reality (VR) or augmented reality (AR) apps run best with little to no latency. They need a 5G world. Investment bank Goldman Sachs forecasts that the global VR and AR market will be worth US$80 billion by 2025[8]. E-commerce could ultimately become the largest exponent of VR and AR applications. VR allows innovative e-commerce platforms to completely personalise the shopping experience, targeting very personal tastes and values of the customer, which would be hard to replicate in the physical world unless you had a personal buyer.

AR will change the home shopping experience. Items will instantly appear in situ, via a mobile device. Clothing, shoes and other accessories can be projected onto various parts of a person, making it easier to make purchasing decisions remotely.

Entertainment

Video streaming accounts for a very large share of internet traffic. 5G will be beneficial for gamers and streamers. In a 5G world, a high-definition video will be downloaded in seconds and HD television will be streamed without interruptions. Lower latency enables the live streaming of events, as well as augmented and virtual reality.

Data centres

If there are 50 billion smart connected devices by 2020, as forecasted by Cisco, all collecting, analysing and sharing data, there will an explosion in the need for data storage. In fact, over 175 zettabytes (one zettabyte is around one trillion gigabytes) of data is expected by 2025, meaning data centres will play a vital role in the management of information.

"From autonomous cars to intelligent personal assistants, data is the lifeblood of a rapidly-growing digital existence, opening up opportunities previously unimagined by business," says Dave Reinsel[9], Senior Vice President of International Data Corporation.

"Storage in particular will continue to grow in importance, as it provides the foundation from which so many of these emerging technologies will be served."

The data journey for organisations is just beginning. Collecting, storing, analysing and utilising data will drive the growth of data storage over the next decade.

Logistics and supply chain

E-commerce has had enormous growth in recent years, and by 2024, thanks in part to the roll out of the 5G network, over 8 billion people will be online. That equates to 4.2 billion new digital consumers versus a total population of around 7.6 billion people[10].

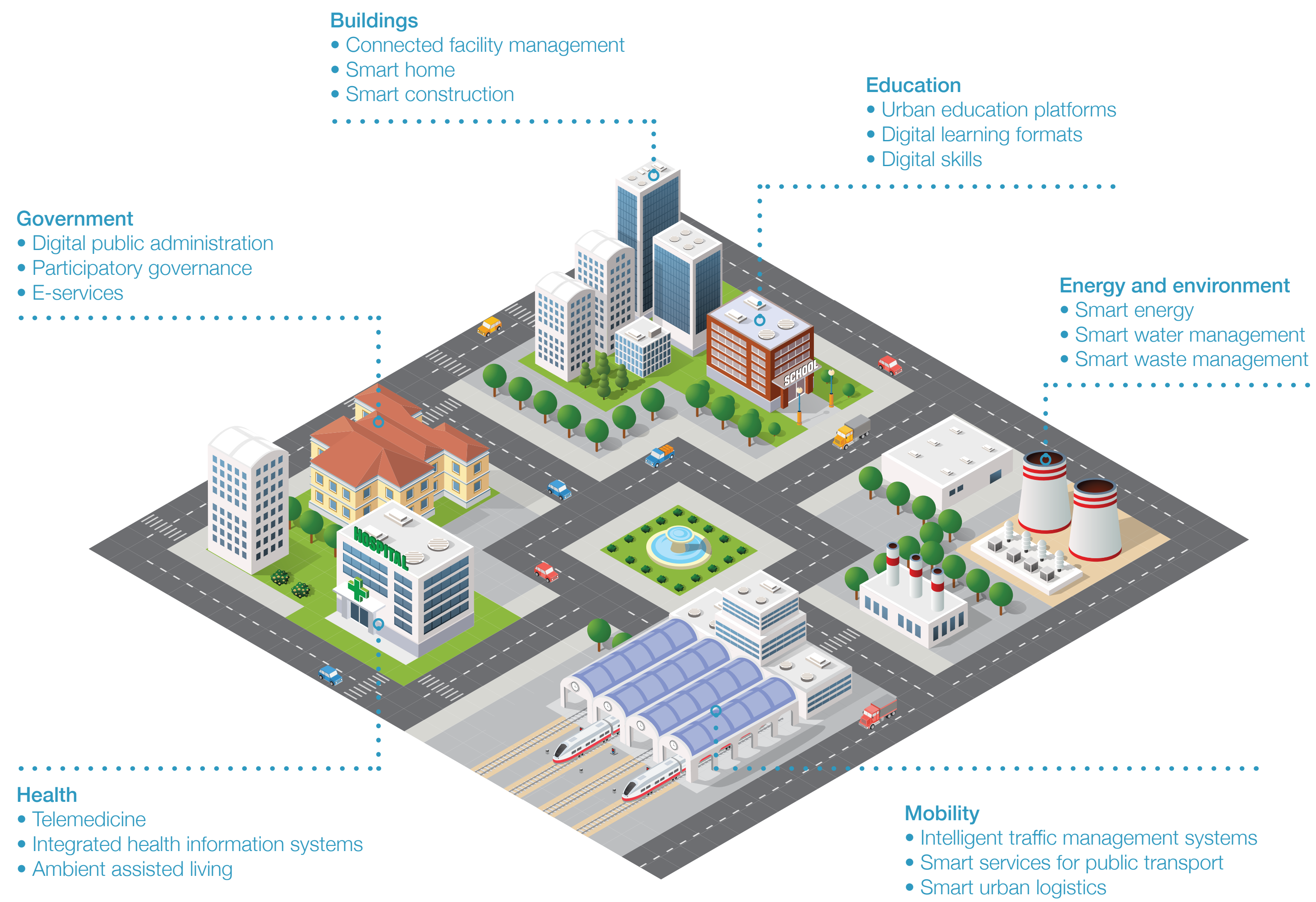
The 5G network will much better enable virtual shopping. E-commerce is already surging in major economies, led by the United Kingdom, China and the United States. The more people shop online, the better the logistics process in fulfilling orders needs to be. A 5G platform will allow companies to vastly improve their delivery logistics and supply chain management.

