You beauties!

Australia's world leading clean energy institutions

AUSTRALIAN CONSERVATION FOUNDATION

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As the federal government prepares to release its technology roadmap concerns are rising about plans to corrupt the mandates of Australia's clean energy agencies to have them invest in fossil fuels.

The Clean Energy Finance Corporation (CEFC) and Australian Renewable Energy Agency (ARENA) were created in 2012. They play important complementary roles in reducing Australia's emissions and driving the transition to a cheap, reliable clean energy system.

ARENA drives innovation and the commercialisation of renewable energy technologies. Since its inception, ARENA has invested $1.58bn into 543 projects, achieving $6.48bn in value.

The CEFC, Australia's 'green bank', came out of an idea in ACF's 2010 report, *Funding the transition to a clean economy*.

It leverages flows of finance for the commercialisation and deployment of clean energy technologies. Since 2012, it has invested more than $8bn into 200 large scale and 18,000 small scale clean energy projects, representing about $27.3bn in total value.

The CEFC and ARENA are resilient, highly effective and world leading clean energy institutions. They have delivered exceptional returns on investment and accelerated the transition towards a low-cost, zero-carbon clean energy system.

CLEAN ENERGY FINANCE CORPORATION (CEFC) Purpose

The CEFC is Australia's $10 billion 'green bank', designed to facilitate increased flows of finance into the clean energy sector. Specifically, it is tasked with catalysing and leveraging the flow of funds for the commercialisation and deployment of renewable energy, low-emissions and energy efficiency technologies necessary for Australia's transition to a low carbon economy.

Investment highlights

- ✓ The CEFC's investment portfolio has achieved cumulative investment returns of 5.29% since 2012.
- ✓ Total lifetime investment of $8 billion has resulted in investments worth $27.3 billion – more than three times the amount CEFC invested. The CEFC has successfully attracted around $2.30 of private sector investment for every $1.00 of CEFC investment, and this increased to more than $3.00 per $1.00 in 2019-20.
- ✓ CEFC capital has been critical to building the clean energy sector in Australia. The CEFC has financed more than 3.6 GW of new solar and wind renewable energy since it began investing. This is more than two coal-fired power plants (e.g. the closed Hazelwood and the soon to be closed Liddell power plant combined).
- ✓ In its 2018-19 Annual Report, the CEFC estimated its investment commitments are targeting lifetime emissions abatement of more than 260 Mt CO_2-e — equivalent to around half a year of Australia's total national greenhouse gas emissions. New investment commitments in 2019-20 are targeting more than one million tonnes of carbon abatement annually.

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	2019-20	LIFETIME
CEFC commitments	>$1b	$8b
Transactions financed	23	~ 200
Transaction value	$4.24b	$27.3b
Leverage (private sector to CEFC)	> $3.00: $1.00	~ $2.30: $1.00
Smaller-scale transactions: financed	~ 6,700	~ 18,000
Smaller-scale transactions: total value	$187m	$1.27b
Finance deployed	$937m	$6.03b
Finance repaid	$942m	$1.66b

Data Source: CEFC 2019-20 Investment Update

Investment highlights

The CEFC is at the forefront of new investment in a wide range of activities to drive down emissions across multiple sectors of the economy, including agriculture, energy, infrastructure, property, transport and waste.

The CEFC's existing mandate has driven investment in technologies and solutions that go well beyond solar and wind and includes energy storage, hydrogen and electric vehicles. While the CEFC has played a critical role in solar and wind technology innovation and delivered investments that have driven down technology costs and helped to build the clean energy sector, many of its other important areas of investment are not as well known.

