2019 OUTLOOK
CREATING OPPORTUNITIES

Corporate & Institutional Bank

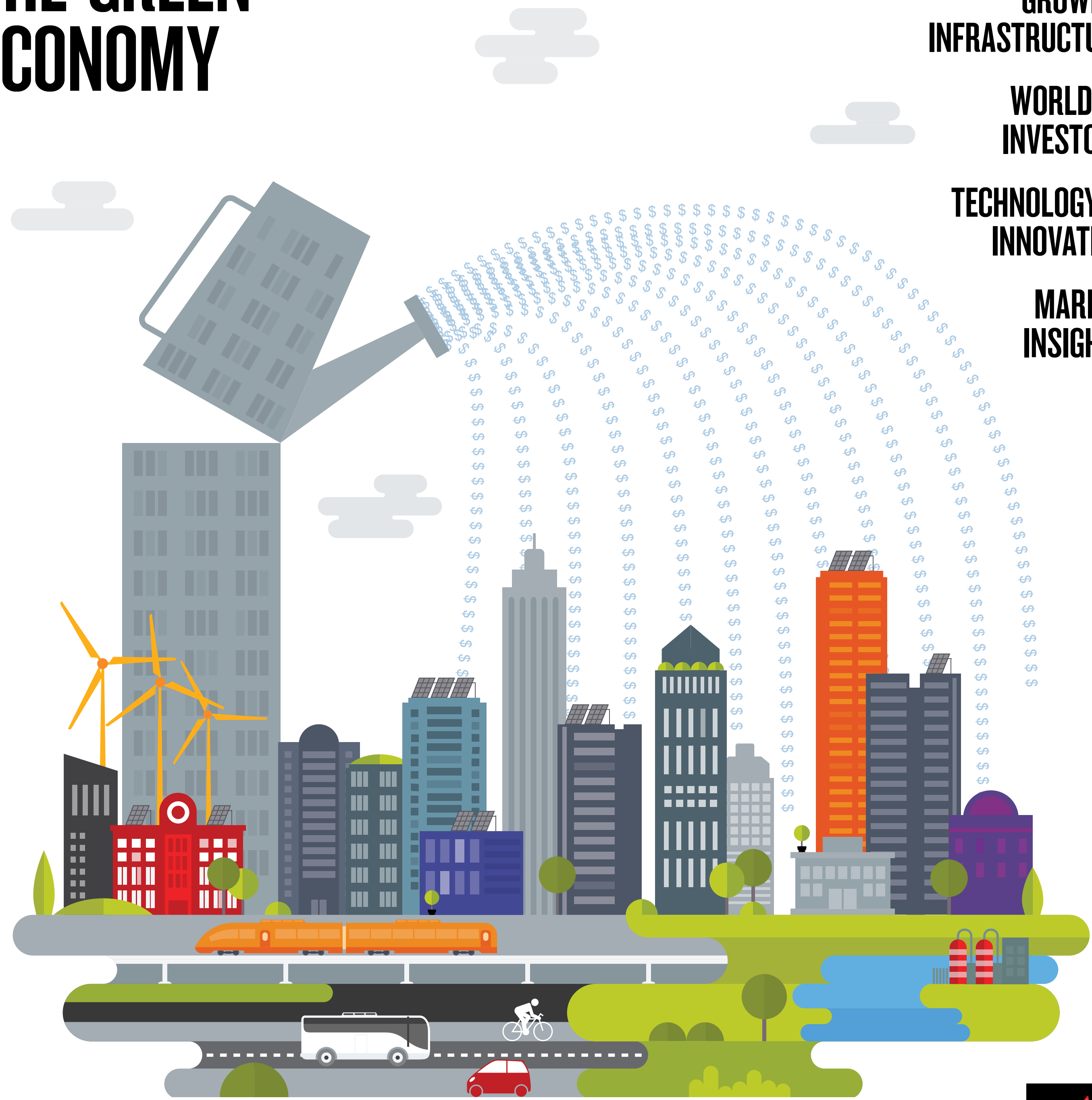
THE GREEN ECONOMY

GROWING INFRASTRUCTURE

WORLD OF INVESTORS

TECHNOLOGY & INNOVATION

MARKET INSIGHTS



National Australia Bank

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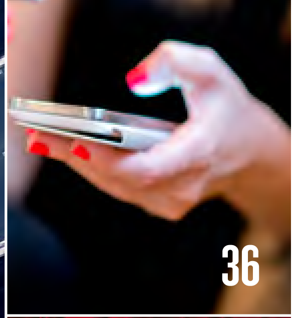

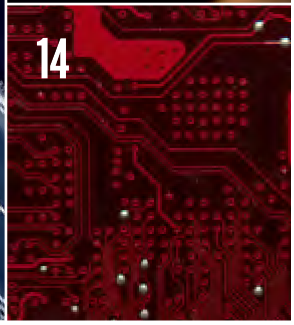

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FINANCING A MORE RESILIENT AND SUSTAINABLE ECONOMY

Globally, the finance sector is directing more capital to address social and environmental challenges. Australia has more work to do on this front.

BY ERIC WILLIAMSON

IT'S FANTASTIC TO see that sustainable finance is becoming the norm internationally. But for Australia to fully embrace a model where capital markets help to address social and environmental challenges, more work needs to be done.

That's why NAB was proud this year to co-host with IAG a ground-breaking meeting held under the umbrella of the United Nations Environment Finance Initiative (UNEP FI).

The Sydney UNEP FI conference brought together all the major banks and a wide range of institutions across the financial sector including investors and insurers, together with regulators, ratings agencies and academics.

NAB has been a member of the UNEP FI since 2002 because we believe in the importance of working to develop a sustainable global finance sector. As a member of the UNEP FI Global Steering Committee, I've seen the progress the initiative has made.

UNEP FI's activities are divided into three streams – investment, insurance and banking. The investor and insurance members have developed the Principles for Responsible Investing (PRI) and the Principles for Sustainable Insurance (PSI) respectively, which represent best practice for organisations and have been widely adopted.

NAB has joined 27 other member banks, including Westpac in Australia, to develop Principles for Responsible Banking.

"The finance sector is directing ever-greater amounts of capital to address social and environmental challenges."

New sources of growth

Economic regions and countries are aligning policy signals and setting frameworks to enable the finance sector to underpin the new engines of green and socially responsible growth, to boost jobs and align with the UN's Sustainable Development Goals – the SDGs.

Trillions of dollars need to be deployed to achieve the objectives of the Paris Agreement and SDGs every year, and much of this will need to come from financial and capital markets.

Globally the finance sector is directing ever-greater amounts of capital – through lending, insuring and investing – to address pressing social and environmental challenges.

In 2017 alone, US$200 billion was issued globally in green bonds[1], over $255 billion was invested in renewable energy[2], and $35 billion was invested into impact investments[3].

More than $22 trillion of capital has been committed to investing with a responsible investment mandate, which is more than a quarter of the world's professionally managed assets.

Momentum is growing

Momentum in responsible investing and finance is building in our region too.

Much of this is coming from the investment community – our green finance teams often report back that demand is outstripping supply for green debt products.

There are other factors too – rising consumer demand for finance to play a role in delivering social outcomes, as well as the consistently strong performance of responsible investments.

Since 2014, Australian public and private institutions have issued over A$8.3 billion in green bonds. All four of the major banks have issued certified green bonds, with NAB leading the first domestic green bond issue in 2014, and more recently, Sustainability Bonds.

Green and sustainable debt

In fact, the speed of innovation in the capital markets since those first green bonds has been dramatic.

We've been developing other new products, such as asset-backed and mortgage-backed securities that have a green tranche, and social impact investments that support outcomes such as improving gender diversity and reducing the rates of re-offending by parolees released from prison.

In the renewable energy space, NAB recently financed our 100th green loan backing wind and solar farms.

In the loan market, new Green Loan Principles were issued by the Loan Market Association in March. NAB was part of the committee that drafted the principles.

The Principles aim to standardise and codify what qualifies as green bank lending, helping to make sustainable finance relevant to a wider cohort of borrowers.

In addition to the finance sector, both the Queensland and Victorian Treasuries and Monash University and several corporates have issued green bonds. Australian Catholic University has issued the world's first Sustainability Bond.

Financial stability

Banks globally recognise the demand for finance of green and sustainable assets. We, the financial sector, have a large and growing role to play in the green-social-and-sustainable debt and capital markets.

A finance sector that is working to build social, natural and economic capital will help to reconnect finance with its purpose – building a world our citizens want to live in and pass on to their children.

More broadly across the economy, a more sustainable finance system in Australia and New Zealand will deliver:

- Greater financial stability from managing shocks and strains, such as climate change impacts;
- Enhanced financial returns through explicit consideration of environmental, social, corporate governance (ESG) risks and opportunities;
- Better alignment with what consumers want – that their savings and investments are being invested responsibly and ethically.

The need for a road map

As Erik Solheim, the head of UN Environment has said, the financial sector has enormous transformative power.

UN Environment has been working with task forces in various countries, including the UK, Canada, Norway and the EU, to develop national action plans or road maps to enable the finance sector to do the heavy lifting required to deliver a more resilient and sustainable economies.

UN Environment and the World Bank agree a road map needs to be consistent with national and global objectives including the Paris Agreement and the United Nations' Sustainable Development Goals.

A road map will set out clearly who needs to do what, and when, to enable the transition to a low-carbon and sustainable economy.

At NAB, we're looking forward to working together with other organisations to collaborate on concrete steps of where we go next to develop a sustainable financial sector.

1. CBI Green Bond Highlights
2. Global Trends in Renewable Energy Investment 2018
3. Global Impacting Investing Network Annual Impact Investor Survey 2018

Global growth of Socially Responsible Investment

Region	2014	2016	Growth over period	Compound annual growth rate
Europe	$10,775	$12,040	11.7%	5.7%
United States	$6,572	$8,723	32.7%	15.2%
Canada	$729	$1,086	49.0%	22.0%
Australia/New Zealand	$148	$516	247.5%	86.4%
Asia (excl. Japan)	$45	$52	15.7%	7.6%
Japan	$7	$474	6689.6%	724.0%
Total	**$18,276**	**$22,890**	**25.2%**	**11.9%**

Note: Asset values are expressed in billions. Asia ex Japan 2014 assets are represented in US dollars based on the exchange rates at year end 2013. All other 2014 assets,as well as all 2016 assets, are converted to US dollars based on exchange rates at year-end 2015.

Source: Global Sustainable Investment Alliance

AUSTRALIA'S FIRST GREEN MORTGAGE-BACKED BOND

How a new, green investment product reaches the market.

BY SARAH SAMSON & JACQUELINE FOX

“NAB has committed to reach A$55bn in environmental financing by 2025.”

NAB HAS DEBUTED several innovative green and social bonds in recent years. In 2018, we launched the world’s first mixed green building bond, an A$2 billion residential mortgage-backed securitisation (RMBS) that includes an A$300 million green tranche.

The finance industry has a role to play in building the market for sustainable assets. We’re still in the early days of evolution but we do see this as becoming mainstream in the future.

The starting point for the bond came more than 18 months ago as our bankers worked on ways to meet growing demand from both domestic and international investors for socially responsible investment (SRI) options, including green bonds.

Increasingly, investors are seeking to incorporate sustainability and Environmental, Social and Governance (ESG) measures into their decision making. By creating new investment products, NAB offers investors greater choice about where they direct their money.

NAB believes that we and the broader financial system have a role to play in the transition to a low-carbon economy. We have committed to reach A$55 billion in environmental financing by 2025, including A$20 billion to support corporate finance.

This follows the 2014 launch of the world’s first bank-issued climate bond that financed solar and wind energy generation projects. In 2017, we issued or arranged over A$2.2 billion in green, sustainability and social impact bonds.

Assets to support new SRI supply

NAB has spent significant time assessing its asset pool through the ESG lens to identify a broad range of assets that can support SRI supply. NAB-originated residential mortgages secured by low carbon buildings were recognised as a ready pool of assets that can form the base of new supply for the investor community.

There is a desire to build more low carbon and energy efficient housing, which helps the transition towards a low carbon economy. There is also a growing demand for socially responsible investing. The big question is how do you enable access to that, and how do lenders capture the information needed to support green issuance? At NAB, we see our role as the intermediary that consolidates that knowledge.

The next step was to work within the Climate Bonds Standard certification requirements developed by the not-for-profit London-based Climate Bonds Initiative. NAB developed a framework under which Australian green RMBS could be issued that would give investors confidence the green tranche would be truly green.

Climate Bonds Standard certification

The CBI explains on its web site that the certification scheme is a Fair Trade-like labelling scheme for bonds. It is used globally by investors, bond issuers, governments and financial markets to give priority to investments that genuinely help to address climate change.

The Climate Bonds Standard certification criteria for Australian low carbon residential buildings leverages building codes and minimum energy ratings/certification scheme requirements across various states as a proxy for the carbon emissions performance of the top 15% of residential buildings in each local market. Only new residential housing in Tasmania, Victoria and NSW were deemed stringent enough, at this point in time, to meet the certification requirements.

The A$300 million green RMBS is earmarked to finance NAB-originated mortgages for Australian residential properties that meet the criteria.

It’s the first Australian RMBS to meet the Climate Bonds Standard criteria. It is also the world’s first RMBS with an underlying pool of both non-green and green residential mortgage securities.

Strong demand

NAB’s green RMBS attracted socially responsible funds and more mainstream investors from Australia and overseas and was close to two times oversubscribed. Reflecting the strong demand, the green tranche was upsized from an originally planned A$112.5 million.

Australia’s Clean Energy Finance Corporation made a A$25 million cornerstone investment in the green tranche and described the transaction as “a big leap forward” for the Australian green bond market.

More Australian superannuation funds and other large investors are incorporating ESG criteria into their decision making.

As demand grows, the feedback that keeps coming through from the investor community is the question of whether supply will meet demand. We want to ensure we are innovating on the product side to ensure we can continue to supply product to investors.

MACQUARIE UNIVERSITY SUSTAINABILITY BOND: ONE FOR THE RECORD BOOKS

BY BRAD SCOTT

AUSTRALIA'S TERTIARY SECTOR continues to experience student-driven campus expansion, and to finance such upgrades, Macquarie University recently aligned its financing plans with debt investor demand for socially responsible investments in a record breaking A$ bond transaction.

Over the past 50 years, Macquarie University has grown to be a progressive and widely influential tertiary institution. Ranked in the top 1% of universities in the world, it has over 40,000 students from more than 120 countries, making it one of Australia's largest tertiary institutions. It notably also pioneered the use of debt capital markets as a funding tool among its tertiary peers back in 2010.

Campus growth aligned to UN Sustainable Development Goals

Beyond educational advancement and research successes, the University has long recognised the stewardship position it holds in the community. More than A$1 billion has been invested in recent years in the Macquarie Park Innovation District where campus development has been aligned developed with sustainability principles recognised under the United Nations (UN) Sustainable Development Goals (SDGs).

It was timely then that in planning its future campus growth, the University Council sought to ensure that financing be aligned with its sustainability strategy.

"Macquarie saw demand for long tenors and appetite for socially responsible investments."

Image: Macquarie University – Faculty of Medicine and Health Sciences.

Having decided that the A$ bond market was the best fit for matching its objectives, it sought to match factors with growth in sustainable debt investment mandates and partnered with NAB capital markets to assist.

Macquarie University subsequently formalised a sustainability financing framework to identify how it intends to enter into transactions where proceeds are earmarked for projects that deliver positive environmental and social outcomes. For the financing at hand, it identified SDG-connected commitments related to green buildings, energy efficiency, pollution control, water and land use management, and various socioeconomic advancement initiatives.

Macquarie's 25-year sustainability tranche a world first

With its sustainability framework and funding plans aligned, Macquarie returned to the domestic A$ market in Q3 2018, recognising investor demand for university bonds, long tenors and appetite for socially responsible investments. The strength of Macquarie's credit reflected in its strong Aa2 credit rating and sustainability overlay ensured an overwhelming investor response.

In the final analysis, a $250 million dual tranche transaction was printed consisting of $200 million issued with a 10-year maturity and $50 million in a 25-year tenor, the latter being a world first.

All in all, Macquarie's dual tranche sustainability transaction represents a milestone outcome, while leading the way by example. With such strong global growth in the mandates of fixed income investors for socially responsible investments, NAB expects to see continued growth in this space for many years to come.

FAST FACTS

- First ever dual tranche A$ university bond in the A$ MTN market.
- World's longest ever sustainability bond tranche (25-yr tranche).
- Longest ever A$ 10/25yr weighted average 13yr A$ university financing.
- Offer was two times oversubscribed.
- Equal tightest credit spread for a 10-yr A$ university bond.

BRINGING TOGETHER COUNCILS, UNIVERSITIES AND COMPANIES TO SUPPORT CLEAN ENERGY

BY ROBERT WHITE

CROWLANDS WIND FARM marked the first time in Australia that a group of Melbourne's most iconic organisations, cultural institutions, universities and corporations have combined their purchasing power to support the construction of a new renewable energy facility, by forming the Melbourne Renewable Energy Project. The wind farm, approximately 25km north east of Ararat in central Victoria, will comprise 39 Senvion wind turbines. Construction of the project is underway with completion anticipated in mid-2019.

Crowlands Wind Farm is being developed by Pacific Hydro, a long standing NAB client and global renewable energy owner, operator and developer. Pacific Hydro operates a high quality, diversified portfolio with an installed capacity of ~960 MW across Australia, Chile and Brazil and they have been a builder, owner and operator of renewables in Australia for over 25 years.

Aside from being the financier for Crowlands, NAB is also one of the entities purchasing power from the wind farm. The consortium consists of a group of 14 customers who have combined their renewable energy demand to support a new renewable energy development. The consortium was pioneered by City of Melbourne and spans local governments, cultural institutions, universities and corporations across Melbourne. The project took the concept to the market in 2016, and Pacific Hydro along with its electricity retailer Tango Energy, won the tender with its proposal for Crowlands Wind Farm. The consortium will purchase 88 gigawatt hours of power a year, approximately one-third of Crowlands' output and enough to power 17,000 homes.

For NAB, joining the Melbourne Renewable Energy Project will assist us in meeting our commitment to source 50 per cent of our Australian energy from renewable sources by 2025, as well as manage our electricity price exposure.

Over 2018, we have seen an increasing level of interest from corporate entities looking to enter into Power Purchase Agreements directly with renewable energy generators. The main drivers from this focus are twofold:

1. to hedge against rising energy prices and more actively manage price risk; and
2. to clearly demonstrate an organisation's commitment to sustainability.

$55BN ENVIRONMENTAL FINANCING COMMITMENT BY 2025

$20BN

To support green infrastructure, capital markets and asset finance

+

$35BN

In new mortgage lending flow for 6 Star residential housing in Australia (new dwellings and significant renovations)

This has been made possible due to the continuing declining costs of renewable energy over the past five years, against a backdrop of increasing wholesale electricity prices, meaning Corporate Power Purchase Agreements (PPAs) are now a viable consideration for an increasing number of corporates.

Other renewable energy projects NAB has project financed that have benefited from Corporate PPAs include Emerald Solar Farm, Haughton Solar Farm, Lal Lal Wind Farm and Sunraysia Solar Farm.

FAST FACTS

- 79.95MW Wind Farm
- Located in Western Victoria
- Owned and operated by Pacific Hydro.
- More than 140 jobs created during construction, and eight ongoing maintenance jobs.
- Once complete it will generate ~263Gwh p.a., equivalent to the annual needs of around 50,000 Victorian homes.

Melbourne Renewable Energy Project participants

The City of Melbourne
The City of Yarra
The City of Port Phillip
The City of Moreland
University of Melbourne
RMIT
National Australia Bank
Federation Square
Melbourne Convention and Exhibition Centre
Australia Post
Zoos Victoria
Next DC
Bank Australia
Citywide

ANOTHER EVOLUTIONARY STEP IN SUSTAINABLE FUNDING

The industry came together in 2018 to standardise new Green Loan Principles.

