

## **ACRE Board submission on the scope of the CEFC**

### **1. How do you expect the CEFC to facilitate investment?**

Australia faces an unprecedented challenge in its transition to a low emissions economy. For example, the Australian Treasury has forecast that under carbon pricing, some 260 terawatt hours of new clean energy generation may be required by 2050. This represents over \$200 billion in new investment, a significant proportion of which will need to come from the private sector. A key challenge for the CEFC will be how best to direct its investment such that it stimulates and leverages private sector funds and helps give certainty to investors in the sector.

The Australian Centre for Renewable Energy (ACRE) provides support for renewable energy technologies at the development, pilot, demonstration and commercialisation stages of the innovation chain. ACRE has designed flexible programs such as the Emerging Renewables Program (ERP) and the Renewable Energy Venture Capital (REVC) Fund to support renewable energy technology development and encourage its commercialisation. The ACRE Board's Vision is national energy markets delivering competitively priced renewable energy sourced from a diverse range of technologies.

Government grant and venture capital funding, where the Government invests without any certainty of return, is better suited to early-stage technology development, when the technology and project risk is likely to be high and the private sector is less willing to invest. Demonstration projects and commercial plants can be funded in part by grant programs, but are less attractive to venture capitalists, who focus more on companies with the potential to take products to capital markets, rather than large-scale projects.

As renewable energy companies progress to the commercial deployment of their technologies, the level of capital required is likely to increase substantially, but the risk of technology failure will often decrease. However, there may still be scale-up technology risks that need to be identified and resolved, as well as project risks. Companies are likely to face barriers in attracting capital due to high project costs, particularly upfront capital costs not faced by incumbent generators. This is the experience of renewable energy projects that are currently underway, or attempting to get underway in Australia and around the world.

It is ACRE's opinion therefore that the CEFC could best provide support for:

- large-scale demonstration and early-deployment stages that require equity or debt investment to assist companies to prove their technologies at scale. The CEFC could absorb what is essentially 'first mover' and scale-up risk on projects which are technically sound at small scale and could be commercially viable once they are developed at economic scale and able to be financed at market interest rates. This is likely to be best achieved by targeting projects at later stages of the innovation chain through funding mechanisms to improve bankability, lower the cost of capital and encourage additional private sector investment. It should be noted that new technological problems may arise during scale up, which change the technology risk profile and require further research and development to overcome;
- clean energy infrastructure, potentially transmission lines, to assist greater connection of renewable energy generation sources where the CEFC is able to

take a longer term view of the connection's viability than the private sector. This may assist in overcoming the 'first-mover' disadvantage where there is an economic case for doing so. As technologies mature, the issue of connectivity to the grid becomes increasingly important. The CEFC could investigate whether it should play a role in providing financial support associated with connectivity that consistent with the established National Energy Market frameworks; and

- a range of clean energy technologies that can generate energy and have the potential to offer a net reduction in carbon emissions. This can include renewable/fossil hybrid technologies, which may offer a lower financial and technology risk profiles than other forms of clean energy technology when they are renewable-energy extensions to existing fossil fuel power stations such as the solar booster on Liddell power station or the ACRE-supported solar booster at Kogan Creek power station.

Through a combination of Government-backed funding mechanisms and clean energy investment expertise, the CEFC could act as a catalyst for further commercial interest in the sector. CEFC support has the potential to demonstrate to lenders that full-scale deployment is debt financeable and to lessen the risk for equity investors, and potentially provide a positive return on the CEFC's investment over the long term. In the short-term, however, it is likely that the CEFC's investment will not be as profitable as private sector investment.

## **2. Are there principles beyond financial viability that could be used to prioritise investments, such as emissions impact or demonstration effect?**

The Government has stated that commercial viability will be a key consideration of the investment decisions made by the CEFC.

As suggested in the response to question (1), ACRE is of the view that the CEFC's investment prioritisation strategy should focus on large-scale technology demonstration, commercialisation and deployment.

ACRE suggests that the CEFC should set realistic levels of commercialisation or return, for instance the long-term government bond rate, as many renewable energy technologies are still to be proven at scale in the Australian market.

The ACRE Board has used a 'best value' approach for its investment decisions, with value measured by the potential economic benefits from lowering the cost and increasing the supply of renewable energy in Australia. Similarly, the objectives of ARENA are to improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia. The CEFC could consider adopting similar principles to ensure alignment with ARENA.

