

Leading from the states

State governments across the US have set aside nearly \$4 billion to expand clean energy markets and invest in renewable technologies.

Cameron Brooks examines how they are investing, and co-operating, to help accelerate the transition to a low carbon economy



Trillions of dollars of investment into generating capacity is required

It is almost universally recognised that an innovation revolution is needed to usher in a new generation of low carbon energy technologies in power generation and transport. The challenge is putting in place the mechanisms that will mobilise the capital needed for a transition to clean energy.

This requires successfully integrating the financing needs of new low carbon technologies with mainstream capital markets. Across the US, a new breed of state-level clean energy funds is stepping up to meet this challenge, creating a bold new role for public sector investment. The focus is not only on policy, but also on technology innovation. The mechanisms employed are not regulatory mandates, but targeted public investments. These funds are leveraging private capital to achieve public purpose goals. And they are reaching out to build important new alliances with international partners, institutional investors and leading strategists, and emerging leaders in the business community.

Some estimates suggest that we are likely to build as much generating capacity in the next 20–30 years as we did in the entire previous century, representing a total investment of nearly \$10 trillion. The annual investment required is equivalent to about 1% of global GDP. Clearly, any significant role for clean energy in this future will demand highly sophisticated solutions tailored to the detailed needs of a broad spectrum of financial actors. In today's world of constrained public treasuries, the crucial transformation cannot be achieved without private sector investment. We will need an investment revolution to finance the technology revolution – and to do that, the interests of the public and private sector must be aligned.

In the first effort of its kind in the US, 17 public funds from 12 states banded together in 2002 to promote clean energy projects and companies. The funds agreed to support a new non-profit organisation – the Clean Energy States Alliance (CESA) – to help them work together and advance new, multi-state efforts to promote solar, wind, fuel cells and other clean energy projects and investments. The non-profit Clean Energy Group (CEG) manages the alliance, and leads its joint initiatives.

CESA's members include the clean energy funds from California, Connecticut, Illinois, Massachusetts, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island and Wisconsin. Collectively, they have put more than \$1.5 billion into clean energy markets over the past five years, through grants, rebates, loans and equity investments. In the coming decade, they are currently budgeted to invest a further \$2.5 billion.

CESA has also established a technology-specific network, the Public Fuel Cell Alliance,

a coalition of state and federal agencies working together to accelerate the development and deployment of fuel cell and hydrogen infrastructure development.

Many of these states are experimenting with new investment vehicles for renewable energy projects and companies. To give just a few examples, the Massachusetts Technology Collaborative's Renewable Energy Trust (MRET) has invested on an equity basis in technology companies such as Evergreen Solar and Konarka. In 2003, it announced \$32 million of funding to support projects totalling nearly 100MW of new, clean generation. And it expects to recoup much of this investment through the resale of renewable energy certificates (RECs) that it obtained through fixed-price purchase agreements, in addition to option revenues.

Part of this support included an innovative structure of put and put-back options, allowing the project developer to secure financing and monetise the value of the RECs. Massachusetts has also approved a \$15 million allocation to establish the Massachusetts Green Energy Fund, a new equity/debt fund to be managed by an independent fund manager. This fund is expected to begin investing this fall.

Connecticut, through the Connecticut Clean Energy Fund, has also been an early pioneer in equity investments in technology companies, such as Acumentrics in the fuel cell sector and Energetech in wave energy. And one of Pennsylvania's funds has led the way in the use of subordinated debt to help wind energy projects secure senior debt from more traditional lenders. Similarly, New Jersey's Clean Energy Program has partnered with the state's Economic Development Authority to offer venture capital financing to new clean energy companies through recoverable grants.

All of these efforts represent bold new steps for state-level players. But the activities of funds working independently are unlikely to be adequate to facilitate the investment revolution. In the current marketplace, there are no vehicles through which interested institutions with different missions and return expectations can effectively pool their capital. Some form of new approach is likely to be needed.

CESA and CEG's work includes investigating new structures and mechanisms for joint investing. CEG is working with partners such as The Carbon Trust in the UK to gauge the market interest and feasibility of a transatlantic low-carbon development fund.

Many state clean energy funds are also looking to institutional investors to leverage their public capital by exploring partnerships with pension funds and foundation invest-

ments. Recently, there has been increasing interest among state pension funds and other financial institutions in incorporating ways to address the future risks of climate change in their investment decisions. Due to the excellent work of groups such as the Carbon Disclosure Project (see *Environmental Finance*, June 2004, page 12) and CERES, public pension funds and other shareholders have begun to pressure companies in which they are stockholders to assess, and respond to, climate change-related financial risks.

