National Australia Bank

SUSTAINABLE RECOVERY

DIGITAL INFRASTRUCTURE

LIQUIDITY TOOLS

CSIRO UPDATE

Beyond 2020

CREATING OPPORTUNITIES

Corporate & Institutional Banking

FOREWORD

ROSS McEWAN
Group Chief Executive Officer
National Australia Bank

I'm pleased to share *Creating Opportunities*, our magazine for NAB's Corporate & Institutional Banking clients. The publication of our third edition comes during one of the most difficult times for businesses in many years, possibly decades.

Our bank exists to serve customers well and help our communities prosper and we know how important it is that we step up and support them through the COVID-19 recovery and rebuild.

In my experience what matters most during a crisis is acting decisively and working together, particularly as we shift from support to stimulus.

The measures put in place by government to protect lives and help both income and cash flow have been vital. This has meant that while the impact on lives and livelihoods has been devastating for some businesses and individuals, overall Australia is handling this virus better than most other developed countries.

Together, we need to keep doing what we can to get through this while giving Australia every opportunity to emerge as a stronger global player on the other side.

National Australia Bank will continue to be an active partner and advocate for our clients. At the same time, we know our clients are determined to find their own ways of responding through this pandemic. Many businesses have seen this as a time to change their business model and expand. Their resilience, adaptability, creativity and stamina is to be admired and we're proud to showcase their achievements in our magazine.

As we look ahead to recovery, we see opportunity to rebuild a stronger and more competitive nation. This theme is brought to life in our first chapter, **Sustainable Recovery**, where we look at building on our strengths and finding the opportunities for further innovation. This includes better use of waste-to-energy technology to move us closer to a circular economy, tapping capital markets for social and sustainability-linked bonds and reshaping supply chains to be more resilient to external shocks.

Our second chapter, **Growing Infrastructure**, explores projects that will create new jobs and opportunities across traditional infrastructure, digital, and renewable energy sectors. We share a special contribution from the CSIRO on the role of science and technology in boosting productivity and growth; we examine the opportunities in digital infrastructure for investors looking beyond traditional assets to the data centres, towers and fibre networks that underpin the digital economy; and we consider the role hydrogen could play in the decarbonisation of the economy and in future exports.

As we work together towards a post-COVID normal, we're proud of the role our bankers are playing to assist our clients.

I hope you enjoy reading this collection of insightful stories.

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BACKING A MORE RESILIENT AUSTRALIA

Adaptability and innovation are hallmarks of the COVID-19 crisis. Backing sustainable opportunities with the right capital now will build a more resilient nation when we get to the other side.

BY DAVID GALL
Group Executive
Corporate & Institutional Banking

OVER RECENT MONTHS, we've all observed the resilience and adaptability of Australians to changing circumstances. Many business owners have experienced an immediate shock to their economic outlook and more face ongoing uncertainty as the pandemic continues.

The financial services sector adapted quickly to support Australians through the hit to confidence over this period.

At the same time, our customers are leading the way in how they support their own employees, with an enduring focus on care and empathy.

We are also seeing a surge in innovation – often out of necessity – as existing business models pivot to new product lines and ways of working.

We will never get a better test of resilience than what we are all collectively facing into this year. And through this, some big questions have emerged: where are the further opportunities for innovation? And what do we want Australia to look like when we get to the other side?

Investing for recovery

Throughout the world, we are witnessing government spending at unprecedented pace. This is for multiple reasons: to shore up confidence, to keep businesses afloat and to mitigate the loss of livelihoods caused by shutdowns.

For businesses and institutions in strong economic positions at the beginning of the crisis, the opportunity will come again where they can invest and grow.

Public and private sectors will each play an important role in investing into our economy to drive recovery, to create new jobs and to supercharge innovation.

The allocation and flow of capital to enable this is critically important.

There are plenty of opportunities for Australia to allocate capital in areas where we have a natural competitive advantage.

For example, we benefit from some of the best wind and solar resources in the world. We have a proven ability to deliver large infrastructure. We're a nation of resilient small business entrepreneurs. And we're also very adaptable. This crisis has proved that.

Allocating capital for the long term

How we choose to build on these strengths to create sustainable and innovative future opportunities lies ahead of us.

It's about making decisions for the long term to future-proof business models, but also to serve customers well and to help communities prosper.

The allocation of today's capital towards sustainable projects is a long-term view. It is one that benefits generations of Australians for years to come.

There is an important role for NAB here. It begins with our own credentials.

These include an accelerated A$70 billion commitment to environmental finance by 2025, where over A$17 billion has already been arranged to support green infrastructure finance, capital markets and asset finance. A further A$16 billion is supporting mortgage lending for energy efficient residential housing.

Our role deepens when we consider the position we play as capital connectors.

We maintain a strong balance sheet to foster business investment, to improve productivity and to enable innovation. This enables us to be the leading arranger of climate finance in Australia, with over A$10 billion to finance renewable power from wind, solar parks and hydro since 2003. It also means we are uniquely placed to connect ESG focused clients with the right investors who can accelerate their goals.

These include clients such as QIC Shopping Centre Fund (QSCF), one of the largest shopping centre landlords in Australia which issued a $300 million Climate Bond-certified green bond, the first to be issued by a retail property landlord.

This green bond was well received by investors across Asia and Australia, attracting investors with green and ESG investment mandates who were new to QSCF.

This is just one example; there are many others. Backing sustainable initiatives with the right capital now will build a more resilient Australia when we get to the other side. We have all the ingredients to fast-track work in this space.

> "The allocation of today's capital towards sustainable projects is a long-term view."

Opportunities to innovate

Looking ahead, the role of banks in using capital for sustainability-driven financial innovation is exciting.

For instance, sustainability-linked loans (SLLs) offer fresh opportunities to innovate. They are behaviour based debt and incentivise better environmental and social performance outcomes within the arrangement.

We've already worked with AGL, Sydney Airport and other clients to achieve these outcomes.

Enabling longer-term growth and innovation when we get to the other side of this crisis is a function of thinking sustainably and using capital in a better way.

It is through capital – and great ideas – that will help Australia reach its full potential. Ultimately, it will also make us less sensitive to shocks.

As a bank, we're committed to doing our part here.

We urge all Australian business owners – from the corner shop to the large institutions – to keep thinking bigger and to keep innovating. ■

MOVING CLOSER TO A CIRCULAR ECONOMY

Extracting maximum use from products and resources by recycling and reusing as much as possible will help minimise waste across the Australian economy.

BY FIONA McINTYRE

UNTIL RECENTLY, MANY Australian householders believed the recyclables they placed in council bins were trucked off to be recycled into new materials.

It was a shock to learn that a third of paper and plastics were actually being shipped overseas for processing, until China raised its standards for recycling and effectively stopped taking in waste from the US, Europe, and Australia[1]. Glass, paper and plastics were stockpiled in warehouses or sent to landfill, as councils around Australia struggled to cope.

China's decision is forcing other countries to adapt and has put the spotlight on the infrastructure required to dramatically expand Australia's ability to sort and reprocess recyclable waste into new and useful products.

"All of these recyclables now need to find a home in Australia," said Gary Sofarelli, Director, Infrastructure at NAB.

Australia produces about 67 million tonnes of waste each year, and more than 21 million tonnes ends up in landfill. The federal government has committed A$190 million to a new Recycling Modernisation Fund that aims to divert waste from landfill to make useful products as part of a national strategy to reach a resource recovery target of 80% by 2030[2].

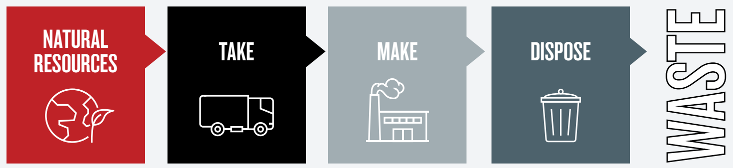
"It's not a one-size-fits-all approach," said Sofarelli. "If you think about where we generate waste, it is over so many different facets. Each waste stream has a particular end use that it could go to and specific infrastructure that it needs in order to get to that end use."

New ways to treat food and green waste

Organics make up more than 10 million tonnes of the total 21 million tonnes of waste in Australia that goes to landfill, where they ferment and create the potent greenhouse gas methane.

Some local governments are finding new ways to treat food waste on an industrial scale, so that it never ends up in landfill. In southeast Melbourne, the South-Eastern Organics Processing Facility opened in 2019 and will turn up to 120,000 tonnes of food and garden waste a year from eight councils into 50,000 tonnes of high quality compost.

Linear economy



Source: The Circular Economy, An Explainer (October 2018), https://www.parliament.vic.gov.au/publications/research-papers/send/36-research-papers/13880-the-circular-economy-an-explainer

The processing facility, developed by Sacyr Environment Australia and built by Sacyr Industrial with financing advised by NAB, will reduce greenhouse emissions by the same amount as taking nearly 14,000 cars off the road.

Councils haven't traditionally had the scale to develop large infrastructure projects, hence the need to work together and work closely with state governments.

"The challenge is that local governments are generally not familiar with procuring infrastructure of this scale," said Vijendra Singam, Acting Head of Energy & Utilities at NAB. "It may be that state governments become the party that tries to coalesce councils into one framework to build these facilities."

Reduce, reuse, recycle

Long-term solutions will require reducing the amount that households, business and industry consume and discard – in other words, behavioural change.

"Landfills will eventually fill up," said Joy Leet, Director, Infrastructure, at NAB. "Recycling and recovery are actually latter steps in the waste hierarchy — the first choice is still to avoid and reduce waste as much as possible."

