Climate Finance and Financial Markets in Australia: The CEFC and ARENA

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Australia has two key Commonwealth government funding organisations that support the development of projects that reduce emissions. The Australian Renewable Energy Agency and the Clean Energy Finance Corporation have committed billions of dollars in funding since their establishment, and will continue to support the sector as Australia migrates to a lower carbon economy. Both organisations have developed sophisticated methods to approach financial decisions, keeping in mind a dual mandate of achieving value for taxpayers while also pursuing their significant policy goals. This article explains the goals and operating realities of ARENA and the CEFC, while also analysing the particular challenges that each faces as a result of its legal structure. It then provides some case studies of projects that have been funded to date, and concludes that progress so far presents a "toolbox" of expertise to assist the Australian government in developing needed projects to mitigate climate change.

INTRODUCTION

The past few years have seen significant and permanent change for the Australian energy sector, driven in no small part by federal and state legislative frameworks to support energy efficiency and renewable energy. This chapter describes:

- two institutions that have been established by the Commonwealth government to facilitate flows of finance into the clean energy sector, being:
  - Australian Renewable Energy Agency (ARENA); and
  - the Clean Energy Finance Corporation (CEFC);
- some unique practical challenges for those institutions in fulfilling their legal mandate in an ever-changing regulatory and commercial framework; and
- several case studies in Australian climate finance transactions facilitated by ARENA and/or the CEFC.

AUSTRALIAN RENEWABLE ENERGY AGENCY

Legislative Establishment and Function

ARENA is a statutory agency established by the Australian government on 1 July 2012 under the *Australian Renewable Energy Act 2011* (Cth) (*ARENA Act*). Its purpose is to accelerate Australia's shift to an affordable and reliable renewable energy future. It contributes to this shift by providing funding to reduce the cost of renewable energy technologies and increasing the supply of clean energy in Australia. ARENA funding (unless approved by legislative instrument, this is limited to grant funding) spans eligible renewable energy initiatives from research and development stage through to early deployment. Funding is granted to initiatives that ARENA believes can provide valuable lessons to industry and ultimately assist to bring those clean energy technologies to the commercialised stage, where they are replicable by the private sector, in the short to medium term.

Each year ARENA is required to develop and publish a General Funding Strategy that outlines its funding objectives and priorities for the next three years.[1] The Strategy is presented to ARENA's responsible

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[1] ARENA, *General Funding Strategy*, <https://arena.gov.au/assets/2017/07/ARENA-2017-GFS-single-page-1.pdf>.

Minister for approval, and all ARENA funding must be in accordance with the Strategy.[2] The *ARENA Act* provides for funding for ARENA until 2022. The government reduced ARENA's originally scheduled funding amounts in 2014[3] and 2016[4] but ARENA still has a total appropriation of approximately $2.1 billion.

ARENA achieves a "return" on its investment usually not in financial profits, but rather in benefits to the overall Australian energy industry through, for example, "knowledge sharing" requirements imposed on funding recipients. ARENA-funded initiatives commit to publicly share knowledge gained through the implementation of their initiatives with their industry peers and the general public. Ultimately by diffusing the knowledge gained by early movers across the industry, ARENA assists to reduce and ideally eliminate future grant funding requirements for the technology in the longer term. ARENA funding is expected to deliver changes beyond the immediately funded project that can ultimately overcome the early-mover disadvantages experienced by that project that led it to require grant funding.[5] However, ARENA can and does recoup its grant funding if uncertainty resolves in favour of the project. Similarly, it can retain rights to upside, for example through equity or royalties. In all cases, however, ARENA funding is only provided if a commercial return is unavailable – if it were, another entity should provide the finance.

ARENA has provided funding to a wide range of Australian clean energy initiatives, including:

- research and development on various Australian technologies to increase efficiency or reduce cost of solar cells;
- proof-of-concept of using biomass to supply remote mine sites with electricity and/or natural gas;
- a number of utility scale solar farms under a grants program targeted at driving down the levelised cost of energy of utility scale solar;
- the world's first commercial-scale wave energy array connected to the grid; and
- a trial with the Australian Energy Market Operator to provide 200 Megawatts of "demand response" initiatives to manage electricity supply during extreme demand peaks.