BY DAVID JENKINS

THE LAUNCH OF the Green Loan Principles (GLPs) presents an opportunity for another evolutionary step in sustainable funding.

By standardising and codifying what qualifies as green bank lending, the GLPs could make sustainable finance relevant to a wider cohort of borrowers.

The GLPs explicitly build on and refer to the existing ICMA Green Bond Principles (GBPs) "with a view to promoting consistency across financial markets" according to the Asia-Pacific Loan Market Association (APLMA).

Published in March this year, the GLPs are the brainchild of the Loan Market Association (LMA) and APLMA. NAB was a member of the APLMA committee responsible for developing the principles.

"Green loans could suit a wider range of corporate borrowers than green bonds."

The GLP framework is designed to be self-regulating and consists of voluntary guidelines. According to the LMA and APLMA, the guidelines "seek to promote integrity in the development of the green-loan market by clarifying the instances in which a loan may be categorised as 'green'."

At the heart of the principles are four "core components" that mirror the Green Bond Principles and are designed to encourage financing with clear environmental benefits as well as increase accountability and transparency. These are:

1. use of proceeds
2. process for project evaluation and selection
3. management of proceeds
4. reporting.

Early movers

While green bonds are arguably the more eye-catching funding option, there's potential for green loans to experience quicker take-up because there's a subset of corporate borrowers that are very engaged and already see the potential value to their businesses.

Some borrowers may move quickly to structure and identify at least part of their bank debt as green loans, and there are transactions bubbling in different markets.

Pace of adoption isn't the main game, however. The focus of interest is instead on the range of borrowers that should be interested in green loans, particularly given the potential for the product to suit a wider range of corporate borrowers than green bonds.

There's no shortage of unrated or sub-investment-grade corporate borrowers that make use of bilateral bank lending facilities, have an interest in corporate sustainability and raise funds for environmentally positive uses but aren't – for reasons of scale or cost – engaged with bond issuance.

The infrastructure sector is another that might seek to have appropriate bank debt structured and labelled as green – especially construction-phase debt that has been better suited to bank lending than bond finance.

This is a great way for infrastructure lenders and asset financiers that may not have been capital markets issuers to enter into small-scale green finance.

The challenge with corporate borrowers is that there has always been concern about the cost of getting specialist teams involved to issue a green bond, and then the requirements to maintain green credentials or certification. But it has become simpler and simpler, and the GLPs add another layer of value.

Liquidity boost

As well as supporting their own corporate sustainability goals, borrowers may find cost and liquidity advantages from the green-loan format.

As green loans become more widely adopted, so will the supply of ready-labelled, pre-verified assets suitable for terming out in the green bond market. In other words, the development of a green-loan market will likely also prove to be a fillip for green-bond supply.

There's also a natural flow-through to term markets for borrowers structuring and labelling some or all of their loan facilities as green. The close linkage between the GLPs and the earlier Green Bond Principles means borrowers should find it easy effectively to apply the same project selection, management of proceeds, reporting and assurance processes in both the loan and bond markets.

Guiding purpose

The overriding goal of the GLPs was to create a consistent framework – and the challenge was doing so in the loan space, which by its nature tends to feature more bespoke arrangements than the bond market.

Streamlining the process was a key selling point in creating a consistent set of principles so that a borrower doesn't have to reinvent the wheel every time.

The big picture for green loans is the role the asset class could play in completing the jigsaw puzzle of understanding, quantifying and – in the end – favourably funding assets that have a positive environmental and sustainable purpose.

Green bonds were a bridgehead in institutional lending, but green loans make the same type of assessment a reality for more borrowers, including for project finance and at smaller scale.

Example green bond/loan use of proceeds

- Green buildings
- Energy efficiency
- Sustainable land use
- Waste and pollution control
- Clean transport
- Climate change adaptation and resilience
- Sustainable water and waste water management
- Renewable energy
- Biodiversity conservation
- Eco-efficient and circular economy products and technologies

PENNON: GREEN AND ESG FINANCING

BY NICHOLAS O'NEILL

IN JULY 2018 NAB entered into two new innovative financings with The Pennon Group plc ("Pennon") through a Green Finance Lease and an Environmental, Social and Governance (ESG) linked term loan. NAB is very active in the Europe infrastructure market and these two transactions are firsts for us in the UK water sector. The Green Finance Lease supports further investment in environmentally sustainable water treatment plants and the ESG linked loan provides meaningful incentives to Pennon to continually improve its ESG score through potential margin reductions.

The company is one of the largest environmental infrastructure groups in the UK with operations in water and waste services and waste management. It is listed on the FTSE with a market capitalisation of £3 billion making it one of the top companies in the FTSE 250.

Pennon's two core businesses are South West Water, which was recently integrated with Bournemouth Water, and Viridor. The water business provides services to a population of about 2.2 million people across Cornwall, Devon, Dorset and the Bournemouth region. Viridor is one of the largest UK waste recycling and recovery businesses servicing over 150 councils and major corporates with over 32,000 customers across UK.

Sustainable financing framework

In May 2018 Pennon put in place their Sustainable Financing Framework aligned with the ICMA Green and Social Bond Principles and the Loan Market Association's Green Loan Principles. The framework focuses on financing of pollution prevention, sustainable water and wastewater management and climate change projects. The framework enables Pennon to issue and enter into loans, bonds, private placements and leases in Green and Sustainable formats.

There is significant appetite for further transactions across the UK water sector with a number of our clients keen to broaden the scope for these financings. We're seeing a meaningful change in their activities with increasing motivation to demonstrate their sustainable business and financing activities, along with support for customers and the environment. In the UK, we expect to see new transactions that go beyond the broadly understood sectors of "green" finance and into other sectors of sustainable financing. We also are seeing increasing numbers of investor mandates in this sector, so are keen to place financings similar to the Green Finance Lease and ESG linked loan in 2019.

Key ESG linked loan terms

Volume	£100 million
Tenor	5 years
Base rate	GBP Libor
Margin	Linked to ESG score
Call feature	Callable
Use of proceeds	General Corporate

ESG linked loan

- The margin paid is linked to Pennon's ESG score as rated by consultants Sustainalytics annually
- Starts at Base Margin with a pricing grid reflecting margin reduction for improvements in ESG score and margin increase if ESG score declines
- To benefit from margin reduction, Pennon needs to continually improve ESG score or be classified as Market Leader as rated by Sustainalytics

Key green finance lease terms

Volume	£30 million
Tenor	10 years
Base rate	GBP Libor
Margin	Flat
Call feature	Callable
Use of proceeds	Specific to green projects

Green finance lease

- Asset finance transaction structured as a sale and leaseback of equipment that forms part of South West Water's Mayflower Water Treatment Works.
- Mayflower is the first water treatment works of its kind in the UK using advanced ceramic filters, photo-voltaic arrays and hydro-electric technology to materially reduce chemicals.
- Given the lease structure NAB was able to offer attractive terms to Pennon
- It was the first Green Finance Lease executed by NAB and our first lease in the UK water sector

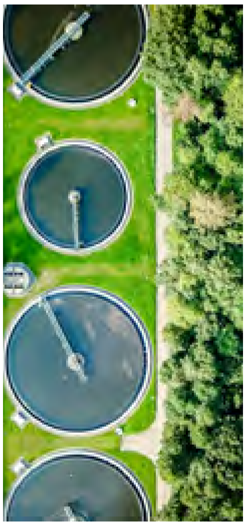


Image: water treatment plant.

SOLAR IPO A MILESTONE FOR THE ASX

BY DAVID CURTIS AND CALVIN LIU

“We drew on the team’s experience in both ECM transactions and the solar sector.”

AS DEMAND GROWS for socially responsible investments in global capital markets, New Energy Solar was the first investment vehicle to be listed on the Australian Stock Exchange with a dedicated strategy of investing in solar energy. The Initial Public Offering (IPO) was a significant milestone for the renewable energy sector in Australia, opening a unique opportunity for investors looking for pure-play renewable exposure alongside attractive long-term financial returns.

NAB was appointed as the only Co-Manager of New Energy Solar’s A$205 million ASX listing in late 2017. New Energy Solar is an award-winning sustainable investment business focused on investing in large-scale solar power plants and associated assets that generate emissions-free power. The company currently focuses on assets with contracted cash flows in the United States (14 assets, with total capacity of ~606MWdc) and Australia (two assets, with total capacity of ~164MWdc).

New yield area for the market

The nature of New Energy Solar’s assets underpins long-term stable revenue streams and low risk-adjusted return to investors: the company bears little development risk, solar farms enjoy long technical and operational life and the company’s strategy is to operate its portfolio under long dated energy offtake agreements with creditworthy counterparties. Some of New Energy Solar’s high quality offtakers are Duke Energy and Stanford University in the US, and EnergyAustralia and Transport for New South Wales.

NAB provided early support to the offer ahead of the retail phase, drawing on the team’s experience in both ECM transactions and the solar sector. The IPO was strongly supported by New Energy Solar’s existing investor base and retail investors, and NAB demand provided the client with a more diversified investor base.

Distribution of the offer

NAB has the largest retail distribution network in Australia and provides issuers with access to broad proprietary channels, including NAB Private, nabtrade, JBWere and MLC. NAB’s investor network has traditionally been receptive to yield stocks, as retail investors have played a significant role in demand for real estate trusts (A-REITs) IPOs in recent years. New Energy Solar offered, in many aspects, a similar investment proposition to A-REITS: investment case backed by real assets, higher proportion of contracted revenues and stable, predictable returns for investors.

The transaction resonated well among wealth advisors and high net worth investors, who were income focused and comfortable with the USD exposure of income generated from the US based assets.

NAB ADVISORY – FAST FACTS

NAB’s Equity Capital Markets capability combines a strong track record in capital markets with deep sector-specific knowledge in renewable energy, across debt and equity capital raisings and merger and acquisitions. Engagements in renewables include:

- Exclusive financial advisor to Canadian Solar on the divestment of a utility-scale portfolio of solar PV assets (Oakey Phase 1, Oakey Phase 2 and Longreach) offering partially contracted revenues.
- Exclusive financial advisor to Canadian Solar on debt capital raising for two utility-scale solar farm projects.
- Exclusive financial advisor to Senvion on the development of a A$1.5 billion, 636MW wind farm located on the Yorke Peninsula of South Australia.
- Exclusive financial advisor to Synergy on its divestment of a 50% interest in the 55MW Mumbida Wind Farm.
- Exclusive financial advisor to Goldwind on the divestment of a A$319 million 75% equity stake in the Gullen Range wind farm.

BACKING THE INFRASTRUCTURE BEHIND THE DIGITAL ECONOMY

The digital economy has given rise to its own infrastructure needs, and investors are paying attention.

> "What we're seeing is digital infrastructure rising in prominence."

What is digital infrastructure?

When we think of infrastructure, the first things that spring to mind are roads and rail lines, utilities, ports and airports. These traditional building blocks help to drive economic growth and have attracted private sector investors for many years as increasingly constrained governments look for partners to invest in and operate key assets.

However, the growing demands of the digital economy have given rise to a whole new group of assets that are just now coming into view for investors as an extension of the traditional infrastructure sector.

Infrastructure is morphing as an asset class and what we're seeing is digital infrastructure rising in prominence.

Digital infrastructure includes the networks that transport data and the data centres that store it. The transition to cloud based services, big data technology and services, continued infilling of mobile spectrum and 5G network rollout, smart manufacturing and electronic payment systems are all driving increased demand for networks and storage. Government projections estimate that the direct economic contribution of communications is expected to grow to $42 billion by 2031.[1]

Add to that the digital side of the consumer economy and the emergence of the Internet of Things, which includes data-heavy products such as mobile apps, smart devices and video streaming. Demand for digital connectivity in Australia is growing at an exponential rate, with data downloads nearly doubling from 2016-2017 and internet access reaching 89% (increasing to 100% for 18-34 year olds).[2]

Sky-high growth for cloud based services

Fibre and mobile networks and data storage centres play an important part in the digital ecosystem and provide the platform infrastructure to transport, share and store this data.

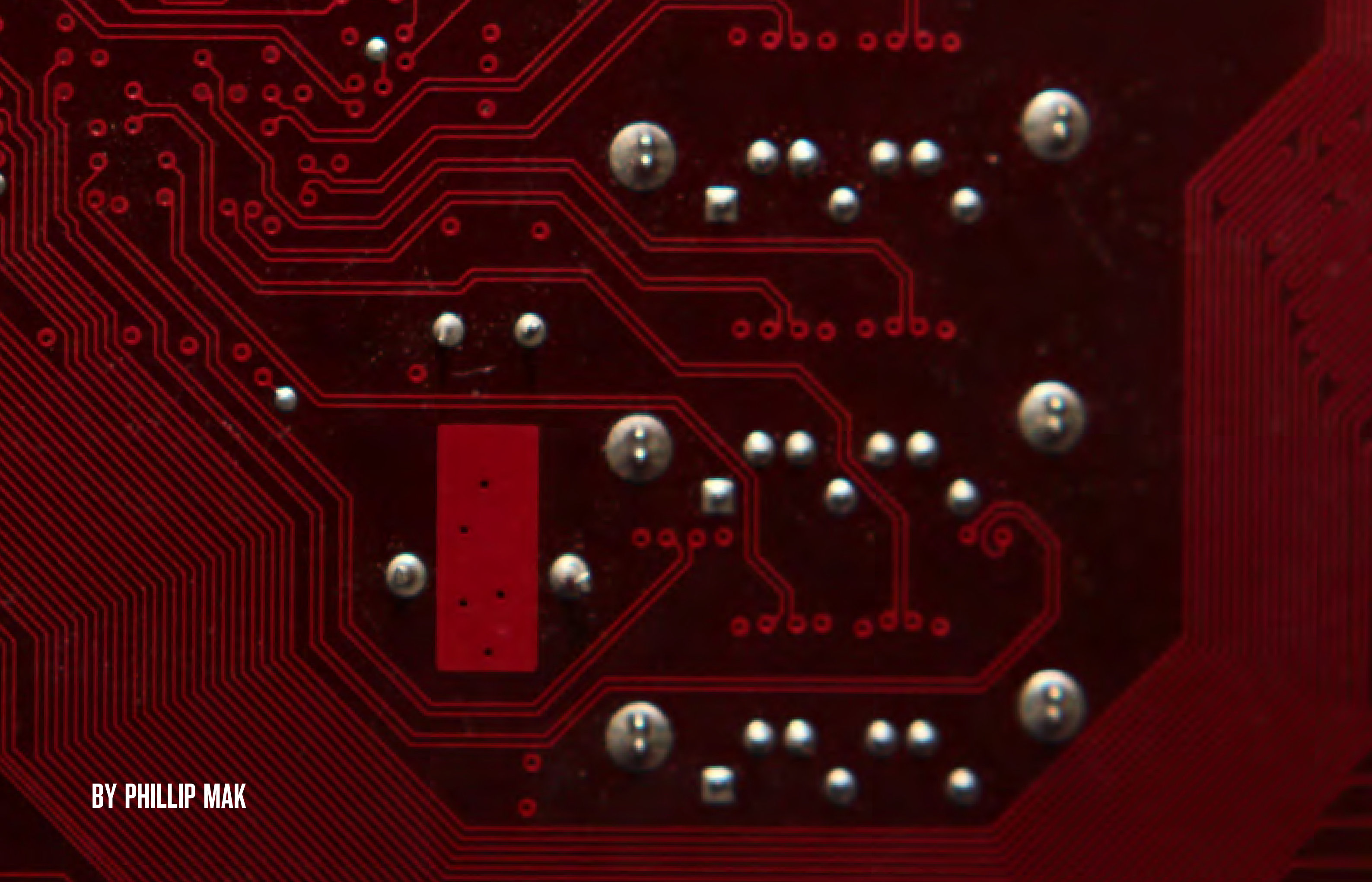
The industry expects demand for cloud service computing and for the data centres they rely on will grow strongly over coming years, far outpacing broader economic growth. The global market for cloud-managed services is forecast to more than double from US$25.5 billion in 2016 to US$69.9 billion by 2023 for an annual growth rate of 15.5 per cent.[3]

Why investors are turning to digital infrastructure

The strong growth profile for data based services and the role of digital services in the consumer economy are key attractions for institutional investors.

Another consideration is that traditional infrastructure assets are becoming increasingly sought after, especially by pension funds, sovereign wealth funds and dedicated infrastructure funds, making for a crowded and competitive market. This has led to a continued run up in the asset valuation cycle.

Toll roads and ports and so on are heavily competed, but there are opportunities in what we call core-plus infrastructure that are very similar to typical infrastructure plays. Core-plus includes a diverse range of assets such as broadcast towers, fibre cable and other telecommunication infrastructure, transport assets such as ferries and rolling stock, and mid-stream energy and terminal facilities.



BY PHILLIP MAK

“Core-plus includes a diverse range of assets such as broadcast towers, fibre cable and other telecoms infrastructure.”

Digital infrastructure displays many of the same characteristics that attract investors to core infrastructure projects:

- Real assets with a long lifespan
- Provision of an essential service
- Long-term stable cash-flows
- Solid growth prospects that are not correlated to financial markets
- Strong barriers to entry such as licensing or accreditation requirements or high capital cost.

NAB is excited to be part of the digital infrastructure journey, supporting a growing sector that serves the evolving data needs of corporate Australia.

1. Australian Communications and Media Authority (ACMA) The Internet of Things and the ACMA's areas of focus Emerging issues in media and communications, Occasional Paper November 2015
2. ACMA, Communications Report 2016-17
3. Cloud Managed Services Market Report 2017

FINANCING THE DIGITAL ECONOMY

NAB has emerged as a leading financier of this digital segment of the economy, arranging capital to support the development or expansion of this increasingly important infrastructure in Australia, the UK and Europe.

We've helped companies with growth capital to build out their mobile tower networks, expand their broadband and fibre network operations, and keep up with rapidly growing demand for cloud storage.

NAB supported an expanded debt package for Canberra Data Centres (CDC), the largest provider of outsourced data centre services to the Federal Government, which operates a highly secure Government accredited facility. NAB supported the expansion of these facilities to enable CDC to meet growing demand from both federal government and corporate clients, following the commencement of a significant new lease with Microsoft.

ASX-listed NEXTDC, one of the leading independent data centre operators, has eight data centre facilities across the country and recently brought extra capacity online. NAB is a trusted partner of NEXTDC, arranging over $300m of growth capital over a number of years.

WESTERN SYDNEY, AUSTRALIA'S THIRD LARGEST ECONOMY

New infrastructure is a fundamental piece of Western Sydney's growth plans.

BY CONNIE SOKARIS

WITH AUSTRALIA'S POPULATION expected to reach up to 42 million people by 2056, it is the growth in our cities where we expect to see the most pressure. In Sydney, much of the growth will be in Greater Western Sydney which is forecast to grow to 3 million people by 2036. How do we ensure Greater Western Sydney evolves into a prosperous, liveable region where its constituents enjoy strong economic, health and educational outcomes in a sustainable way?

Greater Western Sydney extends from Canterbury-Bankstown in the East to the Blue Mountains in the West and from the Hawkesbury in the North to Wollondilly in the South and comprises 13 local government areas. To put this region in perspective, it has the 3rd largest economy in Australia, comprises 8% of GDP, and is expected to absorb two-thirds of the population growth of the Sydney region[1].

Growth of this magnitude cannot be achieved in isolation and requires vision, planning and co-ordination across a broad ecosystem. The role of government is essential in this ecosystem and there is no better example of collaborative government than the Western Sydney City Deal. The Western Sydney City Deal is a partnership between three layers of government: Federal, State and the local governments of the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly. Some of the highlights of the Western Sydney City Deal include creating the 30-minute city through the delivery of the North South Rail Link together with other connective infrastructure, as well as contributing to 200,000 jobs through the new Aerotropolis which will have Sydney's second airport at its heart.