The concept of the waste hierarchy is an inverted pyramid that sets priorities for the efficient use of resources: avoidance; reuse, recycling, recovery; and as a last resort, disposal[3].

Companies are also working to reduce their environmental footprints as part of broader goals to cut emissions. Across the NAB Group, we have reduced our waste sent to landfill by 49% since 2015, cut office paper use by 66% and water use by 50%, as part of a broader push towards greater sustainability across all our operations[4].

Global giants such as Unilever, Adidas and Nestle are moving to a circular business model. The goal of a "circular economy" is to keep resources in use for as long as possible to extract the greatest value from them — in contrast with the linear economy, in which goods are produced, consumed, and then discarded[5].

Recovering energy from waste

A better alternative to landfill is emerging in Australia as part of a broader solution. A new waste-to-energy plant south of Perth, the East Rockingham Resource Recovery Facility with financing jointly arranged by NAB, will divert waste from landfill by treating 300,000 tonnes of council and commercial waste a year. It's the second plant of its type in Australia.

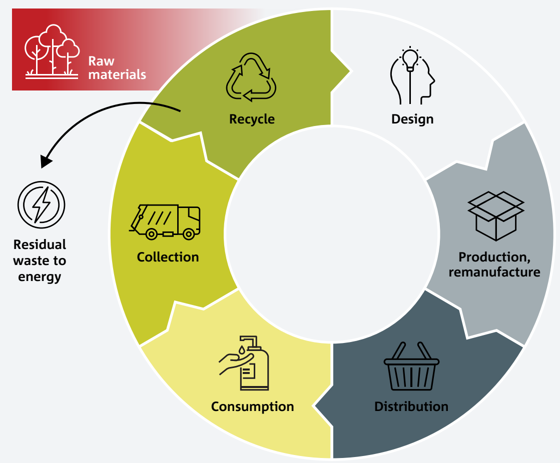
"Waste-to-energy is a relatively new sector in Australia and it can be one aspect of the response," said Leet. "With landfill methane being 25 times more potent in its greenhouse gas effect than CO_2, emissions from landfill are significantly higher than emissions from the plant."

The plant will reduce CO_2 emissions by the equivalent of taking 64,000 cars off the road, as well as generating 29MW of baseload energy.

Leet said councils won't have to sign up to fixed volume contracts for the waste they will send to the East Rockingham facility. "Councils can still adopt waste reduction strategies over time. Waste-to-energy isn't trying to compete with recycling; it's competing with landfill and it's a smart last step before landfill." ■

1. https://www.environment.gov.au/system/files/consultations/bf403fda-b6d7-4476-9c6f-5627502d52a4/files/waste-export-ban-discussion-paper-november-2019.pdf
2. https://minister.awe.gov.au/ley/media-releases/1-billion-waste-and-recycling-plan-transform-waste-industry
3. https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy
4. Data as at 30 June 2020.
5. https://www.parliament.vic.gov.au/publications/research-papers/download/36-research-papers/13880-the-circular-economy-an-explainer

Circular economy



Source: European Parliament, 2018, https://www.europarl.europa.eu/news/en/headlines/priorities/circular-economy.

INVESTORS BACK COVID-19 SOCIAL BOND MARKET

A new class of COVID-19 social bonds has met with overwhelming support from investors, leading to rapid growth in the sustainable debt market and a welcome outperformance.

BY VICTORIA THIEBERGER

THE SOCIAL AND sustainable debt market surged this year as governments, banks and companies rushed to issue special COVID-19 bonds to raise capital to alleviate the impacts of the pandemic.

Investors have proved keen to support a range of COVID themed bonds, while sustainable and ESG funds have seen a global rise in inflows even as the broader fund universe was heavily sold off. Notably, spreads of green and social bonds have outperformed as the coronavirus pandemic unfolded.

"Investor demand has been the biggest surprise through this market," David Jenkins, Global Head of Sustainable Finance at NAB told a NAB Corporate & Institutional Banking roundtable.

"The scale and speed with which investors have mobilised capital to support this issuance of COVID-themed bonds has been amazing," he said.

According to data from Bloomberg New Energy Finance[1], social bond issuance for the first nine months of 2020 was US$72 billion, far surpassing the total global issuance in 2019 of US$17.3 billion. The sharp increase was driven by institutions issuing COVID-19 response social bonds.

Issuing social bonds has helped market players to leverage capital markets to rapidly secure financing. Bank of China kickstarted issuance in February with the first COVID impact alleviation bond, followed by the first COVID-19 corporate bond in the US, Bank of America's US$1 billion four-year issue, and many others.

In the domestic market, Shinhan Bank issued an A$ 5-yr COVID-19 alleviation social bond in September, raising A$400 million earmarked to support Korean SMEs impacted by COVID-19 and for financing to curb the spread of COVID-19 in Korea. NAB acted as joint lead manager.

Under guidance published by the International Capital Markets Association, all types of issuers in the debt capital markets can issue social bonds related to COVID-19, providing that certain criteria including reporting are met and that the proceeds are allocated towards addressing social issues arising from the coronavirus outbreak[2].

Opportunities for Investors

Governments around the world have proposed more than US$9 trillion in emergency lifelines in response to the pandemic through direct budget support, loans and equity injections, according to the IMF[3].

Investors say governments now have a deep pool of assets to support COVID-19 related debt issuance.

"We prefer deals with established asset pools," said Marayka Ward, Senior Credit & ESG Manager at QIC. "With the large packages that have been announced we see the opportunity for issuers with a very ready pool of socially focussed assets to issue social bonds."

She said QIC incorporates ESG considerations in the investment decision-making process because they can have a material impact on the long-term outcomes of investment portfolios. QIC's approach reflects a trend with a growing proportion of fund managers that support responsible investment, which now makes up about half of global institutional assets under management[4].

In Australia, the responsible investment market continues to grow, with the 2020 benchmark report from the Responsible Investment Association Australasia estimating 44% of assets under management meet this definition[5].

Ward said her team is closely monitoring the new COVID-19 bond issues and sees huge opportunities for investors who are focused on sustainable outcomes. "With all the socially focused assets that are going to be deployed, this is probably going to be one of those once-in-a-lifetime investment opportunities for sustainable investors." ➤

"We see the opportunity for issuers with a very ready pool of socially focussed assets to issue social bonds."

— Marayka Ward, QIC.

ESG bonds outperforming

Sustainable debt market investors have also been rewarded with a modest outperformance by green and social bonds. "So far over the pandemic period, spreads on sustainable bonds didn't go as wide as vanilla bonds, they have retraced marginally better, and volatility has been less pronounced," Ward said.

New forms of ESG debt issuance have flourished in 2020 to meet investor demand, including ESG-linked derivatives; the first ESG-linked issue in the US Private Placement market for Sydney Airport; sustainability linked supply chain finance; and the first Climate Bond certified 100% green securitisation from Brighte Capital.

Marcin Bill of the International Finance Corporation (IFC), one of the most active issuers in the social bond market, agreed that green and social bonds were performing better on price and yield. "On the back of demand and supply dynamics, it seems like ESG bonds are starting to develop a bit of a pricing advantage versus the vanilla bonds," said Bill, Senior Financial Officer, Treasury Market Operations – Funding at the IFC.

He said the IFC, which aims to foster further growth in the social bond market, hopes the pricing advantage will encourage a broader range of issuers to finance their projects with social bonds.

In March 2020, IFC issued a three-year US$1 billion social bond as part of the IFC's COVID-19 US$8 billion response package. "We have been overwhelmed by the positive response in the market," Bill told the NAB roundtable from Washington, DC. "With a final order book of over US$3.4 billion, the deal was very well received and is a testament to investors being keenly interested in supporting the alleviation of social issues."

In Australia, the IFC priced an initial A$200 million 15-year social bond in April, later upsized to A$405 million. The World Bank priced a NZ$450m tap of its outstanding Kauri bond for sustainable development projects as well as COVID-19 response, with BNZ acting as joint lead manager.

Prospects for growth

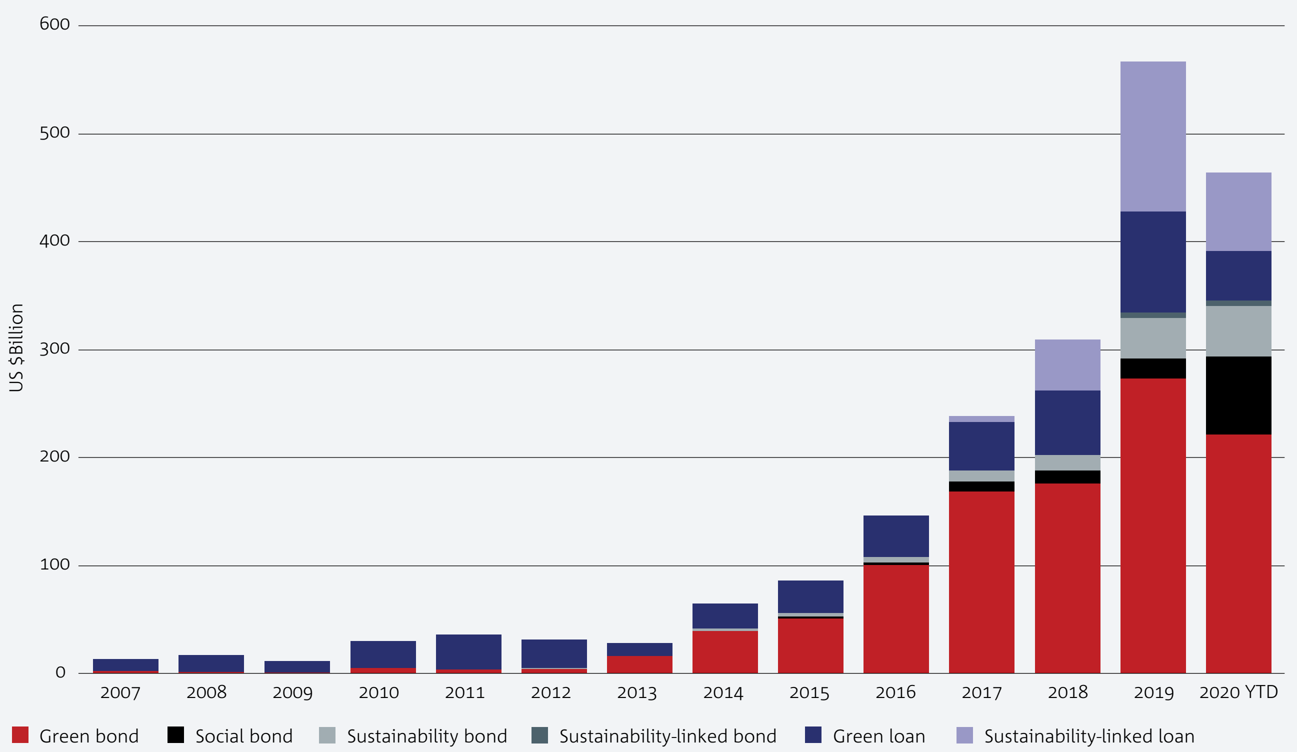
Louise Tong, General Manager, Sustainable Finance at BNZ, told the NAB roundtable that the sustainable debt market in New Zealand is "in its infancy", but with strong prospects for growth.