Currently ARENA's mandate is to provide funding to initiatives in the "renewable energy" sector (which includes hybrid and other related technologies, such as energy storage). The government has flagged an intention to expand ARENA's focus to include energy efficiency and low emissions technology, providing greater alignment with the CEFC as described below.[6] In the interim the government has established the Clean Energy Innovation Fund, jointly managed by ARENA and the CEFC, which focuses on innovative, venture capital stage investments across the above technology spectrum (renewable energy, energy efficiency and low emissions) which can generate a return (potentially concessional, but still positive) for commercial equity and/or debt.

Performing the Legislative Function in Practice

Determining Funding Amount in Complex Projects with "Moving Targets"

One of the principles that ARENA takes into account in determining a funding application is whether the objectives could be achieved without the use of the requested ARENA funding. ARENA's provision of grant support should bridge a gap to enable projects that cannot yet be funded on a commercial returns basis due, for example, to timeframes being too long or rate of return too low.

To maximise the impact of its finite grant budget, ultimately ARENA needs to determine the ARENA funding amount required to enable each project to occur, ideally no more and no less. This requires an assessment of the dollar value of the "commercial gap" to facilitate the project, taking into account the

[2] *Australian Renewable Energy Act 2011* (Cth) s 10.

[3] *Clean Energy Legislation (Carbon Tax Repeal) Act 2014* (Cth) Sch 5.

[4] *Budget Savings (Omnibus) Act 2016* (Cth).

[5] For further information see the ARENA website at <http://www.arena.gov.au>.

[6] ARENA, Submission No 141 to the Senate Economics Legislation Committee, *Inquiry into the Budget Savings (Omnibus) Bill 2016 (Cth)*.

cost of other capital for the project (including a reasonable equity and, where relevant, debt return based on the risks in the project).

ARENA, by its nature, operates in a very dynamic sector where new technologies emerge and the cost (and therefore opportunities for commercial scale) of these technologies changes very quickly due to a range of local and global market factors, including foreign exchange, commodity markets and local and global equity and debt risk appetite and return. In addition, human nature indicates that many project sponsors will gravitate towards maximising grant money to increase their own investment returns. This means that ARENA needs to understand and sense-check the precise amount of grant necessary in complex projects with sponsors biased towards "free money" and a constantly evolving underlying cost curve, which can change in a matter of weeks.

The exercise to assess whether, and what amount of, ARENA funding is required is not dissimilar to the "additionality" assessment which the Clean Development Mechanism Executive Board (CDM Executive Board) established to assess emission reduction projects under the United Nations Framework Executive on Climate Change needs to undertake in determining the eligibility of a project to be granted carbon credits.[7] Under this mechanism, the CDM Executive Board must assess the project proponent's argument that, without the value of the carbon credits, the financial returns to the project would be insufficient to enable the project to proceed.[8] Like the CDM Executive Board, ARENA is able to commission specialist contractors to assess the relevant financial models, survey market comparables (eg, with respect to appropriate equity returns) and advise ARENA on grant sizing. The ARENA Advisory Panel and specialist consultants provide expert advice to support the development and selection of ARENA initiatives.

In practice, financial inputs will vary over time during the ARENA approvals process, but the grant amount needs to be known in the period immediately up to financial close. So ARENA and project sponsors need to adopt a flexible approach to finalise the grant amount consistent with the actual project costs and debt and equity packages.

Finally, in projects where the debt and/or equity cost is higher because of a particular risk that may or may not eventuate (eg expiry of mine life on a particular date), ARENA can flexibly structure its funding so that the grant can be recouped over time, for example once debt has been serviced and equity has achieved the base case modelled return.

Knowledge Sharing Versus Commercial Sensitivity

As described above, to ensure that ARENA-funded projects benefit the wider renewable industry, ARENA requires project proponents to participate in "knowledge sharing".

In general commercial business, project sponsors would be reluctant to reduce the first-mover advantage gained by taking risk on an earlier stage technology. Indeed in some circumstances, ARENA is funding the research and development of the technology itself, which is commercially sensitive and could generate valuable intellectual property.