A key feature of the ACRE Board's 2011 *Strategic Directions*<sup>1</sup> is the focus on lowering the cost of delivered renewable energy as the end goal, rather than industry assistance. This focus is a key feature of the project assessment process. The ACRE Board has also set technology priorities, which are outlined in the *Strategic Directions* document, to ensure its limited resources are spent strategically in areas with the greatest chance of commercial success in the future

---

<sup>1</sup> (see <http://www.ret.gov.au/energy/clean/acre/strategy/Pages/aus-centre-for-renewable-energy-strategy.aspx>)

and for technologies that offer the promise of low cost renewable energy. The Board suggests that technology prioritisation be a feature of the CEFC, without limiting its capacity to fund a diverse range of technologies and maximise chances of commercial returns across the clean energy sector. ACRE's definition of renewable energy is not limited to energy generation and includes direct use technologies, enabling technologies, and hybrid, cogeneration and trigeneration projects.

ACRE has not adopted specific emissions targets for its grant and venture capital programs, as at an early stage of technology development, emissions reduction can be difficult to predict or measure and is generally aspirational. Emissions reduction may be able to be more easily forecast, however, at the large-scale demonstration stage and such information from the demonstration of the project should be a key output as part of a knowledge sharing objective. The CEFC could consider prioritising projects or technologies with greater potential to reduce emissions, for example in off-grid mining operations.

Another key component of the transition to a low emissions economy is the creation of employment opportunities. The CEFC may wish to consider monitoring the impact of investments on direct and indirect employment, without setting this as a specific investment principle.

In terms of addressing a lack of investor confidence, a key market failure in the sector, the CEFC could prioritise investments that leverage additional private sector investment, through debt, equity or other means. Some ACRE grant programs have set a specific ratio of private sector investment (e.g. a 2:1 or 1:1 ratio) to ensure that there is sufficient commercial interest in the projects being funded. The recently launched ERP, however, has moved away from such a prescriptive approach in recognition that the amount of private sector capital able to be raised will vary depending on the stage of technological development and the levels of risk associated with the proposal.

### **3. What are the opportunities for the CEFC to partner with other organisations to deliver its objectives?**

See the response to question (8).

### **4. How could the CEFC catalyse the flow of funds from financial institutions?**

The CEFC should consider the use of a range of financing mechanisms, including loan guarantees, equity guarantees, mezzanine debt, performance guarantees, concessional loans and public-private partnerships. This array of instruments offers a number of avenues for the CEFC to obtain returns on renewable energy investments.

Performance guarantees are one way for project financiers to manage the technology risks. However, banks are likely to be reluctant to lend if the performance guarantee is not supported by a sufficient balance sheet. The CEFC could support the less substantial companies, which cannot provide sufficient balance sheet support to attract debt finance.

On loan guarantees, these could be designed to allow a specific 'failure rate' in recognition that not all projects funded will necessarily be successful. The scope of investment should be carefully selected; deployment projects and non-deployment

projects (for example manufacturing) carry different levels of risk, and therefore different potential for loan defaults.

It should also be noted that CEFC investment in larger scale demonstration projects is likely to stimulate investment earlier in the innovation chain, where technology risk is very high, and where government has a longer tradition of investment at higher ratios of total project cost. Financing a successful project at the commercial end of the innovation chain is likely to build broader investor confidence.

The CEFC could also mobilise private sector capital by subsidising or subordinating its returns. If the primary aim is to mobilise private capital, then:

- for any given project, the CEFC should adopt a lower investment hurdle than would be appropriate for a private sector investor; and
- it should adopt a more modest return target than what would be expected in the commercial world.

ACRE would welcome the opportunity to discuss the merits of various financial mechanisms for potential deployment by the CEFC.

**5. What experiences have firms in the clean energy sector had with trying to obtain finance; have term, cost or availability of funds been the inhibitor?**

The availability of funds is a key barrier for the development of renewable energy technologies in Australia. The reluctance of lenders to finance renewable energy projects reflects the large capital requirements, long time horizons and high risk that investors perceive is attached to renewable energy projects. This creates a financing ‘valley of death’ at the demonstration and commercialisation stages of the innovation chain as projects are too capital intensive for venture capital, but too risky for debt finance. This valley of death has arguably broadened since the global financial crisis, with the venture capital industry, along with other financiers reducing clean energy investment.

Renewable energy projects generally have large and upfront fixed costs, but low variable costs and the potential for steady cash streams. When a renewable energy plant is constructed, the front-loaded fixed costs mean that the electricity is effectively pre-paid for the life of the asset. This cost structure has implications for financing options.

At the early stage of technology development, activity is usually financed from the developer’s own funds, family and friends, or from private equity. Consultations for the design of a new ACRE venture capital fund demonstrated a gap in early-stage capital in Australia. The Renewable Energy Venture Capital Fund will partly address this capital drought by targeting early stage investments in the renewable energy technology sector, with the provision of \$200 million, half from the Australian Government, and half provided for by the private sector.

At the commercial scale, finance can be both equity and debt. Long-term debt financing is appropriate for large-scale projects, but loans are unlikely to be obtained in financial markets unless the project has an off-take agreement or some other guarantee of funding. The ability of emerging renewable energy technology project developers to secure power purchase agreements (PPAs) on commercially viable terms is another significant barrier. Issues around short length of tenure, competition with a PPA provider’s own development investments and policy

uncertainty can mean that a PPA is very difficult to obtain. The CEFC could usefully assist with these PPA barriers, perhaps through insurance mechanisms that sit behind a PPA.