The creation of new infrastructure is a fundamental piece of Greater Western Sydney's growth plans with $35 billion of projects in the pipeline. However, it takes more than physical infrastructure to create a prosperous community. It requires adopting a true community lens, including one which deeply understands the evolving community demographic and their needs. This region is younger and one of the most ethnically diverse with 35% of residents born overseas and 39% speaking a language other than English at home, according to Deloitte findings.

We are committed to continuing to support this growth corridor through our products, services and footprint and we'll be moving some of our teams into a new development at Parramatta Square in 2020, supporting our clients in an area with immense opportunity and growth.

"Growth of this scale requires vision, planning and co-ordination across a broad ecosystem."

GREATER WESTERN SYDNEY FAST FACTS

- Forecast to grow to 3 million residents
- 3rd largest economy in Australia
- Infrastructure pipeline $35bn
- 35% of residents born overseas

1. About Greater Western Sydney

ISLAMIC FINANCING FOR RESIDENTIAL CONSTRUCTION

BY IMRAN LUM

AMEN ZOABI AND Khalil Hafza are cousins who grew up together, went to school together, and studied the same degree at university. So it wasn't a surprise when in 2008 the cousins decided to start a business together, Binah Developments. Very soon a two-man operation evolved into a sophisticated multi-faceted enterprise, successfully completing a wide range of high profile construction projects all over Sydney including recently completing a campus for Western Sydney University.

Binah Developments was banked traditionally for many years. However, around two years ago, Mr Zoabi and Mr Hafza made a decision that they would no longer receive funding in a way that conflicted with their faith; despite the negative financial impact this might have had on their growing business.

Image: Exterior view of the 134 apartment development The Atrium in Liverpool

NAB is the only major Australian bank that has Islamic finance expertise and has developed a financing structure that has been approved by globally recognised Shariah advisory board, Amanie Advisors.

When Mr Zoabi and Mr Hafza heard about NAB's Islamic finance offering, Binah Developments moved all of its financing over to NAB. Through this unique offering, NAB has helped facilitate Mr Zoabi and Mr Hafza to continue to grow Binah Developments without having to compromise their beliefs.

NAB is the only major bank in the Australian market with the capability to offer this form of financing, reflecting our commitment to financial inclusiveness for clients who require financing in a Shariah compliant format. This has become increasingly important to our diverse client base. We're proud to have supported the Shariah compliant construction financing for the Gallipoli Aged Care Home which opened this year, a 102-bed centre linked to the Auburn Gallipoli mosque serving the Turkish Muslim community. NAB was able to provide Gallipoli with financing that was in accordance with their religious beliefs, on economic terms that were competitive. This demonstrates our commitment to deploying innovative financial solutions to fund social infrastructure that makes a difference to our local community.

Since the introduction of our Islamic finance offering in late 2015, NAB's Corporate and Institutional Bank has originated more than $700 million in financing. The market has recognised the clear value NAB has provided, with the Islamic finance book experiencing exponential growth year on year – with no marketing and only word of mouth.

The 134-apartment Binah Developments construction in Liverpool, called The Atrium, is part of NAB's strategic focus on Greater Western Sydney, reflecting the surge in infrastructure and development in the region to serve the growing population. The State Government of New South Wales has invested approximately $60 billion in infrastructure development projects across Western Sydney. This has flow-on effects in terms of the requirements for increased housing, commercial, and leisure facilities in the area.

This transaction is our first Shariah compliant construction residential financing facility and it is another example of NAB innovating for our clients, respecting what is important to them, and doing the right thing by them.

"NAB is the only major Australian bank that has an Islamic finance structure approved by globally recognised Shariah advisory board Amanie Advisors."

CONNECTING WESTERN SYDNEY TO THE CBD, SYDNEY AIRPORT AND PORT BOTANY

BY TIM GLICK

WESTCONNEX IS A transformational project for Sydney, adding significant capacity to the city's motorway corridors which see congestion throughout the day. Comprising of the widening of the M4 motorway and its extension to Haberfield, the duplication of the M5 motorway and the new M4-M5 Link connecting the two, WestConnex bypasses up to 52 sets of traffic lights[1] and provides forecast travel time savings to motorists of as much as 40 minutes between Parramatta and Sydney Airport. The additional capacity should also see increased travel time reliability, providing users with greater confidence that they will reach their destination on time.

By offering access to an alternative underground motorway network for trucks and other heavy vehicles, WestConnex is anticipated to improve conditions on surface roads including the highly congested Parramatta Road corridor. WestConnex is forecast to remove 10,000 trucks a day off Parramatta Road, which will support the rejuvenation of the inner west corridor and benefit local communities, with the creation of tens of thousands of new homes and jobs[2]. As part of the project, the State is also delivering over 14km of new and upgraded cycle and pedestrian pathways, linked to existing cycleways for improved active transport options.

WestConnex has been designed to connect to future improvements to Sydney's road network including a second harbour crossing and the potential extension of the F6 motorway. Completing a missing link in Sydney's orbital network, the motorways should support the Greater Sydney Commission's vision of a metropolis of three cities by improving the connection between the Eastern Harbour City and the Central River City of Parramatta and surrounds.

NAB is proud to be a financier to the WestConnex project, having supported the State of NSW in financing the development of the new M5 in 2015 and the M4 Widening and M4 East in 2016. In 2018, through the State's privatisation of the project, we have supported Transurban and the Sydney Transport Partners consortium in their acquisition of a 51% stake. As part of the financing, we have provided a commitment to a new construction facility for the M4-M5 Link, the third stage of the broader project.

Toll road projects have historically faced challenges in securing finance. These projects can be complex, characterised by consortia forming around construction contractors, debt and equity financiers bidding; competing traffic forecasts; and upfront payments being

made to State governments. In this case, however, the State's procurement of WestConnex was a different approach, separating out construction contracts, patronage forecasts and provision of finance. This allowed the State and the Sydney Transport Partners consortium to attract debt funding for the project, notwithstanding the risks associated with patronage.

NAB is a leading provider of finance to infrastructure projects including toll roads, rail, ports, airports, hospitals and schools. We also have the capability to provide finance for new and emerging forms of core plus and infrastructure-like asset classes such as land titles registries, data centres and student accommodation.

"WestConnex has been designed to connect to future improvements in the road network."

FAST FACTS

- 33km of new and improved motorways serving Sydney's West
- Owned by Transurban, the State of NSW and co-investors
- Time savings of up to 40 minutes between Parramatta and Sydney Airport
- Over 10,000 jobs created
- Distance based tolling with cap

1. WestConnex benefits
2. About the Parramatta Road Program

INFRASTRUCTURE THROUGH THE EYES OF THE PEOPLE

NAB asked over 1,000 Australians across the country about what types of infrastructure and services they really value in their daily lives, the main areas which they believe are getting better and those that are getting worse; and finally, where they think infrastructure investment should be prioritised and who should be responsible for its provision.

INFRASTRUCTURE CLEARLY PLAYS an important role in our everyday lives, but some areas impact Australians much more than others. In this survey, Australians were asked to assess infrastructure as it relates to their "daily lives" (e.g. housing, safety, shopping), "critical services" (e.g. utilities, education, healthcare), and "travel and work" (e.g. public transport, roads, job availability).

What infrastructure impacts Australians most?

Electricity and roads were identified as having the biggest overall impact - affecting almost 1 in 2 people (either positively or negatively). Electricity had the biggest impact in SA, while roads were most important in NSW/ACT & WA. Gas impacted Victorians a lot more than other states.

What has improved (and deteriorated) most in the past 5 years across all aspects of infrastructure?

The biggest improvements have been in every day shopping and cultural entertainment options, recreational outdoor environments (such as parks, playgrounds, cycling paths & beaches) and mobile phone/internet access.

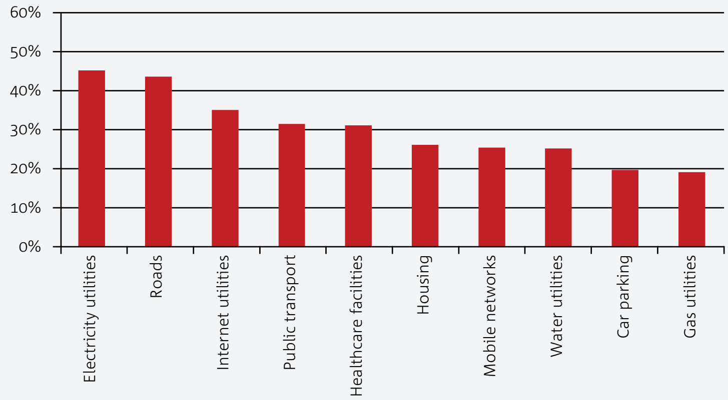
The biggest areas of deterioration in the past 5 years have been in the cost of utilities (and in all states, but particularly QLD), traffic congestion and cost of healthcare (most notably in TAS and QLD).

What about the future?

Australians see little prospect for improvement in some key areas of infrastructure in the next five years. In fact, many Australians expect areas such as utility costs (particularly electricity), traffic congestion and the cost of healthcare to deteriorate further. But some aspects are expected to continue improving - led by shopping and entertainment options, outdoor recreational environments and mobile phone/internet access.

> "Electricity and roads were identified as having the biggest overall impact."

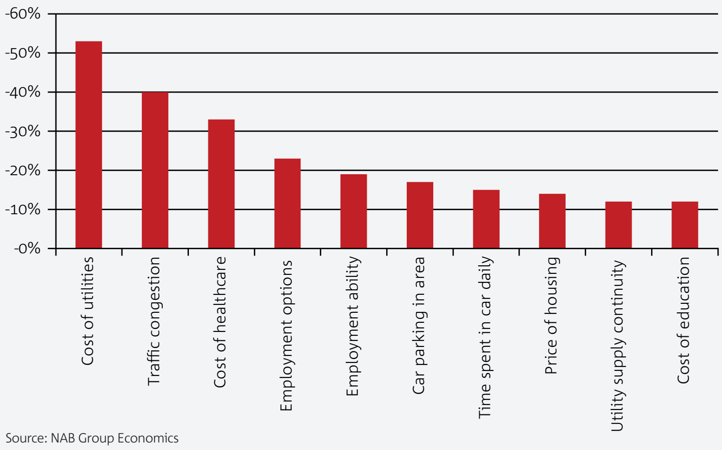
Top 10 types of infrastructure that most (positively or negatively) impact life and work on a daily basis



Source: NAB Group Economics

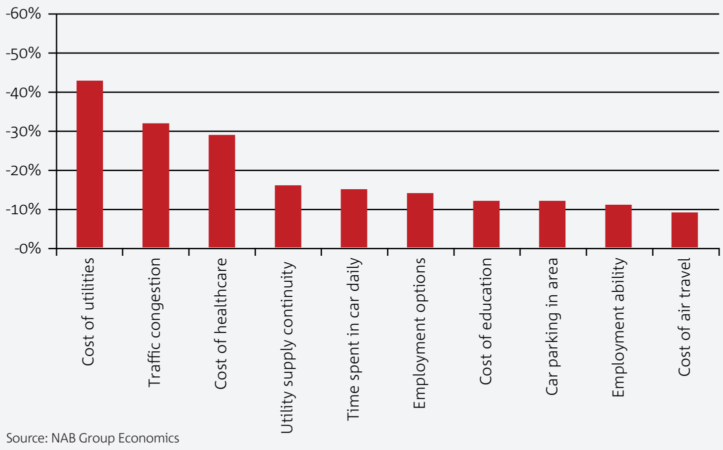
BY ALAN OSTER AND DEAN PEARSON

Top 10 areas that have deteriorated most in the last 5 years (net change)



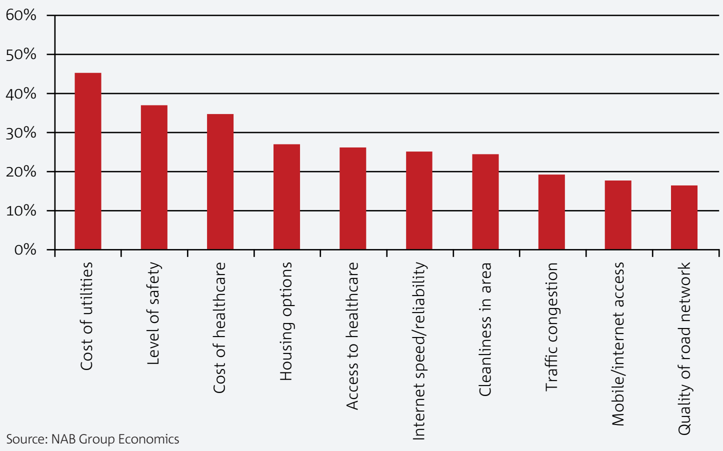
Source: NAB Group Economics

The 10 areas expected to deteriorate most in the next 5 years (net change)



Source: NAB Group Economics

Top 10 areas that would improve our life the most if investment in them was prioritised



Source: NAB Group Economics

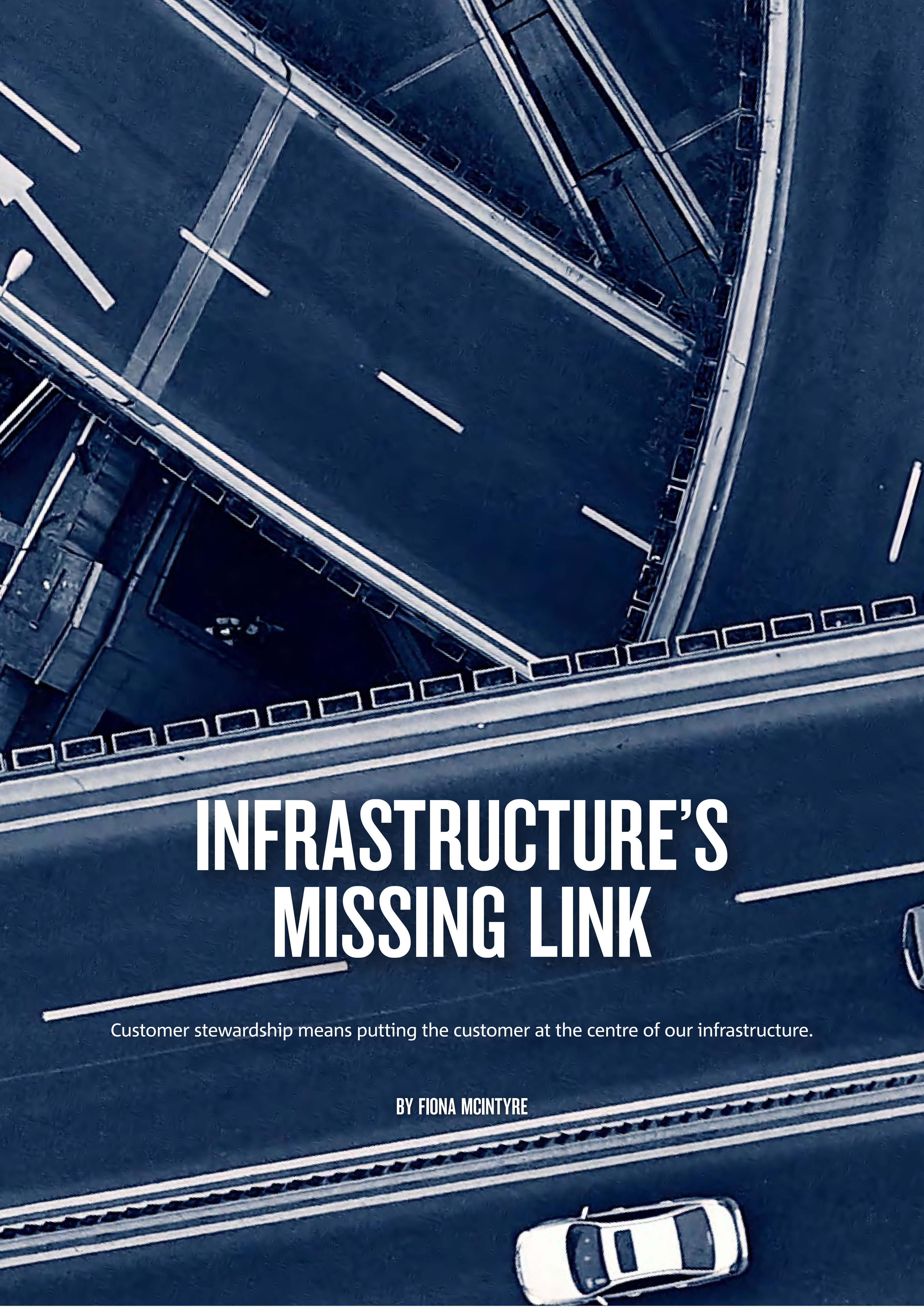
Where do Australians believe that investment should be prioritised?

Perhaps not surprisingly, Australians believe the cost of utilities (gas, electricity and water) is the number one area that would improve their lives if investment was prioritised - according to almost 1 in 2 (45%) people across the country. VIC was the exception with the level of community safety identified as the biggest investment priority.

Priority areas do however differ by state. The level of cleanliness, maintenance and pollution ranked in the top 5 in NSW/ACT & WA, but did not feature in other states. Instead, investment in continuity of electricity supply was a far bigger priority in SA/NT and employment in TAS.

Other areas that would also make a big difference to our lives are: community safety; cost of healthcare; housing; access to quality healthcare; speed/reliability of home internet; and the level of cleanliness, maintenance and pollution in our local areas.

Australians clearly see infrastructure responsibility as the domain of government. Australians ‘moderately’ agree that private businesses have responsibility for improving infrastructure in the next five years. But the majority see it as the remit of state, local and federal government, in that order.



INFRASTRUCTURE'S MISSING LINK

Customer stewardship means putting the customer at the centre of our infrastructure.

BY FIONA MCINTYRE

MOST OF US know the value of good quality infrastructure that meets the user's needs and expectations. Whilst much of Australia's infrastructure is known to be of a high quality, there is always the opportunity to keep lifting the bar for the betterment of our customers and communities.

In September, NAB released its latest paper under our partnership with Sydney University's Better Infrastructure Initiative, launched by our chairman Ken Henry. This paper, entitled "Customer Stewardship: Infrastructure's Missing Link", focusses on the concept of customer stewardship. The premise of the work is that if our infrastructure services are vested in customer outcomes over the long term, wider social and economic benefits will result, including better returns, smarter use of capital and the rebuilding of trust. The paper continues the theme of customer-led infrastructure. That is, we will get the best results if we put the customer at the centre of our infrastructure services, designing and adapting our infrastructure services to their changing needs.

The first step is to understand who the customer is and how their needs are evolving. All industries are faced with changing customer expectations, in part enabled by new technologies. The rise of the experience economy means customers demand the best experience of any industry as the new benchmark.

In addition, with shifts in our demographic patterns, including through increasing populations and new growth corridors, customer desires and behaviours will continue to evolve. The industry needs the agility to respond. With this agility infrastructure can be adapted, operational efficiencies can be increased, spend on excess capacity can be minimized and high return investment can prevail.

What is customer stewardship?

Customer stewardship is defined by the Better Infrastructure Initiative as "the collective management principles and practices that focus on long-term customer outcomes". The purpose of these principles and practices is to guide infrastructure owners and operators to deliver services that adapt to what is needed and desired by their customers. Without it, the requisite discipline and purpose to direct capital may not be present.

To assist this process, a workable framework was required; a framework that can be applied across industry and be used to help owners and operators benchmark against best practice. This has been the focus of the work of the Expert Reference Group, a cross-sector industry working group established in 2018. The Expert group has developed the Customer Stewardship Blueprint comprising five pillars of practice and provides guidance to help owners and operators understand their own organisation's readiness and mindset towards true customer stewardship.

Customer stewardship exemplars

We have many infrastructure owners and operators who are customer stewardship exemplars, all providing strong leadership and connecting to one or more of the pillars of practice. They include our ports, airports, roads, utilities, train stations and convention centres. They span industry and ownership models.

Some exemplars of customer stewardship are adapting to improve sustainability: SA Water and Adelaide Airport worked together to reduce tarmac temperatures through irrigation of nearby open space.