Accordingly, there is an inherent conflict between the desire to achieve transparency and reduce costs of technology by allowing others to replicate an ARENA-funded project, and the private sector desire to retain intellectual property value. ARENA wants to get a "return" for its funding through sufficient knowledge sharing, while not depleting the commercial worth of a sponsor's business or disclosing truly commercial-in-confidence information. ARENA manages this by pre-agreeing methods for redacting data, time methods for redacting data, time delays for the release of data, aggregation of data, synthesis reports and small group discussions held under Chatham House rules.[9] Again, pragmatism and flexibility

[7] See, for example, UNFCCC, *Tool for the Demonstration and Assessment of Additionality*, version 7.0.0, Executive Board 70th meeting, annex 08, <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf/history_view>.

[8] For further information, see UNEP Capacity Development for CDM (CD4CDM) Project, *Legal Issues Guidebook to the Clean Development Mechanism* (2018) <http://www.cd4cdm.org/Publications/CDM%20Legal%20Issues%20Guidebook.pdf>.

[9] See, for example, ARENA, *Knowledge Sharing Plan – ERP Projects Template* (2017) <https://arena.gov.au/assets/2017/02/Knowledge-Sharing-Plan-Template_140522_ERP-Projects.pdf>.

is required in preparing knowledge sharing plans and assessing whether draft plans provide sufficient information. Sponsors will need to manage the risks of inadvertently disclosing the intellectual property of others (eg EPC contractors, equipment providers, financiers) through their knowledge sharing activities and ensure that responsibilities and risks are allocated contractually.

Establishment as an Agency

ARENA is a Commonwealth government statutory agency, which means it is responsible for carrying out a particular governmental administrative function of the Department of Environment and Energy (being the allocation of certain funding to clean energy initiatives). ARENA reports directly to the government via its responsible Minister and Ministerial approval is required for certain ARENA activities. ARENA operates with some staff employed under the Public Service Act but also has a degree of independence and can hire specialist contractors (eg, finance or R&D specialists) to assist it perform its legislative function.

The effect of the ARENA legal status as a Commonwealth agency is that, like other government statutory agencies, its decision-making process is subject to administrative law. ARENA is established in a manner that makes it subject to internal merit review and potentially external administrative or judicial review.[10] Potential administrative law implications of its decisions require ARENA to have sufficiently transparent processes for assessing projects presented to it, and to document its decision making appropriately. This could potentially prove challenging without appropriate delegations to management if ARENA is called on to be "nimble" and adapt to changing project circumstances (eg to adjust its funding amount) in a live transaction, as discussed above.

Clean Energy Finance Corporation

Legislative Establishment and Function

The CEFC is a specialist clean energy financier, investing in debt or equity to generate a commercial return by increasing the flow of finance into clean technologies within its mandate. It is a corporate Commonwealth entity established under the *Clean Energy Finance Corporation Act 2012* (Cth) (*CEFC Act*).

The CEFC has a Special Account under the *Public Governance, Performance and Accountability Act 2013* (Cth) which is credited with $2 billion each 1 July, for five years from July 2013, to enable the CEFC to invest in the clean energy sector. The CEFC targets a commercial return against the Commonwealth government's cost of funds.

The CEFC's Board has statutory responsibility for decision making and managing the CEFC's investments. The Board operates and makes its investment decisions independently of government, although the government provides guidance on preferred areas of focus under the CEFC Investment Mandate.

The CEFC has a flexible mandate to invest across the capital spectrum in Australian-based activities in the areas of:

- *renewable energy*, which includes wind, solar and biomass and ancillary technologies such as battery storage;
- *energy efficiency*, which includes demand side response and power or fuel savings initiatives in the property, infrastructure and transport sectors; and
- *low-emissions technology*, which includes abatement activities such as landfill methane gas capture, which result in greenhouse gas emissions being substantially lower than the current average of the most relevant baseline for the activity being undertaken.[11]

[10] Attorney-General's Department, Australian Government, *Australian Administrative Law Policy Guide* (2011) <https://www.ag.gov.au/LegalSystem/AdministrativeLaw/Documents/Australian-administrative-law-policy-guide.pdf>.

[11] See CEFC, *Complying Investment Guidelines* (2017) <https://www.cefc.com.au/media/303027/cefc-complying-investments-guidelines-may-2017.pdf>.