In particular, the development of sustainability-linked loans will help make sustainable debt relevant to a wider range of companies. Unlike green or social bonds, the proceeds of sustainability-linked loans can be used for general corporate purposes.

"It's particularly important for New Zealand, where a significant portion of the economy is focused on small and medium size enterprises and in food production. Much of the asset base is not well suited to green bonds, but they have real ESG ambitions and can be supported and incentivised with sustainability linked loans," Tong said.

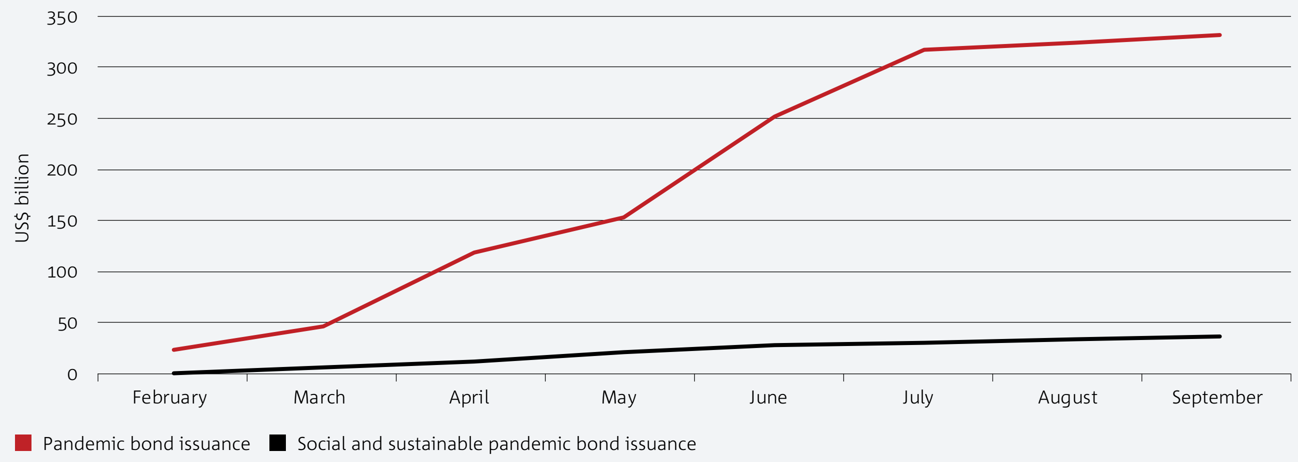
> "We have been overwhelmed by the positive response in the market."
>
> — Marcin Bill, IFC.

Sustainable debt annual issuance



Source: Bloomberg New Energy Finance.

Pandemic bond issuance



Source: BloombergNEF, Bloomberg Terminal

Demand for transparency

One of the key themes that emerged in the NAB roundtable discussion was the clear expectation of investors for transparency in the use of proceeds of the COVID-19 related debt raised, considering the varied nature of the asset pools and underlying lending.

"There has been a strong call for greater assurance of where the proceeds will be allocated and how impacts will be reported, and that is to avoid potential for social washing," said NAB's Jenkins.

Some borrowers have launched issues without the usual second party opinion attached to the transaction and instead made commitments to follow up with an assurance provider's report later.

However, labelling a social bond issue is a more robust approach and appeals to a wider range of investors, according to Nicholas Gandolfo, Director of Sustainable Finance Solutions at Sustainalytics, the largest second-party opinion provider globally.

"The benefit of labelling is transparency, which a lot of investors demand, as well as the ongoing reporting aspect," he told the roundtable from Singapore. "Our goal is to ensure when we are doing an opinion that the use of proceeds, the framework, and the governance is impactful and credible and aligns to the Social Bond Principles."

Sustainalytics has identified COVID bond use of proceeds for two main areas: in healthcare (medical services, equipment, procurement, infrastructure and training); and socioeconomic activities such as financial support to small businesses affected by the pandemic or projects to alleviate unemployment.

A light bulb moment

As nations shut down their economies early in the year to slow the spread of the coronavirus, there has been an equally dramatic shift in the focus of many companies from shareholders towards their staff and customers, in a broadening of corporate purpose that has gained traction in recent years.

Before the pandemic, companies often limited their discussion with investors on ESG issues to health and safety reports or a reduction in their environmental footprint, said QIC's Ward. She has seen a dramatic shift from the environmental and governance concerns to sustainability in discussions with companies.

"It's been interesting to see a sudden change in narrative about what makes a business sustainable," she said.

"Now all the company calls in recent months have been led with a discussion of employee and customer welfare. The value of these two groups to business sustainability has almost been a light bulb moment for some issuers." ■

1. Bloomberg NEF: 2H 2020 Sustainable Finance Market Outlook - July 29, 2020
2. https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Social-Bonds-Covid-QA310320.pdf
3. https://blogs.imf.org/2020/05/20/tracking-the-9-trillion-global-fiscal-support-to-fight-covid-19/
4. https://business.nab.com.au/investors-taking-action-to-support-a-sustainable-economy-38174/
5. https://responsibleinvestment.org/resources/benchmark-report/

> "The benefit of labelling is transparency, which a lot of investors demand."
>
> — Nicholas Gandolfo, Sustainalytics.

OVERCOMING THE COVID-19 SUPPLY CHAIN DISRUPTION

Thousands of businesses around Australia are re-assessing their supply chains, inventories and financing options to deal with future shocks in the wake of disruptions caused by the pandemic.

BY TOM MAZZAFERRO

WHEN GLOBAL SUPPLY chains started breaking down in February and March as countries went into lockdown, hardware and garden tool company Ames Australia was well prepared.

"All of our factories within China were closed down for a period of time so the result of that was delays from anywhere from two weeks up to six weeks," said Chief Executive Simon Hupfeld.

"Then we saw the flow-on to other countries as the virus spread. We were facing some serious stock shortages as a result, but we were able to navigate our way through that shortage quite successfully. We invest a lot in inventory and see this as a fundamental component of our offering for customers, so we keep our five warehouses around Australia well stocked," Hupfeld said.

Many companies, however, were not in such a strong position, and couldn't secure inventory and goods to keep their businesses going as first China and then other parts of Asia and the world locked down daily life to try to contain the COVID-19 pandemic. Sectors including construction, car parts, clothing and general retail were particularly hard-hit.

To cope with shortages, Ames – which manufactures and supplies hardware and garden equipment to retailers around Australia including Bunnings – offered retailers substitute items from its broad range of inventory. It was also able to secure alternatives from existing suppliers, and find new ones.

"We had to go to the world and explore all options, so we were casting the net locally and internationally, working with new suppliers in new parts of the world," Hupfeld said.

> "We had to go to the world and explore all options."
>
> — Simon Hupfeld, Ames Australia.

For instance, when its Italian maker of pottery planters closed for a period, Ames turned to other suppliers in Pakistan, Vietnam and Malaysia. And when the usual supplier of garden shovels shut, it turned to one of its local Victorian manufacturers to expand its product range and help meet surging demand for garden equipment.

Rethinking inventory management

As Ames rushed to meet demand from locked-down Australians turning to gardening and home improvements, it accelerated plans to broaden its network of suppliers as a result of the global supply crunch.

It is also looking to bring more manufacturing onshore and will likely acquire more local manufacturing capability to add to its Wonthaggi and Grafton plants, Hupfeld said.

Ames is just one of thousands of businesses around Australia that are reassessing their supply chains.

"What COVID has highlighted to a number of businesses in Australia is just how reliant they were on China, and reliant in some cases on a single supplier in a single country," said Casey Morecroft, Head of Corporate in Victoria and South Australia at National Australia Bank. "That put a lot of pressure on people when that supply chain was disrupted, and it triggered a process around assessing alternatives."

Businesses have adopted a range of strategies both to help manage the immediate supply chain crunch but also to bolster their supply chains to deal with future disruptions.

They are seeking out low-cost manufacturing destinations in Asia other than China; broadening their range of suppliers; and seeking to bring more manufacturing and supply on-shore where feasible. Companies are also rethinking just-in-time inventory management and the wisdom of keeping costs down by holding as little stock as possible.