Renewable energy

- **Solar**: CEFC investments have reduced the cost of large-scale solar. CEFC works with domestic and international investors to bring new investment and clean energy to regional Australia, capitalising on arguably the best solar and wind resources in the world.
- **Wind**: CEFC investments in large-scale wind projects have supported a remarkable level of innovation. CEFC is now working on hybrid projects that bring together wind, solar and energy storage, as well as projects that involve Power Purchase Agreements (PPAs) with large energy users.
- **Energy Storage**: Integrating new clean energy into our electricity grid requires significant investment in energy transmission and storage systems. Technologies such as pumped hydro and battery storage bring large-scale and small-scale energy storage projects to reality.
- **Bioenergy**: Bioenergy has a unique role to play in creating renewable electricity, gas, heat and liquid biofuels. It also offers important waste management solutions, to produce-energy-from waste, cut landfill and lower emissions. CEFC has invested in several market-leading bioenergy projects.
- **Hydrogen**: The $300m Advancing Hydrogen Fund draws on existing CEFC finance. In line with the CEFC Act, projects seeking CEFC finance through the Advancing Hydrogen Fund are required to be commercial, draw on renewable energy, energy efficiency and/or low emissions technologies and contribute to emissions reduction.

Built environment

- **Housing**: CEFC finance is helping new homes have the strongest energy efficiency and deliver the smallest carbon footprint possible, across a diverse range of cleaner, greener residential options. This includes finance for green home loans, community housing, build-to-rent and master planned communities, seniors living and student accommodation.
- **Manufacturing**: CEFC research has identified a range of practical and proven strategies to deliver energy and cost savings across manufacturing operations. CEFC finances clean energy equipment upgrades and renewable energy installations in the manufacturing sector through tailored lending programs.
- **Property**: Energy efficient buildings using proven clean energy technologies reduce stress on the electricity network, lower electricity consumption, and support a least-cost pathway to net zero emissions, improving health and resilience outcomes for households and businesses. CEFC's property-related investment commitments include 'demonstration' projects with the ability to deliver best-in-class performance around energy efficiency and the integration of renewable energy into new and existing buildings.
- **Infrastructure**: CEFC finance supports best practice infrastructure design, construction and operations. This includes influencing clean energy standards for social and economic infrastructure assets, as well as transport and electricity. For example, CEFC is working with Australia's largest infrastructure fund, the $12 billion IFM Australian Infrastructure Fund, to reduce carbon emissions at leading ports, airports and electricity infrastructure.

Sustainable economy

- **Innovation fund**: The Clean Energy Innovation Fund was created as a specialist financier to invest $200 million in early-stage clean energy companies. It is operated with the assistance of ARENA.
- **Asset finance**: CEFC partners with other financial institutions to support Australian businesses to invest in smaller-scale clean energy projects. CEFC has helped finance more than 18,000 smaller-scale projects, involving farmers, small businesses, manufacturers, building owners and community facilities. The sorts of projects supported include small-scale rooftop solar and battery storage; energy efficient manufacturing; improved building insulation, heating and cooling; and low emissions or electric light vehicles.
- **Agribusiness**: The CEFC is an active financier to agribusiness, including through tailored asset finance programs. In an Australian first, the CEFC and the National Farmers' Federation collaborated to produce a practical guide for Australia's 85,000 farming enterprises, identifying 51 opportunities where farmers can reduce their energy bills by improving energy efficiency and switching to renewables.
- **Clean vehicles**: Lowering transport-related emissions is critical to the broader decarbonisation of the Australian economy. The CEFC supports investment to accelerate the purchase of electric and plug-in hybrid electric vehicles, for individual, small business and fleet buyers. In addition, through the Clean Energy Innovation Fund, the CEFC is financing start-up companies targeting the electric vehicle market.

Case studies

These case studies provide examples of the CEFC's broad-ranging clean energy investment success. Many more are accessible here.

- Australia's first dedicated green bond fund
- Australia's largest virtual power plant to benefit South Australia's social housing tenants

- Biotech start-up that aims to lift soil organic carbon and boost farm productivity
- Ground-breaking battery storage technology: Relectrify technology that extends battery life and reduces battery storage costs
- Salt Lake Potash to build world leading fertiliser industry in Western Australia
- JET Charge making electric vehicle charging smarter, cheaper and more user friendly
- Retirement living green makeover: Australian property group Stockland undertaking a portfolio-wide energy efficiency retrofit program
- CEFC works with community housing providers to supply energy efficient homes
- Finance program aims to boost battery storage
- New hybrid bus fleet helps drive change
- Major solar farm for Victoria uses tech to boost grid, offers new PPA model
- New welding system delivers 21 per cent energy efficiency gain for Cairns-based CSF Steel

AUSTRALIAN RENEWABLE ENERGY AGENCY (ARENA)

Purpose

ARENA was established in 2012 to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia. Its core purpose is to accelerate Australia's shift to affordable and reliable renewable energy.

