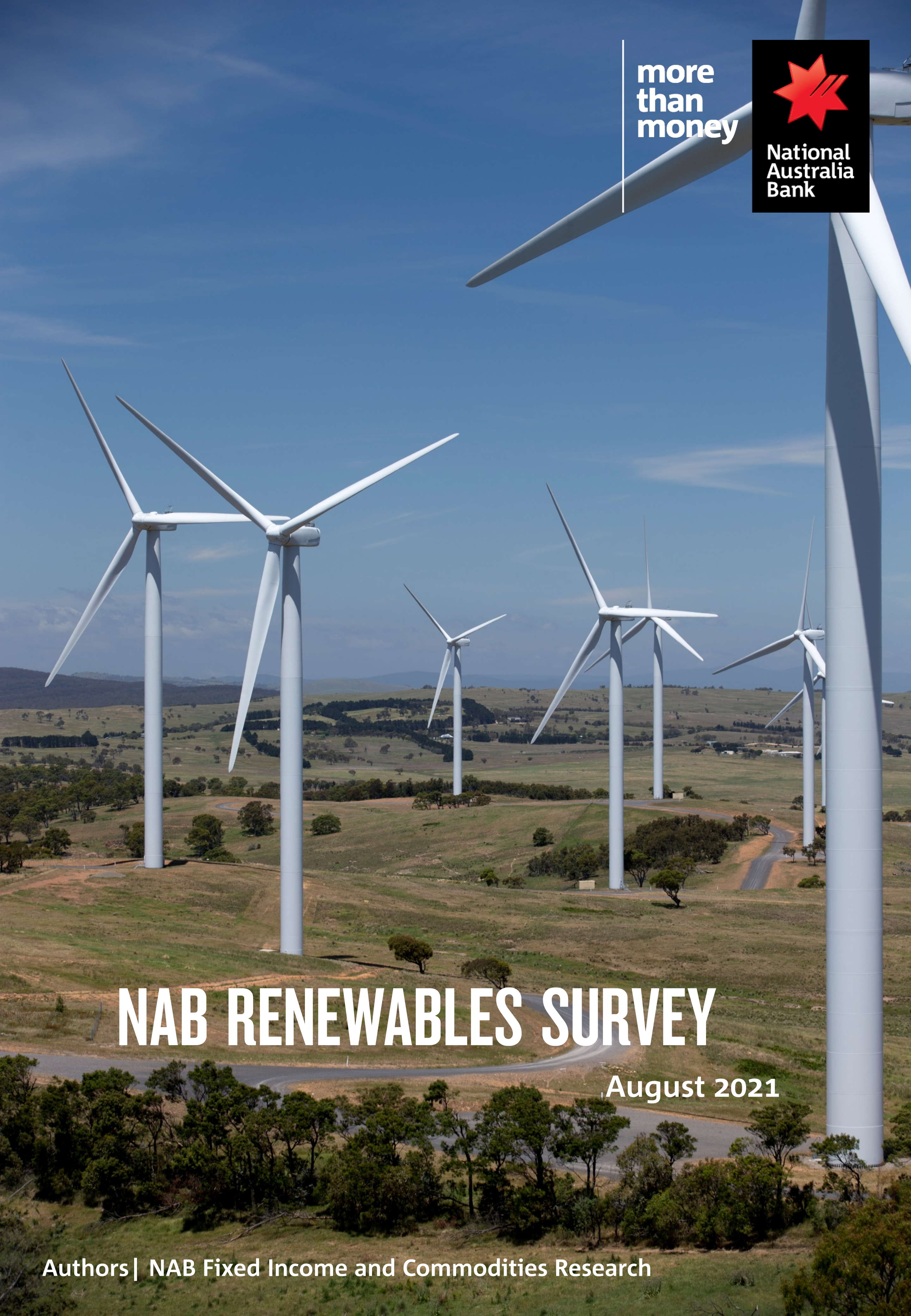


more than money

National Australia Bank

NAB RENEWABLES SURVEY

August 2021

Authors| NAB Fixed Income and Commodities Research

Important Notice: Please see page 18 at back of document for our full disclosure.

NAB RENEWABLES SURVEY

There has been a renewed focus on climate change and the shift to renewable energy. While NAB's second Renewables Survey shows that the transition to renewable energy by Australian businesses remains slow there is a growing recognition of the social and reputational benefits.

The focus on reducing global emissions has intensified as many countries work towards net zero emissions. While Australia is heading down this path, the latest NAB Renewables Survey[1] highlights that the transition amongst the non-farm business sector remains relatively slow.

Encouragingly the survey shows an increase in renewable energy usage, with close to 50% of respondents confirming they now use renewable energy for some part of their energy needs (up from 33% in the previous survey). However, as a proportion of overall energy usage the take-up remains low. Only 16% of respondents reported that their renewable energy usage makes up greater than 25% of overall energy use.

The number of firms reporting they have a renewable energy policy remains very low, at 22%. While the sector breakdown highlights some differences, overall the survey continues to show a lack of urgency amongst firms to set their own policies with 40% of firms reporting that switching to renewable energy was not a high priority. A lack of understanding of the cost reductions that are being made in the renewables sector may also be an issue with many firms citing costs as being a key barrier to renewable energy usage.

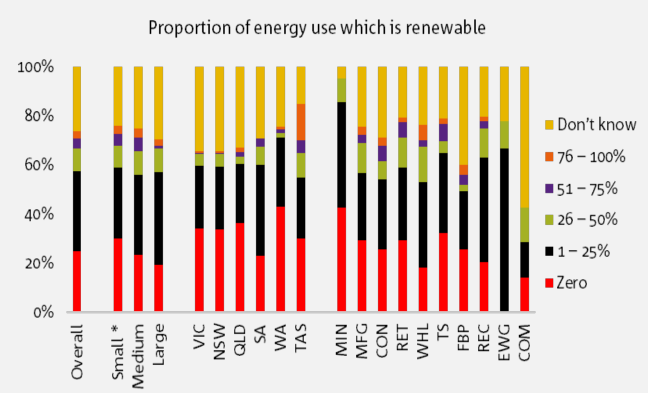
One of the biggest shifts in the current survey was the increasing recognition of the social and reputational benefits of working towards net zero emissions as well as recognising customer demand and expectations that firms make this shift. The renewed focus on climate change and the push from society for action is likely doing some of the heavy lifting in the absence of firms having clear policy targets.

As for net-zero carbon transition plans and carbon trading activity, almost a third of participants either have in place, are developing or plan to develop net-zero carbon emissions transition plans. However carbon trading has some way to go, with less than 7% buying, and less than 5% selling, carbon offsets.