Supply chains will need to be fully transparent and trackable. Predictive analytics will provide a competitive advantage to some retailers. Consumer expectations about shipping times will encourage companies to use advanced robotics and automation. All facets will be better enabled by a 5G network.

Industrial real estate

Already, successful retailers understand that customers want convenience, immediacy and product variety. The roll-out of 5G will accelerate the ability of retailers to meet customers' demands. Real estate will be a factor in meeting that demand because it allows retailers to execute their strategy.

Retailers emphasise time-to-market and proximity to consumers. In fact, proximity to the customer and efficiency via modern facilities are the most important drivers of industrial real estate. Technology changes and the introduction of 5G networks will sharply improve supply chain efficiencies. This will provide savings, and profit margin, to retailers, brands, consumers and industrial real estate owners.



By 2024, we can expect:

+8.4 billion
mobile broadband connections

+8.8 billion
mobile subscriptions

+6.2 billion
mobile subscribers

Source: Ericsson Mobility Report, 2019

8 https://www.goldmansachs.com/insights/pages/virtual-and-augmented-reality.html
9 Quoted in https://inform.tmforum.org/data-analytics-and-ai/2017/04/idc-predicts-ten-fold-increase-data-2025/
10 https://www.ericsson.com/en/mobility-report/reports/june-2019

Words of warning

No industrial revolution occurs without some social upheaval. There will be a myriad of challenges that society, led by governments, need to face. They range from how 5G technology affects capitalism, through to personal identification and security, to cost.

In previous revolutions, human input into change was much greater than is anticipated in the 5G expansion. The roll-out of assembly lines in car factories didn't only produce more vehicles, it also produced more jobs. The 5G revolution is based on how technology can be deployed effectively. Will that mean that corporate profits benefit more from 5G than wages?

The roll-out of the 5G network is hugely expensive. If governments don't play a role in managing the transition from 4G to 5G, companies will demand high prices to get a return on their investments. Any transition could become much less egalitarian.

In a 5G world where everyone is connected, security becomes much more of an issue. The network itself will provide some solutions. For example, blockchain technology – which can underpin financial services and smart legal contracts - will be much better enabled in a 5G network.

There is also an unknown, and partly intangible, personal cost of technology. How do people relate to each other? What do they do with their idle time? The 5G network will change the way we operate as human beings. And finally: are people ready for another revolution?

The final say

The next industrial revolution is coming soon. The roll-out of 5G technology will enable a low-latency interconnectedness between humans and objects that will change how we live, how we work, how we relate and our impact on the earth.

Some cities and countries are already spending tens of billions of dollars to roll out the network. As that occurs there will be enormous opportunities from creating smart cities and advancing health and education outcomes through to reinventing real estate, entertainment and transportation.

The complete impact of a functioning 5G network is impossible to forecast, a bit like trying to predict in 2007 how smart phones would change the world. All that is known is that in a decade from now, society will have changed.

Nirvana, however, only happens when all societies can access and share in a 5G world. That's when the revolution truly transforms the fabric of working, socialising and living.

On the ground

Craig Keary embodies the philosophy of AMP Capital in the Asia-Pacific regions' individual economies – on the ground, future focused, and in tune with the human core of investment markets.

Story by SIMON ANDERSON
Pictures by NIC WALKER

Craig Keary is speaking from Osaka, Japan, early on a Wednesday morning. He is there for the Australia-Japan Business Co-operation Committee annual conference and has just flown in from Hong Kong.

The AMP Capital Managing Director of the Asia-Pacific region will head to Beijing later in the week and then fly to Sydney seven days later.

Balancing the travel with family commitments has become a core life skill.

"WhatsApp has become our family's friend," Keary says without irony. "My wife and I live in Tokyo. My daughter has just gone back to Australia to go to university and my son is already at university in Canberra."