"There's a lot more businesses now that are willing to pay the extra cost to hold additional inventory, so if that disruption does happen again, they've got supply on hand so they can continue to service their customers," Morecroft said.

Companies are also trying to control more of the supply chain, for instance, dealing directly with manufacturers rather than relying on importers or wholesalers.

Demand for trade financing

The crisis highlighted the importance of payment terms, with some businesses offering faster payment to ensure they were at the top of the pecking order when supply chains reopened and manufacturers struggled to meet pent-up demand from around the world.

Each of these options brings its own financing needs, and that's where NAB stepped in to support customers.

"More customers are using trade finance or supply chain finance in the wake of the COVID-19 pandemic," said Anthony Zweck, Director, Trade and Working Capital, at National Australia Bank.

The bank has been helping customers pay their suppliers sooner, a goal that has become important among large businesses. Early payment can also ensure supply and may allow the buyer to receive supplier offered discounts. In some cases, customers have been paying their smaller suppliers sooner to support them through a tough operating environment. Under a supply chain finance facility, NAB pays the supplier and provides extended payment terms to the customer to help them preserve cash.

For businesses that are building up levels of inventory, NAB is extending funding against the inventory. Other companies, which typically issue invoices to clients and have a delay in receiving payment, are funding their working capital with receivables financing, where NAB extends cash against the value of their receivables, said Zweck.

The bank has also provided increased funding for business wanting to hold more inventory, particularly as the price of warehousing and distribution facilities has increased sharply. It's one of many ways businesses have had to adapt in an extraordinary year. ■

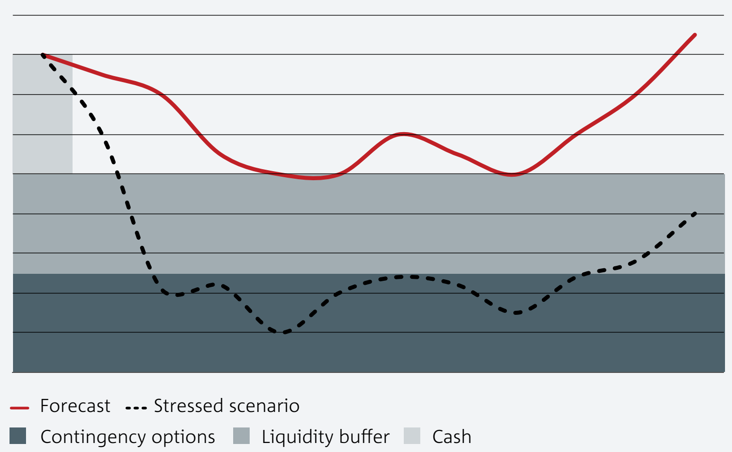
LIQUIDITY MANAGEMENT BEYOND THE CRISIS

2020 has presented some unique challenges for corporate treasurers. Looking ahead, now is the time for many to review liquidity management strategies to ensure they are well placed as we adjust to a new post COVID-19 normal.

BY SHAWN TRELOAR AND BRETT HEALY

AT THE ONSET of the pandemic, the initial response for many corporate treasurers was to ensure they had continued access to liquidity for the immediate and short term. Many corporates took the option to draw down on existing lines of credit as well as establish contingency. Indeed, across our Corporate & Institutional Banking clients, NAB saw an increase of 59% in cash holdings in operational accounts between 1 March and 31 August.

Capital and liquidity buffers diverging over time



Source: NAB Liquidity Management Advisory

With evidence of stabilisation and eventual recovery, it's now time for treasurers to re-assess the liquidity management strategy. The pandemic has emphasised the importance of "liquid capital". Improving efficiencies and controls to accommodate shifting needs toward a faster, leaner and more robust treasury operation will provide a strong foundation for improving profitability and shareholder returns in the future.

Visibility of cash and liquidity

Uncertainty around future cashflows will remain for some time and the effectiveness of historical data for liquidity planning is no longer a reliable backstop for forecasting gaps or delays.

Having 100% visibility of cash via a visual dashboard that provides availability, location and previous outflows is now a minimum necessary starting point for daily planning and monitoring.

Where visibility via existing Enterprise Resource Planning systems (ERPs) or Treasury Management Systems (TMS) is limited, leveraging online banking platforms is a useful tactical alternative. NAB for example has launched a Liquidity Management Solution that incorporates a visual cash dashboard covering group cash, agnostic of bank, currency or account type, improving both visibility of cash and utilisation.

Once cash visibility blind spots have been eliminated, re-assessing and monitoring liquidity reserves and contingency options will be essential.

Returns on strategic capital have given way to liquidity as the priority in the short to medium term.

Having 100% visibility of cash via a visual dashboard is now a minimum necessary starting point.

Along with active management of cash, utilisation of liquidity buffers and headroom should be included in weekly if not daily updates.

Liquidity management structures and strategies

While structures can vary in complexity, their overall objective is to improve utilisation of cash and on-demand debt through the combination of positive and negative cash flows and debt facilities.

1. **Physical Pooling (cash concentration) –** Involves consolidation of cash to a central or master account, typically owned by a finance or holding company through the physical movement of credit and debit balances from operating accounts across the group. Cash and liquidity can be managed via the central account for the entire structure. Centralisation enhances control and limits free cash available in operation accounts for discretionary spend. More advanced bank providers automate intercompany loan management, including management of daily and overall loan limits utilisation and interest.

2. **Notional Pooling –** Operating balances are maintained in their respective accounts. However, for the purposes of calculating available liquidity and interest, the bank balances are combined to a single net (or pool) balance. Notional structures do not involve the physical movement of funds, so participating entities can maintain a level of autonomy over their cash and avoid administrative effort of managing intercompany positions. While this clearly has its advantages, it also imposes greater due diligence and documentation requirements. Cross guarantees, indemnities and right of set-off must be addressed to establish a structure that can be provided on a net basis.

3. **Overlay –** Sits over existing transactional bank accounts and automates concentration of cash to the overlay bank for participation in a notional or physical pooling structure. This strategy allows companies to maintain multiple transaction banking relationships, while leveraging the benefits of a cash concentration or notional pool structure without the disruption associated with changing banking partner. The key benefit of an overlay strategy is the speed and simplicity with which it can be deployed. With little or no disruption to processes it a pragmatic option to fast track benefits.

Treasury structures and process

The COVID-19 pandemic has been a liquidity 'black swan' event that has tested the strength and resilience of existing treasury strategies and structures. Corporates with adaptable structures that can adjust to further possible disruptions or delays in recovery will set themselves up for delivering greater enterprise value in the future.

While there is no universal right solution for liquidity management, generic principles do apply. Centralised or Global Treasury Centres and In-house banking structures improve data aggregation and risk management, as well as optimisation and control of cash and liquidity.

Cost has typically been a barrier, but banks and fin-techs now offer sophisticated liquidity management solutions that can support most client needs. Assessing the desirable and practical level of centralisation, combined with an efficient and automated liquidity optimisation structure, should be a high priority for most treasury departments. ■

NEW PATHWAYS FOR THE FUTURE OF BUSINESS

The banking sector has an important role to play in supporting industry through the economic recovery.

BY CATHRYN CARVER

AUSTRALIA HAS EMBARKED on an ambitious road to economic and social recovery post COVID-19. Recovery assumes that a vaccine will become available, and corporations, banks, governments and communities will share responsibility for creating a stronger and more resilient nation.

The federal budget extended the bridge of temporary fiscal support with a range of measures to help stimulate jobs and growth. Banking will also continue to support industry initiatives to boost growth and employment, restore business and consumer confidence and advocate for Australia's critical businesses and industries.

Bankers have taken a leading role to help clients quickly mobilise their own pandemic response and support employees and end-customers to navigate shutdowns and lockdown measures.

Now, our client conversations have moved on from maintaining essential activity to helping revisit growth strategies for a very different world. While corporations are not necessarily changing their purpose, they are looking at different ways to deliver it. As the role of business becomes increasingly linked to a broader sense of purpose and social and environmental outcomes, we're having deeper conversations around the social contract of business, including employee wellbeing.

A shared road to recovery

Australia's pathway to recovery depends on interplay between government, business, banks, regulators and industry. Private investment already plays a very significant role in large-scale infrastructure projects, research, technology, and environmental programs. Some of our social and sustainable debt products have been created with investors like these in mind.

Support for clients, key industries and government

When the pandemic hit, our first response was to reach out to our clients, many of whom are in industry sectors that experienced significant disruption. We were also very conscious of our responsibility to help governments deliver policy and social measures to support employment, protect the vulnerable in our communities and stimulate business activity.

We've seen the highest level of capital raisings since the GFC, across several key industries. One of these is airports, many owned by Australian and global investment firms and large superannuation funds, which have experienced deep impacts from sharply reduced passenger numbers and border closures. We've provided additional liquidity and other support to enable them to sustain limited operations. We'll continue to monitor border restrictions and work with airports and their sponsors on future financing requirements.

Education is Australia's largest service export and greatly reduced international student numbers have created funding gaps for both research and educational services. As we turn the COVID corner, universities are re-imagining how they fund and deliver student programs and research, and banks have an important role to play.

We work with more than 10 universities across a variety of research engagements including: sustainability and environment, agriculture, social programs and technology. We're currently working with the University of South Australia and the University of Adelaide to deliver research identifying barriers for start-ups and SMEs to become part of global space and defence industries. This will help identify where innovative solutions are required to support these companies into domestic and global supply chains.

