



BY EMAIL

29th November 2011

Ms Jillian Broadbent
Clean Energy Finance Corporation

Dear Ms Broadbent

Submission Document – Expert Review

RMDSTEM is pleased to provide a response to selected areas identified in the Request for Submissions. RMDSTEM provides professional assistance to organisations seeking to commercialise products and processes, and is familiar with a number of emerging energy technologies.

The Market Gap

Australia has a good track record in developing new technologies and products, including new battery technologies, fuel cells, hydrogen powered applications, inverters, and efficient solar cells. To date, however, these have not been commercialized extensively in Australia.

The main factor inhibiting clean energy projects is that the relative (levelised) costs of power (\$ per unit of energy) has been higher compared to competing traditional technologies, and that the benefits of clean energy have not been taken into account in the comparison. The introduction of a carbon price will provide a clearer basis for comparison (but not necessarily fully value the benefit). Applications for finance will need to clearly demonstrate impact on GHG emissions, and the value of this impact (using the carbon price and other metrics) will need to be given appropriate weight in the assessment of applications.

In addition, investors have been reluctant to invest in projects which are typically characterised by relatively high up front costs, and long term revenue horizons (eg. 30 year life of a photovoltaic array). From an investors perspective this often means longer payback periods and lower expected net present values.

New technologies, and renewable technologies in particular, are subject to a cost 'hill'. Typically at the early stages of technology development, costs (manufacturing, marketing, operating) tend to be underestimated, or the level of uncertainty is not adequately acknowledged. Following demonstration and early commercialisation companies have a better idea of expected costs and revenues. As technologies mature, manufacturing costs reduce due to economies of scale and through improved techniques in production, as well as economies of scale in the development of applications (ie. larger wind turbines are cheaper on a per MW basis). Expected cost competitiveness over time is thus a key performance metric.

Other factors which might inhibit clean energy and energy efficient projects in Australia include:

- Lack of important associated industries and products for some technologies (eg. Energy storage for some renewable technologies, power engineering capability)
- Mismatch of product performance characteristics with electricity load characteristics

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- Lack of incentives, or support to articulate clean energy within traditional energy networks
- Geographic isolation of Australian companies from leaders of global manufacturing networks
- Community attitudes (positive and negative) towards particular products/ technologies
- 'Early' sale of IP to overseas organisations (where further development and commercialisation occurs overseas)
- Lack of innovation depth in related (supplier and end user) industries (electronics, automotive, power generation)
- Relatively high costs associated with market entry and marketing (loss/ low cost leading, foreign regulatory barriers, warranty costs, product support costs)
- Uncertain supply of some materials and components of appropriate quality (eg. Silicon)
- Lack of business/ commercialization/ marketing skills
- Lack of finance/ investors.

Australian companies need to develop financing, manufacturing and marketing strategies which reduce the cost of manufacturing and marketing and minimize their risk. There are some good examples (and lessons) in the Australian medical technology and aerospace sectors. In these sectors, competitive advantage (and growth) has been may be achieved by various strategies

- Focusing on high value added manufacturing
- Maintaining strong IP positions
- Procurement leverage (eg. Australian content)
- Promoting clusters of excellence (eg. medical research)
- Effective participation in global manufacturing networks, including key partnerships in the supply chain
- Developing sound business and financial plans
- Obtaining Government support at critical stages.

Scope of the CEFC

In considering investment opportunities, the CEFC will need to assess the potential returns and risks associated with each proposal. A wide range of proposals are likely, in terms of:

- Type of technology (solar, wind, biomass, geothermal, wave/tidal, biofuels, etc.)
- Type of application (generation, storage, transmission, transport, end use devices)
- Size of investment
- Stage of development
- Location in the business chain

Assessment of proposals will require consideration of a range of risk factors which are characteristic of renewable energy projects, in terms of technical risk, business risk, and market risk. Investment proposals will need to identify the risks (eg. explicit consideration of barriers and issues such as those identified above), as well as the strategies proposed by the applicant to address these issues, reduce risks, and achieve expected outcomes.

It will be important to identify the level of uncertainty associated with the key performance metrics (eg. levelised cost per energy unit) which will establish the competitiveness of the product or process. This will necessarily include consideration of risk associated with issues unique to the renewable sector, such as the resource quality (speed of wind, intensity of sunshine), and capacity (number of hours the resource is 'available').

It will be important for CEFC to achieve and maintain a balanced investment portfolio, in terms of risk and return – lower risk investments with growth potential, as well as higher risk start up companies and SMEs.

Other factors or principles used to assess investments

In addition to these normal (investment banking) considerations, there are other factors (or principles) which CEFC needs to take into consideration in assessing and prioritizing investments. These include:

- Potential for reduction in emissions in Australia, and elsewhere
- whether the proposal relates to renewable energy and enabling technology, or energy efficiency and low emissions technology
- contribution to knowledge and IP, and a skilled workforce
- demonstration impact of new products and technologies
- alignment with national objectives/ priorities (clean energy future, research, manufacturing)
- related economic benefits – for suppliers, and potential for spin off companies
- regional development impact
- social and community issues (eg. Including attitudes towards particular technologies)
- OH&S issues.

In summary, for each investment proposal, there will be a wide range of factors which need to be taken into consideration, all of which have some associated uncertainty.

In order to efficiently and effectively assess a number of diverse applications, a consistent and objective evaluation framework is required. This should include detailed consideration of the uncertainty of estimates associated with revenues, costs and timeframes, any technical risk related to research and development, as well as proposed strategies to reduce risk.

A computer based system could be developed to assess applications, as well as manage the portfolio of projects. This would provide a consistent and rigorous basis for the evaluation of projects and the monitoring and management of the investment portfolio.¹

Yours sincerely

John Thomson

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¹ RMDSTEM has developed such a system for a Government Department, and would be pleased to demonstrate this to CEFC