"When I'm back in Australia I see the kids and my wife sometimes comes with me when I'm travelling."

Keary's children also visit Japan during their university breaks, which is an important routine for the family unit.

He loves living in Tokyo – "it's an amazing city, efficient and clean" – and is active in sharing his observations. In one LinkedIn post, he writes about the similarities between continuous improvement in a ramen noodle restaurant and goals-based investing for AMP Capital. Both are about understanding the client or customer's goal and tailoring strategies or recipes to meet them, he writes.

It is a very different life to his suburban upbringing in North Rocks, in north-western Sydney. The family home is still in that region of the city, but Keary doesn't spend a lot of time there.

"I'd say 75 per cent of my time is in Asia and 25 per cent in Australasia."

Keary doesn't often use the term "Asia" when referring to work.

"Typically, in Australia we think about Asia as a block, but each country is very different. Trust is critical to everything we do in each country, like it is in Australia and New Zealand, but different economies are looking for different things. It's all about understanding what the economies are looking for," he says.

"Understanding each culture and treating each as different, helps build relationships for the long term. Of course, in each country you must build trust, have mutual respect and be prepared to collaborate.

"If we weren't embedded in the region we would be treated very differently."

China and Japan are the second and third largest economies in the world in gross domestic product terms. South Korea is ranked number 11. Each is at very different stages of development. China is a fast growing, urbanising economy colloquially known as the 'world's factory'. Its economy is forecasted to take over the United States as the world's largest in coming years. Its growth has substantial flow-on effects for the economies around it.

"Generally, the reputation Australia has across its key trading partners China, Japan, and Korea is very strong and that makes doing business easier. It's one of the reasons we have been successful"

Japan is among the world's most industrialised economies, although the past two decades have seen relatively little growth. It has an ageing population which provides its own unique challenges.

South Korea's economy has been dominated by major conglomerates and over the past 20 years has evolved into one of the leading high-tech industrialised nations. While it has become one of the world's top exporters, it has largely invested domestically, but now is moving to invest offshore.

All three have different political and social systems. Understanding the differences is critical to success, Keary says.

"Japan has an ageing population and a low interest rate environment, so we need to provide products that meet that demand. It is very important to build trust in Japan and keep strengthening that trust. Being respectful and mindful of the Japanese culture is really important when doing business," Keary says.

"In China, the pension and wealth management systems are starting to evolve and they want insights into that. Australia has a very good pension and retirement system and the Chinese are looking for learnings from that. We have a pension joint venture in China and the value we are bringing includes the knowledge we have.

"Again, it's about trust and also about your reputation. In China it is also about mutual collaboration. You need to be looking for a win-win situation for the various parties," he says.

"In Korea, it starts with trust, but they really are looking for assistance. They are looking to evolve their pension system and to invest offshore and we are trying to work with them. We have experience in investing in offshore markets and we end up hosting a lot of delegates to Australia."

While each country is looking for something different, they do share a common purpose.

"There is a strong desire from people within the economies to improve everyone's lives, by creating a better retirement system, or a better investment system, or by thinking about ESG (environmental, social and governance) initiatives," Keary says.

"Generally, the reputation Australia has across its key trading partners China, Japan, and Korea is very strong and that makes doing business easier. It's one of the reasons we have been successful."

It doesn't take much time with Keary to appreciate how much he enjoys thinking about the different economies in the region. Sometimes when you ask him a question, he warns you that he is about to get on a roll. And he does.

He's unsure of how many hundreds of thousands of travel miles he has clocked up since taking his job of running the AMP Capital business in the Asia-Pacific region, but he has learnt of few new skills.

"I had to quickly adjust to working remotely. My office is my Surface Pro (laptop) and my iPhone. I know how to use technology. I'm completely paperless," Keary says.

He adds that working remotely means developing a different relationship with his boss. In his case it's Adam Tindall, Chief Executive Officer of AMP Capital.

"It's different not being in the same country. Our relationship has actually improved. We have been able to achieve plenty and the trust between us is very high," Keary says.

Two years into his stint based in Tokyo, Keary says he has started running again: "It helps me relax."

"Oh, and I'm doing a PhD. I enjoy that because it stimulates me mentally." His doctorate, through the University of Western Sydney, includes a thesis on financial planning, currently one of the more controversial parts of the financial services industry in Australia.

Keary himself, after almost two decades at HSBC and stints at Commonwealth Bank of Australia and Westpac Banking Corporation, seems both stimulated and relaxed by his role at AMP Capital.

"I've got an Asia-Pacific role so I could be anywhere. I am inspired by our clients, both by the value we bring to them and what we learn from them. Being on the ground with them, at the intersection of a diversity of cultures, is both exciting and a challenge."

"There is a strong desire from people within the economies to improve everyone's lives, by creating a better retirement system, or a better investment system, or by thinking about ESG initiatives"

A force for good

Environmental sustainability and social consciousness have long been core to Emily Woodland's personal ethos and way of life. This foundation powers her vision, strategy and passion as AMP Capital's co-head of sustainable investment.