Pandemic conditions, the increase in financial uncertainty and the shift to working from home have supercharged incidences of cybercrime and fraud, with attacks against corporations and individuals increasing significantly. We're currently partnering with university-led research programs to help develop and commercialise technical solutions in cyber intelligence, digital forensics, reverse engineering, malware detection and response. Increasing digitisation of business and services delivery makes response to cyber threat essential for recovery.

Tapping into innovation

In 2019, NAB joined with CSIRO to publish the Australian National Outlook – which modelled two alternative pathways for the nation 40 years into the future: one leading to strong economic and societal growth, the other to a slow decline in prosperity.

In the wake of COVID-19, we were pleased to participate in another CSIRO report on medium and long-term pathways heading into recovery: COVID-19: Recovery and Resilience (see page 26).

Through our partnership with CSIRO, we're helping to bring their 'Missions' program to life. Missions aim to increase the pace and scale of scientific innovation in areas such as climate change, hydrogen, resilience and adaptation. We're also helping NAB clients tap into science/technology innovation in digital business, new payments technologies, manufacturing/construction and clean energy, as well as improving information security and productivity as new products are brought to market.

We also continue to work closely with all levels of government on programs such as the SME Loan Guarantee Scheme (NAB wrote one third of total loans in the first phase of the scheme), and the First Home Loan Deposit Scheme. Banks are rich sources of economic and industry data and we've provided Government with public and bespoke insights, in areas such as spending habits during COVID, to help government decision makers position policy responses. These data-related activities are another important way for banks to contribute to evidence-based policy creation and measuring policy effectiveness.

As we start the steady climb back from the pandemic induced downturn, NAB is supporting a wide range of organisations, not only with our core banking capabilities, but also with greater technical, data and research capability. We are collaborating with business, government and social organisations to solve the problems of today and tomorrow. ■

> We're partnering with university research programs to help develop technical solutions in cyber intelligence and digital forensics.

WHY RESPONSIBLE INVESTING IS ATTRACTING BIG MONEY

Responsible investing among Australia's wealthiest individuals is on the rise as investors seek to combine profit with purpose.

BEFORE COVID-19, ONLY about one in 10 families who walked through the door of NAB Private were keen to find out more about responsible investing. Fast-forward to this year's pandemic and that ratio has jumped to one in four.

"The enquiries around sustainable finance, renewable energy and impact investing opportunities have actually accelerated," said Gavan Lynn, NAB Private's Head of Global Investment Desk.

JBWere's Head of Alternative Investments and Responsible Investing, Gillian Gordon, has seen a similar upsurge in interest. Admittedly the not-for-profits, family offices and high net worth individuals that JBWere serves have always had a strong appetite for responsible investments, but it's grown significantly this year.

"I don't think COVID has subdued client interest in this space; I think it's actually enhanced it," Gordon said.

Their experiences are supported by recent statistics.

According to investment research house Morningstar, almost US$10 billion had already poured into sustainable open-ended funds or exchange traded funds in the first quarter of 2020. "That's already over half the total of the whole of 2019 in that one quarter," Gordon said. "I think that's really telling. It shows that it's exponentially increasing in clients' minds."

Positive and negative screening

Responsible investing is about meeting certain social, environmental, corporate governance or ethical objectives in addition to making financial gains. How investors choose to go about this can vary considerably.

One form of responsible investing, popular with Australian investors due to its ease of implementation, is negative or positive screening. Essentially, it's about including or excluding certain investments based on your values, principles or ethics.

While negative (or exclusionary) screening filters out or reduces exposures in your portfolio that don't align with your values – for example, tobacco or gaming-related investments – positive (or in-class) screening aims to up those investments that do reflect your values. For instance, you may choose to increase investments with a low carbon footprint.

Then there's Environmental, Social and Governance (ESG) investing, which considers these factors as a fundamental part of the financial analysis and investment decision-making process. While ESG investing initially attracted sceptics, these days it's recognised as a key risk mitigation tool and core driver of enhanced returns. So fundamental is ESG analysis to robust decision-making that JBWere provides an ESG viewpoint for all assets to help clients make more informed investment decisions.

There are still other ways to responsibly invest. One very hands-on method is through corporate engagement and shareholder action. "That's really looking at how you can influence companies and funds and advocate for change," said Gordon.

Investing for impact

More recently, the idea of impact investing has come to the fore. This involves directly investing in organisations, projects or funds with the intention of generating positive social or environmental outcomes – alongside a financial return.

"It's taking more of an active approach," Lynn said. "Previous generations were focused on giving and donating through philanthropic means, private ancillary funds for example. While this is still a very plausible and effective means of supporting for-purpose organisations, you are relying heavily on the charity to administer those funds appropriately.

"Impact investing however goes further, investing directly into your preferred social or environmental project, while understanding the investment metrics that will provide a suitable return."

Impact investing in Australia is experiencing rapid growth and investment opportunities. However, these tend to be more grassroots or community based – which is one of its benefits, but also one of its challenges.

What's driving the spike in interest?

Gordon cited three long-term drivers.

The first is climate change. "There's been an awakening, a heightened realisation that climate change is real," Gordon said. "There's compelling scientific evidence and we are all coming to the realisation that we have to act collectively."

This has prompted the second driver: increased action from governments and the private sector including COP 26 – the 2021 UN Climate Change Conference and the launch of the European Green Deal. "There are a few big global calls to action across the world that will fundamentally change the way that capital flows."

The third driver, according to Gordon, is generational change and the repositioning of wealth. "We are witnessing the greatest transfer of wealth ever in Australia's history and that's bringing people into the driver's seat who statistically are more interested in responsible investing. Gen X and Gen Y, and Millennials, have a greater interest in responsible investing than any other demographic."

Of course, Gen X will be the first to benefit from this wealth transfer. But the mindset of that generation is already quite different to their forebears.

"It's not enough for the younger generations to just invest for performance anymore. They are increasingly looking to invest for performance and purpose," said Gordon.

"They are finding their voice and looking to advocate for change as they take on increased responsibility and decision making in their own wealth – potentially their family's wealth – and as they hold positions on not for profits and charitable boards. They're demanding it; it's no longer just a 'nice to have'." ■

DIGITAL REVOLUTION OFFERS NEW INFRASTRUCTURE OPPORTUNITIES

The COVID-19 pandemic is set to accelerate the shift to the digital economy, expanding the relatively new asset class of digital infrastructure.

BY BRAD CALLEJA

THE GROWTH OF digital infrastructure in recent years has broadened opportunities for infrastructure investors looking beyond traditional assets to the data centres, telecom towers and fibre networks that underpin the digital economy, a recent NAB roundtable was told.

The Corporate & Institutional Banking roundtable brought together consultants and institutional investors to discuss the emergence of digital infrastructure as a distinct asset class, supported by the ever-growing demand for data.

Funds are increasingly looking at the physical technology assets that underpin critical services in the economy and the move to the cloud, hyper connected homes and industries and the Internet of Things.

"This period of change and development presents a unique strategic opportunity."

"The need for digital infrastructure is fundamental, and we're seeing that businesses and consumers are demanding not only increased speed of data but also lower latency and better energy efficiency," said Brad Calleja, Executive, Specialised and Acquisition Finance at NAB.

"From an investment perspective, this period of change and development presents a unique strategic opportunity to invest in digital infrastructure, but it also introduces new risks that need to be considered," said Calleja.

The COVID-19 pandemic triggered a surge in demand for data as jobs, schooling, university education and even medical visits suddenly moved online as governments around the world imposed shut down measures to slow the spread of the virus.

The response accelerated digital trends that might have taken years to eventuate.

Before quarantine and lockdowns, just seven per cent of American civilian workers had access to flexible telecommuting; that is expected to grow to as much as 30 per cent of the workforce working from home several days a week in the next two years[1].

Tailwinds to investment

The massive COVID-driven spike in demand for online connectivity illustrates the favourable tailwinds to investment in digital infrastructure assets. Many large investors in hard infrastructure assets such as ports, roads and airports are eyeing opportunities in telecommunications as a complementary sector to traditional infrastructure.

The subsets of digital infrastructure assets include towers, fibre optic networks, and data centres.

"Digital infrastructure has become an essential service," said Ani Satchcroft, Executive Director at alternative asset manager Macquarie Infrastructure & Real Assets (MIRA). MIRA, with approximately A$223 billion in assets under management around the world, has organised its infrastructure business in Australia into three pillars: utilities, transport and digital.

"That gives you a sense of how much evolution and growth we've seen – digital is now sitting alongside the pillars we have traditionally regarded as infrastructure," she told the NAB roundtable. MIRA has investments in data centres, fibre assets and telecommunication tower businesses across Europe, North America, and the Asia Pacific.

While the demand story is clear, the investment opportunity has not always been as apparent, the NAB roundtable heard. The sector has complex drivers of profitability, a high cost of rolling out new technology (such as the NBN), and pressure on prices that consumers are willing to pay.

"Everyone has seen the macro trend of needing more connectivity, but the big question for us was how do we invest in assets that also meet the core requirements of our investors?" Satchcroft said.

"The big question for us was how do we invest in assets that also meet the core requirements of our investors?"

— Ani Satchcroft, MIRA.

"We assess the assets from the perspective of barriers to entry, stability of cash flows and visibility of those cash flows, resilience through market cycles – all similar requirements for any style of infrastructure investment."

While investors generally need little advice on core infrastructure assets such as roads, the features of a potential digital asset are not as well understood and can require a process of education and engagement that Satchcroft describes as "a bit of a journey". She noted the she and her team spent significant time analysing the data centre sector before making the first investment.