49%
of respondents **use renewable energy** but only 16% report greater than 25% usage

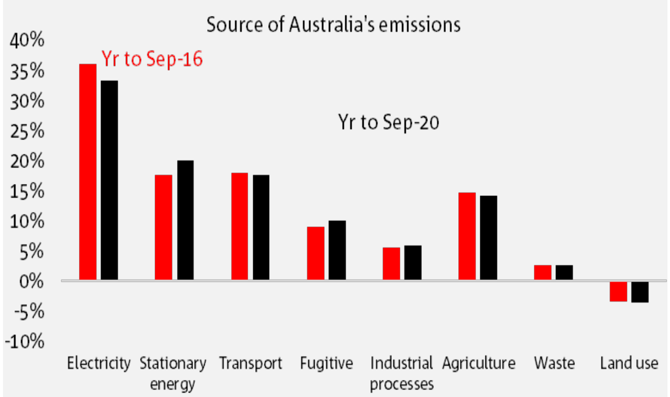
Only
22%
of respondents **have a policy** on renewable energy

30%
of respondents have in place or plan to develop **net zero carbon emissions plans**



* Employee size: Small 35-99, Medium 100-199, Large 200+

Source: NAB Renewables Survey



Source: Australian National Greenhouse Accounts - Qrtly update on greenhouse gas inventory -

1. The inaugural NAB Renewable survey was conducted in late 2018. In February this year we ran the survey within NAB's regular Quarterly Business Survey. This survey covers 850-900 firms across the non-farm business sector ranging from small (35-99 employees),medium (100-199 employees) to large companies (200 plus employees).

SURVEY FINDINGS

Only 22% of respondents said their organisation had a policy on renewable energy

Renewable policy adoption

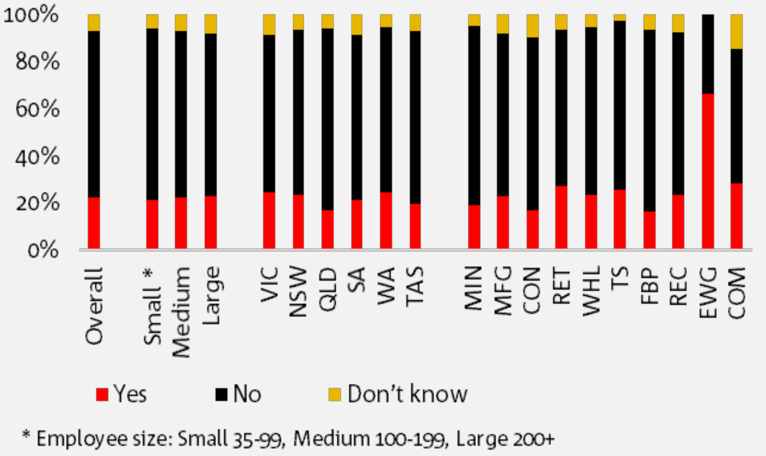
Respondents were asked whether their organisation has a renewable energy policy. In the survey conducted in late 2018, 18% of firms responded that their organisation had a policy on renewable energy. This has increased to 22% in the latest survey.

There is no difference across firm size with 23% of large and medium firms confirming that they have a renewable energy policy and 21.5% of small firms.

There is also limited difference across the states. Given the amount of renewable energy which Tasmania generates (99.2% in 2020) it is no surprise that only 20% of respondents in Tasmania said they had a renewable energy policy (although this is up from 15% in 2018).

Across the industry sectors, the notable changes between surveys were the increase for mining with close to 20% now saying they had a renewable energy policy (up from 4%) and Finance, Business and Property at 16.5% (up from 9%). The EWG sector continues to be a leader with 67% citing they had a renewable energy policy.

Does your organisation have a renewable energy policy?



* Employee size: Small 35-99, Medium 100-199, Large 200+

Source: NAB Renewables Survey

Key drivers to using renewable energy

Respondents were asked about the key drivers, if any, for the organisation to use renewable energy and could select more than one answer. While cost savings remain the main driver of renewable energy usage there has been a noticeable increase in firms referencing social and reputational benefits as well as customer demand and expectations as a driver.

Across firm size, small businesses have played catch up to medium and large firms in recognising the "social and reputational benefits" of using renewable energy. Large firms continue to lead in citing this as a reason for using renewable energy sources (50% compared to 47% for medium sized firms and 42% for small).

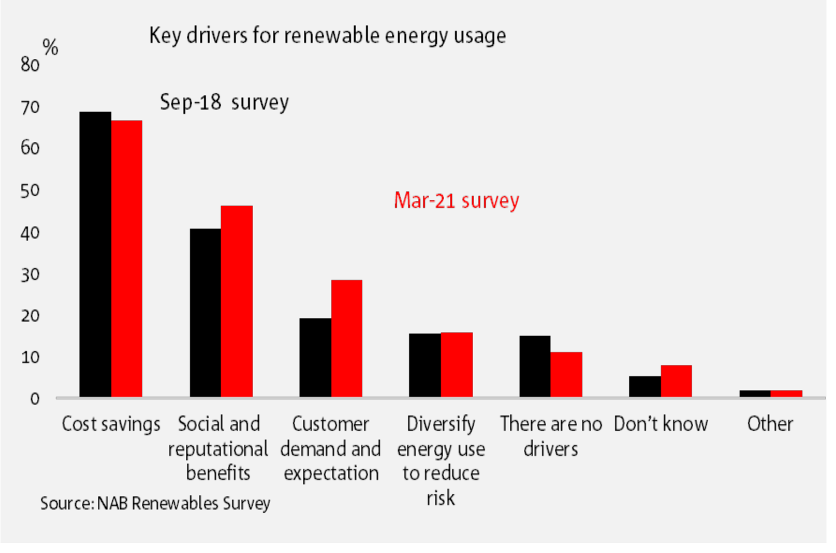
By state, it is Tasmania where there has been the biggest lift in regards to recognising the social and reputational benefits of using renewable energy (currently at 53% vs 35% in the previous survey). The biggest uptick in regards to "customer demand and expectations" was in South Australia (at 43%, up from 18.5%).

Within the sectors, all (excluding Telecommunications) rank cost savings as a key driver with Retail (at 80%), Manufacturing (at 77%) and Recreation (at 73%) leading. The biggest increase in recognition of the "social and reputational benefits" was in mining while there was a notable increase for most sectors in citing "customer demand and expectations" as a reason.