Story by SIMON ANDERSON
Pictures by NIC WALKER

"As someone who is very outdoorsy and in tune with nature, I've always been very passionate about environmental issues"

Emily Woodland was running the peaks and forests of her adopted home Hong Kong, training for a 250km ultramarathon in the Gobi Desert, when she started questioning her traditional portfolio management career.

The UK-born finance graduate, who was posted to Hong Kong not long out of university, had been managing a long-short portfolio in an investment bank when she had the epiphany that short term, high-turnover trading didn't sit right with her personal beliefs.

"As someone who is very outdoorsy and in tune with nature, I've always been very passionate about environmental issues," she says.

"I started to question the investment model we were following. I questioned why there wasn't any accountability for the non-financial impacts of the companies that we were investing in."

Emily took herself to evening classes to do a two-year master's degree in corporate environmental governance at the University of Hong Kong, with the goal of finally marrying her personal beliefs with the investment world. The change ultimately led her to AMP Capital, where today she leads the sustainable investing team globally.

"I wanted to be a part of financial capital being used as a force for good – directing funding to companies that are doing the right and powerful thing."

And ultramarathons?

"Whatever I do in life I do rather wholeheartedly," says Emily, who finished as the 4th female and 17th overall that year in the Gobi Desert, and runs ultra-marathons to this day.

"I started running when I was at university and when I came to Hong Kong found its big trail running scene. I realised I was a lot better suited to running far rather than running fast."

“I started running when I was at university and when I came to Hong Kong found its big trail running scene. I realised I was a lot better suited to running far rather than running fast”

Emily Woodland running the 170km Ultra Trail due Mont Blanc, 2017

Q&A

Why does sustainable investing matter and how should it be incorporated into portfolios?

It's important when you're talking about ESG to distinguish between morals and ethics, versus whether you think there is an investment-related case.

Some people consider personal values as their main driver. But our team very much approaches this from the perspective that it also makes real investment sense to consider ESG factors in your decision-making process.

We're looking at an increasingly resource-constrained future facing off against burgeoning populations; we've got systemic issues such as climate change, data security and the relentless abuse of human rights.

Any businesses that are properly factoring these considerations into their operations are managing their downside risks better, and potentially taking better advantage of the associated opportunities. And they are more likely to outperform, because these types of non-financial factors and externalities are going to become more prevalent and priced into organisational cost bases going forward.

Conversely, companies that aren't building those constraints into their strategy are likely to increasingly lag their peers that do.

Therefore, if you are not considering these factors in your investment process, you're actually doing your clients a significant disservice.

Why is sustainable investing growing so fast around the world? What kind of problems are portfolio managers trying to solve?

The term ESG is exploding globally, but there's a bit of confusion as people struggle to wrap their heads around the growth and what it really looks like.

Ethical investing - which is saying ‘these are my values and these are the sectors or companies I don't want to invest in’ – has been around in various forms for a long time. But it's upping the ante now. It used to be things like tobacco or gambling and now it's starting to move into questions like ‘what are we doing about animal welfare or fossil fuels?’ These kind of exclusionary tactics – where people omit entire sectors from the portfolio – are growing a lot. You're seeing a lot of passive solutions out there taking the global universe and then chopping out certain sectors or activities and calling that ESG.

That’s not really how we view ESG. We go the next step along the spectrum and view ESG and sustainability factors as significant, intangible drivers of company value. You need to have a proper way of integrating that into how you value a company over the long term. That's an investment consideration rather than only an ethical consideration. There are different degrees of how well that is being done globally.

Another style approach which is growing rapidly is sustainability-themed investing, which allows investors to align their portfolio with a particular theme, such as water, energy efficiency, medicine, education or agriculture.

The next stage along the spectrum receiving increased attention is impact investing. That's investing in companies or projects making an intentionally positive contribution to environmental or social issues, where the business model revolves around presenting a solution to a sustainability-related challenge and the impact of these efforts is measured and reported.

What’s driving the underlying demand?

More and more people want to see their investments not only doing well for themselves, but also doing good for society and the planet.

With the advent of social media and increasing amounts and speed of information available, people are much more aware now of sustainability-related issues. Civil society is starting to demand more action and holding companies to account for their impacts.

It’s also partly a shift in the underlying asset owner. There's a generational shift of assets occurring to an asset owner who is much more in tune with global challenges. There's also a gender shift underway, with women controlling an increasing proportion of assets.

How can better ESG behaviour benefit a company's bottom line?

First of all, a company that is properly considering its material ESG risks is managing its downside better. Companies with superior governance who are managing their environmental and social risks thoughtfully are less susceptible to big, sudden downside shocks. There've been plenty of examples of this over time.

The types of ESG-related risks companies are subject to include increasing regulatory and legal requirements, financial, reputational and operational risk - all of which can affect cash flows, profits and even their license to operate.