Others work to better serve specific groups of customers or stakeholders. For example, Southern Cross Station introduced an initiative to assist vision impaired patrons, while Auckland City Rail Link integrated indigenous consultation into the design of the project. There are no doubt many unsung exemplars. Part of the challenge concerns both transparency and consistency of information that would enable a customer stewardship story to be identified and shared.

It is intended that the blueprint and the work of the ERG will help reveal customer stewardship examples so that all our communities can benefit.

THE CUSTOMER STEWARDSHIP EXPERT REFERENCE GROUP

The Customer Stewardship Expert Reference Group[1] was established to provide national leadership and to develop a framework to deliver long term customer outcomes for infrastructure.

The ERG is represented by members across the transport, construction, energy, water and investor communities and they have developed five pillars of practice of customer stewardship (the "Customer Stewardship Blueprint").

These pillars are intended to communicate to customers and communities the qualities, principles and values that they should expect of their infrastructure – qualities, principles and values that will lead to better long term customer outcomes. They are Connectedness, Informed choice, Adapting, Transparency and Serving all.

Acknowledging that customer stewardship is a journey, the ERG also developed the Customer Stewardship Compass, navigational themes to help organisations identify where they are on the customer stewardship path.

The next step is to develop and implement a reporting framework to communicate what owners and operators are doing to advance customer stewardship. Ultimately, performance under this framework could provide a meaningful indicator to long term financial and risk management outcomes.

"All industries are faced with changing customer expectations."

1. Member organisations including Brisbane Airport, EnergyAustralia, Port of Newcastle, John Holland Group, Port of Brisbane, QIC, Sydney Airport, Sydney Water, Transurban and Transport for New South Wales.

SUPER FUNDS AND BANKS: PARTNERING FOR THE FUTURE

Tapping into a giant retirement savings pool.

BY THOMAS LYDON

THE BANKING AND superannuation systems have much in common. Both play a significant role providing a stable financial system. Both have unwavering duties to depositors and members; banks have a duty to keep depositors' money safe; superannuation funds are committed to providing safety in retirement.

Both industries are evolving as they meet the needs of changing demographics and new customer groups and preferences as well as developing new channels and platforms that technological advances bring. Both industries are impacted by significant structural change. Specifically, three of the major banks have divested or plan to divest their wealth arms and significant mergers have taken place across the superannuation sectors with the number of both retail and industry funds declining by 64% and 76% respectively over the past 20 years[1].

What of the future? How will our paths diverge and where will our paths become increasingly intertwined? One area where our paths will likely diverge is the level of asset growth. Super funds will continue on their growth trajectory with some estimates projecting assets of A$10 trillion by 2037. The banking sector, on the other hand, is not expected to enjoy four-fold asset growth during this period. Banks are also increasingly capital constrained with superannuation funds having the opposite problem. Where will this capital be deployed and how can we play a role?

Diversification of asset classes

For a variety of reasons including liquidity needs, tax benefits and historical preference, Australian superannuation funds have been heavily tilted towards equities (including international equities) and have been somewhat underweight in other asset classes such as infrastructure.

According to the superannuation industry group ASFA, asset allocation to infrastructure by funds exceeding four members is just 5% of total assets. However, the growth rate of different asset classes tells a more nuanced story both domestically and offshore. Growth rates have been particularly strong in both international unlisted infrastructure and listed infrastructure with international infrastructure multiplying by more than 5.5 times and listed infrastructure growing by almost 3 times during that period. We expect this trend to continue as funds look to deploy their growing pools of capital and at the same time, the global infrastructure pipeline remains strong, driven by factors such as urbanisation, population growth, replacement of ageing assets in developed markets, and the transition to a low carbon economy.

Domestically and offshore, NAB plays an important role facilitating infrastructure by providing capital and financing solutions across the infrastructure delivery continuum– including the participants, the projects themselves and the investors. Domestically, we have long been an infrastructure leader and expect to continue to bring infrastructure opportunities to fund clients. As domestic fund investors expand into offshore markets, we can support the cross-border flow of capital through our global infrastructure footprint.

"ASFA says asset allocation to infrastructure is just 5% of total assets."

1. ASFA Research and Resource Centre
2. Rainmaker Roundup: Superannuation Projections 2017 to 2037
3. The Economist

SIGNIFICANT GROWTH TO COME

As a sector, Australia's superannuation industry is truly moving Australia forward and is fundamental to the creation of strong economic and social and environmental outcomes for Australia. At A$2.7 trillion, the Australian retirement savings pool is one of the largest in the world.

To put this in perspective, whilst this savings pool is the world's 4th largest, Australia is the 13th largest by GDP and only the 54th largest by population size. And there is still significant growth to come. The pool is growing circa 7% p.a and is expected to increase almost four-fold over the next 20 years to $10 trillion[2]. The growing size of the pool is expected to eclipse the $4.6 trillion banking sector within the next 10 years.

The sector has led to an improvement in Australia's national savings and helps contributes to Australia's long term fiscal strength, including the implications of an ageing demographic. Public spending on pensions is relatively low at 4% of GDP, comparing favourably to the OECD average and countries such as the US and France at 7% and 14% respectively[3].

In addition, superannuation has led to improvements in equity across socio-economic groups, moving beyond specific industries, professions and gender groups. In 1974, just 32% of wage and salary earners were covered by superannuation, representing just 41% of male workers and 17% of females according to the industry body ASFA.

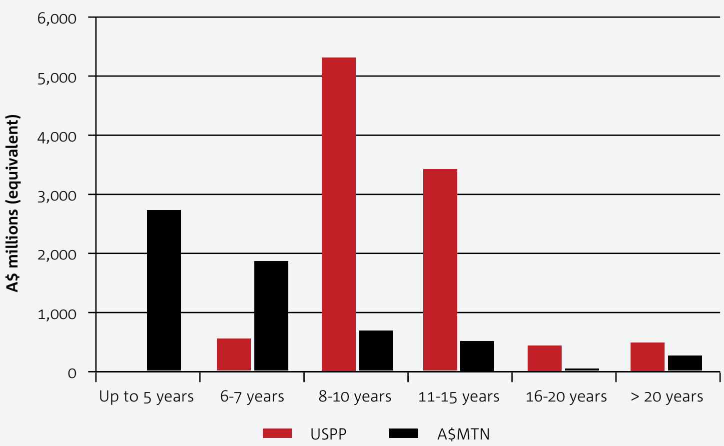
FIVE REASONS WHY INVESTORS LOVE U.S. PRIVATE PLACEMENTS

In the Private Placement market, the size of the pie keeps growing.

BY GEOFFREY SCHMIDT

MOST ARTICLES ABOUT US Private Placements (US PPs) are focused on the benefits of the market to the issuer. They highlight long tenors, great pricing and constructive "bank-like" relationships that exist between issuer and investors.

2018 YTD issuance volume by tenor and market



Source: Bloomberg and Private Placement Monitor

But what about the investor? If the "size of the pie" is finite, as is traditionally the case between the buyer and seller of a financial instrument, then an improvement for one side of the transaction should mean a less favorable outcome for the other. The difference with the US Private Placement market, however, is that the pie is continuously growing – like the Magic Pudding – so that a win for an issuer is often a win for an investor as well.

The investor's goal is to place a rock-solid asset in the firm's investment portfolio.

A "rock solid" asset is one where:

- company management provides deep investment insight prior to the investor's financial commitment;
- the company has had strong financial performance in its run up to the US PP market;
- in the event something goes wrong, the asset contains standard financial covenants that act as an early warning system to protect the investor and facilitate a mutually beneficial amendment.

What are the options for investors?

In the United States, the alternative to the US Private Placement market is the 144(a) market. The 144(a) instrument caters to similar investors with similar investment horizons. However, it has evolved into a market for issuers who:

- either need more capital than a US Private Placement can provide (greater than US$2-3 billion), or
- come to market so frequently that documentation costs will actually go down if they issue off a 144(a) shelf registration. Most times, the issuer meets both conditions.

A true "frequent issue" 144(a) is poetry in motion. The offering launches mid-morning, bids are taken at midday and the transaction is priced by mid-afternoon. This speed to market is great for issuers and bankers but from an investor's perspective, can be challenging.

Even infrequent issuers who complete a modest sized 144(a) offering take days, not weeks, to get through the market. While the additional time helps, it does not provide the comfortable timeline that a US Private Placement affords an investor.

1. Time for analysis

By contrast, a US PP transaction takes about three weeks from launch to pricing. During this time the transaction documents are sent to the investment team where they are reviewed at multiple levels. The issuer will often roadshow, meeting investors and then fielding further questions the following week. This level of analysis is not possible in any other investment-grade debt capital market. The end result is that the investor has a deep understanding of the issuer, its industry and the competitive environment.

2. Close investor/issuer relationships

Unlike the bigger brother 144(a), where the investors may never be known to the issuers, the US Private Placement market fosters stronger bank-investor relationships. This is a mutually beneficial arrangement where investors, big or small, will meet with key treasury staff at the companies where they invest. This closer relationship fosters better communication during good times and more importantly, during turbulent times. That's why US Private Placements have the highest recovery rate in the fixed income asset class when things go wrong.

3. Plain English documentation

The offering documentation for a 144(a) typically contains numerous pages of legalese around risks, accounting, reliance on information, etc. This is necessary because a bank needs to fully discuss risks from a number of different perspectives.

By contrast, the language on a US Private Placement offering memorandum is written in plain English. The same six to eight sections are contained in almost all traditional Private Placement offering memorandums, covering information that is both standardized and quantifiable. Most importantly, the document is delivered in final form before the deal is launched.

4. Strong downside protection

Most Private Placements have covenants. That means more to an investor than just about any other attribute of the investment. Covenant protection means that the investor does not need to heavily monitor the company (and its industry) for news and activity. It means that they can analyze the investment and potentially participate in offerings where they would not have participated in the past. And on the rare occasion that something starts to go wrong, the covenants facilitate a conversation before any trigger events.

Striking a modified agreement gives all parties time to address the challenge constructively. The fact is, almost all problems can be worked through unless a business is in permanent decline, which is rare.

5. Helpful advice

The final element of this market is the close relationship between issuers and investors. The "value" of this relationship spans more than money. Investors are some of the best sources of business advice for issuers in the world. That's the definition of "growing the pie". Maintaining these relationships also helps the investors understand the risk when a repeat issue comes to market, a scenario that will ultimately help a new issue.

A unique role

US Private Placements play a major role in the portfolios of many US pension funds and insurance companies. These long-tenored assets match the liability book of an insurance company nicely, and they provide protections that many other financial instruments cannot. Most importantly, US Private Placements can create a mutually beneficial relationship between debt investor and company management that is rarely seen in any other capital market.

> "The USPP market fosters stronger bank-investor relationships."

THE LONG ROAD TO BREXIT

Despite the signing of a Brexit Withdrawal Treaty, the path ahead remains uncertain.

BY NAB LONDON BRANCH

SINCE THE BREXIT vote 18 months ago, companies across the UK have been dealing with an extended period of uncertainty. A Withdrawal Treaty between the UK and EU – ending 46 years of shared history and running to almost 600 pages – was signed in late November. However, it is unclear if this agreement will pass through the UK's Parliament. If the Treaty needs to be amended, it cannot be ruled out that an extension to Article 50 and the end-March 2019 leaving date will be necessary. Alternatively, a failure of the agreement to pass through the UK Parliament could open the way for either a hard 'No-deal' exit or a second referendum.

Only once an agreement is finalised can the two sides start to build on the preliminary framework for future ties, and so this extended period of uncertainty is set to continue. In the meantime, businesses are hoping a deal can be passed so that a transition period from March 2019 to December 2020 will maintain current trading arrangements, and thus avoid a cliff-edge for business. The task then will be to agree a future trading relationship after December 2020.

Companies operating in the UK have thus had to prepare for a range of scenarios, including alternative versions of a deal making it through the political process, or not at all. While progress has been made, it is still too soon to know what the final outcome will be.

Infrastructure provides potential stimulus

Having supported investors in British energy and infrastructure for over 20 years, NAB doesn't foresee Brexit per se having a material impact on existing infrastructure investments, particularly if the Withdrawal Agreement delivers frictionless trade at the borders, mitigating the potential logistical impact on transportation infrastructure. One caveat to this would be the impact on certain infrastructure segments if a Corbyn-led administration eventuated. While the likelihood of this happening is difficult to quantify, investors will prefer to see this risk reduced through a reasonably balanced Withdrawal Agreement that has the best possibility of being supported both by the UK Parliament and the 27 EU member states.

There is the possibility that GDP-linked assets may be impacted somewhat in the near term due to economic slowdown or a slowdown in investment activity during the implementation of Brexit, however the combination of the essential nature of these assets, the role of infrastructure renewal as a stimulus, and the need for Britain to continue to attract global capital may mean, as in the Global Financial Crisis, that investors seek such investments out as a safe haven.

Addressing investor concerns

A recent survey has shown that around two-thirds of institutional investors view developments relating to Brexit negotiations and domestic politics as a far greater risk to market sentiment than interest rate uncertainty, employment, or wage concerns. It is still possible that cross-border investor trade between the UK and EU will face restrictions after the Brexit deadline in March 2019, with many experiencing this impact already as they pour considerable resources into ensuring continuity of service for EU customers after the deadline.

Global infrastructure investors are actively monitoring and assessing their Sterling-Euro exposures in an effort to understand the potential impact of any significant currency fluctuations that may result. NAB is working with several investors to model their risk in the context of alternative Brexit scenario outcomes. This provides our clients with an independent view of the challenges they face, and enables them to consider their hedging strategies over the coming months.

A survey by the CFA Institute concluded that 63% of fund manager firms would decrease their presence in the UK, and 85% believed London would be worse off as a result of Brexit. Around 67% expected staffing levels in London to fall as a result of Brexit, and 34% believed the UK will indeed diverge from EU regulation.

As things stand it looks like a system of regulatory equivalence will mitigate the worst of these concerns.

Very recently, we have seen an increase in institutional investors wanting to understand NAB's plans for post-Brexit, with a view to ascertaining the overall impact on their liquidity and service provision. NAB is assuring clients that we will continue to provide the support and services that they currently receive from our team.

Markets turn cautious

The continued political instability that is part and parcel of the Brexit process shows no sign of abating as we move towards the March 2019 deadline.

The instability that we witnessed through 2018 saw investors adopt a conservative stance towards their investment appetite in Sterling. This is leading investors to focus in on the shorter-end (five years and less). Should we witness a more benign Brexit outcome, we would expect to see investors become reengaged in their traditional longer curve appetite, combined with their affinity for infrastructure type assets/issuers.

Whilst investors continue to support credits, particularly those that offer diversity away from the machinations of Brexit and Euro, we see a number of potential opportunities for Australian/New Zealand issuers in the market through 2019.

Euro market investors have been un-phased by Brexit and continue to be actively engaged in the market. UK names are being forced to pay a premium for access; otherwise the market is expected to continue to be open as we move through the process.

We would note that, as would be expected, any political instability that arises around the key Brexit dates is likely to see the market stand aside until certainty is achieved. As with Sterling investors, Euro investors continue to actively seek out the diversity that Australasian credits offer, and we believe that the market will continue to offer opportunities for these issuers through 2019.

Conclusion

Though some progress has been made, the path to a Brexit conclusion remains unclear and will continue to present many challenges and opportunities for some time for our customers who are located in, or who are looking to operate in, the EU.

NAB is well advanced in assessing our current and future operating models, and remains committed and able to support our customers, both those who reside within the UK and EU looking to our home markets in Australia & New Zealand, and those in our home markets looking to access opportunities and investors in the UK and EU in the years ahead.

"Instability in 2018 saw investors adopt a conservative stance."

EVOLVING CONNECTIONS SUPPORT ASIA'S GROWTH AMBITIONS

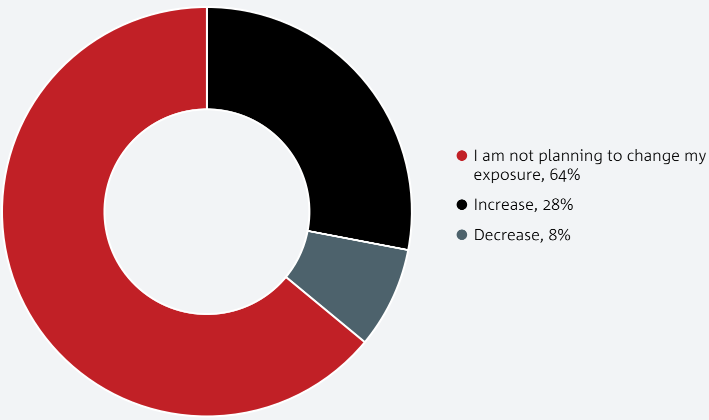
At NAB's 2018 Asian Debt Capital Markets Conference, issuers and investors zeroed in on the forces that will build connections and foster future opportunities.

BY MELISSA GRIBBLE & LORNA GREENE

A MORE UNCERTAIN global environment will do little to derail the megatrends creating opportunities in Asia Pacific for Australian and New Zealand issuers, and Asian investors alike, according to participants at National Australia Bank's (NAB) 2018 Asian Debt Capital Markets (DCM) Conference.

Now in its fifth year, the event brought together a broad range of issuers and investors in Singapore, Hong Kong and Tokyo to discuss the issues dominating debt markets.

How are you planning to change your exposure to the Australian market over the next 12 months?



Source: Asiamoney 2018

Strong Asian investor connectivity with Australasian issuers is structural in nature, and short-term market gyrations won't turn back the clock. The most significant change to the way debt capital markets operate in this region is how critical Asian investors are to local issuers. Now roadshows and deal launches are managed around Asian time zones.

With the global interest rate environment shifting and markets roiled by tensions over geopolitics and global trade, volatility is foremost on many issuers' minds. But as Geoff McMurray, General Manager, Capital Management & CRO at chemicals firm Incitec Pivot Ltd, pointed out, "volatility is nothing new".

Rather than embarking on a full-scale retreat from the markets, firms are focusing on tightening management of their balance sheets and maturity profiles. Companies are also adopting nimbler issuance strategies, or looking to access investors directly.

Periods of volatility highlight the need for companies to cultivate diversity in their investor bases, issuers said. "It's about making sure you have capacity in your funding markets and not just keeping yourself tied to one market where there's no capacity to fund if things change," Mr McMurray said.

Wealth to put to work

As more Australian and New Zealand issuers seek to broaden their investor horizons, the transformation taking place on their doorstep means they don't have to look far. Asia Pacific's rapid growth has created pools of capital that investors are looking to deploy; by one estimate the assets managed on behalf of the region's institutional investors will nearly double to US$10 trillion by 2025[1].

The outlook for the region is relatively bright, with growth in developing East Asia and the Pacific expected to top 6.3 percent in 2018 – around double the global rate of 3.1 percent[2].

Importantly, many of these investors have strong appetite for Australian and New Zealand debt. The 2018 poll of Asian and European investors by NAB and Asiamoney found that around a quarter had increased their exposure to Australian debt over the last 12 months, and that 64 percent had left their Australian bond allocations unchanged. In addition, 28 percent plan to increase their Australian bond portfolios over the next year[3].

A region reshaped

The growing presence of Asian investors in Australian and New Zealand debt markets is just one aspect of a more connected region. We continue to see the blending of Asian, Australian and New Zealand expertise in our capital, trade and business flows. In particular we see this happening via the Australian bond and loan markets, where Asian investors make up a significant part of all transactions, providing depth, diversity and liquidity.

David Lowe, Senior Manager, Treasury at Newcastle Permanent Building Society said the firm had seen a "big influx of interest from Asia", with a 20 percent rise in Asian investor participation in one issuance early this year, versus the 2-3 percent increases seen previously.

There are several factors that explain the appeal of Australian and New Zealand debt to the regional investor base. A track record of robust growth and stable governance play a role, as do the attractive yields offered by Australian and New Zealand credits. And as it has for issuers, diversification has emerged as a major driver, with 40 percent of the investors polled citing this as the main reason for planning to boost Australian bond holdings.