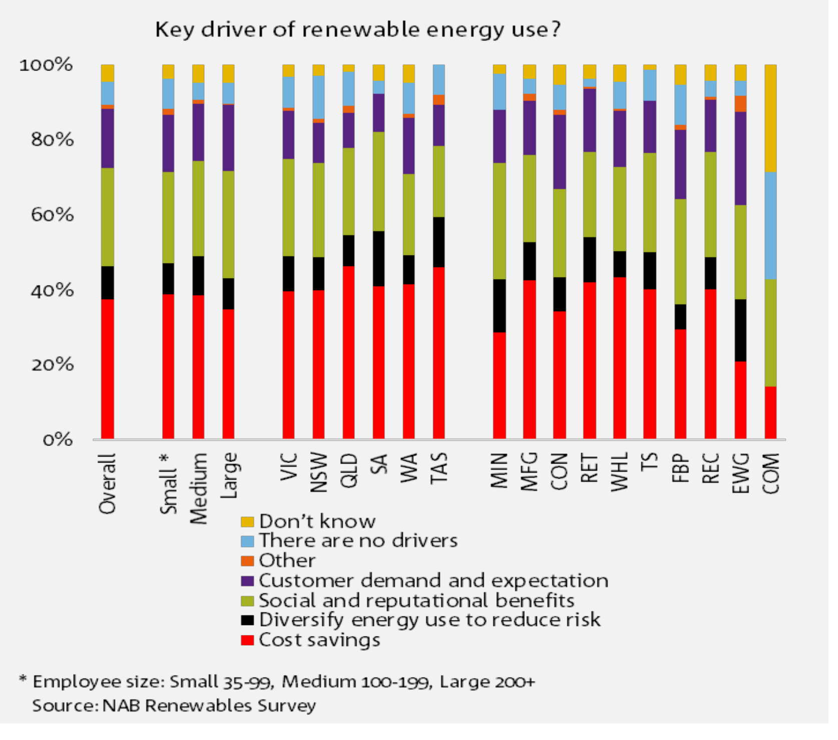
Key for industry charts:

MIN – Mining
MFG – Manufacturing
CON – Construction
RET – Retail
WHL – Wholesale
TS – Transport
FBP – Finance, Business and Property
REC - Recreation and Personal Services, Accommodation, Cafes, Restaurants
EWG – Electricity, Water and Gas
COM - Telecommunication

SURVEY FINDINGS



There has been a noticeable increase in firms ranking Social and reputational benefits and Customer demand/expectation as a reason for sourcing renewable energy.



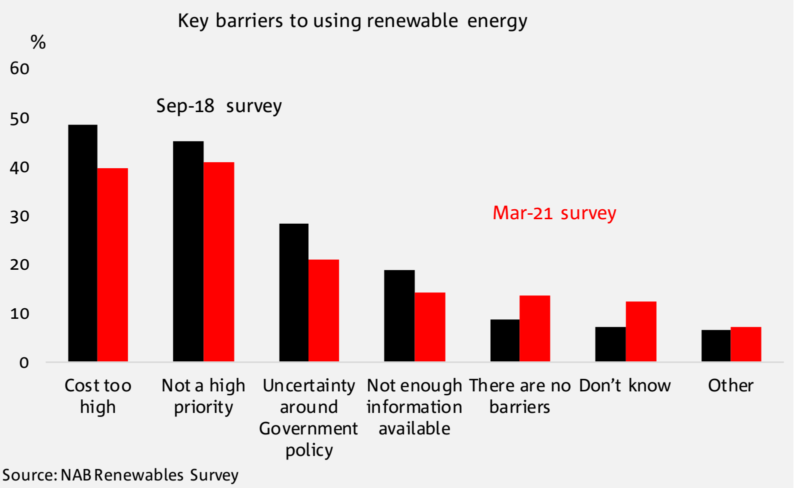
The biggest increase in recognition of the "social and reputational benefits" was in the mining sector.

SURVEY FINDINGS

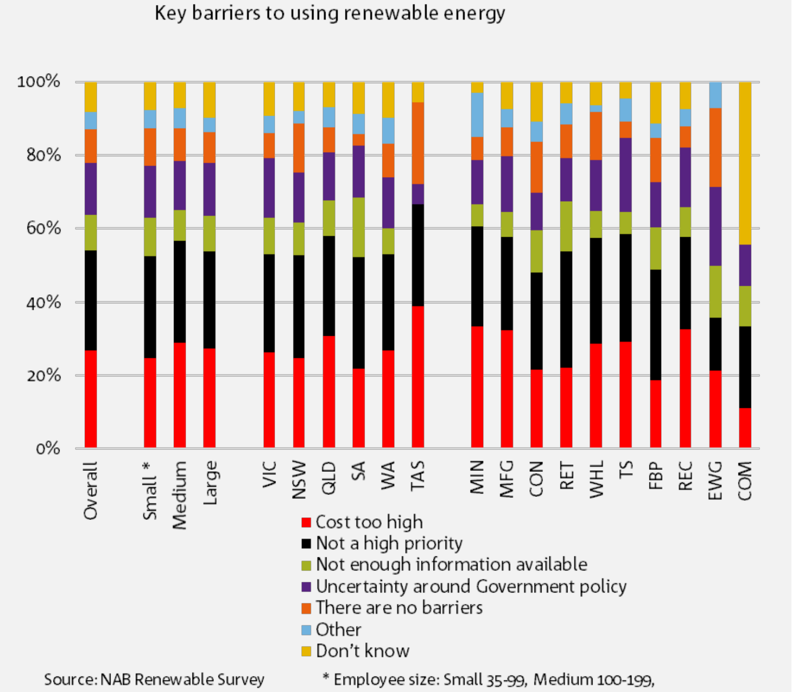
Barriers to using renewable energy

Respondents were asked to select key barriers to their organisation using more renewable energy and could select more than one answer. Renewable energy costs being too high remains a key barrier to increased usage but the number of firms citing this has fallen from the previous survey (to 39% from 48%). Usage not being considered a high priority is now the highest barrier but this too has fallen from the previous survey. Around a quarter of respondents cite uncertainty around government policy as a barrier (although it is not within the top two cited barriers).

Within the sectors it is mining which cites increased uncertainty around Government policy, while other sectors see this as less of a barrier compared to the previous survey. All sectors, ex mining, see cost as less of a barrier compared to the previous survey, although the cost of renewable energy does remain as the top barrier for usage of renewable energy across the industries.