It's also about managing opportunities. Forward-thinking companies with well-run business models that properly capitalise on transformative changes in the global economy can offer attractive investment upside as well as creating a positive impact.

What future trends do you see emerging in sustainable investing?

There's an increasing level of sophistication with which managers who call themselves ESG have actually got to demonstrate what they're doing. Ongoing, it won't be good enough to simply label yourself with those badges. You will have to prove how and why you're differentiating yourself in the space.

With that comes things like impact measurement and reporting, which is a trend that we're going to see more and more of down the line.

There will also be increasing calls to action on engagement – using our influence to help change companies for the better and to work collaboratively within our industry to achieve this.

One of the other global trends is going to be the question of fiduciary duty – to what extent you have to consider ESG factors as part of your fiduciary duty.

In the past, ESG was considered to be something that involved a trade-off in returns. There's been a very big mindset change, particularly in some of the more forward-thinking jurisdictions around the world, that it is actually an integral part of your fiduciary duty. This is on track to be written into various pieces of legislation and it's a trend that's definitely not going away.

What advice would you offer to a manager wrestling with these issues on behalf of their members?

The first place to start is to be very clear on the ethical hard lines of their members – to really understand what their members do and don't want to invest in.

Have a clear position on topical issues like fossil fuels and climate change and clearly articulate the investment implications of what eliminating certain hard lines from the portfolio might mean.

Then take it a step forward and educate the members as to what ESG integration means for investment value and drivers. Explain that things could look very different in a resource-constrained future where there's much greater regulatory, legal and operational risk than there was in the past and what that potentially means for the value of their investments going forward.

Be discerning about the choice of investment managers, in terms of how thoroughly this is being considered in the various investment options. For example, consider whether there is only a screening process, or whether there is a much more active consideration of these factors. Be more proactive around things like engagement for positive change and investing for impact. Don't just accept clever marketing - look in-depth at what the managers are actually doing, rather than simply ticking boxes.

"There's a generational shift of assets occurring to an asset owner who is much more in tune with global challenges. There's also a gender shift underway, with women controlling an increasing proportion of assets"

"In the past, ESG was considered to be something that involved a trade-off in returns. There's been a very big mindset change"

Emily Woodland running the
120km Lavaredo Ultra Trail, 2016

"AMP Capital is globalising its investment offerings - it makes sense to be globalising our ESG capabilities alongside that"

How does AMP Capital's approach to impact investing differ from other managers?

Impact investment in general, so far, has taken place via private markets. That's led to some challenges in terms of it being fragmented and challenging to scale. These projects can be quite small and geographically dispersed. Because they're in private markets, not everybody has the capacity to invest.

AMP Capital is questioning what role public markets have to play in that, and whether using public market asset classes can really help to mobilise assets at a greater scale, and to have more positive impact.

There are a number of ways you can have positive impact via public markets, which we have extensive experience in.

First of all, it's about choosing the right companies for your portfolio whose business models are absolutely intentional. This question of intentionality is a critical one. You have to look very carefully at the company's core capabilities, where the bulk of its revenue and profits are coming from, and to what extent that is actually addressing a sustainability challenge. You can look at companies that are, for example, doing really great things in renewable energy, but it's only five per cent of its business and the bulk is in fossil fuels. I personally don't view that as positive impact, whereas some of the products that are out there labelling themselves 'impact' do.

We're quite lucky in that we've got some great resources and capabilities internally in AMP Capital in terms of identifying great companies that have this ethos built into the business model – and also present attractive investment opportunities.

Secondly, large asset managers are privileged to have significant power to create positive impact through voting and direct engagement — helping companies change their business models and practices for the better. This is something our team has been skilled at doing for over 20 years.

AMP Capital's ESG team is now global – based in London, Wellington and Hong Kong, as well as Sydney. Why was that move made?

This has been a conscious decision. Because AMP Capital is globalising its investment offerings, it makes sense to be globalising our ESG capabilities alongside that.

Furthermore, when we talk about sustainability issues and how to create positive impact, these are by their very nature global challenges, and there are great companies across the world taking steps to address them.

There's also a lot of opportunity, particularly in Asia, where the ESG field is generally quite underdeveloped and there's a real lack of expertise on the ground. What we tend to find is that when something in Asia catches on, it catches on very quickly, and we're well positioned to be a significant player in the region when that happens.

Airports of the future

Airports are quietly undergoing an evolution worldwide. Here we explore where the modern airport experience could land in the future.

For many, the modern airport experience leaves much to be desired. Endless queues, heavy luggage, and repeated security checks are among the least-favourite airport experiences of travellers worldwide.

However, the sector is quietly undergoing a revolution. Artificial intelligence, biometric technology and autonomous vehicles are transforming the airport experience, changing everything from check-in to touchdown for the better.

"Air travel is one of the sectors most significantly impacted by technology," says Boe Pahari, AMP Capital's global head of infrastructure.