Meeting green ambitions

The interests of Australian and New Zealand issuers are also converging on sustainable assets. Environmental, social and governance (ESG) factors have become a significant consideration for many investors, with 25.8 percent of those in the NAB/Asiamoney poll intending to increase their ESG bond exposure in the next year – some by up to 25 percent.

Of the investors planning to boost ESG bond holdings, 44 percent also intend to lift exposure to the Australian fixed income market. This is very much in line with what NAB sees as an international trend around social and responsible investment.

This represents a clear opportunity for the rising number of Australian and New Zealand corporates who have made sustainability a priority and are exploring green or social bond issuance. There is increasing investor appetite for ESG bonds and a growing recognition that companies need to take ESG seriously.

Going forward, NAB is expecting a pickup in issuances from sectors that have so far been underrepresented from a specific funding perspective despite a strong focus on ESG initiatives, such as infrastructure and utilities.

Fundamental forces, now and in future

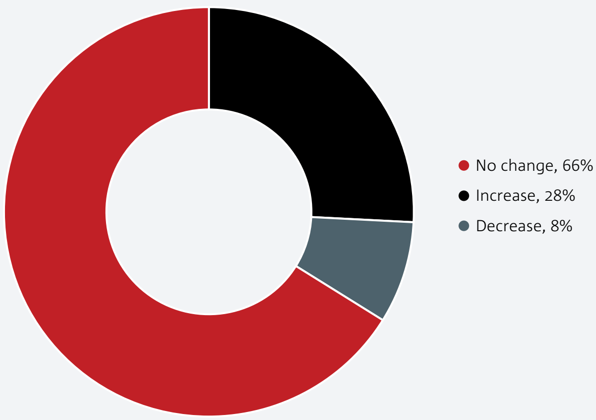
One looming question is whether the broadly positive factors creating a more integrated regional debt market – solid growth in Australia, New Zealand, and the rest of Asia Pacific; greater focus on diversification; the pressing need for infrastructure and a rising ESG emphasis – are vulnerable to volatility spikes or macroeconomic shocks.

The consensus at the conference seemed to be while there may be short-term setbacks, the forces encouraging regional connections are too fundamental to be reversed completely. Strong population and hence infrastructure growth is set to continue in New Zealand and Australia, while the push towards greener policies and renewable energy sources is an important trend that represents a new source of growth region-wide.

This means the bonds between Australian, New Zealand and Asian issuers and Asia Pacific investors will continue to expand in future. Investors will continue to seek out Australian assets for their yield, stability, consistency and sustainability. We expect the depth and dynamism of the region's investor base will stand issuers in good stead – contributing to building infrastructure and helping to ensure vibrant communities.

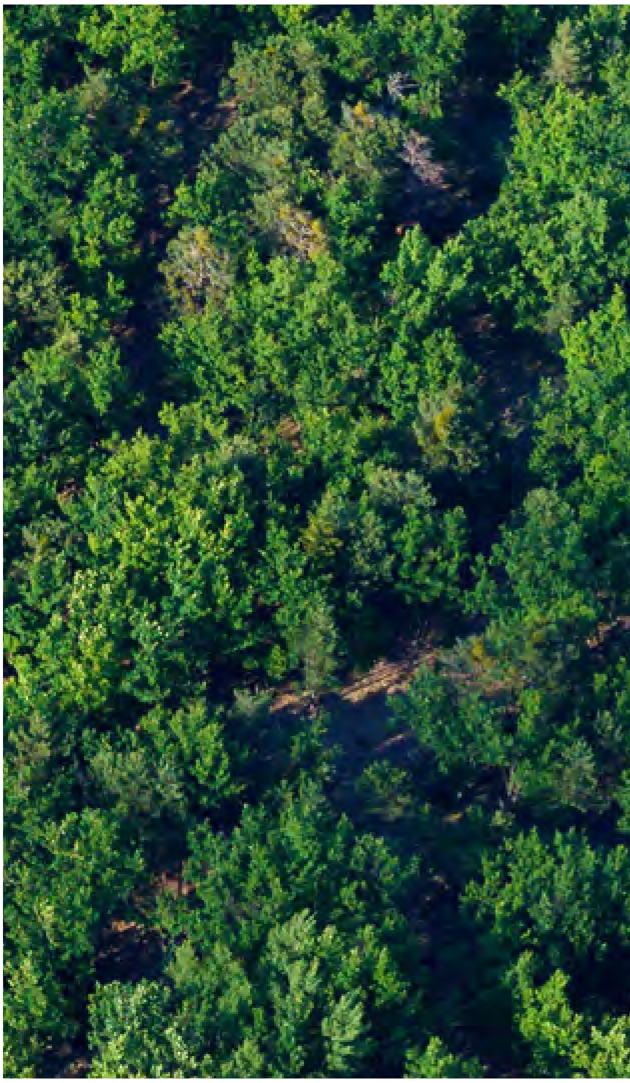
"We continue to see the blending of Asian, Australian and New Zealand expertise in capital, trade and business flows."

How are you planning to change your exposure to the ESG bond market in the next 12 months?



Source: Asiamoney 2018

1. Spence Johnson projects $10 trillion in Asia-Pacific institutional assets for managers by 2025
2. Global Economic Prospects: East Asia and the Pacific; Global Economic Prospects: The Turning of the Tide?; Annual Impact Investor Survey 2018
3. Yield hungry investors head to Oz



A NEW WAY TO INVEST IN WIND AND SOLAR FARMS

NAB is providing new products to meet growing demand for green investments.

BY ARKADY LIPPA & JACQUELINE FOX

IN RECENT YEARS, National Australia Bank has created several new green debt products that enable investors to tap into the growing market for renewable energy.

We were the first Australian bank to issue a green bond, in 2014, which has since been replicated by other Australian banks, directing hundreds of millions of dollars into the renewable energy sector.

This year, we launched another first: a Low Carbon Shared Portfolio. Institutional investors had the opportunity to buy into an A$200 million pool of NAB loans, giving them direct access to the bank's own portfolio of loans to wind farms and solar parks that usually are not available to the broader market.

The electricity generated by the seven renewable energy projects, loans to which have been included in the portfolio, avoids more than 2.5 million tonnes of CO_2 emissions every year, which is equal to the emissions created by over 350,000 Australian households.

We believe in the growth of the socially responsible investor. The rise of socially responsible investing is a global phenomenon and we are working towards providing more products suitable for these investors.

The Low-Carbon Shared Portfolio provides access to a vertical slice of our eligible Australian renewables loan book, and investors received access to loans that NAB has vetted and itself has an interest in, which is a rare opportunity for investors.

Sustainable investing

The Low-Carbon Shared Portfolio attracted investors including the Clean Energy Finance Corporation (CEFC) and Insurance Group Australia Ltd (IAG).

The Portfolio Notes have been Climate Bond certified by the independent London-based Climate Bond Initiative, making it Australia's first Climate Bond Initiative certified project bond. It is NAB's third green debt product type to receive this certification following the bank's AUD, USD and EUR denominated green bonds and the green tranche of its early 2018 RMBS issue.

The Portfolio is unique in that it enables institutional investors to access a market which is usually the domain of the large project finance teams within commercial banks. We've been active in this market for over 15 years and are well placed to deliver this innovative product to new investors.

NAB's renewable energy team has arranged over A$7 billion in financing for wind farms and solar parks over the past 15 years, and earlier this year completed its 100th green loan.

Eight loans to the seven operational wind parks and solar farms in the Portfolio meet strict eligibility criteria and make up a bespoke pool of low-carbon loans, originated by NAB's renewable energy team. Investors in the Portfolio Notes issued by the Low Carbon Shared Portfolio rank alongside NAB in the exposure to the

23.5%▲

Expected growth in renewable energy penetration in Australia by 2020.

55BN

NAB's committed financing over 7 years to 2025 to help address climate change.

245%▲

The growth in Responsible Investment assets from 2014- 2016.

loans, and will receive regular principal and interest payments. The portfolio has the characteristics of a fixed-income product, but it is unique.

Record investment in renewables

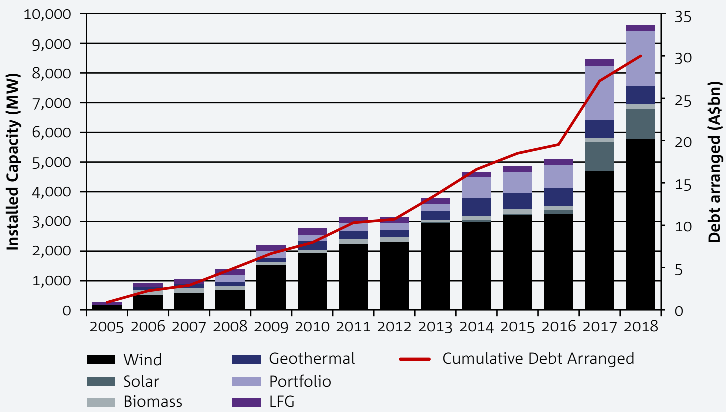
The renewable energy sector is witnessing record investment levels. Large-scale renewable energy projects adding up to more than A$10 billion in private investment were either under construction in Australia or committed during 2017, according to the Clean Energy Council.

Globally, the penetration of renewable energy is increasing and Australia has the opportunity to boost its renewable energy penetration compared to other developed nations. By 2020, renewable energy penetration is expected to grow to about 23.5 per cent in Australia, according to the International Energy Agency, while some individual states have targets of between 40 per cent and 100 per cent by 2025.

There are significant opportunities in the Australian renewables sector, and NAB will continue to look for new ways to enable investors to tap into this growing market.

> "The rise of socially responsible investing is a global phenomenon."

Cumulative installed capacity/debt arranged by NAB for renewable projects



Source: NAB data

COMPANIES CHOOSING AUSSIE HIGH YIELD FOR GROWTH

The digital economy has given rise to its own infrastructure needs, and investors are paying attention.

BY ANDREW GORDON

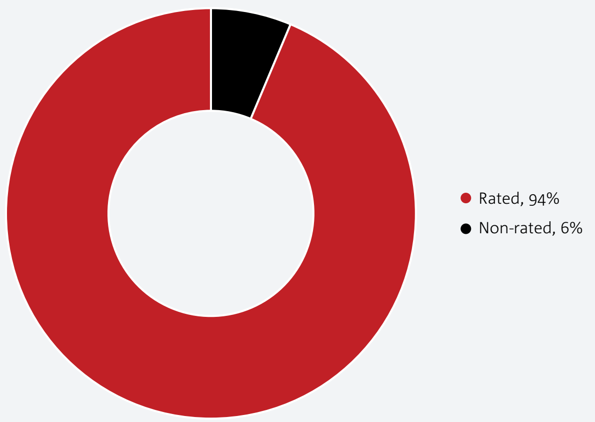
ASX-LISTED COMPANIES THAT have traditionally looked to equity markets or bank debt to fund their growth plans have recognised an increasingly attractive alternative source of funding: the burgeoning A$ non-rated corporate bond market.

Supported by strong appetite from investors, the volume of non-rated corporate bond issuance in calendar year 2017 was over A$1.0 billion and year to date in 2018 over A$0.8 billion, according to NAB data. In 2017, non-rated issuers represented one in every four corporate bond transactions in the A$ market and so far in 2018 non-rated issuers represent almost two in every five corporate bond transactions – yet this growth has come with little fanfare.

For borrowers that have a growth agenda, non-rated debt can provide the flexibility and capital to support those growth plans, without having to raise equity and dilute their shareholders.

These higher yielding bonds are similar to those issued by investment grade rated corporates but are not rated or are sub-investment grade and therefore offer a higher rate of return to investors. Investors are willing to provide additional flexibility such as limited covenants and accepting some level of subordination to generate this higher return.

2017 A$ corporate debt markets issuance (volume)*



Source: NAB data, Bloomberg.
*Excludes financial institutions, SSA and auto finance issuance; includes Kangaroo issuance.

Funding for capex

In recent deals, capital raised has generally gone towards capital expenditure or to refinance existing debt. Names that have tapped the market through NAB include Seek, NEXTDC, Afterpay Touch, Qube, QMS Media, Peet and Centuria.

Earlier this year, Australia's leading data centre provider, NEXTDC Limited (ASX:NXT), issued A$300 million of senior unsecured notes maturing in June 2022. This NXT transaction was split between a $200m floating rate tranche and a $100m fixed rate tranche. NAB acted as sole arranger and sole lead manager on NXT's fourth transaction in the A$ non-rated market, taking NXT's total issuance to A$600 million.

As in all A$ high-yield issuance, one of the key ingredients to success is the co-mingled investor base. The order book for NXT Notes IV was made up of around half institutional investors and half non-institutional wholesale and sophisticated investors.

NAB has moved quickly to support the growth of the market, becoming the market leader in the A$ non-rated bond market and acting as lead arranger on over A$1.3 billion of non-rated corporate issuance out of a collective A$1.9 billion in offer proceeds over the last 18 months.

NAB is generally seeing more demand than supply. Our order books have been oversubscribed in each transaction, the issues have priced tightly and they're trading well in the secondary market.

Appetite for fixed income

Non-rated debt appeals in particular to investors who wish to receive a similar income stream that dividends typically provide to share investors, while avoiding the volatility of the stock market that can lead to share price declines even among blue-chip stocks.

Driving the non-rated debt market is growing appetite for fixed income overall as investors seek to diversify their portfolios, coupled with the hunt for yield that has been the driving theme in investment markets over the past decade.

There's a new generation of highly specialised fund managers who run mandates for both rated and non-rated paper, and they are happy to do the credit analysis on these transactions.

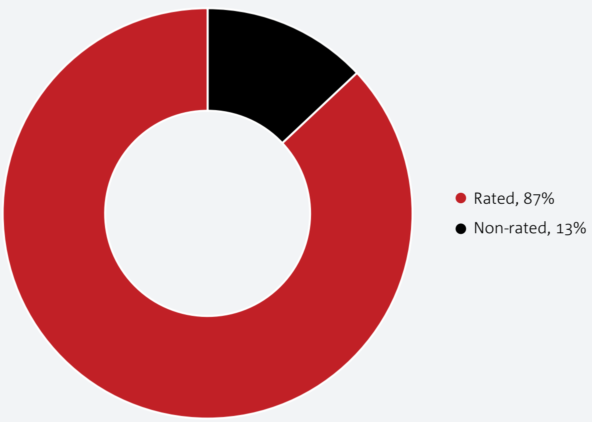
As the market evolves, credit teams at larger asset managers are also working with specialised fund managers to assess issuer quality, sometimes tapping in to their internal equity coverage to evaluate management and the business strategy.

In the non-institutional space, high-net worth individuals and self-managed super funds are looking for a larger weighting to fixed income as the Baby Boomer demographic heads into retirement phase. Often these investors are willing to commit to more investment risk for a small part of their portfolio in return for the higher yield on offer compared to term deposits or other cash-like investments.

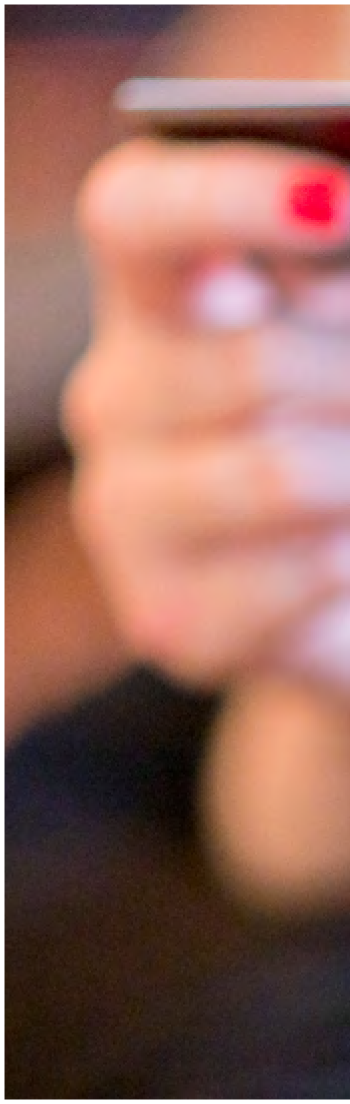
NAB is working closely with investors to tap into the capital flows in the market, and at the same time help our issuers to grow their business.

"For borrowers with a growth agenda, non-rated debt can provide flexibility and capital."

2018 A$ corporate debt markets issuance (volume)



Source: NAB data, Bloomberg (as at 15 November 2018).
*Excludes financial institutions, SSA and auto finance issuance; includes Kangaroo issuance.



GROWING AUSTRALIA'S FLEDGLING FINTECH ECOSYSTEM

Alternatives are emerging to give Australia's fledgling fintech firms easier access to funding.

BY CAMERON SMITH

"We support emerging companies at an earlier stage than a traditional corporate bank would."

IN THE LAST five years, the number of fintech start-up companies in Australia has increased fivefold, including in the financial services space where a new era of business is dawning.

Growing a new business, particularly in the very early days, can be challenging. For a fintech start-up with limited physical or tangible assets, access to secured funding can be a hurdle. Further, these firms' relative youth and lack of track record may also be a barrier to finance.

However, the fintech 'boom' is causing a shift among some financial institutions, and many are beginning to work with and support new entrants. This provides incumbents with opportunities to grow outside of their core businesses, and gives start-ups access to lending and business support from experienced players.

NAB has developed an approach to identify emerging and small finance companies early in their lifecycle, and to support them at an earlier stage than a traditional corporate and institutional bank usually might.

Also, a separate dedicated team called NAB Ventures looks to provide venture capital funding to innovative technologies and technology related entities. Its current portfolio includes Basiq, which helps build financial apps; BrickX, a platform for property investment; and Poynt, an open operating system that can power any smart payment terminal worldwide.

Informed thinking

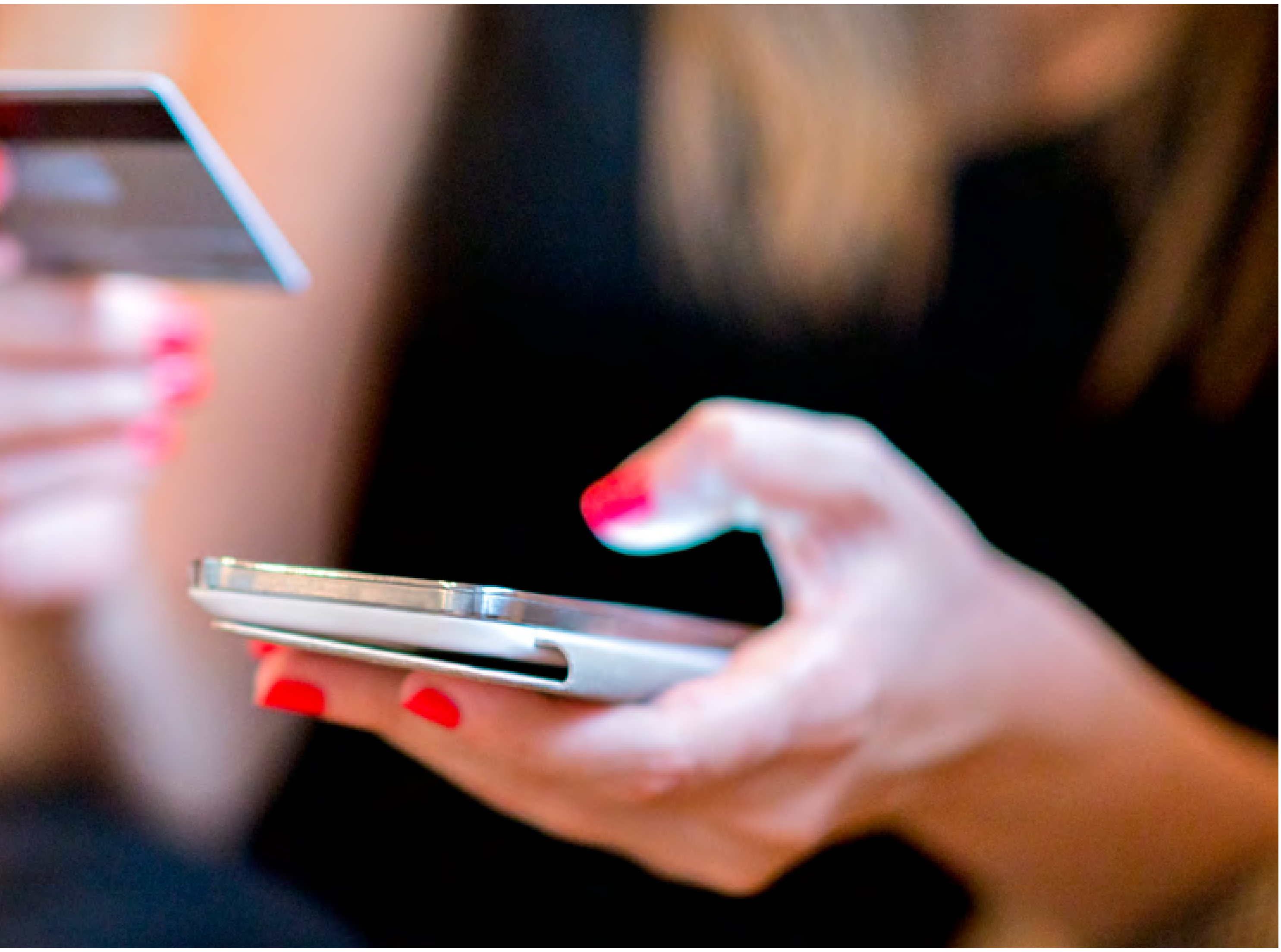
Fintechs are appealing to the increasing preference of consumers to purchase items through their smartphones and tablets.