Source: NAB Renewables Survey



Source: NAB Renewable Survey * Employee size: Small 35-99, Medium 100-199,

KEY TAKEAWAYS

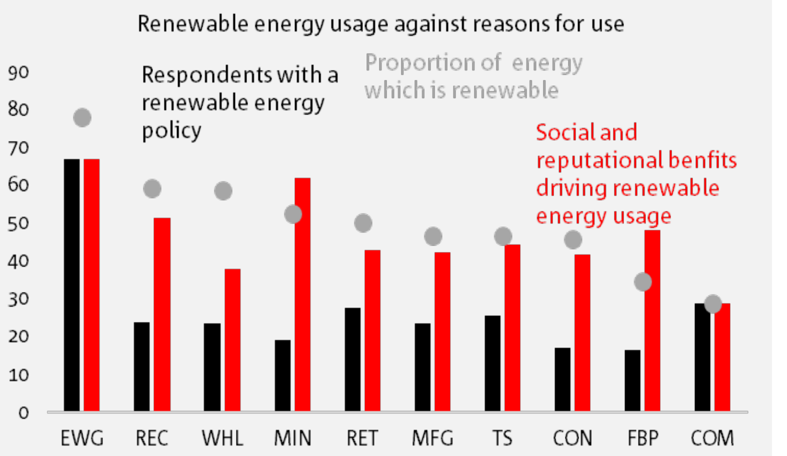
Set policies/targets may speed up the shift to renewable energy usage and lower emissions but the renewed focus on climate change and the push from society for action is doing some of the heavy lifting

The cultural shift is making up for a lack of policy targets

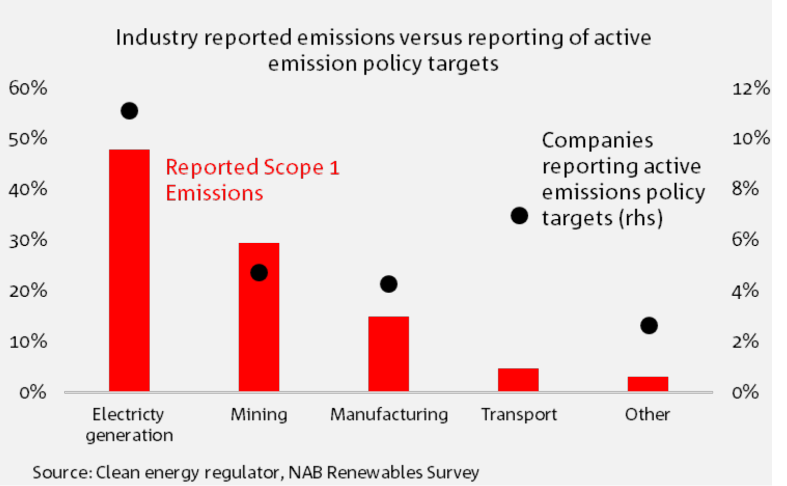
The survey results highlight the advancements that the Electricity, Water and Gas (EWG) sector is making in terms of the shift to renewable energy and reducing emissions. This is possibly no surprise given the EWG sector is one of the more polluting industries. According to the survey, close to 80% of energy usage within this sector is renewable. This high level of usage corresponds with a high level of respondents saying they have a renewable energy policy (circa 67%). While also having a high recognition of the social benefits.

For the other sectors, while the proportion having a renewable energy policy is low, the rating of social and reputational benefits of using renewable energy is very high (as it is for the EWG sector).

Specific policies or targets for transition to renewable energy may help speed up the progression to renewable energy usage. It is those sectors which have a renewable energy policy but also recognise the social benefits where the renewable energy usage is higher.



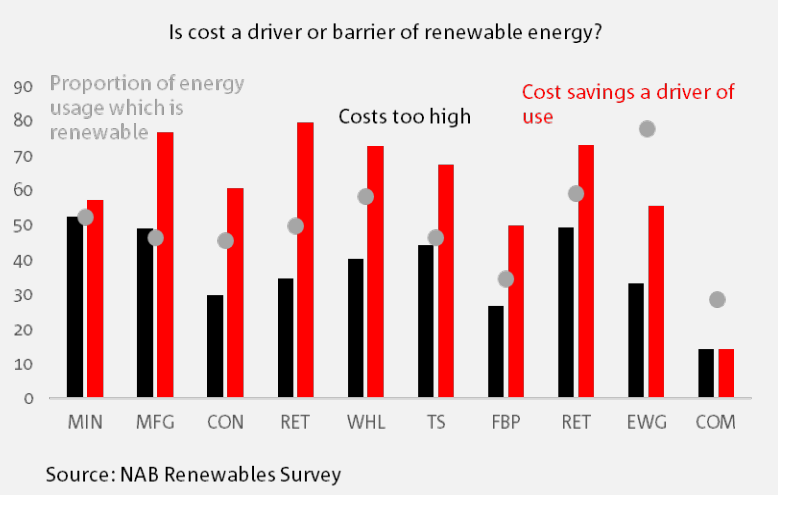
Source: NAB Renewables Survey

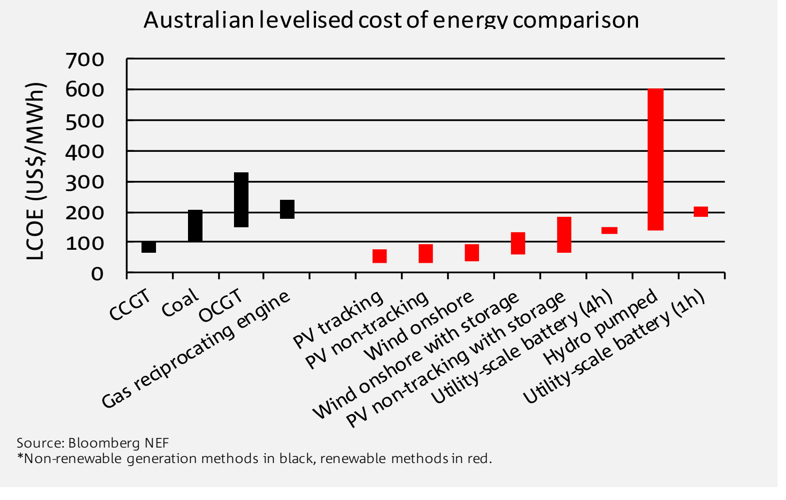


Source: Clean energy regulator, NAB Renewables Survey

KEY TAKEAWAYS

A better understanding/education on the renewable energy space could help lift the usage of renewable energy.





There still appears to be a lack of awareness around renewable energy

Putting the EWG sector aside, the latest NAB Renewables survey highlights that the shift towards renewable energy usage remains slow. Half of Australian businesses are sourcing renewable energy, but the overall take-up remains low, at 1-25% of total energy usage.

Responses suggest that a lack of urgency or understanding of the inroads that are being made within the renewable energy sector, and uncertainty with respect to Government policy remain key factors slowing the transition.

For example, the results suggest that there remains some confusion around costs. In Australia, LCOEs for solar and wind generation are now at levels which are competitive with or lower than traditional generation methods on an unsubsidised basis.