ARENA invests in projects spanning the innovation chain, from research to roll-out, to help push first-of-a-kind energy technologies and business models towards commercial viability. ARENA's support has helped unblock the pathway to commercialisation for many new technologies and businesses including the Darling Downs solar project, a 110 MW solar-PV farm, and the East Rockingham waste to energy project, that will process up to 330,000 tonnes of residual waste per year and produce 28.9 MW of electricity.

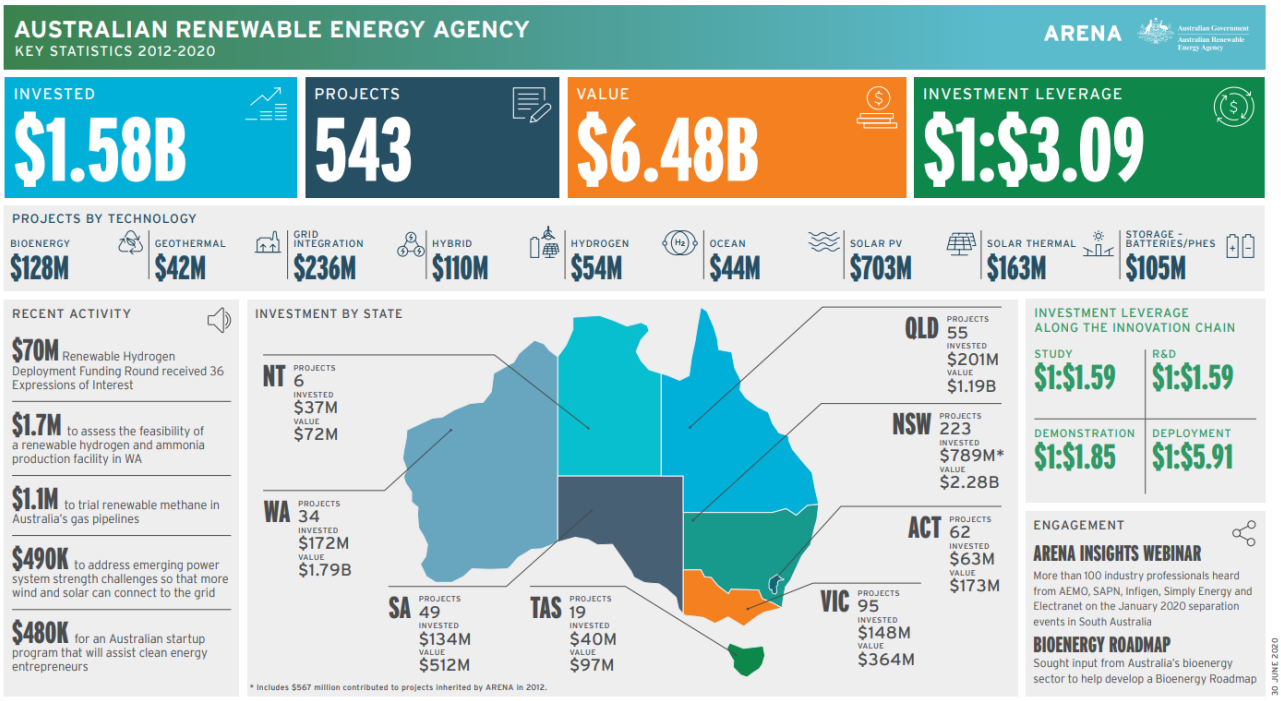
Another key part of ARENA's work is 'to build knowledge that can be shared openly to help industry and government better navigate the energy transition' to:

- De-risk follow-on projects
- Accelerate deployment of safe and commercially viable technologies
- Increase public understanding and confidence in new technologies
- Support capability development