For example, Brighte is a digital finance platform connecting homeowners with renewable energy vendors and offering zero-interest payment plans for the installation of energy-saving devices such as solar panels and batteries.

As a leading funder of green energy products, NAB provided Brighte with a A$20 million funding facility in May this year.

Similarly, Afterpay Touch Group (Afterpay) is an emerging payments company that allows retailers to offer a lay-by style service in-store and online, and has a A$300 million secured funding facility from NAB.

Recently, provider of business loans to Australian small-to-medium enterprises, GetCapital, obtained a A$40 million secured funding facility with NAB, and credit and digital payment company ZipMoney has also received NAB financing.



Multiple benefits

There are several benefits to providing finance to emerging financial firms such as Brighte, Afterpay and GetCapital – not only through supporting them as businesses directly, but also indirectly supporting their customers through the funding facilities.

The benefits to the start-ups also go beyond pure financing. Many don't yet have sophisticated Treasury functions as they are busy with the growth phase of their business, so NAB provides access to trustee and trust-manager functions.

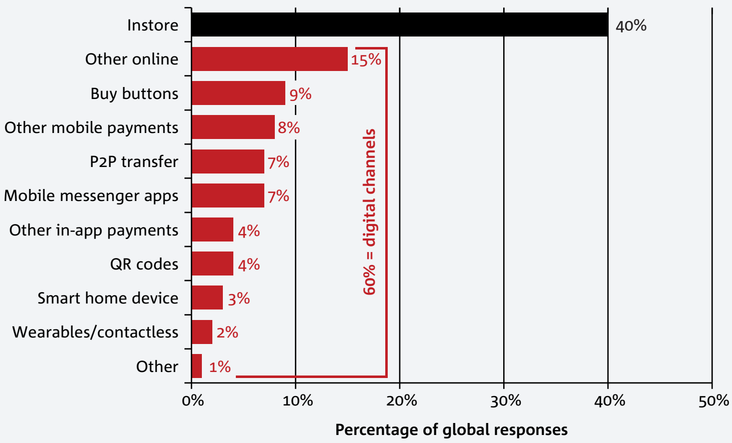
In addition to secured lending and associated services, NAB has also arranged and sold unrated medium term notes for emerging growth companies.

Evolution

Once funding and transactional facilities are in place, things don't slow down. The initial tranche of debt funding from NAB typically gives the start-up the certainty it needs to grow the business's origination channels – which then requires further debt or equity funding – and also gives external investors comfort.

As these companies mature and their involvement with debt and equity investors expands, we can provide a full range of services such as ratings advisory; DCM and securitisation; and distribution.

Transactions by payment channel



Source: Kleiner Perkins 2018 Internet Trends (international data)

> "The benefits to the start-ups also go beyond pure financing."

ELECTRIC POWER AND THE FUTURE OF AVIATION

The aviation sector sees electric and hybrid technology as a way to reduce dependence on fossil fuels.

BY JACKSON FLINT AND KRISTIAN BOGDANOV

“There are significant technological advances still required.”

A GROWING MOVEMENT in electrical propulsion looks set to transform the future of the aviation industry with an increased investment in new technology. More electric aviation projects were announced last year than in all of the previous nine years. One of the biggest challenges currently facing the aviation industry is how to move away from its heavy reliance on fossil fuels and towards a more efficient and environmentally friendly means of transporting people around the globe.

The European Commission in its Flightpath 2050 Vision for Aviation report has set environmental goals for the aviation industry including a 75% reduction in carbon dioxide (CO2) emissions per passenger kilometre, a 90% reduction in nitrogen oxides (NOx) emissions, noise reduction of 65% and the goal that aircraft movements be emission-free whilst taxiing at airports. These goals are unachievable with existing technologies and unrealistic should future technology continue to be fossil fuel-reliant.

The aviation sector sees electric and hybrid-propulsion as the most promising solution to the environmental challenges it currently faces. In July 2018 the UK government announced a “new era of cleaner, greener flight” by pledging to invest £343m into research and development of electric aircraft, hybrid-electric propulsion systems, and future materials for aircraft manufacturing. One of the beneficiaries of this investment is the E-Fan X, a sub 100-seat hybrid electric aircraft demonstrator under development by Airbus, Rolls-Royce and Siemens, which is expected to take flight in 2020 and accelerate hybrid-electric propulsion for aircraft. The E-Fan X is expected to pave the way for hybrid single-aisle commercial aircraft that are safe, efficient and cost-effective.

A long history

Electric propulsion is not a new concept with electric-powered vehicles dating as far back as 1883 when Gaston & Albert Tissandier took flight in an electrically powered airship. However, the problem that has persisted over the years is in the engineering of a battery along with an electrical system powerful and light enough to be used in commercial aircraft. This problem has been partly resolved by the recent rapid development of electric-powered cars, where the application of batteries and electrical storage systems may be suitable for application in a hybrid electric short-haul aircraft.

However, there is a long way to go before even the most technologically advanced car batteries can be used in commercial aircraft. According to Safran, a manufacturer of aircraft engines, batteries can store 60 times less energy than the amount which jet fuel can produce and even if the storage capacity of batteries could be improved by five times, which is currently unachievable by laboratories, it would meant that an A320 aircraft with a maximum take-off weight of 80 tonnes would still require 180 tonnes of batteries to power it for more than 3,000 nautical miles.

Such technology may at first only be useful for aircraft to be utilised on short-haul and domestic routes which are up to 1,000 miles, most commonly operated by low-cost carriers such as easyJet and Ryanair. The idea of an electric aircraft is seen as reality by airline executives with easyJet stating that they believe electric aviation to be a matter of “when” not “if”. A shift towards cleaner, and potentially fuel-free aircraft is good news both for consumers who stand to benefit from greener, cheaper and possibly safer flights and airline operators who in the future could significantly reduce or completely eliminate their reliance on jet fuel as well as the costs associated with hedging its future price.

Safety hurdles

There are currently several companies investing in projects to develop electric aircraft such as Wright Electric, a US based start-up currently in the planning stages for a 120-seat aircraft, and Eviation, an Israeli company which is developing an all-electric aircraft capable of carrying nine people up to 650 miles.

Although the future of electric-powered aircraft as a permanent replacement of existing jet fuel-reliant aircraft looks promising, there are significant technological advances still required. The current commercial airline fleet is a tried and tested method of efficiently transporting passengers globally with rigorous safety standard having been developed over the course of many decades. At present, batteries present significant safety hurdles that must be overcome, such as mid-flight power outages and the risks posed by electrical fires.

A reminder of the safety issues come from the Boeing 787 Dreamliner which comprises various electrical systems in place of hydraulics. The 787 faced the issue of battery fires, leading to the Federal Aviation Administration (FAA) calling a review into the manufacture and design of the aircraft following five incidents in five days which were linked to the aircraft’s electrical systems. Furthermore, there would need to be significant investment in airports to enable them to service electrical aircraft and ensure that the turnaround time of recharging an aircraft is comparable to the current time it takes to refuel a jet engine plane.

BLOCKCHAIN: THE NEXT BIG THING

There is an increasing expectation that blockchain will play a major role as a future economic driver.

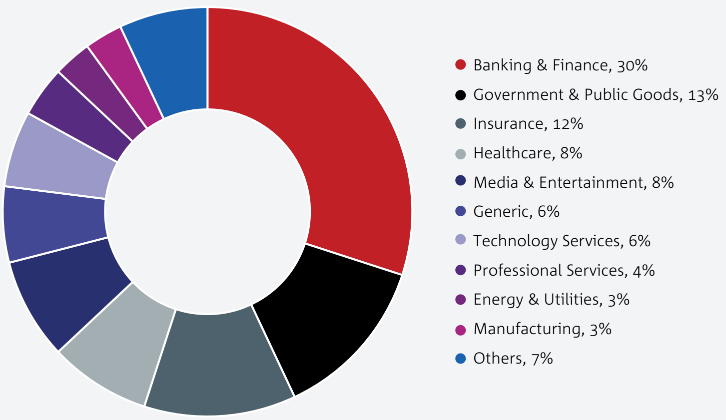
BY MATHEW SALIBA

PROPONENTS BELIEVE BLOCKCHAIN may well be one of the key technologies (along with the internet, automation, AI and robotics) that propels us into the next industrial revolution, with new paradigms for doing business in finance, commodities trading, and many other industries.

What is Blockchain?

In the same way there are there are many ways to describe the internet, there are many ways to characterise blockchain. In simple terms blockchain is a distributed (or decentralised) digital ledger which records digital data or events in a series of blocks, which are tamper-resistant. While the data may be accessed, inspected or added to, it cannot be changed or deleted, leaving a permanent and public chain of transactions.

Sectors currently using blockchain



Source: University of Cambridge, Judge Business School[2]

In reality, blockchain incorporates a range of other characteristics including acting as a marketplace for financial and other services, including cryptocurrencies (like bitcoin) and as an open source platform for software development. Importantly, it unbundles trust so that anyone performing a trust function will be challenged and can be verified by the blockchain which means that there is no longer a need for a middleman of any kind. This means that the transfer of ownership of anything of value – whether it is money, a bond or stock or a digital asset with a right attached to it – can happen instantaneously.

Blockchain and banking

To date the financial services sector has been most active in using blockchain. The main areas in which banks and other financial institutions will be able to implement blockchain technology are reducing costs and making bank-to-bank and international transfers faster. Research by Accenture found that the global banking sector will save up to $20 billion by 2022 through the adoption of blockchain.[1]

Another field of blockchain application in the banking industry is for the creation of a client identification system based on the distributed ledger technology. This is highly relevant because all credit organizations have to perform Know Your Customer (KYC) when processing applications. Blockchain enables users to be identified on a single occasion and this information is stored with access granted to other banks in the system.

Heavyweights ramping up blockchain

Beyond financial services, we are also seeing other sectors increasingly considering the merits of blockchain technology. Commodity traders and trade finance banks are embracing blockchain as a way to reduce costs and administrative tasks, while improving record

keeping and tracking for trades. The biggest traders conduct thousands of transactions per year valued in the billions of dollars, but those deals typically have low profit margins. For blockchain to succeed, however, industrywide adoption of standardised platforms and systems will be needed. For this reason banks are teaming with the biggest trading houses, such as Louis Dreyfus, on early blockchain tests.

Oil traders and commodity trade finance banks have already used blockchain to conduct energy trades. Some of the world's biggest oil producers, trading houses and trade finance banks have formed a consortium develop a blockchain-based digital platform to manage physical commodity transactions. The venture is expected to be fully operational by the end of 2018.

Social benefits

Blockchain is also being used for improved ethical supply chains. Diamond industry giant De Beers recently commenced a pilot scheme to train and equip artisanal diamond miners in Sierra Leone before authenticating and buying their production. The company plans to make the technology available to the entire diamond industry. Should the scheme prove successful, it could solve multiple problems. Artisanal miners will have a route to market that will offer them better prices, while De Beers gains additional supply and consumers can have the confidence that the product they are buying is free from many of the negative connotations of small-scale mining.

There are already moves afoot to replicate the De Beers' scheme in cobalt mining. Cobalt is a key ingredient in lithium-ion batteries used in electric vehicles and the scarcest of battery raw materials. It is also the most geographically challenged in terms of economically viable deposits: More than 50 per cent of global reserves are found in the Democratic Republic of Congo, a country plagued by political instability.

Securing supply and ensuring it meets the sustainability demands of customers, who want to know that extraction has met environmental and social standards, are at the heart of the difficulties of building a sustainable and ethical supply chain. The proposed cobalt pilot will monitor artisanal mines against OECD sourcing standards by using blockchain technology to trace those supplies and ensure against supply chain contamination.

The use of blockchain technology may also become the norm through regulation. So far, most proposed or piloted blockchain schemes are being driven by companies or industry groups. Yet, as the technology advances and regulators tighten rules, there's an increasing likelihood that such monitoring technologies will become compulsory in the future.

The future

Given its vast implications, organisations will clearly benefit from a considered, methodical and sustained approach to implementing blockchain.

The key question is how to go about this and whether it is led by technology or business. A sensible option could be a hybrid approach with a blockchain champion to articulate a strategy and move projects forward which focus not just on cost savings but also innovation. In large organisations there will need to be many champions. In the same way that the internet has become omnipresent, their ultimate goal will be to ingrain blockchain as part of the organisation's operating DNA.

> "Blockchain is also being used for improved ethical supply chains."

1. Accenture Technology Vision 2018 Trends Report
2. Global Blockchain Benchmarking Study 2017

THE DIGITAL EVOLUTION OF ESG INVESTMENT

How to create trust, transparency and liquidity for green infrastructure opportunities.

BY JOHN MCCLUSKY

The global green phenomenon

Green investments are rapidly gaining in popularity with investor mandates and demand changing significantly in recent years to support this asset class.

We have seen this first in the debt markets, with a dramatic rise in the demand for green bonds. The market is expected to grow about 40% this year.

Investors are eyeing green bonds because they believe they can create value and deliver strong returns by increasing their exposure to renewable and clean energy projects, sustainable water management initiatives, green buildings and future low carbon mobility solutions.

"This is a global phenomenon... We have green shoots everywhere," said Sean Kidney, chief executive of the Climate Bonds Initiative, at National Australia Bank's inaugural 'Insight Series' seminar in London in September.

But are investors actually changing and measuring the impact of their investment? Many investors are struggling to reconcile their desire to invest in sustainable business opportunities given their stringent investment criteria and reporting needs.

New fintech technologies such as digital assets, built using blockchain, offer a solution by helping both investors and green infrastructure providers to meet environmental, social and governance (ESG) requirements, and mobilise capital at the scale needed to finance the transition to a green, low carbon economy.

Evaluating green opportunities

Around the world, we are witnessing a green investment shift away from purely short-term financial returns, towards a focus on long-term sustainability themed investing, taking ESG factors into account in the investment process and seeking both financial and societal returns.

The interest of investors in green bonds and green infrastructure could not be timelier, as the shift towards more sustainable investment opportunities comes at a time of great need.

But in spite of this meeting of minds – between those requiring investment in projects that make infrastructure climate adapted and resilient, and investors with both the funds and the desire to get involved – it is often tricky to match demand with supply.

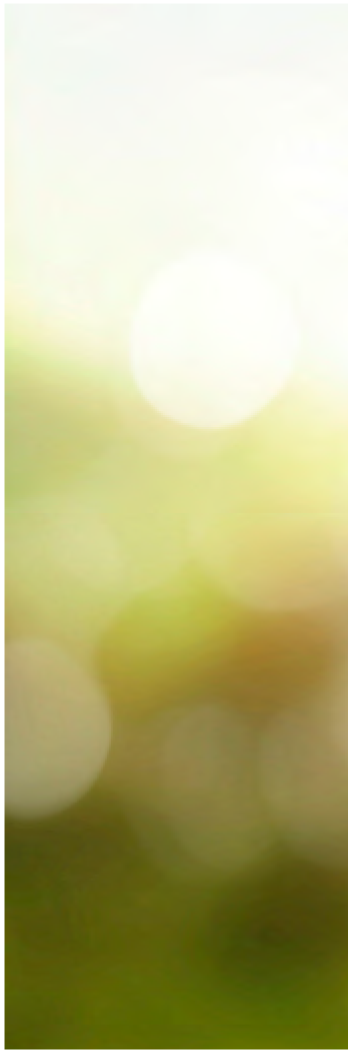
This is because investors are required to evaluate green infrastructure investment opportunities in terms of potential risks and rewards, both in the short and the long term, before funds can be directed towards mitigating initiatives that address pollution and climate change.

Hence, they require proper reporting procedures to be implemented. Without them, many investment opportunities fall foul of investors' investment screening and reporting requirements.

Fintech for investors

The result is a lack of solid investment opportunities for impact investors to act on. Fortunately, however, we are seeing a host of new fintech instruments that will help alleviate the situation.

The solutions will include both new products and new market players, such as the blockchain-based green energy trading platform WePower; Stockholm Green Digital Finance – a not-for-profit centre tasked to accelerate green finance and investment through fintech innovations – and their Green Assets Wallet blockchain verification technology that verifies green impacts; and the software technology company ConsenSys, which uses blockchain for digital verification.



ConsenSys created a digital platform that makes it possible to verifiably sign Power Purchase Agreements for buyers of energy while simultaneously decreasing the risk on both sides of the transaction.

WePower's tradeable Smart Energy Contracts are essentially Contracts for Difference, which enable renewable energy producers, even small ones, to sell energy tokens that represent digital utility services, which in turn represent their commitment to deliver energy in the future.

The platform enables the seller to deal directly with buyers. Small companies, and even households, can invest in the energy market, where their tokens can be freely traded at current market price if their energy requirements change over time.

Faster funding

ConsenSys is also enabling investors to put their money to work for good more efficiently.

The company has created an impact investment blockchain platform that provides instant access to investment criteria. Investors and philanthropists can enter information about what investments they are looking for, what their capital needs and return requirements are, and whether their focus is mainly on generating returns or making an impact. They can also detail which of the Sustainable Development Goals they want to invest in.

It's also possible to underpin agricultural assets with Smart Contracts, using digital and blockchain platforms to turn them into digital assets. It allows farmers and smallholders to access funds instantaneously, by using a simple futures trading formula. Previously, they would have to wait 12 to 24 weeks for funds to arrive; thanks to Fintech, they can run their farms more efficiently.

Investors have a role to play

As digital assets mature and regulators, politicians and the broader public drive demand for sustainable investments, we could soon see green bonds go mainstream. Investors want these instruments to be employed more widely to help cut costs, build trust and enable impact investors to come on board.

Digital evolution within ESG investment will change how borrowers borrow and how investors invest.

Much of the emphasis must be on education, to make sure both issuers and investors become more familiar with blockchain-based digital assets. This can happen quickly, so we expect ever more – perhaps even most – bonds and corporate loans to be agreed using blockchain technology.