Sectors with greater usage of renewable energy generally have a greater recognition of the cost benefits. Ultimately, companies will be driven by the economics and education will play a key role.

The focus on climate change has intensified but the survey suggests that further education on renewable energy could help lift the usage of renewable energy.

Open cycle gas turbine (OCGT): Consists of a gas turbine and has low start-up costs, but not very thermally efficient. Usually operates as a peaking plant. Combined cycle gas turbine (CCGT): Consists of a gas turbine like OCGTs but also captures heat from its exhaust to drive a steam turbine. Higher thermal efficiency but also higher fixed costs. Reciprocating engines: Gas fired engine technology coupled to a generator on the same base frame.

KEY TAKEAWAYS

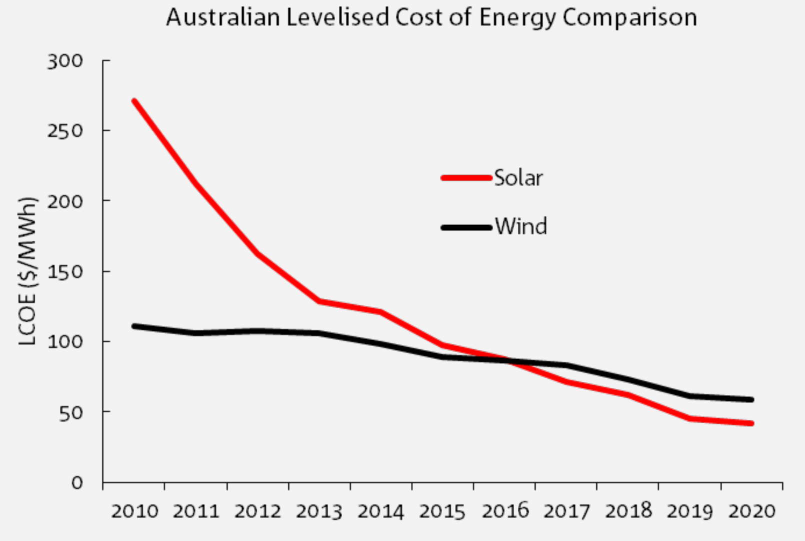
There has been a substantial decline in the Levelized Cost of Energy

The Levelized Cost of Energy (LCOE) for wind and solar PV have seen substantial decline. This has been driven by a decline in the price of system components and increased generation efficiency, amongst other factors.

While the rate of decline has slowed as technologies mature, the LCOE continues to trend down.

In recent years, the LCOE for solar PV has dropped below that of wind, according to analysis by government agencies.

Countries equipped with abundant wind and solar resources, such as Australia, also benefit from having relatively lower LCOE for the technologies.



Source: AEMO, CSIRO, IRENA, RBA

SURVEY FINDINGS

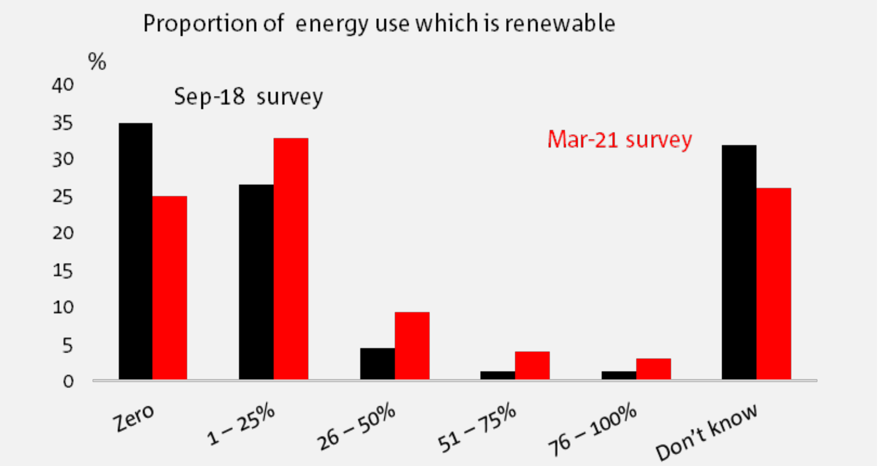
Proportion of renewable energy usage

Respondents were asked what proportion of their energy use is renewable. Around a third of firms surveyed said they used renewable energy back in 2018. This proportion has lifted to 50% in the latest survey.

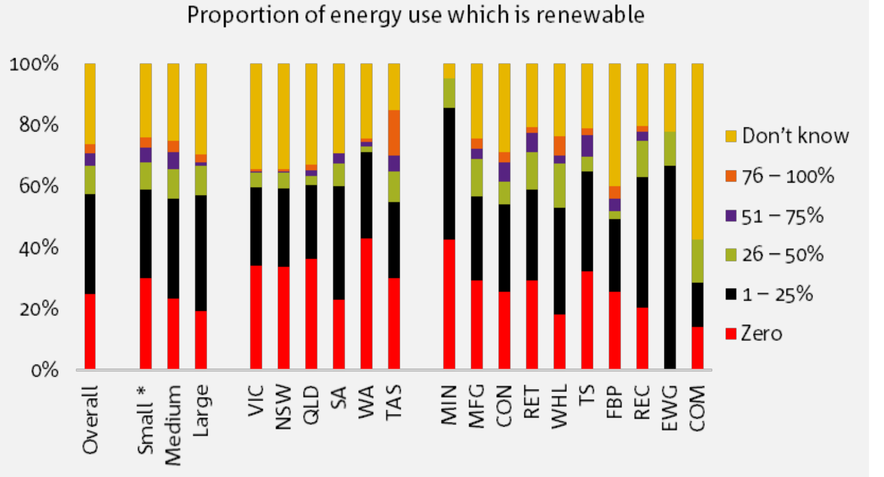
The majority of respondents usage of renewable energy remains low with 33% saying renewable energy makes up less than 25% of overall energy usage. Those citing renewable energy usage was greater than 25% of total energy usage has more than doubled since the previous survey at 16% (up from 7%).

Across the businesses, there has been a significant lift in medium sized firms usage of renewable energy, now accounting for 51% (vs 31.5% in the 2018 survey). Large firms usage has risen to 51% (from 38%) while small firms usage is also higher at 46% (from 30%).

Across sectors, it is the electricity, gas and water sector, wholesale and mining which continue to display higher usage of renewable energy. The lowest usage is seen in finance, business, construction and communication sectors.



Source: NAB Renewables Survey



* Employee size: Small 35-99, Medium 100-199, Large 200+

Source: NAB Renewables Survey

SURVEY FINDINGS

Buying carbon credits to offset emissions

Respondents were asked if their organisation participates in buying carbon credits to offset emissions.