"Everything from passport control to the digitisation of luggage handling to online parking is changing the nature of the airport experience."

AMP Capital has long been a fan of the airport sector.

In 2018, the global fund manager bought a 49 per cent stake in the UK's London Luton Airport for investors in its global infrastructure equity strategy.

In 2017, AMP Capital bought 100 per cent of Leeds Bradford Airport in the north of England, and it has long held stakes in other airports including Newcastle in the UK and Melbourne and Launceston in Australia.

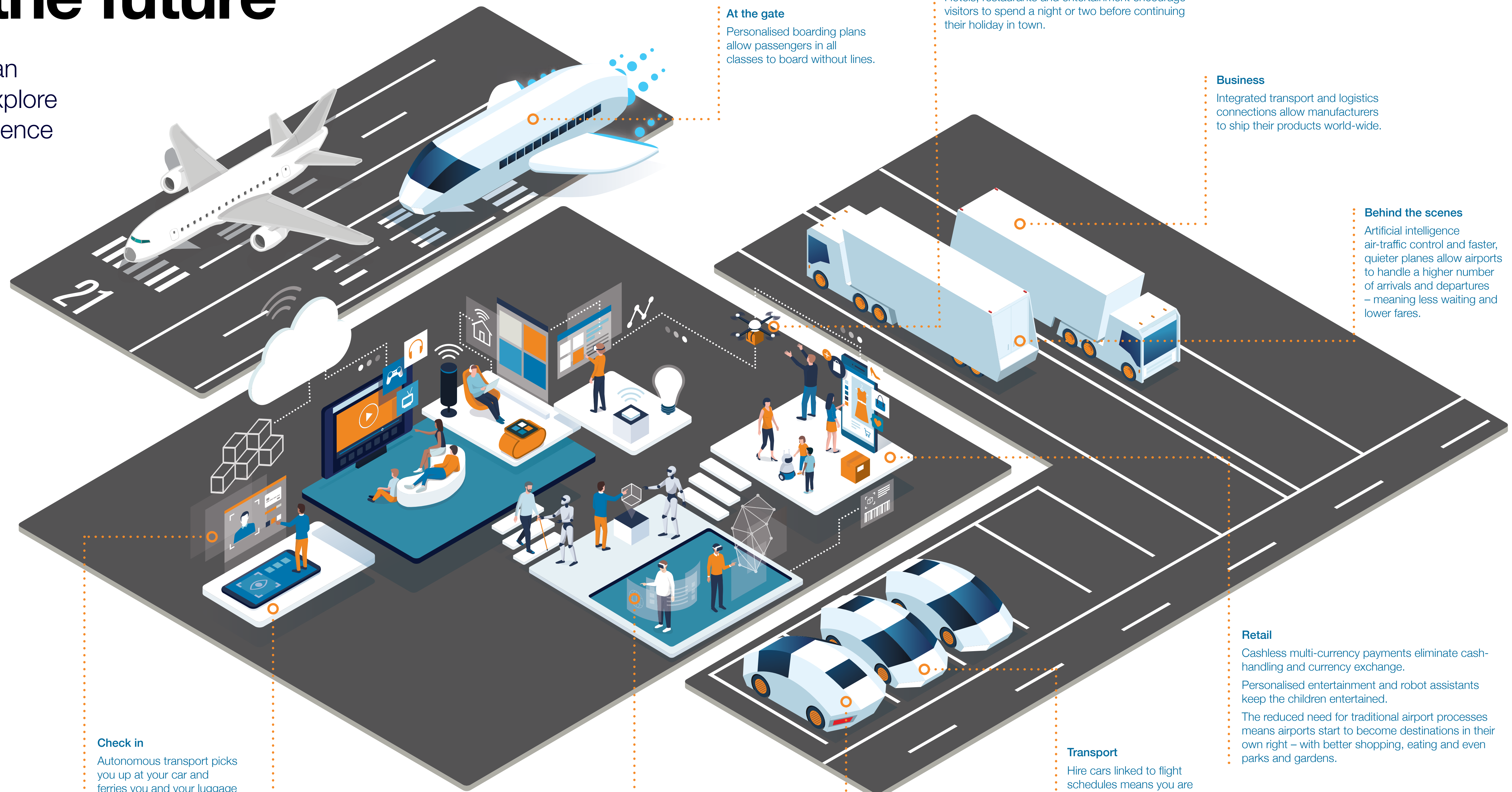
Part of the attraction is the potential for technology to transform the airport experience.

Already, flyers are benefiting from self-check in on their mobile phones, automated bag drop counters and fast facial recognition at passport control.

But the technological revolution is only just getting started.

AMP Capital sees a future where every aspect of the airport experience is touched by technology, reducing wait times and eliminating queues.

The potential is there for a very different airport experience.



Arrivals

Autonomous baggage handlers deliver your luggage directly to your car – or even to your home.

Hotels, restaurants and entertainment encourage visitors to spend a night or two before continuing their holiday in town.