In April, MIRA led a consortium that acquired 88% of Airtrunk, a hyperscale data centre platform, in a deal valuing Airtrunk at A$3 billion. MIRA cited significant growth in the global data centre industry driven by "an exponential increase" in data consumption, the shift to the cloud and a shift from internal IT systems to outsourced resources[2].

Defensive assets?

Indeed, while assets such as airports and roads have traditionally been viewed as defensive sectors, the economic havoc wreaked by COVID-19 has turned those assumptions on their head. Perhaps fibre optics and telecom towers have become the more defensive plays in 2020, when international borders are closed and air and road traffic collapsed at the height of the shutdowns.

Reliance on electronic data will grow as we spend more time at home, working or streaming video, and adopting smart devices for lighting, heating and even the fridge and coffee machine.

According to the OECD, nine countries now have high-speed fibre making up 50% or more of their fixed internet connections, up from six in 2018[3].

Jay Chong, Associate Director, Infrastructure Investments at First Sentier Investors, said his team typically employs the same investment analysis with digital assets as they would with a core infrastructure opportunity. First Sentier (formerly Colonial First State Global Asset Management) has A$220 billion in assets under management across a range of asset classes.

"We look at digital infrastructure in a similar way – we take a long-term view and like to see stable cashflow and barriers to entry" Chong told the NAB roundtable. "In New Zealand, fibre falls under the same regulatory regime as electricity and gas; the regulators see fibre in the same way to other core infrastructure sectors." ►

In May, First Sentier agreed to acquire New Zealand's Ultrafast Fibre Limited (UFF), which has a network of over 3,500 km of fibre providing broadband to more than 237,000 premises in the North Island. First Sentier was attracted by the defensive characteristics of fibre and the dramatic rise in data usage, which has roughly doubled every two years.

"Despite the rise of 5G, fibre has a really strong place in the market, due to its bandwidth, speed and reliability – fibre is always going to have that advantage over wireless networks," Chong said, noting the reach of delivering fibre to the premises was also an important risk mitigant to network replication.

MIRA's Satchcroft said consumers expect the same reliability from their digital infrastructure providers as they do from water or electricity utilities. "In the same way that the operator of a utility or transport system has to earn their social licence to operate – it's the same with digital providers, and maybe even more so in this environment," she said.

> "More and more investment over time is needed in the network to meet the capacity."
>
> **— David Ellis, Bain & Company.**

Surge in investment

Investment in telecoms infrastructure has seen an "explosion" over the past decade, with the bulk of deal value still in fixed line but a growing volume of transactions in wireless transmission and data centres, the NAB roundtable was told.

"Since the pandemic began, we've seen a massive spike in overall demand," said David Ellis, partner at Bain & Company. "How do we meet that demand? More and more investment over time is needed in the network to meet the capacity," he said.

Ellis noted providers have the ability to add capacity in the short term to meet demand without physical investment, pointing to NBN's decision to boost capacity by 40% during the pandemic without any charge to the end user.

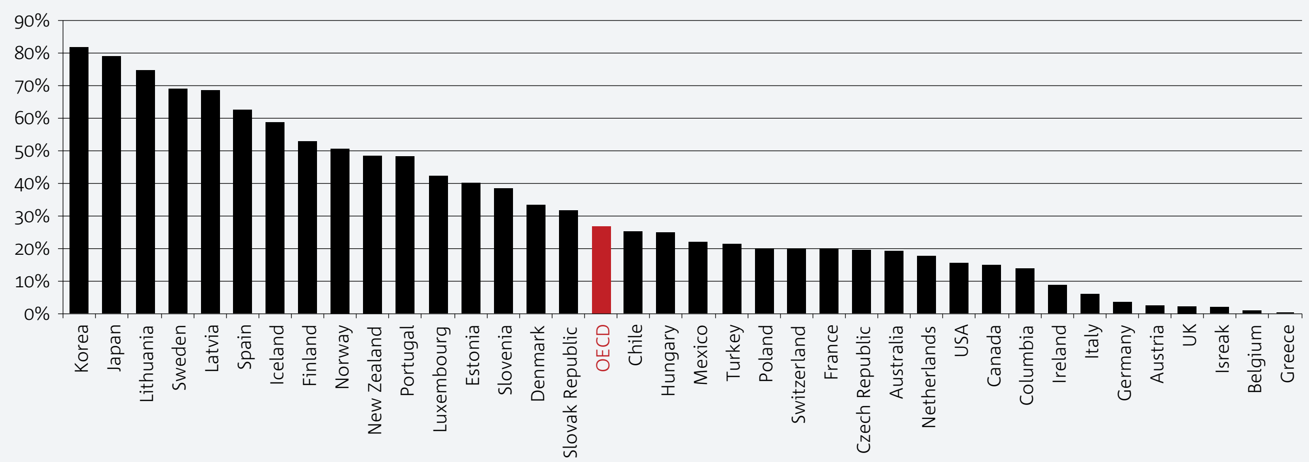
In Bain's view, three technological developments suggest there will be continued strong infrastructure-style investment in digital.

First, the de-coupling of products sold to an end-user from the physical infrastructure used to supply it enables the separation of network infrastructure assets from an integrated telco.

Second, increasing densification of infrastructure to improve performance, such as the rollout of small cells to complement macro towers or expansion of fibre closer to the home, requires new capital investment.

Third, advances in capacity and innovation in network sharing will shift the competition away from raw network performance and lead to a focus on capturing cost savings from increased sharing and wholesale models.

Percentage of fibre connections in total fixed broadband



Source: OECD (data as at June 2019)

DATA EXPLOSION EXPECTED IN COMING YEARS

Digitisation (AI)

Artificial intelligence (AI) uses cases growing at 10-30% annually.

- Autonomous vehicles up 31%

Networking (IoT)

IoT (Internet of Things; connected devices) forecast to grow at a rate of ~34% annually.

- Increase from 8.4 billion devices (2017) to 20.4 billion in 2020.

5G Connectivity

Total global 5G traffic is expected to grow from one exabyte in 2019 to 598 exabytes in 2025.

Source: Bain & Co

Risk of disruption

NAB is a leading financier of this digital segment of the economy, arranging capital to support the development or expansion in Australia, New Zealand the UK and Europe. We've helped companies with growth capital to build out their mobile tower networks, expand broadband and fibre network operations, and keep pace with demand for cloud storage[4].

"The challenge is that dynamism and uncertainty and perception of an increased risk of disruption in digital," said Michael Verhoeven, Partner at Bain & Company.

"On the plus side, there are much more positive tailwinds in terms of underlying growth compared to traditional infrastructure asset classes. That's the risk-reward trade-off that everyone is grappling with. You need to identify those assets or segments of the value chain that are more infrastructure-like, that are more defensive, that have more certainty and have a longer-term investment profile.

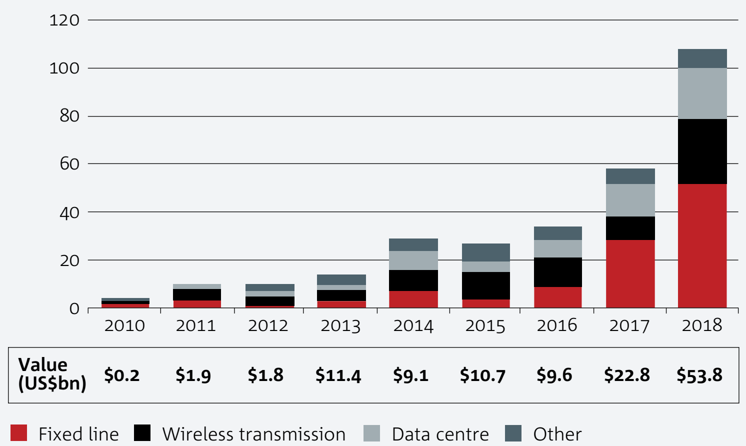
"While some investors are cautious on the pace of technological change in digital infrastructure, panellists at the NAB roundtable noted that many sectors of the economy face disruption.

"There's an increasing focus on the pace of change in infrastructure investments, but it's not just specific to digital," said MIRA's Satchcroft.

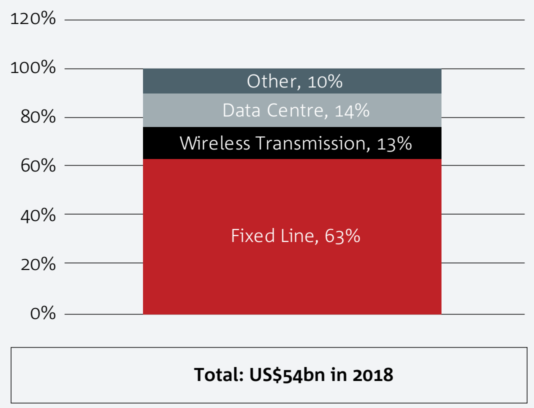
"There has been an evolution in the way people look at the risk of technological change, regardless of whether it's a digital infra asset or another asset. Electrical utilities have challenges of distributed grids, the impact of renewables, regulatory change. You just need to think about what that step change in technology is going to look like." ■

1. https://www.infrastructureinvestor.com/how-digital-infrastructure-became-mission-critical/
2. https://www.macquarie.com/kr/en/about/news/2020/macquarie-managed-infrastructure-fund-led-consortium-reaches-financial-close-on-leading-hyperscale-data-centre-platform-airtrunk.html
3. https://www.oecd.org/internet/broadband/broadband-statistics-update.htm
4. https://business.nab.com.au/backing-the-infrastructure-behind-the-digital-economy-30789/

Infrastructure investment in telecoms has grown rapidly



Most investment still in fixed line



Source: Bain & Co, Inframation deals database

DECARBONISING NEEDS A DOSE OF HYDROGEN

Clean hydrogen has the potential to help decarbonise the Australian economy and create a new export industry.