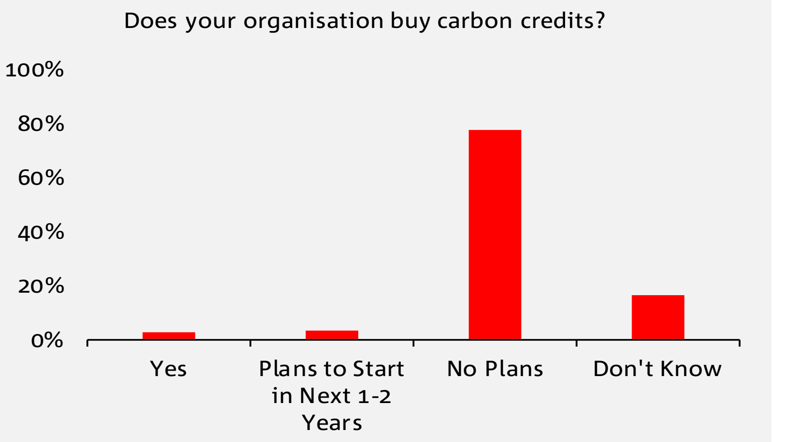
3% of respondents currently buy carbon credits, while a further 3.2% plan to start in the next 1-2 years. The majority (77.5%) have no current plans to buy credits.

While take-up and interest is encouraging the low levels of participation in purchasing carbon trading credits is likely reflective of the largely voluntary nature of Australian carbon markets.

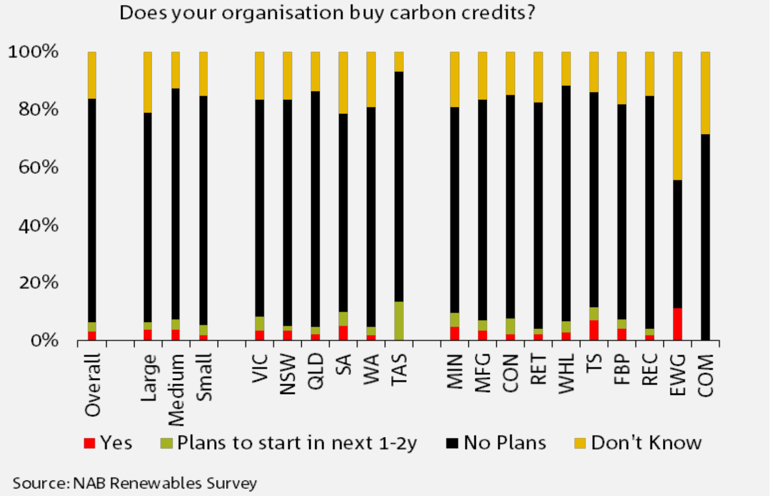
Large organisations (3.9%) are currently more likely than medium (3.6%) or small sized organisations (1.9%) to buy carbon credits.

Industries most engaged in buying carbon credits are Electricity Water & Gas (11.1%), followed by Transport & Storage (7%) and Finance, Business & Property (4.1%).

Respondents were not limited in their definition of carbon credits. In Australia, carbon credits can refer to the federally issued Australian Carbon Credit Units (ACCUs), Victorian Energy Efficiency Certificates (VEECs), NSW-issued Energy Savings Certificates or Renewable Energy Certificates in a broader sense. Businesses can also choose to purchase internationally certified carbon credits.



Source: NAB Renewables Survey



Source: NAB Renewables Survey

*Employee Size: Small 35-99, Medium 100-199, Large 200+

SURVEY FINDINGS

Selling carbon credits to offset emissions

Respondents were asked if their organisation sells carbon credits from sequestration activities.

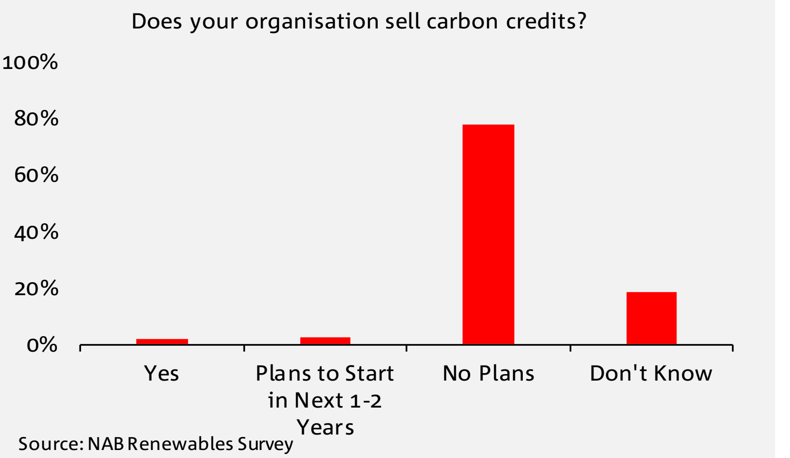
1.8% of respondents currently sell carbon credits, with 2.4% flagging plans to start in the next 1-2 years. The majority (77.5%) have no plans to sell credits.

The low level of participation in selling carbon credits may reflect the lack of a federally mandated carbon price. The proportion of respondents currently selling credits is lower than the proportion buying credits.

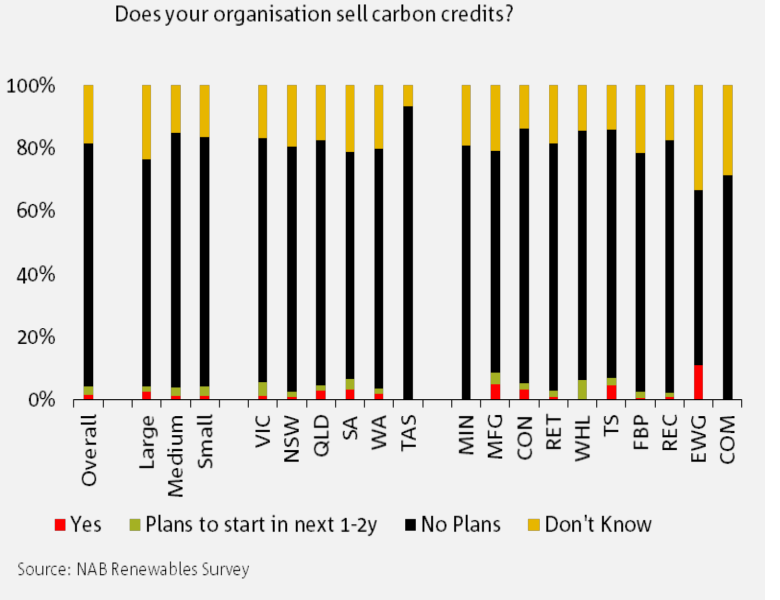
Large organisations are currently more likely than medium or small sized organisations to sell carbon credits.