At the gate

Personalised boarding plans allow passengers in all classes to board without lines.

Business

Integrated transport and logistics connections allow manufacturers to ship their products world-wide.

Behind the scenes

Artificial intelligence air-traffic control and faster, quieter planes allow airports to handle a higher number of arrivals and departures – meaning less waiting and lower fares.

Retail

Cashless multi-currency payments eliminate cash-handling and currency exchange.

Personalised entertainment and robot assistants keep the children entertained.

The reduced need for traditional airport processes means airports start to become destinations in their own right – with better shopping, eating and even parks and gardens.

Check in

Autonomous transport picks you up at your car and ferries you and your luggage through the airport.

Automatic biometric check-in means you can go straight to gate – or the shops.

Passport control

Facial recognition cameras automatically review passengers as they pass checkpoints without stopping.

No need to leave your friends and family behind – the constant monitoring means even non-passengers can wander right up to the gate.

Security

Remote 3D imaging means no security stops, no queues at X-ray machines – and no removing laptops and liquids from your bag.

Parking

Predictive artificial intelligence means parking is always available near your terminal while in-car guidance directs you to your own vacant parking spot.

Transport

Hire cars linked to flight schedules means you are never too late – or too early.

The impact of political sagas on global markets

Between impeachment talks in the US, the ongoing Brexit fiasco in Europe and protesters in Hong Kong rallying in the streets – you could be forgiven for assuming global economic markets are a mess. However, these political dramas don't necessarily translate into market volatility.

Story by
DIANA MOUSINA,
Senior Economist, AMP Capital

The United States

One of the latest political developments in the US is an impeachment inquiry opening into President Donald Trump, announced by speaker of the house Nancy Pelosi. Ms Pelosi set the scope of the inquiry to focus on the unfolding revelations about President Trump's dealings with the Ukraine, and the accusation that he withheld aid to leverage for information about his political rival, Joe Biden.

This comes in the midst of ongoing trade tension relations between the US and China, which currently show no signs of a resolution.

The impeachment inquiry does cause a bit of uncertainty for markets and for business, particularly in the US. However, we ultimately believe that share markets will look through this noise.

The United Kingdom

With a rapidly unfolding – yet somehow stagnant – situation in the UK, it's a tough ask to cement predictions.

However, we do have some observations about what is materially impacting markets to date.

Although the happenings and words of UK Prime Minister Boris Johnson often dominate headlines - especially with recent election talk, debates and fallout - it's the ongoing Brexit saga which is having the most impact on markets.

Brexit is a risk for financial markets because it creates uncertainty for businesses and consumers, especially the longer that the debate on details of the exit agreement between UK Parliament and the EU persists. We note a previous position that the Brexit saga is not disastrous for the global economy. The UK is wearing the brunt of the impact and there has probably also been some negative flow through to the Eurozone economy. However, the most negative outcome of a 'no deal' Brexit looks very unlikely now, which would have created the biggest negative risks for the UK and Eurozone.

The impact of the UK's moves are not wholly contained, certainly we can expect shockwaves to reverberate around key decision points, but it won't be as cataclysmic as global headlines suggest from a markets perspective, assuming no entirely unexpected developments unfold.

Chart 1.
Global composite PMI vs World GDP

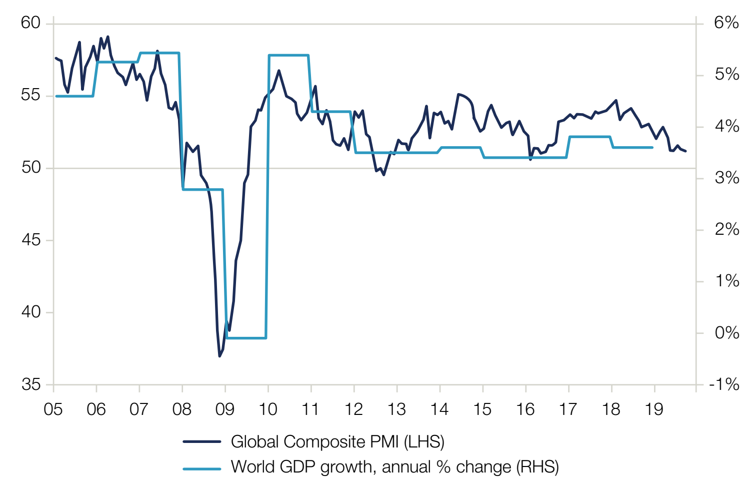


Chart 2.
Global composite PMI vs China GDP

Source: AMP Capital, Markit and Bloomberg 2019

China: Trade tensions and taking to the streets

Tensions in Hong Kong are ongoing, with protesters making international headlines and continuing to clash with local policy. In terms of market impact, so far, this seems to be contained to Hong Kong, and is not being felt by global markets.

As far as China goes, the trade tensions with the US continue to impact global markets.