To determine the level of risk, debt and equity providers undertake an extensive due diligence process. Financiers look for proven technology, secure revenue streams, good management of operational risks, and a project finance structure that is viable. Without prospects of a secure revenue stream that allows the project to service debt and provide agreed returns on equity, projects are likely to continue to struggle to obtain finance. As there have been few large-scale projects developed in Australia, financiers and investors are unfamiliar with such projects. Financiers may also lack understanding of non-traditional sources of income such as carbon credits or PPAs. The lack of public information on the costs and benefits of renewable energy projects, and perceptions of unreliability and poor technical performance add to the risk. This means that their decisions can be relatively conservative, or that a risk premium is attached to any finance that is provided to projects.

#### **6. What non-financial factors inhibit clean energy projects?**

There are some significant non-financial barriers that prevent optimal investment in renewable energy technologies. They include technical and ‘first of a kind’ scale-up risks, lack of capacity within small and medium-sized enterprises, a ‘first-mover’ disadvantage in bearing the bulk of establishment costs, spillovers that prevent developers of new technologies from capturing the full value of their investments, and information failures associated with a lack of knowledge about the costs, performance, benefits, risks and investment opportunities of renewable energy technologies.

Some technologies face barriers that are unique to them, such as geothermal, where access to appropriately sized drilling rigs combined with the costs of mobilisation/demobilisation in a high demand rig market can prevent a project from starting.

Another factor inhibiting investment is regulatory risk, partly because the long time frames associated with renewable energy projects make them susceptible to changes in policy settings and partly because regulatory regimes are not yet streamlined sufficiently to manage the range of permits required for trials or demonstrations of technologies. There is extensive literature about these market failures, and some Government programs already exist to address some of the barriers.

#### **7. Are there special factors that inhibit energy efficiency projects?**

ACRE programs do not include energy efficiency projects, so the Board is unable to comment on this question.

#### **8. How do you see the CEFC fitting with other government initiatives on clean energy?**

The CEFC has an opportunity to assist companies developing renewable energy technologies to overcome financing barriers and complement the other elements of the Clean Energy Future package. The carbon price will provide a price signal to energy companies to invest in clean energy technology such as renewable energy and for consumers to invest in energy efficiency. The Renewable Energy Target requires

Australian retail companies to source 20 per cent of Australia's electricity from renewable sources by 2020, providing an incentive for energy companies to invest in more mature technologies such as onshore wind energy. These market 'pull' mechanisms are complemented by technology 'push' measures currently being funded by ACRE and soon to be funded through ARENA. Venture capital investment is also a feature of ACRE and then ARENA, through the Renewable Energy Venture Capital Fund, which targets promising early stage investments and takes them through to commercialisation.

A critical partnership for the support of renewable energy will be the relationship between the CEFC and ARENA. ARENA will build on ACRE's consolidation of a range of renewable energy programs, adding more programs to the mix, and will invest \$1.7 billion through a funding strategy to be developed by the ARENA Board.

ARENA will have technical and policy knowledge that could be leveraged in the CEFC's investment decision making. This could be facilitated through an ongoing dialogue between the respective boards on prospective technologies and companies to ensure that investment proposals are considered by the most appropriate agency. The proposed cross-membership of the ARENA and CEFC boards would be beneficial in this regard.<sup>2</sup> Linkages between agencies would ensure that the most successful early-stage ARENA investments could be considered by the CEFC for follow-on funding.

It is the ACRE Board's view that companies that have received funding from ACRE or ARENA should not be ineligible for CEFC funding if the funding is for a different project or a different stage of the project. Similarly, there may be a role for ARENA and CEFC jointly to fund projects, for example where ARENA could fund a project's feasibility studies demonstrating its technical feasibility and proving its commerciality, prior to investment in the project by the CEFC.

A key objective for the ACRE Board has been building relationships with a range of stakeholders in government, industry and academia to increase its knowledge and forge connections to encourage the progress of technology development. For instance, ACRE has established a State and Territory Network to facilitate collaboration on renewable energy development. The CEFC might consider leveraging ACRE's networks and relationships, including with the Australian Solar Institute, which will become part of ARENA.

The CEFC could also consider building strategic partnerships with other international clean energy organisations, such as the UK's Carbon Trust and Green Investment Bank and the US Department of Energy and ARPA-E (Advanced Research Project Agency – ENERGY), as well as agencies in key European countries like Austria, Denmark, Germany, China, Japan, and Sweden which are strongly supporting clean energy technology development.

---

<sup>2</sup> Minister for Resources and Energy, Second Reading Speech for the Introduction of the Australian Renewable Energy Agency Bill 2011.