The industries most engaged in selling credits are Electricity Water & Gas (11.1%) followed by Manufacturing (5.7%) and Transport & Storage (4.7%).

Consistent with the previous question, respondents were not limited in their definition of carbon credits, nor in the jurisdiction in which they sold carbon credits into.



Source: NAB Renewables Survey



Source: NAB Renewables Survey

*Employee Size: Small 35-99, Medium 100-199, Large 200+

SURVEY FINDINGS

Net-zero carbon transition plans

Respondents were asked if their organisation has a policy on achieving net zero carbon emissions or plans to develop one.

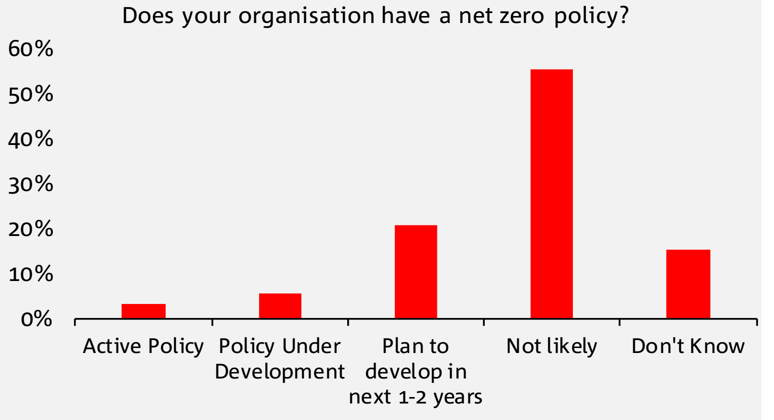
3.2% of respondents indicated that their organisation has an active net zero policy in place. Amongst these respondents, the average of when they expect to achieve net zero is in mid-2028, a little over 7 years from now.

5.5% of respondents indicated that a policy is under development, while 20.6% are planning to develop one in the next 1-2 years. A majority either stated that a net zero policy is not likely (55.5%) or that they do not know if such a policy is in place (15.2%).

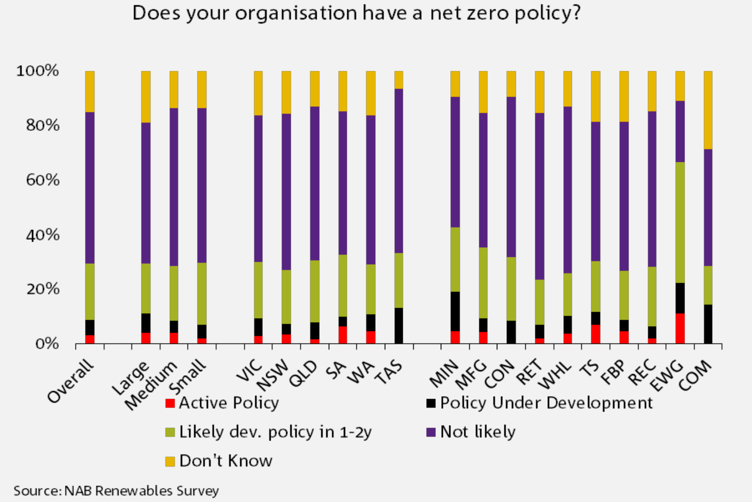
Large organisations (4.2%) are currently more likely than medium (4%) or small (1.9%) organisations to have an active net zero policy. On average, large organisations expect to reach their goals in March 2031, anticipating a longer transition period compared to medium (Jan 2027) and small sized organisations (May 2026).

By industry, Electricity, Water & Gas (11.1%), Transport & Storage (7%) and Mining (4.8%) have the most respondents indicating that an active net zero policy is in place.

When taking into account policies under development and future plans to develop policies, the Electricity, Water & Gas sector shines with 66.7% of respondents flagging current or future plans, followed by the Mining (42.9%) and Manufacturing (35.3%) sectors.



Source: NAB Renewables Survey

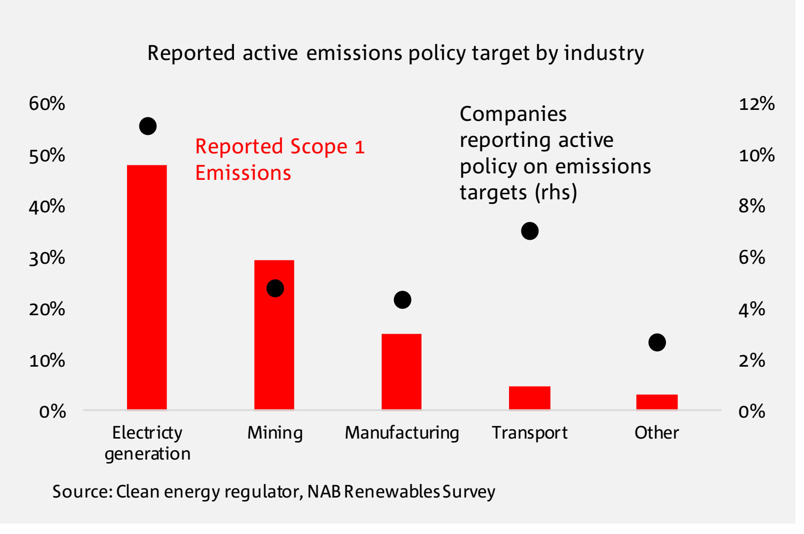


Source: NAB Renewables Survey

*Employee Size: Small 35-99, Medium 100-199, Large 200+

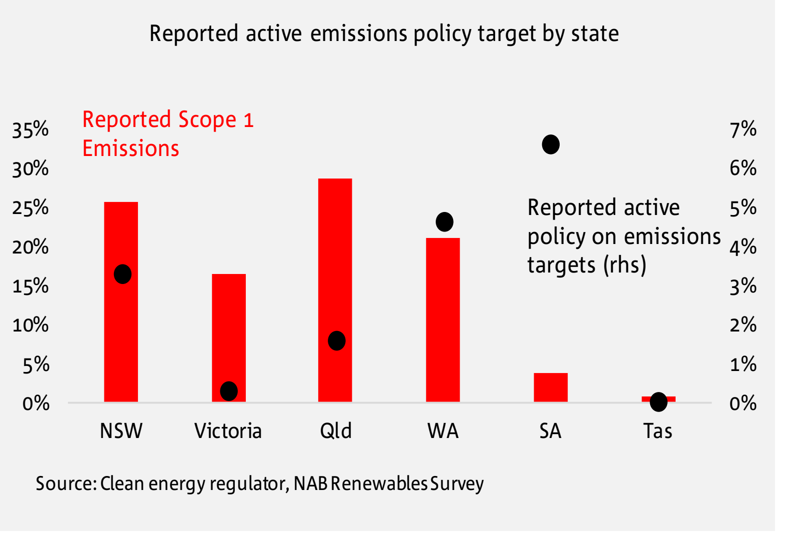
KEY TAKEAWAYS

Businesses are reducing emissions as consumers and investors demand it. But the move is slow and not uniform across sectors



The Electricity generating sector is the highest emitting sector but it also leads in terms of having an active policy on emissions targets

In 2019–20, electricity generation remained the highest emitting industry in Queensland, Victoria, South Australia, New South Wales and the Australian Capital Territory. Manufacturing was again the highest emitting industry in Tasmania. Oil and gas production continued to be the highest emitting industry in Western Australia and the Northern Territory.
Source: Clean Energy Regulator



Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organization.