Investment highlights

- ✓ Since 2012, ARENA has invested more than $1.5 billion in 543 projects worth $6.48 billion. This means that every dollar of public investment has attracted $3.09 in private investment.
- ✓ A 2018 economic contribution study estimated the total employment contribution of projects funded by ARENA to be 3,863 direct jobs in regional Australia (see Ernst & Young, Evaluation of ARENA's Impact and Effectiveness, 2019, p 5).
- ✓ ARENA invests across a range of technologies: bioenergy, geothermal grid integration, hybrid technologies, hydrogen, ocean, solar PV, solar thermal and storage technologies such as batteries.
- ✓ ARENA has supported projects not only to increase the supply of renewables, but also to speed up the commercialisation of promising renewable energy technologies and solutions so that Australians can have affordable access to these energy options as soon as possible.

- ✓ ARENA has sped up commercialisation of renewable energy transition by reducing costs, helping to ease the transition, and building industry capacity and capability.
- ✓ ARENA has benefited every state and territory in Australia with support for projects that have leveraged significant additional value.



Source: ARENA 2020

Case studies

In 2018-19, ARENA committed $228 million to 80 projects. Highlights include:

- Funded the first utility scale waste-to-energy facility
- Rollout of 60+ ultra-fast EV charging stations starts
- 11 projects funded to trial short-term forecasting at wind and solar farms
- $11.6 million committed to navigate the integration of distributed energy resources

In 2017-18, ARENA committed $181.3 million to 86 new projects. Highlights include:

- Funding Australia's first green hydrogen innovation hub
- Ten pilot demand response projects commencing operation
- $22.1 million committed to 16 hydrogen research projects
- Launched the Distributed Energy Integration Program with 11 market bodies

Powering the clean energy of tomorrow

ARENA contributes to renewable energy projects based on its General Funding Strategy and Investment Plan. The three key priorities in its current plan are outlined below. These priorities allow ARENA to adapt to new and evolving challenges. ARENA is now working to integrate renewables in the electricity system, accelerate renewable hydrogens so Australia can become a major renewable energy exporter and support industry to cut emissions through innovative and replicable technologies.

Priority 1. Integrating renewables into the electricity system

By investing in innovative ways to use, store, manage and share renewable energy, ARENA can help provide affordable, secure and reliable electricity for Australians through the energy transition.

Priority 2. Accelerating hydrogen

ARENA will help drive innovation in hydrogen supply chains, from production to end use, creating opportunities across the domestic economy, and positioning Australia to become a major renewable energy exporter.

Priority 3. Supporting industry to reduce emissions

ARENA will help Australian industry reduce emissions by investing in innovative and replicable technologies and processes that increase the adoption of renewable energy (including renewable electricity, renewable fuels, solar thermal, hydrogen and bioenergy).