At the time of writing, the CEFC has nearly 90 investments including:

- project finance senior debt to renewable energy projects, largely wind and solar, working alongside private sector sponsors and, in many cases, other financiers, including banks;
- aggregation programs with nine financial institutions, including major Australian banks, to provide finance to individual smaller projects, encouraging the switch to more energy efficient equipment and vehicles and distributed energy resources;
- investments in funds across infrastructure, agriculture, property and other sectors; and
- loans to major low emissions and energy efficiency initiatives in the property, social housing and infrastructure sectors.

The *CEFC Act* provides a flexible framework for the CEFC to perform its investment function, with the CEFC able to play a part in any aspect of the capital structure of an eligible project (including eg senior debt, mezzanine debt or equity), provided that commercial rigour is applied in determining whether or not to invest. Although CEFC has a flexible mandate, its governing legislation prohibits it from, inter alia:

- investing in:
  - nuclear power or technology; or
  - a technology for carbon capture and storage (within the meaning of the *National Greenhouse and Energy Reporting Act 2007* (Cth)), noting that at the time of writing the government has a Bill before Parliament that would amend the *CEFC Act* to allow CEFC to invest in such carbon capture and storage technology;
- borrowing money except in limited circumstances (s 55 of the *CEFC Act*);
- acquiring derivatives for the purpose of speculation or leverage (s 70 of the *CEFC Act*); or
- providing guarantees (except in limited circumstances) (CEFC Investment Mandate).

Performing the Legislative Function in Practice

Like ARENA, CEFC also occupies a unique space in Australian climate finance, and must navigate a number of practical and legal complexities in performing its role.

"Crowding In" Private Sector Capital

CEFC invests in projects that make a commercial return. To maximise the impact of CEFC's funding in the market, CEFC seeks to catalyse or "crowd in" additional private sector capital to enable clean energy activities to proceed. Over the period since its establishment to the time of writing, CEFC achieved investment leverage of $2.10 of private sector investment for each $1.00 of CEFC investment, and lent alongside many local and international lenders, as well as a range of private and public sector project sponsors.

CEFC has sought to "crowd in" private sector capital through several avenues:

- CEFC has provided early-stage finance to projects that are unable to attract sufficient private sector finance, with the expectation that these projects are refinanced by the private sector once they are sufficiently de-risked. For example, a renewable energy project may offer compelling environmental and community benefits within CEFC mandate, but unless it has a strong, long-term offtake agreement for the power and Large-Scale Generation Certificates, private sector banks may be unable to offer on the terms or tenor required by the sponsor to build the project. In these circumstances, subject always to its then-current risk appetite based on market conditions, the CEFC may be able to invest on a "merchant" basis alongside the equity sponsor, and seek to attract co-lenders once the project attracts an offtake agreement.
- Another way that the CEFC "crowds in" private sector finance and offers opportunities to Australian banks and customers to access clean energy finance is via its aggregation platforms. Under these facilities, the CEFC provides financing that enables domestic lenders to provide attractive finance rates to customers who wish to procure or lease "best of breed" vehicles or equipment to incentivise the choice of cleaner products over more emissions-intensive options.

- In addition, as well as providing capital, CEFC (alongside ARENA) plays an educational role, developing internal capabilities to better identify, assess and mitigate risk which facilitates learning by co-investors and supports project developers. Some observers have noted that CEFC also performs a "trust creation and signalling role" (ie by lending its support to a project this assists other investors to crowd in their finance), as well as a "first or early mover role" by supporting risky innovative projects to create a track record which indirectly crowds-in private finance to future projects.[12]

Complying Investment Analysis

CEFC has a relatively broad mandate, and many activities across the Australian economy fall into scope, including energy efficiency activities in agriculture, transport, mining and infrastructure. For each eligible investment, the CEFC must satisfy itself that the investment is in a "clean energy technology". While for some activities (eg wind or solar investments), this is self evident, for others (eg modifying agricultural practices to increase productivity and reduce emissions), a more detailed explanation is necessary, for example:

- CEFC has invested in a lithium mining project in Western Australia.[13] While a mining investment may not be immediately obvious as a "clean energy" investment, lithium is required as a key part of the supply chain for electric vehicles and energy storage, which are themselves clearly within CEFC mandate. This investment supported Australia's part in the supply chain to develop lithium ion batteries that are capable of permanently changing the global electricity and vehicle industries once economies of scale are reached.
- The CEFC invested in an agricultural fund that will implement sustainable on-farm asset management practices, including precision agriculture.[14] While the main activity of the fund is agriculture, the standards of the fund will aim to achieve reduced energy intensity on a "per unit of production" basis and deliver improved financial and environmental efficiency. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) will contribute expert analysis to enable clean energy learnings to be shared across the farming sector. The sponsor and the CEFC will work to develop an emissions reduction benchmarking system consistent with science-based targets for the agricultural sector to reduce emissions. Through its investment CEFC has the ability to influence the energy efficiency and emissions profile of the underlying agricultural activity and provide an example for other agribusinesses and farmers.

Concessionality

While CEFC generally invests for a commercial return, it does not necessarily have to invest at the same returns as the private sector. Where CEFC invests on more favourable terms than the terms on which the private sector would have financed an opportunity, the difference between the present value of the CEFC loan and the present value of the notional "market" loan is calculated as the amount of "concessionality" in the CEFC investment.

Under its investment mandate,[15] CEFC is permitted to use a wide range of investment tools, including providing concessional loans where necessary, but limited to $300 million of concessionality in any one year.

CEFC has historically exercised its power to provide concessionality frugally, with this power used only where public policy benefits are promoted through the concessionality provided, for example, by making possible a choice to buy or build best practice energy efficiency buildings or vehicles. For example, CEFC has offered concessional finance to several financial institutions, on the condition that

[12] Anna Geddes, Tobias S Schmidt and Bjarne Steffen, "The Multiple Roles of State Investment Banks in Low-carbon Energy Finance: An Analysis of Australia, the UK and Germany" (2018) 115 *Energy Policy* 158.

[13] CEFC, "CEFC commits $20M to WA lithium project boosting supply chain for electric vehicles and energy storage" (27 June 2017) <https://www.cefc.com.au/media/files/cefc-commits-20m-to-wa-lithium-project-boosting-supply-chain-for-electric-vehicles-and-energy-storage/>.

[14] CEFC, *Investing in Australia's Farming Sector* <https://www.cefc.com.au/media/390727/20180219-cefc-and-clean-energy-for-agriculture.pdf>.

[15] Clean Energy Finance Corporation, *Investment Mandate Direction 2016 (No 2)* <https://www.cefc.com.au/media/files/statement-from-the-cefc-about-the-new-investment-mandate-2016/>.

the concessionality be passed through to end-users to facilitate a choice to finance-eligible clean energy initiatives such as solar panels and/or electric vehicles.

CASE STUDIES IN AUSTRALIAN CLIMATE FINANCE

Below are several case studies of how ARENA and CEFC have co-operated to finance clean energy initiatives. Under their establishing legislation, the CEFC and ARENA are able to exchange information to assist the other to carry out their investment mandate, and both organisations co-operate closely to achieve the optimum funding structure for a jointly funded project.

Case Study 1: Renewable Energy in the Off-grid Mining Sector

At the remote Sandfire deGrussa copper and gold mine in Western Australia, diesel generators were used to provide power to the mine, including for the energy-intensive equipment that crushed the copper ore to extract the copper. Land and solar resource were abundant at the mine site, and solar power was cost-competitive compared to trucking diesel to site. A proposal was submitted to ARENA for the funding of a solar photovoltaics and battery project at the site that would, together with the incumbent diesel power supply, provide power to the mine.

This project would provide an important proof-of-concept for other remote power users showing that solar and battery can be successfully integrated with more traditional remote power sources such as diesel and gas. Sandfire was prepared to be a first mover in Australia to prove renewable energy use in an off-grid mining application.

The proven mineral resources at the Sandfire mine led to a relatively brief published mine life (and therefore a relatively brief initial power offtake agreement period). This published mine life was too short to generate a sufficient equity return and pay off a loan. Based on experience with similar mines it was reasonably probable that the mine life could be extended, and if the mine life was extended the offtake would be extended also, but this extension could not be banked on.