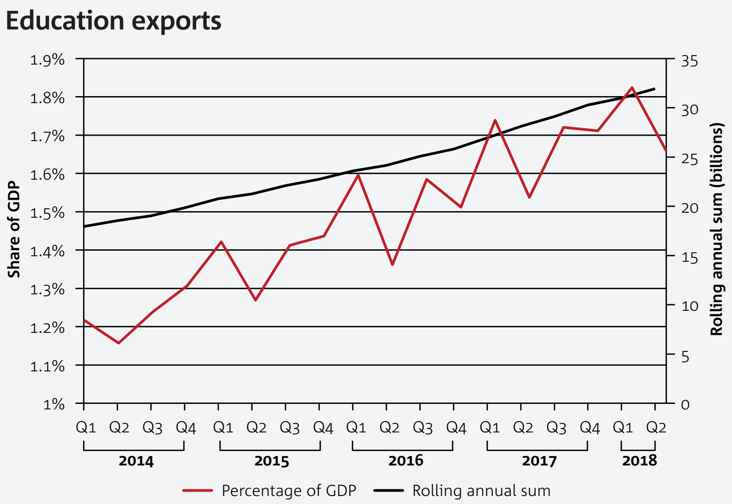
As a consequence, there will be less bureaucracy, greater transparency, and the real economy will grow in ways that safeguard the environment and contribute towards the implementation of the UN's Sustainable Development Goals.

"Digital evolution within ESG investment will change how borrowers borrow and how investors invest."

THE AUSTRALIAN ECONOMY'S QUIET ACHIEVER

BY DAVID DE GARIS

THERE ARE UNDERSTANDABLE market jitters around current trade tensions between the United States and China. Even so, the overall global expansion, the growth in business, incomes, and jobs has been a very positive one for the Australian economy. Apart from the occasional supply disruptions to Australian production, from the likes of Cyclone Debbie damaging rail infrastructure and more recently the drought decimating this year's Eastern crop, export volumes have been an almost continuous source of support for Australia's growth journey. The recent boost in resource commodity production and buoyant prices (e.g. iron ore and LNG) led to Australia notching up a sizeable A$3.0 billion trade surplus in September, a trade surplus so far for the year of A$15.5 billion, up from a A$11.9 billion surplus for the same period last year.



Source: National Australia Bank, Macrobond

Given Australia's exporting history, it's understandable that commentary often focuses on the good stories from the resources sector, the burgeoning liquefied natural gas exports that were nearly A$5.0 billion in September, and the lift in iron ore exports in the wake of mine expansions earlier this decade. There is no doubting that Australia has competitive strengths and resource endowment from its traditional resources sectors.

Against that background, it's a little surprising to learn that the export star for the past half-decade has seemingly flown under the radar. Not only has it grown at a fast clip, as some more fledgling sectors have (interesting stories in themselves), but it's grown to a scale export industry, currently ranking as Australia's third largest export earner. And it's actually the "learning" industry, education.

Education exports earnings totalled A$32 billion in the year to September 2018, up 13.6% in annual terms, having averaged annual growth of 12.9% in the five years to 2017, well above average annual growth of 5.0% across all export categories, goods and services. Education exports constituted 1.7% of GDP for the year to September, up from 1.2% a decade earlier.

By July 2018[1], there were 626,988 international students in Australia, an increase of 11% on the student numbers in July last year. There were large increases in the number of Chinese students, (currently 30% of students) up 14% from a year earlier, students from India (13% of students and up 25% from July 2017), and Nepal, the third largest source, accounting for 6% of total students with growth up by more than half (52%).

While more than half of students are enrolled in universities, 26% are enrolled in VET courses, another 14% in English language courses (ELICOS), and the remainder in Schools (3%) and non-award courses (6% of total). Of course, students can enrol in more than one course, often enrolling in an English language course while undertaking other learning.

Looking out, looking in

While the growth and size of the industry in Australia is one perspective, it's always useful to see how Australia ranks across other countries in terms of popularity. Australia ranks highly. A study this year from the OECD found that in 2016, there were five million tertiary students studying offshore, 3.5 million in OECD countries. Australia ranked as the third most popular choice to undertake tertiary education internationally with a 7% share of the international tertiary student market behind the United States at 19% and the United Kingdom at 9%. Australia ranked ahead of France and Germany, both with a 5% share of the market.

An alternative data set from UNESCO's Institute of Statistics confirmed Australia's ranking as number three, a separate report[2] suggesting that Australia could even overtake the UK as number two by the time the 2018 data set becomes available.

The China connection

Education is yet another sector where Australia's links with China have increased measurably. As recently as 2007, there were around 50,000 students from China studying in Australia[3]. The Chinese Ministry of Education reported that among the 523,740 Chinese students that went abroad to study in 2015, the USA, the UK, and Australia were the three most popular destinations: the US with 31%, 27% to Australia and the UK with 20%. Students coming to study in Australia have grown at an average annual rate of 11% since 2002. It was also reported that many Chinese students studying abroad return to China to work in finance, education, and software/IT[4], sectors that will figure large in China's prospective economic development in the years ahead.

While the attractiveness of studying abroad for students and families with rising incomes and opportunities is understandable, China itself is beginning to emerge as a host country for students, despite language barriers. The number of inbound students into China doubled in less than a decade to 2015 to 400,000 students.

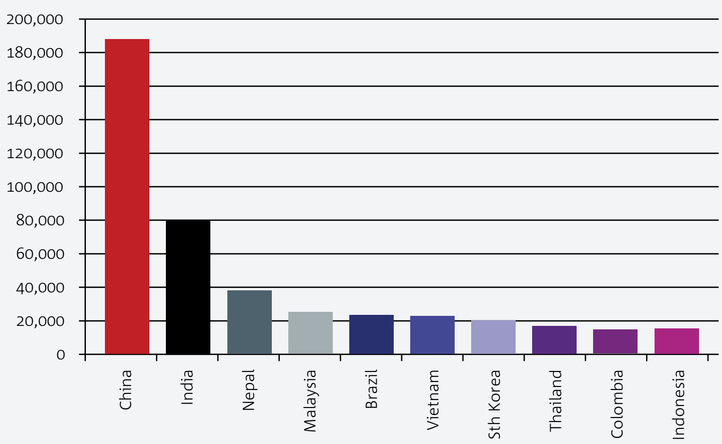
The outlook

It's perhaps no surprise that Asia accounts for more than half of all international tertiary students, with Europe the next largest source at just under a quarter, representative both of population and the more rapid growth in incomes in the Asia-Pacific region. Whether Australia can continue to record the double digit growth achieved in recent years will depend both on the factors affecting demand from source countries as well as conditions in host countries, and the capacity of universities and schools to expand and market their education offerings to prospective students. Some have already established campuses offshore.

The attractiveness of Australian universities and schools and English language course offerings are important, as is the openness of host countries to international students. Beyond the popularity of cities and universities, other factors such as the availability of accommodation, law and order, and liveability factors no doubt also play a part in where to study as well as individual university entrance requirements and fees.

"Education ranks as Australia's third largest export earner."

International students in Australia



Source: National Australia Bank, Macrobond

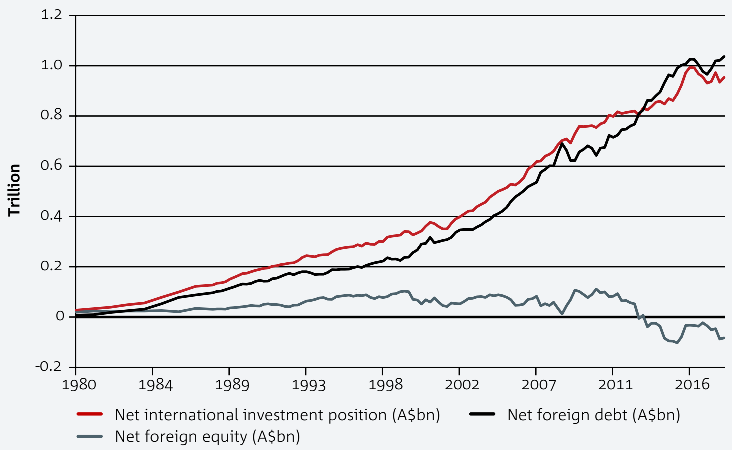
1. Department of Education and Training: International Student Enrolment Data
2. UNESCO Institute for Statistics (UIS) student mobility data
3. Department of Education and Training: China – Outbound and inbound international students, August 2016
4. Chinese outbound growth slows as returnee numbers rise

THE AUSSIE DOLLAR – FINDING ITS FEET IN 2019

BY RAY ATTRILL

THE COURSE OF the Australian dollar (AUD) in 2019 inevitably revolves first and foremost around the fate of the United States dollar (USD). Where the US dollar goes, the Australian dollar (almost) invariably follows, in the opposite direction of course. This is not to say we don't care, from a currency perspective, how well the Australian economy fares and what that might mean for RBA policy. It's simply that the AUD's fate will be shaped more by the global forces operating on it from a combination of volatility in the USD, in commodity prices and the extent to which the financial world is generally a happy or unhappy place.

Australia's net international investment position



Source: National Australia Bank, Macrobond

The significance of the latter can never be overlooked, bearing in mind Australia's inglorious status as one the world's biggest net international debtors. Externally owned debt is currently close to A$1 trillion, which as a share of GDP is surpassed only by New Zealand and Spain. This means that when the world's financial markets start to fret for whatever reason and focus on the return of, rather than the return on, capital, money flies home and the AUD tends to suffer.

For much of 2018, this negative correlation was more evident in relation to stresses in various Emerging Markets (EM), which suffered capital flight as US interest rates continued to rise, reversing some of the inflow evident during the post-GFC period of ultra-low Fed policy rates and Quantitative Easing as a result of the 'reach for yield' by US investors in particular.

Alongside, we have witnessed various idiosyncratic sources of pressure on some big EM currencies this year (e.g. Turkey, Brazil and South Africa) and of course China, the latter as the US government imposed, and subsequently ratcheted up, trade tariffs on imports from China. Throughout these developments, the AUD has proved to be the pre-eminent 'EM risk proxy', a product of Australia's strong trade links with EM – China in particular – and the superior liquidity on offer in what is the fifth most actively traded currency in the world.

Trade tensions

We would happily be proved wrong, but our working assumption as we head toward 2019 is that President Trump will carry through on his threat to increase the tariff rate on US$200 billion worth of Chinese imports from 10% to 25% from 1 January 2019 and, from February, levy tariffs on the full gamut of Chinese imports (meaning on a further US$267 billion worth of goods). This is because of the depth and complexity of the US's grievances with China. This includes rules, whether tacit or explicit, governing licensing, joint ventures between US and Chinese firms and intellectual property transfers. The 'Made in China 2025' policy has in this respect, further inflamed US senses.

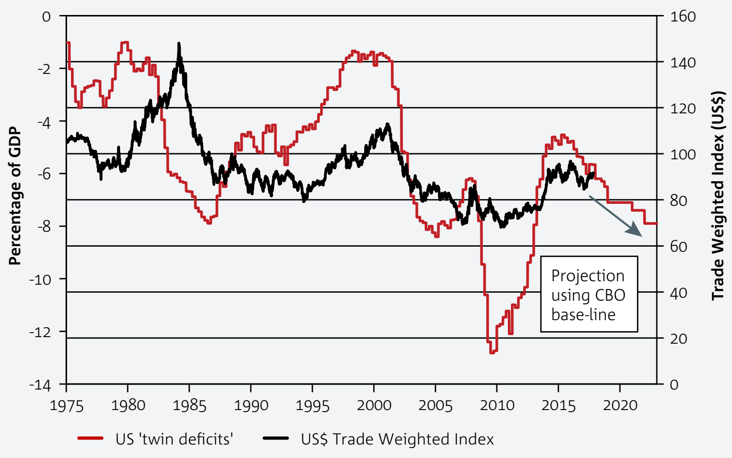
US policy is increasingly focused on persuading US firms to shift manufacturing operation out of China back to the United States, as part of President Trump's ambitions to 'Make America Great Again'. Running alongside are cyber-security, geopolitical and related defence concerns. To our minds, this adds up to the Sino-US trade stoush extending well into 2019 and with that the likelihood of the re-emergence of pressures on EM, to include capital outflows from China that if not fully resisted by the PBoC, will mean USD/CNY being allowed to trade above the psychologically significant 7.00 level. This is turn would represent a fresh weight on the AUD given the aforementioned strong AUD links to Emerging Markets

Against this, we should note that global commodity demand currently looks reasonably robust. To the extent China will do whatever it takes to protect its overall growth rate in the face of slower export demand, this is positive for iron ore and coking coal demand (and prices), bearing in mind most Chinese steel production is consumed domestically.

As for where the USD goes next year, one potential source of upward pressure has just receded following the US mid-term elections. Here, the victory for the Democrats in the House of Representatives makes it less likely that we will see even more expansionary fiscal policy courtesy of additional tax cuts. There could be bipartisan agreement for an infrastructure package but only if this isn't tied to funding for 'the wall'.

“China will do whatever it takes to protect its overall growth rate in the face of slower export demand.”

US 'twin deficits' and the US dollar



Source: National Australia Bank, Macrobond, CBO

The path of the Fed

The risk of further loosening of fiscal policy adding to the build of inflationary pressures and requiring a more aggressive tightening stance from the Federal Reserve – supporting the USD in the process – has receded, though it remains possible the Fed will end up raising rates in 2019 by more than the market currently discounts. Yet as the Fed gets close to the point where policy is considered 'neutral' we look for the USD to come under downward pressure, especially if the prospect of higher rates in other parts of the world come closer into view.

Furthermore, even without further easing in US fiscal policy, budget deficits are slated to get bigger in 2019 and beyond, at the same time that the US trade deficits continues to widen (the impact of US tariffs notwithstanding). The so called 'twin deficits' will be widening in coming years, which historically is a recipe for a weaker, not stronger USD. Think of foreign investors demanding either a higher interest rates or cheaper purchase price (weaker USD) to be persuaded to buy ever increasing amounts of US debt.

If the USD starts to move lower as 2019 progresses as NAB's FX Strategists expect, the flip-side is likely to be an AUD/USD moving back up to, or through 75 cents before the year is out.

STRONG FUNDAMENTAL SUPPORT FOR AUSSIE CREDIT IN 2019

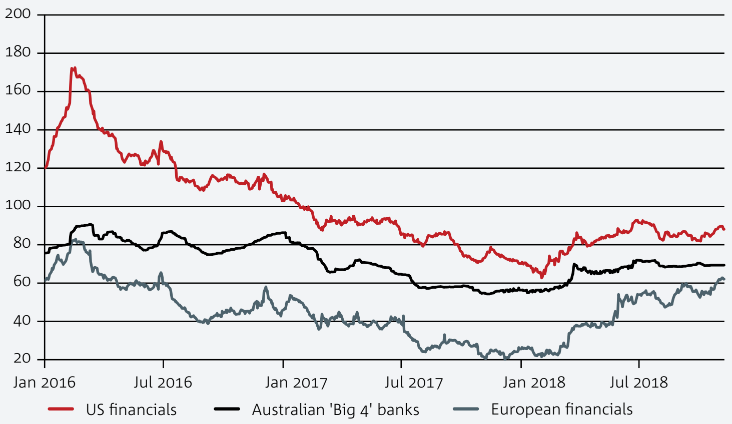
BY MICHAEL BUSH

THE CURRENT YEAR has proved a challenging period for global corporate credit markets as a near continuous period of credit spread tightening that began in early 2016 came to an end. The end of the credit rally was precipitated by the same events that drove volatility in equity markets over the same period, namely the 'taper-tantrum'/rising bond yields of January and February, repeated again in September, overlain by rising Chinese-US trade tensions, European (specifically Italian and Brexit) concerns and Middle East political strains.

For credit markets specifically, the year has seen a relatively steady episode of widening spreads and in the process, have largely ignored several US (and to a lesser extent European) major equity market rallies. For the most part though, the spread widening has been orderly and continues to be seen as an appropriate reassessment of what had become overly tight credit spreads rather than a reflection of any material deterioration of credit fundamentals.

The volume of corporate bond issuance is also another measure partly reflective of investors' risk appetite. As with corporate bond spreads, the primary bond market has also displayed a shift, moving from a pervasive mood of complacency – as indicated by heavy issuance volumes, thin (at times even negative) new issue concessions and light covenant protection – to now, an increasing degree of investor caution, discipline and selectiveness.

Regional credit spread indices (bps over domestic benchmark)



Source: Bloomberg, NAB Credit Research

That has been most evident in the US High Yield (sub investment grade) market where issuance volumes are down 34% from the same period last year.

US and European IG issuance volumes are also short of last year's volumes, but not nearly to the same degree as for the US High Yield market and are still within 5-year ranges.

What is also clear is that new deals will still attract sufficient investor interest, providing they are priced appropriately. There's certainly no suggestion currently of any 'capital strike' to the degree seen during the three most recent market dislocation events of the GFC, the European debt crisis/US sovereign downgrade or the China currency devaluation events.

Corporate credit quality

While the risk reassessment is generally attributed to broader macro-economic concerns over rising bond yields and Chinese-US trade tensions, there are also some more specific and fundamental corporate credit quality concerns that have been building for several years.

Australian corporate credit quality appears to be at cyclically strong levels (as evidenced, amongst many other measures, by very low current loan arrears and defaults) and European credit also appears to be on a recovering trend (albeit with plenty of bumps along the way). However, some indicators do point towards growing stress across corporate America. That principally reflects growing leverage, with many companies pursuing debt-funded shareholder distributions and M&A policies. For now, bank loan liquidity remains very high – the US Senior Loan Officer Opinion Survey for example is approaching its easiest level of the cycle range. But should liquidity tighten, stresses in time will progress to rising defaults.

Despite the concerns posed by rising US corporate leverage, liquidity in the US is likely to remain supported by expectations for reasonably solid US corporate profit growth (notwithstanding that will decline materially from the current high levels once the effects of the US tax cuts roll off from 1Q 2019).

For corporate credit spreads globally that means the outlook remains relatively supportive. Investors are unlikely to quickly return to the environment of deep complacency evident up until early this year and credit spreads are unlikely to return to the levels of that period. While Australian credit spreads could likewise remain under some gentle widening pressure, domestic issuers are robustly placed from a fundamental credit quality perspective.

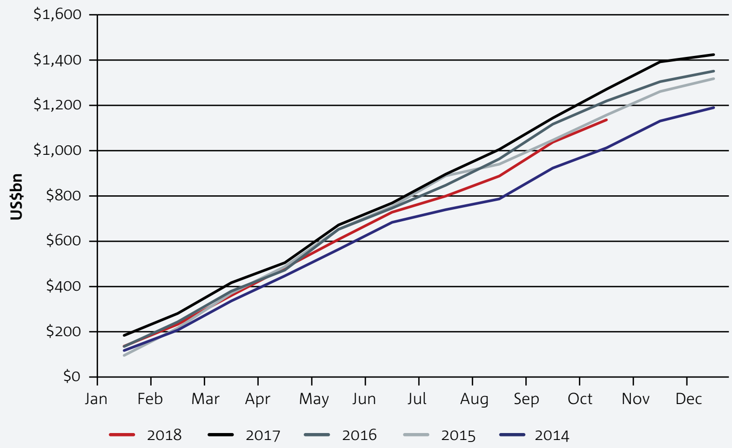
Housing risks

Declines in Australian housing prices are probably the single largest risk in the minds of offshore investors and will likely be the key point of interest in the year ahead. House prices in Sydney and Melbourne have declined approximately 8% and 5% (respectively) from their late 2017 peaks. However, non-performing mortgage loans (90 days plus or impaired), while having increased somewhat over the past three years, remain very low by international standards (currently approximately 0.7% for the Australian Big 4 banks), while actual losses remain at very low levels.

Further, the strong house price rises registered over the past decade have now seen most loans with a low dynamic LVR (average is under 50%), and the credit quality of more recent loans has been strengthened by more stringent controls. As such, actual losses incurred by the Big 4 banks on their mortgage books remains extremely low. Likewise, the high level of broader corporate credit quality referred to earlier is reflected in corporate non- performing loans declining to extremely low levels, under 0.7% of exposures.