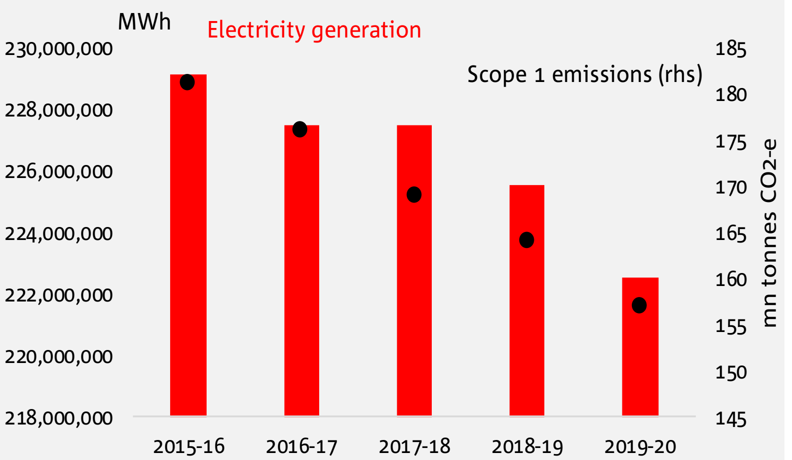
CALL-OUT

In 2020 all Australian states and territories announced renewable energy policies and targets to reach zero emissions by 2050. In addition there were 26 corporate renewable power purchase agreements (PPAs) made in 2020 – this included Aldi, Amazon, Coles, Transurban, Newcrest Mining, Macquarie University, the City of Adelaide and CSIRO[2].

What are some of Australia's largest emitters doing to reduce zero carbon emissions?

AGL Energy, which is currently Australia's single largest greenhouse gas (GHG) emitter, is investing heavily in renewable energy. It has also announced plans to demerge, creating Australia's largest electricity retailer, by sold volume, (AGL Australia) which would be immediately carbon neutral for scope one and two emissions, will be the owner and operator of substantial battery projects (currently with a 850Mw pipeline) and has a clear pathway to full carbon neutrality.

The other company (Accel Energy) would account for approximately 20% of total electricity generation across Australia's National Electricity Market would operate Australia's largest wind portfolio and also develop future wind projects, including currently defined projects. While Accel Energy would retain AGL's portfolio of large GHG emitting coal fired generators, it has a clear timetable to closure of those generators and transition the sites to industrial energy hubs. The closure of the Liddell (NSW) power station in 2023 will reduce Accel Energy's carbon emissions by 20%, while the closure of Bayswater (NSW), no later than 2035, will reduce it by a further 50%. The closure of Loy Yang (Vict.), no later than 2048 will see the new company become fully net zero carbon emissions.



Source: Clean Energy Reguator, electricty sector emissions and generation data

Santos (ranked 11th by the Clean Energy Regulator in terms of GHG emissions), is looking to develop what may be (subject to FID) one of Australia's largest and most advanced emission mitigating projects - its 1.7mtpa Moomba carbon capture and storage project. The project is expected be ready to enter a FID decision by the end of this calendar year and the first injection is planned for early 2024. Santos claims the project is the world's lowest unit cost CCS project with unit costs of under A$30/t (lifecycle; $6-8/t in operation, with an estimated capex of $125-155m). The Moomba project would also provide a competitive advantage in developing a zero emissions, low cost hydrogen production business and Santos has also begun studies on a Cooper Basin hydrogen domestic blending and export operation. Santos is targeting to be net zero emissions by 2040.

2. Source: Clean Energy Australia Report, 2021

CALL-OUT

Other Australian corporates which are currently far smaller emitters of GHGs are investing considerable capital in new clean energy technologies, as well as in reducing their own direct and indirect emissions.

In March this year, Fortescue Mining brought forward its target of achieving scope one and two carbon neutrality by 2030, 10 years earlier than previously indicated. It aims to achieve that by investing over US$800m in both reducing emissions from power generation and increasing use of renewables (including solar) as well as also investigating in green hydrogen/ammonia as a potential power generation fuel and looking to decarbonise its currently diesel-fuelled mining fleet. Fortescue is also seeking to reduce scope three emissions through research and collaborating with steel mill clients and shipping providers to reduce their emissions as well as conducting trials to produce its own 'green iron' from renewable power and without the use of coal.

As well as reducing the GHG footprint of its existing iron ore operations, Fortescue is also investing significant capital in developing new clean energy technologies and has committed to allocate 10% of its profits towards funding a fully-owned subsidiary, 'Fortescue Future Industries' (FFI). Based on the latest half's results, that equates to approximately US$800m annually (though it's unlikely that level of profitability will be sustained over the medium and longer term). One of FFI's more high profile projects it is considering is a 250kt per annum export-scale renewable power-based hydrogen and ammonia production facility which would be located in Tasmania's industrial Bell Bay region.

Major Australian food retailers Coles and Woolworths are also taking actions to reduce their carbon footprint with both seeking to deliver net zero greenhouse gas emissions by 2050 and to be powered by 100% renewable energy by 2025 with the former the first to execute a power purchase agreement with solar farms. In addition, both companies are undertaking a number of initiatives to reduce energy usage at an individual supermarket level, including the installation of solar panels, roll out of LED lighting and the optimisation of heating, ventilation, air-conditioning and refrigeration.

The largest Australian real estate trusts have been proactive with their respective ESG strategies with many rated as 'Leaders' (AAA/AA) by MSCI. This includes environmental measures with many A-REITs committing to net zero emissions by the end of the decade. Initiatives underway include the installation of on-site solar on shopping centres and other commercial assets, the sourcing and voluntary purchase of renewable energy and the investment in new technologies that can reduce their respective carbon footprints. For A-REITs engaged in commercial developments, climate considerations have also increased with Australian master planned communities developments recognised for their high liveability and sustainability standards.

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