Lately, there's been good news and bad news on the long-standing dispute. The good news is that tensions haven't gotten any worse, which is an improvement on recent updates. What we don't want to see is a re-escalation of trade tensions, and more trade tariffs to be imposed on top of what is already in place. That would have a negative impact on share markets.

At the moment, there's a lot of uncertainty as to how this will end, and how much further the dispute can extend for. We think that ultimately President Trump does want to form some sort of deal with China before the election in 2020, but that may take some months. We don't expect a quick resolution on this.

More broadly, China's economic data has been ok recently. There's been some signs that the manufacturing sector in China is stabilising, albeit at a low level, because of the negatives flow-on effects from the trade war with the US.

Further, Chinese policy makers are putting in place a lot of different forms of stimulus into the economy, and we think that is finally showing up in the data. That should be a positive for Chinese growth in the near term, but any further escalation in trade would de-rail that recovery.

Australia

As is always the case, the housing market continues to dominate the hearts and minds of Australians investors and market watchers. Speculation of boom time conditions returning have started to surface, but the data paints a slightly different picture.

According to figures released towards the end of last quarter from CoreLogic, capital city dwelling prices rose 1.1 per cent in September. Although this seems minor, it is a turnaround compared to a 10.2 per cent decline over a 21-month period, which is worse than what was seen during the Global Financial Crisis of 2007/8.

Auction clearance rates also give an indication of what's to come for the housing market in Australia over the next year. The rebound in auction clearance rates points to a continuing rebound in home prices in the key markets of Sydney and Melbourne. Based on past relationships and patterns, the current level of clearances points to annual house price growth rising to around 10 to 15 per cent over the next 9 to 12 months.

Although the bottom of the property cycle is upon us, our base case remains that house price gains will be far more constrained than what Australia has seen in most recent boom time conditions, particularly at its peak in 2016. Key factors to consider here are that household debt to income ratios are much higher, bank lending standards are much tighter than they have been during previous housing recovery cycles.

About AMP Capital

AMP Capital is a global investment manager offering private market and public market solutions to clients, with a strong focus on ESG.

Our home strength in Australia and New Zealand has enabled us to grow internationally, and today we have operations in Dubai, China, Hong Kong, India, Ireland, Japan, Luxembourg, the United Kingdom and the United States. With over 250 investment professionals working in 17 locations around the world, we're able to deliver the capabilities and investment solutions that help our clients achieve their financial goals. We also collaborate with a network of global investment partners, leveraging our shared capabilities to provide greater access to new investment opportunities.

We are entrusted to manage A$200 billion[1] in assets under management on behalf of our clients, across a range of single sector and diversified funds. We work with more than 300 international clients and manage almost A$19 billion in assets on their behalf[1].

Direct real estate

With a heritage spanning over 50 years, we actively manage real estate across all stages of the cycle. We realise true value for clients through the investment management, property management and development of a portfolio of some of the most iconic shopping centres, industrial estates and office buildings, from Australia's first skyscraper to the transformational Quay Quarter Sydney development.

Direct infrastructure

Backed by a truly global infrastructure platform, we're able to capture what we consider to be the best investment opportunities from around the world. It's earned us a name on a global stage, and a place as one of the top 10 infrastructure managers worldwide[2].

With 30 years' experience, we bring a breadth of insight that spans energy, power, transport, utilities, airports, seaports, communications infrastructure, social infrastructure, aged care and more. The combined expertise of close to 100 infrastructure investment specialists also allows us to cover all aspects of capital structure giving our clients more investment options for their future.

Public markets

Our well-established public markets business, including fixed income, listed equities and multi-asset solutions, requires shifting from traditional actively managed products to a specialist active offering of targeted solutions which meet specific client needs. Our public markets team remains focused on delivering investments that match our client's needs as we manage A$140.7 billion[4] across our global fixed income, multi-asset solutions, Australian equities, global listed real estate, global listed infrastructure and global equities solutions.

ESG and responsible investment

We believe considering ESG factors provides greater insight into areas of risk and opportunity that impact the value, performance and reputation of investments we make on behalf of our clients.

We recognise that all investments we make have a purpose and a wider impact and it's up to us to help make it a positive one for our clients and the global markets and communities in which we invest.

By looking at what we do as part of a bigger picture, we've developed a portfolio of responsible investment options for our clients. We are one of the first investment managers globally to sign the UN-backed Principles for Responsible Investment (PRI)[3]. Many of our funds have been recognised for their ESG performance. We continue to challenge and evolve our thinking, our processes and product offerings to meet our clients' growing expectations, partnering with them as they too look to fulfil their own goals and commitments to responsible investing.

MELBOURNE AIRPORT, AUSTRALIA, AT SUNSET

GRESB INFRASTRUCTURE Sector Leader 2019

1. As of 30 June 2019 Represents draw down amount on a fully funded basis
2. Willis Towers Watson Global Alternatives Survey 2017
3. www.unpri.org
4. As of 30 June 2019

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