BY CHRISTOPHER NIESCHE
This article first appeared in the Australian Financial Review.

Australia has significant competitive advantages for developing a substantial hydrogen export industry.

THE DECARBONISATION OF Australia's economy is a massive and expensive task.

It is also a major investment thematic and a once in a lifetime investment opportunity, says Andrew Smith, Global Head of Infrastructure, Energy and Utilities at NAB.

Decarbonisation in Australia – replacing fossil fuel power sources with low or zero carbon sources – began with the electricity sector, where wind and solar farms are coming onto the grid and replacing carbon-intensive generation.

The next step will be to start decarbonising other sectors, such as residential heating and transport.

One option is electrification of these sectors and the other is replacing the fossil fuels they use with hydrogen, which requires electricity to split water into its two component parts.

"All roads lead back to wind farms and solar parks as we continue to decarbonise not just the electricity grid, but the hard to decarbonise sectors," Smith says.

Smith says we now have a great opportunity to decarbonise the economy.

As long as hydrogen is produced from renewable electricity, then it is a zero emissions fuel, whose only by-product is water.

Export potential

Daniel Roberts, the leader of the Hydrogen Energy Systems Future Science Platform at the CSIRO, says hydrogen has become a more viable renewable energy source because the cost of the technology to produce hydrogen from renewable energy and of renewable electricity itself have all come down. Additionally, technologies for storing and distributing hydrogen have become a lot more deployable.

Hydrogen can be used for industrial processes and transport, and there are already hydrogen-powered cars on the streets of California and Tokyo.

The National Hydrogen Strategy aims for Australia to be one of the top three exporters of hydrogen to Asian markets and for the nation to be a destination of choice for international investors in hydrogen.

"Australia has significant competitive advantages for developing a substantial hydrogen export industry. It has all the natural resources needed to make clean hydrogen. It has a track record in building large-scale energy industries. It has an established reputation as a trusted energy supplier to Asia. It can compete with any other nation," the report states.

Narrowing the cost gap

Separately, the CSIRO's National Hydrogen Roadmap from 2018 states that demand for imported hydrogen in China, Japan, South Korea and Singapore could reach in the order of 3.8 million tonnes in 2030 at a value of about A$9.5 billion, with Australia well positioned to play a key role in the export market.

Australia needs to develop a domestic market for hydrogen in order support a viable export market, says Roberts.

The government's Australian Renewable Energy Agency is spending tens of millions of dollars building large-scale electrolysers, but this still leaves the question of where domestic demand will come from.

"There's no point in having lots of hydrogen if you've got nothing to do with it. And it's a classic chicken and egg problem," Roberts says. "No one is going to buy a hydrogen car because you can't go anywhere and fill it up. And no one is building the refuelling stations because no one has got any cars to fill up."

NAB's Smith says despite the falling price of hydrogen, it is still more expensive than other fuels, but he adds: "The cost gap has narrowed and could be small enough to be closed by policy drivers."

"It is most likely that hydrogen will out-compete fossil fuels for transport first and in particular long-haul transport, and the studies that are out there seem to suggest that will happen in the next five to 10 years."

Appetite to finance renewables

More broadly, banks have a central role to play in decarbonisation and have "significant appetite" to finance renewables.

"A mature, deep, well-functioning finance market is crucial as this lowers the cost of capital. Given about 70 per cent of the project lifetime cashflows are allocated to servicing capital, lower-cost capital equals lower-cost electricity," Smith says.

"The opportunity is not simply in lending, but repackaging the loans/assets and creating investment products that provide financial and social returns."

Banks are also working to decarbonise their lending portfolios in line with public commitments they have made.

Accelerating investment in renewables will not only help address climate change, it will also help stimulate the economic recovery in the wake of the COVID-19 pandemic.

"There's no doubt large-scale construction projects will be a key tool used to get Australians back to work – and the renewable energy industry should be an important part," Smith says.

In addition, renewable energy has the potential to reduce energy costs as it is the lowest-cost new entrant into the energy market, and so could help lay the foundation for competitive energy-intensive energy in Australia.

Looking at what is required to manage the transition to balance decarbonisation, affordability and reliability, Smith said bipartisan support for long-term energy policy and decarbonisation was needed along with investment in modernising the electricity grid.

Also, investors need market-wide frameworks which adequately incentivise new renewable capacity to meet targets and reduced risk to bring in low- cost capital and so reduce renewable energy costs. ■

A TECHNOLOGY-LED RECOVERY FROM COVID-19

The effects of COVID-19 will be felt for years and cut across all prisms of life as we know it. What does Australia's National Outlook look like now?

BY JAMES DEVERELL
DIRECTOR, CSIRO FUTURES

LAST YEAR, CSIRO released the landmark Australian National Outlook 2019 (ANO) report, which outlined a vision for Australia in 2060 with prosperous and globally competitive industries, inclusive and enabling communities, and sustainable natural endowments. The ANO combined input from over 50 senior business leaders with CSIRO's research and modelling to identify five major, generational shifts Australia will need to undergo to achieve this vision. It also outlined six significant challenges Australia will face along the way.

The COVID-19 pandemic and the devastating bushfires of last summer have put many of these challenges into greater focus. With Australia in its first recession in 30 years, now is a good time to revisit the key findings of the ANO and look at how Australian businesses can put them into action.

For example, modelling in the ANO showed how investments in science and technology can spur economic growth by boosting productivity in established industries and creating new industries based on emerging technologies. In the report's 'Outlook Vision' scenario, GDP per capita is as much as 36% higher in 2060 than the base case, with around three-quarters of the difference attributable to technology investments.

In the past six months, we've seen first-hand how science, technology and innovation can help address urgent challenges. In response to COVID-19, we've seen leaps forward in our national adoption of innovative digital services like telehealth, the mass movement to digitise our workforce, and the rise of agile manufacturing to scale up vaccines and the production of critical products like face masks.

Now we have an opportunity to build on that momentum by accelerating our investment in science and technology to boost our economic recovery and build long-term resilience and sustainable growth.

In a recently released report, CSIRO outlined 16 near-term opportunities for investment in science and technology across six key sectors of the Australian economy: food and agribusiness, energy, mining, healthcare, manufacturing and digital. These opportunities could all contribute to Australia's economic recovery from COVID-19. The report also identifies longer-term opportunities that could help our industries build resilience against the next big shock.

A green recovery

The ANO highlighted the risk that a changing climate would contribute to more extreme weather events, including extended periods of drought and longer bushfire seasons. Although we are past the point of eliminating this risk, we can minimise its impact by reducing greenhouse gas emissions to keep the global average temperature increase below 2 degrees Celsius.

We now have an opportunity to reboot our economy through a "green recovery". Modelling in the ANO showed that Australia can achieve net zero emissions by 2050, while still experiencing strong economic growth. There are three main levers we can pull to achieve this: increasing our energy productivity, decarbonising electricity generation, and investing in opportunities for low-emissions energy export. Advances in science and technology will underpin each of these levers. For example, hydrogen (or other energy carriers like ammonia) could be a lucrative new export opportunity for Australia that utilises our world-leading renewable energy resources (sun and wind). This could be particularly important considering that global demand for thermal coal could decline by as much as 70% by 2060 if the world takes serious action to mitigate the impact of climate change.

Actions for industry

This year has demonstrated that the challenges we face are not just abstract ideas; they have tangible impacts on our prosperity and wellbeing. This is our wake-up call to take the bold action needed to secure a prosperous future for Australia. What do business leaders need to do to address these challenges and capitalise on new opportunities?

1. **Invest in science and technology to gain a competitive advantage in the COVID-19 recovery**
   The current pandemic and preceding bushfires showcase the important role of science and technology to solve our greatest challenges. Technology also plays an important role in creating competitive advantage in existing industries by boosting productivity and enabling new products and services. Furthermore, evidence suggests that large firms that invest more in R&D and prioritise intangibles perform better than firms that prioritise dividends.

2. **Invest in workforce skills and capability development**
   These same technologies that are reshaping existing industries and creating new ones are also changing the skills that will be needed in the workforce of tomorrow. Businesses can invest more in the skills and capabilities of their workforce to ensure they are globally competitive, prepared for the technology-enabled jobs of the future, and adaptable to future shocks and disruptions.

3. **Collaborate for greater impact**
   COVID-19 has highlighted how collaboration between businesses and with government can lead to rapid innovation, particularly for challenges and opportunities that are too large for any one organisation to tackle alone. Government, research and industry need to continue to work together to leverage their strengths for greater economic, environmental and social well-being.

As Australia's innovation catalyst, CSIRO works with both large businesses and SMEs to help them identify science and technology-based opportunities and translate them into value for customers and shareholders. These opportunities will be critical to Australia's economic recovery from COVID-19, and to our long-term prosperity. ■

“"We've seen first-hand how science, technology and innovation can help address urgent challenges."

— James Deverell, CSIRO.

LEADING THE WAY TOWARDS CARBON LIGHT ECONOMIES

Europe's Green Deal sets the 27 member states on a path to becoming carbon neutral by 2050. District heating and cooling is part of the solution.

BY NICK WOOLFITT AND ADAM COXHEAD

> "We want to be part of the decarbonisation solution of the heating and cooling sector, and of energy transition more broadly."
>
> — Anne Grandin, Whitehelm Capital.

TROMSØ IS AN unlikely place to find a modern, affluent city. Located some 350 kilometres inside the Arctic Circle in northern Norway, after the sun sets on the 21st of November it doesn't rise until the 21st of January. A combination of its remoteness and the country's desire to be exemplars in decarbonisation and environmental protection has led to the solution of heating all new buildings through district heat, generated from municipal waste rather than fossil fuels.