There were a number of risks to be managed in the project, including credit risk of the mine offtaker (which is correlated to global copper and gold market dynamics) and integration of the three power supply systems (diesel, battery and solar). CEFC was able to offer a loan but there would be insufficient revenues under the offtake agreement *during the published mine life* in order to repay the loan and make a sufficient equity return during this period.

ARENA offered finance to bridge the gap in capital costs. This finance was provided on a recoupable basis, such that the project sponsor would start repaying ARENA if the mine life (and therefore the offtake agreement) were extended.

Following commissioning of the project, ARENA and the project sponsor coordinated "knowledge-sharing" activities, including a site visit to the project for a large number of industry peers in the construction, resources and technology sectors, and a presentation on the challenges experienced in building and operating such an innovative project to deliver continuous power in a remote location. Likely in large part due to the demonstration value of this project, it is now routine for renewable energy to be one of the energy supply options considered in remote areas.

Case Study 2: Reducing Technology and Build Costs in Large Scale Solar

The past several years have seen enormous growth in the Australian utility scale solar industry. ARENA and CEFC were involved in the earliest of such projects in Australia which, at the time, still required significant grant funding. Cost reductions achieved internationally through scale of global manufacturing and time efficiencies in the build process had not yet filtered to the Australian market. The private sector had been slow to invest due to uncertainty on the future of the Renewable Energy Target, which led to a dearth of offtake agreements and therefore an uncertain revenue stream.

ARENA and CEFC discussed the manner in which the two organisations could best leverage their respective funding abilities to unlock further utility scale solar projects and minimise the grant amount required.

- ARENA invited solar project proponents to bid into a competitive grant funding round of $100 m funding total, with eligible projects to be primarily assessed on the basis of the lowest levelised cost of energy bid per grant dollar required.[16]
- Acknowledging that the private sector would require offtake agreements to be finalised before committing investment, CEFC offered a loan product to eligible project sponsors that was flexible enough to accommodate projects that had no offtake agreement, with pricing set at the same level as for contracted projects (requiring CEFC to be prepared to commit "concessionality" to those projects, as described above). The CEFC's preparedness to commit to eligible solar projects with or without offtake agreements provided ARENA with the certainty that once the grant was allocated, the project would proceed to be built, and so increased the prospects of success of the grant program. In addition, the Queensland government also offered offtake agreements for up to 150 MW of solar projects in Queensland that were successful in bidding for ARENA funding.[17]
- During the process to financial close, a number of projects were successful in attracting offtake agreements, opening up opportunities for competition among private sector debt and equity investors. For these projects, generally CEFC elected to retain a portion of the debt and to "crowd in" other banks to the transaction by working with the project sponsor to create a banking syndicate.
- The program was a resounding success in attracting experienced domestic and international equity sponsors, banks, advisors and construction companies to the Australian market, coinciding with continued cost reductions in technology inputs due to global manufacturing efficiencies. The program ultimately supported 12 large-scale solar projects of 480 MW capacity, with total project costs reduced by around 40% compared to the first Australian utility solar projects. Costs continued to reduce over the following year, with ARENA grant funding no longer required for utility scale solar and CEFC working with private sector banks to finance several of those projects which had missed out on the original ARENA grant round. As at the date of writing, more than 1,000 MW of large-scale solar projects have now reached financial close in Australia without any ARENA support.

Conclusion

ARENA and the CEFC, working in tandem to unlock clean energy opportunities across the Australian economic spectrum, have accelerated these opportunities and contributed valuable emissions savings to assist Australia in meeting its international law emissions commitments.

As the clean energy industry continues to grow and evolve, both organisations will need to continue to be adaptable and flexible to apply their funding in the most efficient manner, constantly adjusting their approach to accommodate risk appetite and experience in the private sector. The success of both organisations in fostering Australian technologies and projects provides a specialist toolbox for the Australian government to encourage further valuable innovation and investment.

[16] ARENA, *Large-scale Solar Photovoltaics – Competitive Round* <https://arena.gov.au/funding/programs/advancing-renewables-program/large-scale-solar-photovoltaics-competitive-round/>.

[17] See Queensland Government, *Solar 150 – Queensland's Large-scale Solar Investment Program* (2016) <https://www.business.qld.gov.au/industries/mining-energy-water/energy/renewable/solar-150>.