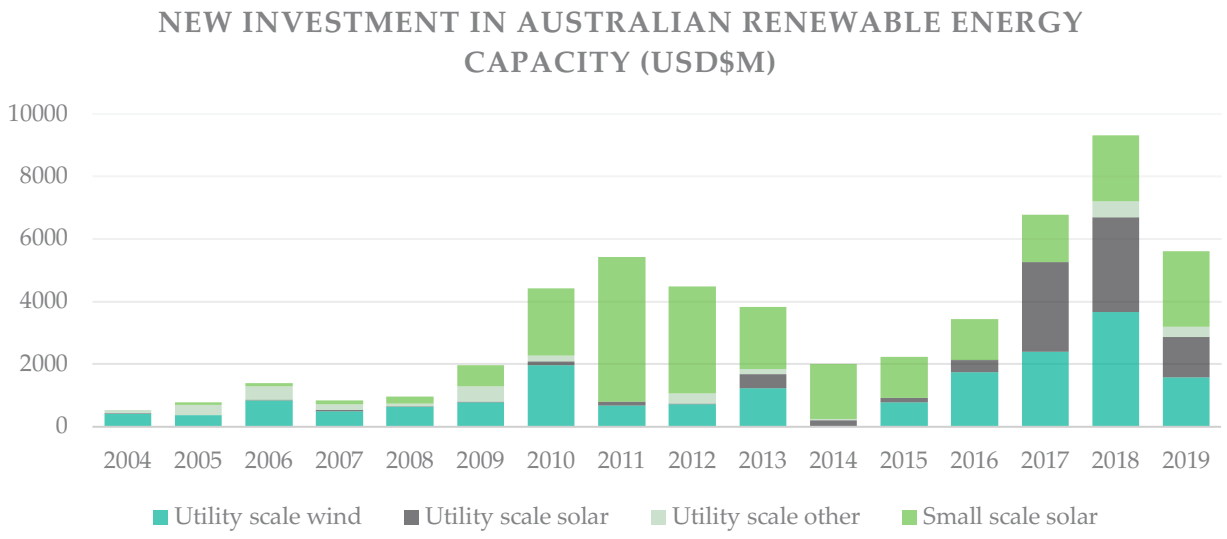
Source: ARENA Investment Plan 2019

THREATS

Policy uncertainty

Continued policy uncertainty in the energy sector has severely dented investor confidence in renewable energy. After record-breaking investments in 2017 and 2018, renewable energy investment dropped significantly in 2019 (see below). The trend is expected to become more pronounced through 2020, due to the absence of energy policy following the Australian Government's Renewable Energy Target, the proposed expanded remit of these agencies and the diminishing funds available to the CEFC and ARENA.

This underscores the need for continued government investment in the CEFC and ARENA with a continued focus on clean energy and energy efficiency, and certainty on federal energy and climate policy. Without it, Australia's clean energy sector could go from boom to bust.



Data Source: PV Magazine 2020

Proposed changes to the CEFC and ARENA

The Morrison government has announced its intention to broaden the remit of the CEFC and ARENA to enable investment in non-renewable fossil fuels like gas via a proposed $1 billion Grid Reliability Fund (GRF), administered by the CEFC. As proposed, the GRF would not mandate a return on investment, meaning that gas projects funded under the scheme could create a net financial loss for the Australian public. Recent reports by The Australian Institute and the Australian Conservation Foundation found:

- Australia's existing pipeline of 22 gas projects, along with identified and prospective gas resources, could emit up to three times the annual world emissions.
- Taking a global carbon budget approach to meeting the Paris Agreement goal of 1.5 degrees, Australia's use of gas resources would use up 28% of the global carbon budget.
- The gas industry is one of the least job-intensive industries in Australia, providing only an eighth as many jobs per dollar spent as the average for all Australian industries. Investing in nearly any other industry would create more jobs.
- Subsidising gas would displace renewable energy alternatives to gas for households, businesses and industry, locking in more pollution and higher energy prices for decades.
- Few of the multinational oil and gas companies operating in Australia pay any company tax at all in Australia.

Diverting investment from the CEFC and ARENA away from clean energy and towards gas would be an expensive decision that would threaten the successful legacy of these institutions. Opening the door to fund uncommercial gas and carbon capture and storage projects diverts investment away from the CEFC and ARENA's successful history of attracting private investment into clean energy. The more diluted the investment mandates become, the less successful these institutions will be in driving the transition to a zero-carbon electricity system.

What is needed is more funding (without the new strings attached) to continue these institutions' remarkable record of unlocking the investment Australia needs to transition to an affordable and reliable clean energy system.

CONCLUSION

The CEFC and ARENA have proven to be resilient, highly effective and world-leading clean energy institutions. They have supported the research, development, commercialisation and roll-out of renewable energy and other low-emissions technology across Australia.

These important institutions have filled a range of market gaps to help drive investment in clean energy technologies across many sectors of the economy including manufacturing, industry, agriculture and transport. These investments have reduced emissions and helped to position these sectors to compete in a carbon constrained economy.

The CEFC and ARENA have met these economic and environmental imperatives while leveraging enormous private sector investment and delivering exception returns to the Australian public.

The CEFC and ARENA remain critical to Australia's clean energy transition.

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