NAB customer Whitehelm Capital, an Australian infrastructure investor, invested in Tromsø's municipal supplier of heat in 2018 and is a very active investor in the Norwegian heating market.

"We want to be part of the decarbonisation solution of the heating and cooling sector, and of energy transition more broadly," said Anne Grandin, Investment Director at Whitehelm Capital.

"Norwegian district heating is particularly attractive for Whitehelm given the strong market fundamentals and the number of mid-market opportunities with a significant value creation potential... Our ambition is to continue investing in this market where we can generate attractive and sustainable returns for our investors," she said.

The European Union's "Green Deal" aims to transform its economy to a sustainable, carbon neutral state by 2050[1]. At its core are ambitions around clean energy and the circular economy, both of which require the adoption of radical measures to abate carbon emissions.

For some sectors, progress is well underway, most visibly in the growing role of wind and solar generation in producing our electricity and the continuing rise in adoption of electric vehicles. Other sectors face much more knotty problems; emerging interest in hydrogen and fuel cells may address the needs of transport that cannot be readily electrified, but space heating remains reliant on gas.

A parallel approach to decarbonisation

As Chris Stark, Chief Executive of the independent Committee on Climate Change, has argued, the previous approach to carbon mitigation, of "moving from power, to transport, to heat, to industry and agriculture," needs to be replaced with a parallel approach of addressing each sector at once[2].

Helpfully, decarbonising heat has been substantially achieved in some places. In Sweden, for instance, the role of fossil fuels in the heating mix has been driven below 5%[3]. Government incentives have underpinned recovering energy from waste (where it cannot be recycled), a strong bioenergy sector using forestry products that would otherwise have gone to waste, and a socially responsible manufacturing sector that channels surplus heat back into a distribution grid to warm the housing stock. Other carbon-light economies, such as Finland and France, are close followers.

Both the Netherlands and the UK are now promoting alternatives to heating with gas, attempting to address the twin problems of eliminating carbon emissions and ensuring security of energy supply.

For Ed Clarke, Co-Founder and Managing Partner at Infracapital, a UK-based fund and long-standing NAB customer which was an early investor into the Dutch heating sector, the role of clean heating is clear.

"The market for sustainable clean heating solutions is expected to grow meaningfully, driven by energy efficiency measures and depleting natural gas reserves. Recent impressive growth is expected to continue as these solutions play an increasingly key role in assisting the Dutch heating market to become more sustainable," Clarke said.

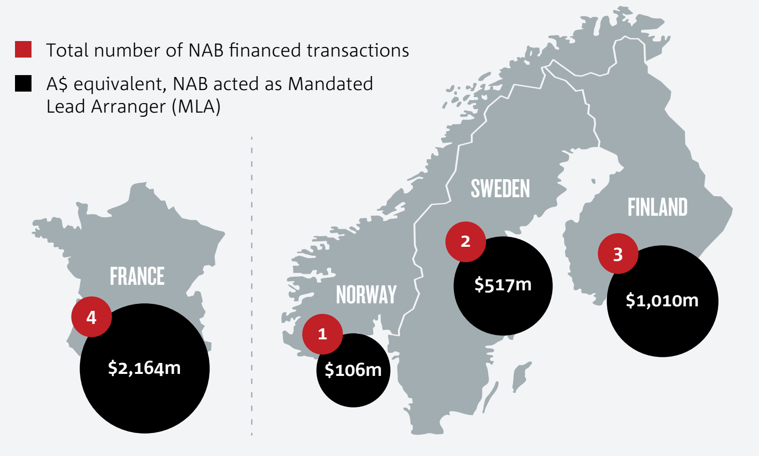
More sustainable solutions

The same logic applicable to heating can be extended to cooling. District cooling is not new – New York has had communal chillers since the 1890s and modern European cooling infrastructure can be traced to the system around Les Halles in Paris established in 1980.

Like heating, cooling is energy intensive; but unlike heating, many cities have established themselves around the natural source of cooling provided by rivers and lakes. An important part of the City of Paris's ambition to reduce greenhouse gas emissions to zero by 2050 is to expand the network that began around Les Halles, and to build a new chilling plant using water from the Seine.

Work is also underway on ways to manage storage. In a project that combines utility with quite remarkable symbolism, Värmevärden, a district heating utility and NAB customer, recommissioned disused oil storage rooms in Hudiksvall, Sweden, as Sweden's largest hot water storage facility. This is not a one-off – storage in old mines, in geological structures and in old salt caverns is also being considered around Europe.

Supporting the transition: district heating activity



Source: NAB data

Making the transition from an economy reliant on fossil fuels to one that abates carbon dioxide emissions is hard, and decarbonising heat is harder than electricity generation or transport. But as bushfires in Australia and the falling levels of sea ice in the Arctic have demonstrated, deciding to decarbonise heating and cooling is imperative to ensuring we have a sustainable economy while protecting the environment. ■

1. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
2. https://www.theccc.org.uk/2019/03/19/chris-stark-towards-net-zero/
3. https://www.sei.org/publications/swedish-heat-energy-system-new-tensions-and-lock-ins-after-a-successful-transition/

MEETING THE CHALLENGE OF AFFORDABLE HOUSING

The UK's approach to providing social and affordable housing has some useful lessons for Australia.

BY LYONS O'KEEFFE AND MICHAEL CARR

IN TODAY'S WORLD there is an ever-increasing requirement for large institutions to have a social licence to operate. Companies are now expected to align organisational goals to those of wider society and are being held to account by shareholders, stakeholders and employees, especially younger employees who are vocal in asking, "Where is the social value?".

Accordingly, our business plan at National Australia Bank includes a commitment to provide commercial responses to society's biggest problems. The COVID-19 pandemic has only intensified these problems.

Our recent initiative to help to house those in the UK who are really in need of a home is a prime example of executing on our commitment. Roughly 20% of the overall housing in the UK is social housing, most of which is owned by housing associations. These are charitable organisations which are heavily regulated but independent of government.

Housing associations have properties that cover a range of rented tenures – but predominantly social housing which is heavily discounted to market rent targeted at the poorest members of society, coupled with affordable housing which provides partially discounted rent for key workers and keeps our teachers, fire fighters, nurses and police officers housed. This is especially important in areas of high property value and high market rents such as the South-East of England.

"Housing associations are highly fundable, allowing banks to make meaningful debt investments."

Housing associations also provide other innovative tenures such as shared ownership, which is part purchase, part rental, and allows people to make a low-cost step onto the housing ladder.

A shortfall in affordable housing

The housing deficit in the UK is of such a scale that over 300,000 homes a year need to be built to attempt to extinguish the backlog. Currently that number is not being achieved but the recent efforts of housing associations has resulted in an increase from 100,000 homes in 2012 to 240,000 homes in 2019. However, this is still only 75% of what is required to eliminate the deficit[1]. The path to providing a decent home for everyone is a long one and since COVID, it is only getting longer.

To meet the housing challenge head on, the housing association sector has organised itself in the last half century from a disparate set of community-based organisations into large institutions. Many would be FTSE-100 listed if not charitable organisations, with some owning over 100,000 homes and armed with very strong credit ratings. All of this, coupled with effective regulation, makes them highly fundable, allowing banks to make meaningful debt investments that allow them to increase their housing stock and maintain existing homes.

1. https://commonslibrary.parliament.uk/research-briefings/cbp-7671/

A strong commitment

NAB started funding this sector in 2018, and since then we have completed 12 transactions with nine Housing Associations. It is as much the associations choosing us as us choosing them – they do not want to waste their time establishing relationships with banks who may swerve away from the sector.

Prior to our entry into the market we made sure that there was commitment at every level across the organisation, especially in Australia, to ensure that this wouldn't be viewed as a UK initiative, but instead as a core strategy within the bank's C&IB division, to create real social value.

This initiative has had a long reach. It has given NAB a broader vision and encouraged leadership to make a A$2 billion commitment to social and affordable housing in Australia – making use of the knowledge and expertise gained via funding social housing finance in the UK – to help to improve the housing situation on the other side of the globe.

We are proud as an organisation of our work to date, lending £660 million from our own balance sheet to the UK housing sector and £430 million more from other sources. This financing has enabled the funding of the equivalent of 10,000 new homes over the past two years, which equates to a lot of deserving families finally crossing the threshold of their first proper home. ■

NAB'S AUSTRALIAN AFFORDABLE HOUSING COMMITMENT

There continues to be a chronic shortage in appropriate housing for very low to moderate income households in Australia, and shelter for those in crisis.

In 2019, NAB announced a commitment to provide A$2 billion for affordable and specialist housing.

Through FY 2020, NAB financed A$11.6 million into the Australian sector against our commitment, with mandated transactions underway totalling around A$190 million across affordable housing, specialist disability housing and sustainable developments to be delivered by the end of December 2020. Once completed, these transactions will deliver accommodation to more than 800 individuals.

While the impact of COVID-19 temporarily slowed some progress during the year, the need for affordable housing options in the community is greater than ever, with a solid pipeline of activity into the future. We also welcome the momentum achieved by the National Housing Finance and Investment Corporation (NHFIC). This is a corporate Commonwealth entity with a focus on affordable housing that can lend at lower than commercial rates to community housing providers.

In disability housing, we entered into a sponsorship arrangement with the Specialised Disability Accommodation Alliance which acts as a national co-ordinating body of New Build Specialist Disability Accommodation (SDA) housing that empowers people with disability to live full and vibrant lives facilitated by increased housing choice and control. We continue to focus on supporting SDA clients with their financing and broader bank needs.

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