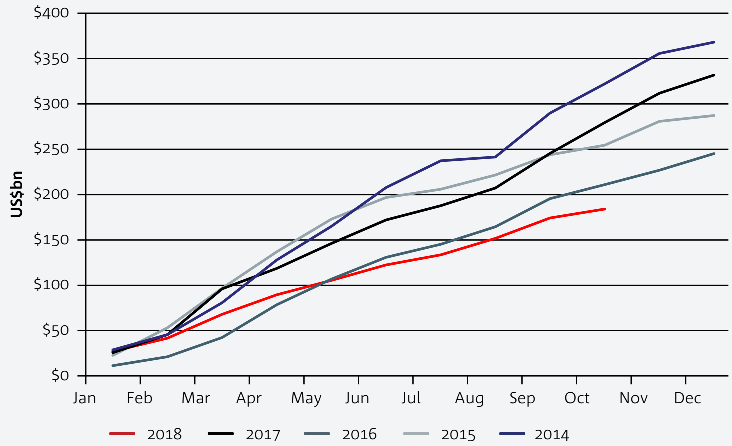
That strong asset quality positioning, together with an 'undeniably strong' capital position as mandated by the bank regulator, continues to see the Big 4 banks placed amongst the highest rated globally. Additionally, clarity now emerging on the bank regulator's proposed TLAC policy is very likely to see that strong credit rating position maintained, as well as provide pricing support for senior unsecured bonds. Term bond issuance from the Big 4 banks (across all seniorities) is expected to increase in 2019 due to materially higher maturities, though under the bank regulators' capital recommendations, T2 subordinated bond issuance may increase somewhat, at the expense of senior unsecured debt. Investors' search for diversity outside of the banking sector combined with low issuance for an extended period of time has provided solid support for Australian non-FI corporate spreads. The solid credit fundamentals supporting many in the sector, together with low maturities in 2019 (and thus low refinancing requirements) is likely to see that dynamic continue.

US Investment Grade issuance



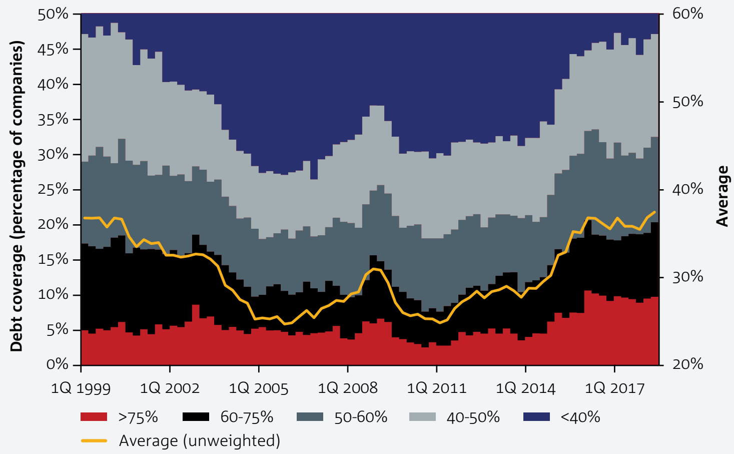
Source: Bloomberg, NAB Credit Research

US High Yield issuance



Source: Bloomberg, NAB Credit Research

S&P500 (ex FIs): Gearing distribution (nd/nd+e)



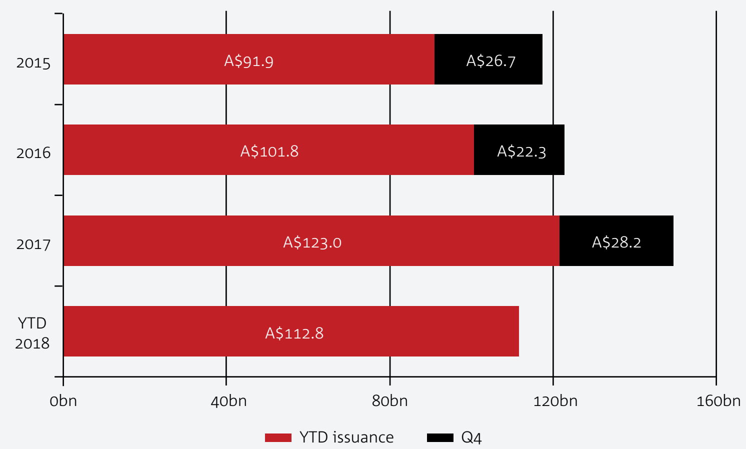
Source: Bloomberg, NAB Credit Research

AUSTRALIAN CREDIT MARKET OUTLOOK

BY JOSH SIFE, LEWIS KARANICOLAS AND BRAD SCOTT

AUSTRALIAN HIGH GRADE and credit markets have much to look forward to in 2019. We have been disturbed in 2018 by bouts of volatility that temporarily closed down activity. By the end of June, volumes were down about 25% year-on-year. However, the Australian new issue market roared back from mid-July and by the end of October was only about 7% below last year's volume. Steady redemptions into year-end may not be converted to material issuance volume. However, the steady amounts of cash re-entering the system will leave the market technically short in the coming months. Next year, AUD bond maturities are better spread across the months further assisting the process. Unless macro factors complicate the picture – and the risk of this is now elevated – we see the Australian credit markets biased slightly tighter in 2019.

Recent medium term note issuance volumes (all sectors, $A)



Source: Bloomberg (as at 1 November 2018)

Corporates need to stay nimble

After the record supply in the A$ corporate bond market in 2017, 2018 has seen a lower level of supply closer to mean averages, and 2019 should be similar if volatility persists next year.

It has been a year of transition for the A$ corporate market, where issuance was 'barbelled' between the positive start to Q1, a slow Q2, and the rebound in Q3. While the record A$20 billion printed in 2017 was always going to be a hard act to follow, the return of rate and geopolitical volatility fostered a defensive investor mindset. The volatility tempered issuance from local and Kangaroo corporates. Softening A$ investor appetite for tenor combined with a mid-year widening of spreads led to many corporates accessing the USPP or bank loan markets. The sharp rebound in corporate bond supply in Q3 from various sectors (A$8.5 billion) nevertheless served as a reminder of the latent potential investor demand for A$ credit when markets are conducive. This bodes well for 2019 and beyond.

Looking ahead to 2019, we expect the following trends to emerge for domestic corporate MTN issuers:

- **Market rotation:** NAB expects the A$MTN space to benefit from some debt capital market rotation in 2019, implying activity levels may be more steady, subject to local markets being cost and tenor competitive versus alternatives;
- **Nimble issuer mindset:** Should volatility persist and mindful of next year's Australian Federal election, corporates will need to be nimble and be ready to access issuance windows at short notice, and avoid planning deals close to such events.
- **Asian investor marketing remains important:** Asian based investment into the A$ bond market has been one of the biggest defining changes in the past decade. At a time when global rates are rising and local yields are not, issuers should nonetheless step-up marketing efforts to consolidate investor demand from Asia as well as domestically.

High Grade sees steady supply

The 2018-19 Semi Government budgets estimated a total issuance requirement of around A$30 billion for the year of which A$7.8 billion was new funding. Whilst the expected requirement was similar to the issuance volumes of 2017-18, for many issuers it was lower than expected based on previous updates to the market. Balance sheet management strategies, asset sales, delays to infrastructure spending and improved operating positions have all helped lower requirements across the respective issuers.

By the end of October, and buoyed by high amounts of investor liquidity, the sector has been very active, with a number of issuers already well progressed through their FY18-19 funding requirements.

Looking ahead, we expect issuance to continue at a steady rate as the sector works through its requirement. What's interesting to note is the material lift in supply that is anticipated for fiscal 2019-2020. Gross issuance is projected to rise to as much as A$51 billion in that financial year with approximately A$18 billion of this to be net new issuance. Therefore, we expect no letup in supply over the near-term.

This uplift in issuance comes at a time where Australian Commonwealth Government issuance is expected to decrease, which should ensure an interesting spread dynamic between the high grade sectors over the near term. Compression between the AA and AAA ratings has been a key feature of the market in recent years. Whether we are at an inflection point on this spread will certainly be keenly followed by the market.

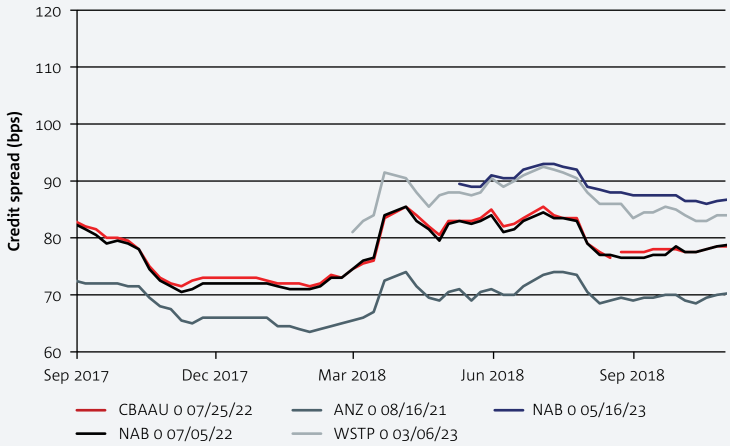
Financials face tougher conditions

Whilst both global and A$ credit markets provided supportive demand dynamics for the vast majority of 2018, Australian financial institutions faced rising cost of funds pressure through a variety of different mechanisms. In the short end money markets, banks have faced a volatile BBSW, elevated repo markets and record high cross-currency basis markets. All of which has resulted in a rising cost of funds environment for domestic lenders. Conversely, the higher cross-currency basis meant the A$ market looked attractive for many Kangaroo issuers and we saw both inaugural and repeat issuers tap the Australian investor base.

Credit spreads on new issues for financials has been remarkably stable over recent months with Major Bank 5-yr issues trading within a 5-10bps range since mid-May. Nonetheless, we do not expect these benign conditions to continue. With economic and geopolitical risks on the rise, there is an expectation that the next 12 months will present more challenging market conditions with issuance windows narrowing and volatility increasing.

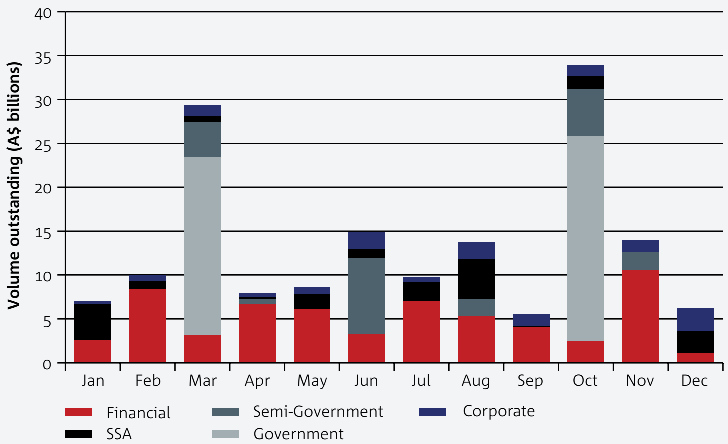
Pleasingly, the A$ market has matured substantially over recent years and now offers Financial issuers from Australia and around the world issuance opportunities in a variety of formats, tenors and structures. This will ensure the Australian market remains a core funding tool for global banks and a valuable source of liquidity under all market conditions.

Australian major bank secondary spreads



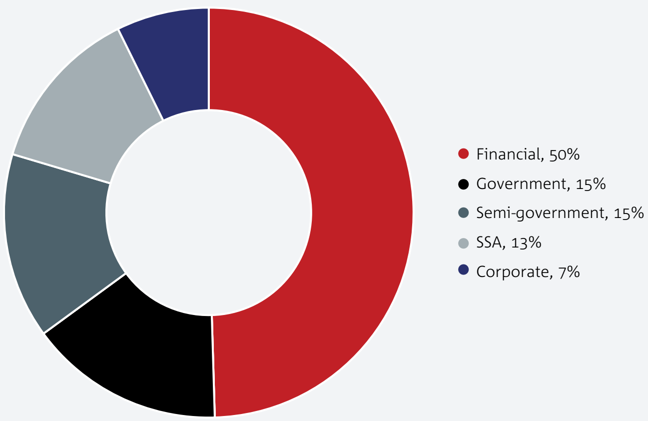
Source: Bloomberg (as at 1 November 2018)

Aggregated A$ maturities in 2019



Source: Bloomberg (as at 1 November 2018)

Aggregate volumes by sector (YTD 2018)



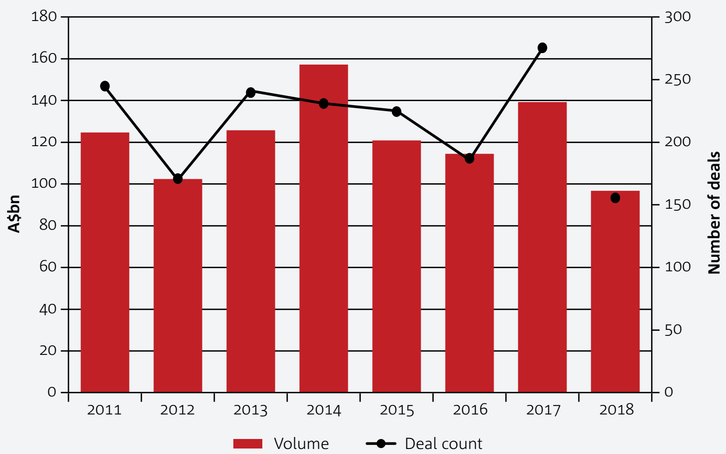
Source: Bloomberg (as at 1 November 2018)

ANOTHER STRONG YEAR IN THE LOAN MARKET

BY MARK BOWER

THE SYNDICATED LOAN market has been strong in Australia and Asia more generally this year. While not yet delivering record volume, the level of activity and demand from banks and funds increased significantly. Competition in certain sectors has been fierce, with Infrastructure a clear standout. Additionally, 2018 has seen a strong reinforcement of support for high brand credits, with big names getting incredible support from lenders locally.

Loan market volume



Source: Reuters (YTD as at 1 November 2018)

Availability of credit has been high and spread well across sectors. Given the focus on infrastructure nationally, it is no surprise that borrowing for infrastructure was the largest share of market in recent history. In the fourth ar quarter of 2018, demand is high and borrowers are approaching the market during its busiest quarter which is likely to make 2018 a record year for loan issuance. A key feature has been volume of underwritten loans, driven by a strong level of acquisition finance and very stable market conditions.

Additionally, movement on terms and conditions has started during the year.

Bank demand

Demand from banks has been universal across the tenor spectrum. Borrowers have switched focus to longer tenor with the balance moving to five years from three and longer dated tranches being made available from both banks and institutional investors.

Top 5 most active investors (ex. ANZ, CBA, NAB, WBC) and most participated transactions	Total deal number	Image Bidco	Celsus Securitisation	Origin Energy	Qantas Airways	Walker Collins St Finance
BTMU	41	✓		✓		
SMBC	38	✓		✓		✓
Bank of China	37	✓		✓	✓	✓
HSBC	34	✓	✓			✓
ICBC	30		✓	✓		✓
Total investors	-	**34**	**29**	**27**	**26**	**24**

Source: Reuters

In certain sectors, headroom in financial covenants and debt sizing criteria has crept in favour of borrowers, again an indicator of strong competition for assets.

The increasing presence of the major Japanese and Chinese lenders has been felt throughout the year. Their ability to place large commitments, and increasingly underwrite transactions, has resulted in easy conditions for loan syndications. This flexibility has additionally resulted in a large number of self-arranged transactions passing through market. Volume of transactions has however allowed distribution to a variety of smaller lenders from Korea and Taiwan who have strongly supported underwritten transactions bookrun by the major banks in market.

A variety of Asian banks have opened operations locally in Australia to be close to borrowers and meet the need to be "local" to get allocation in transactions. Various European and larger Asian banks have also expanded local operations and product capabilities.

Institutional demand

Institutional participation in Loans has seen a step change in Australia in 2018. Important work undertaken by several market participants, with NAB at the forefront, has seen institutional participation not only increase but extend into investment grade, real assets and corporates for the first time with any real momentum.

Transactions specialised as Institutional Term Loans for Brickworks, Visy, Viva Energy REIT and various others indicate the level of demand from institutional investors to participate in loans, not just focussing on high yield but building out a broad portfolio of unrated credit to complement existing portfolios. Leverage finance transactions have grown strongly in the Unitranche and Term B markets locally. Demand for these assets has been driven by several large institutional funds placing significant commitments to underpin transactions.

Following this has been a series of smaller funds and then several investment banks with deep global distribution channels, willing to provide underwritten commitments to their broad channels to stimulate this market.

There is no indication that institutional demand will wane or weaken over coming years. Funds are now firmly positioned in all levels of the syndicated loan market and will continue so as funds under management increase and drive alternate asset allocation volumes higher.

Pricing

Significant demand for assets from banks has driven strong pricing outcomes for borrowers during 2018. Starting the year flat, pricing has eased in during the year driven by weight of commitments from banks in Australia and Asia:

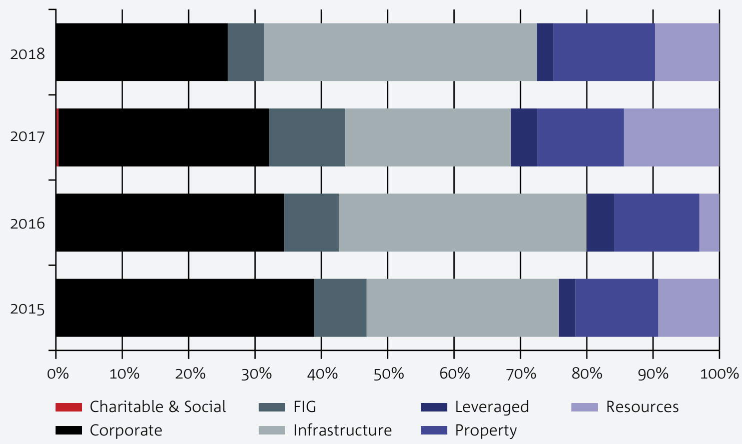
Differential sector pricing has been a strong theme. Infrastructure and Energy/Utility borrowers have benefited from high demand, pricing between 20 and 30 basis points inside the broader corporate and institutional market. Notwithstanding this preference, pricing for all sectors has remained tight and borrowers have benefited from excellent pricing conditions.

Outlook

With more banks than ever opening and maintaining branches in Australia, in addition to increased institutional participation, conditions are expected to remain very strong for corporate and institutional level borrowers in Australia.

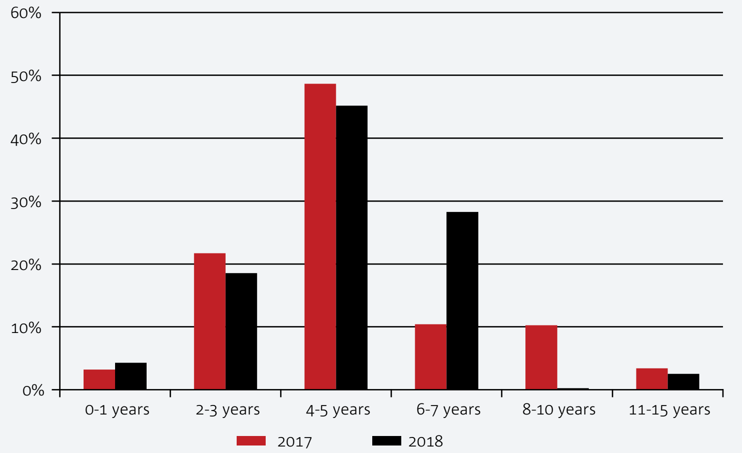
Key headwinds of increasing bank regulation are likely to change the composition of lending groups and potentially pricing outcomes, rather than strictly limit availability of loan credit. Expect a strong year in 2019 as Australian and Asian banks in particular continue to provide Australian business with the credit they need to move the Australian economy forward.

Loan market volume by industries



Source: Reuters, NAB data (as at 1 November 2018)

Loan market tenor



Source: Reuters (as at 1 November 2018)

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