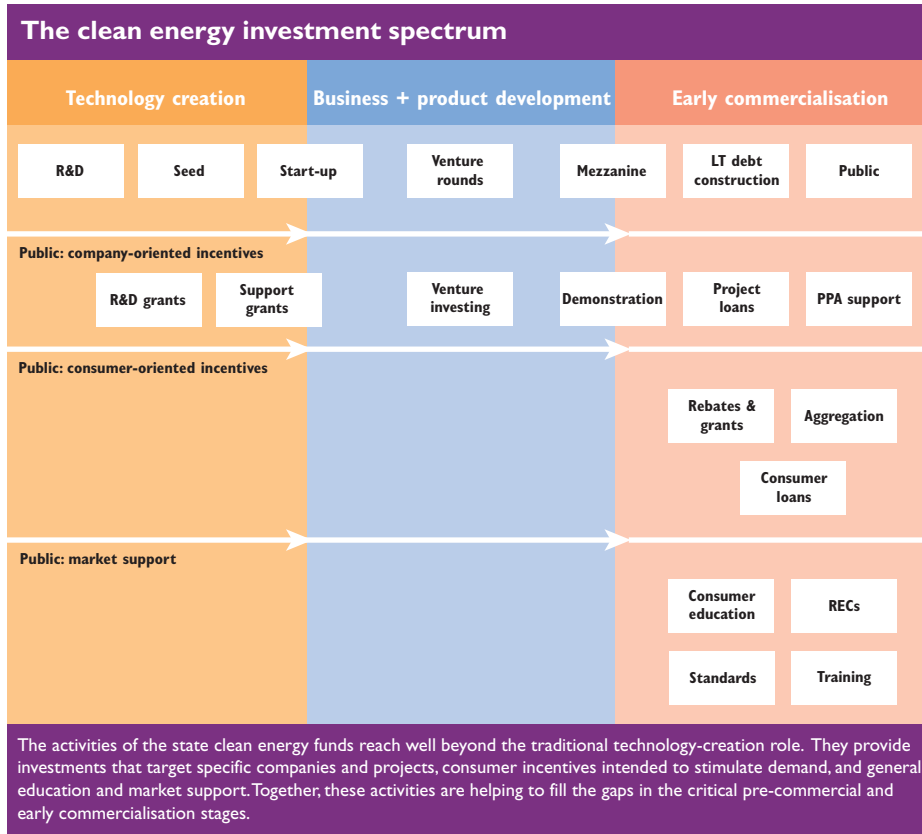
Two California public pension programmes – CalPERS and CalSTRS – recently announced initiatives to create new investment allocations dedicated to the clean energy sector. However, investments in these early markets are not conventional in nature. Institutional investors typically shun capital commitments to anything that can be considered a novel investment opportunity, preferring the ‘safe harbours’ of established vehicles and management teams. At the same time, the relatively immature clean energy markets often offer risk/reward relationships that can be difficult to assess, particularly for less experienced investment managers.

Linking these initiatives and investors requires bridges to be built between public and private capital, as has been done successfully in other areas where the market infrastructure is not yet sufficient to adequately reduce investor risk, such as low-income housing, timber conservation and poverty alleviation. CEG, in collaboration with its CESA partners, is exploring how a non-profit can serve such an intermediary role to reduce risks and bring together public and private funding sectors through the design of successful REC-trading support schemes, as well as support for investments in companies and projects.

Through this work, CEG could serve as a key broker for much of the public sector investment in clean energy innovation across the US by linking efforts to capture the key public benefits of clean energy with the early investors in these new markets. This could provide a potential model for how sustainable innovation could be accelerated in this technology area, not only in the US, but also further afield.

Over the past year and a half, several distinct areas of CESA’s multi-state network have evolved into international efforts. Each has roots in CEG’s basic approach – harnessing state, federal and international players to bring new capital to clean energy markets and accelerate a transition to a low carbon economy.

For example, the CEG’s Clean Technology Implementation Network is an international infrastructure for ongoing dialogue about market-based clean energy activities that can be used by clean energy funds and other advocates in Europe and North America. This includes sharing of best practices and expertise with states, regions and countries that are interested in creating new funds so that the groundbreaking first generation of clean energy practices and programmes can be better understood, improved upon and translated into future efforts.



Since its launch in 2002, the network has initiated a number of exchange efforts with the support of the Oak Foundation and other funders. These activities began with a conference for clean energy funders in Amsterdam in May 2003 to explore these ideas and obtain their input, and continued with recent meetings with international counterparts during the Renewables 2004 conference in Bonn, Germany, in June.

All of these CEG-led collaborative efforts are rooted in leading business academic thinking that suggests how the clean energy sector can best benefit from theories of disruptive innovation and the social processes of building networks of public, private and government actors, which are explored in more detail in a recent CEG report – *Global Clean Energy Markets: The Strategic Role of Public Investment and Innovation*. Leading scholars at top US business schools are beginning to link their theories of how technologies move from small to mainstream markets to specific CESA programmes. Having a well-considered strategy in this area helps investors reduce investment risk, which we believe is essential to attract new capital.

During the past year, through a new ‘MBA Clean Energy Network’, led by CEG, MBA and environmental management students from the nation’s leading universities (such as Yale, Harvard, Stanford and UC Berkeley) have completed research and consulting projects directly for CESA members on topics vital to clean energy finance.

This initiative marks the first time that a

non-profit group has brought together the leading academic and business thinkers in the country to develop practical investment and policy approaches to move clean energy into the mainstream markets. Building from the premise that the core business skills now taught to emerging leaders are the same ones needed to drive the transition to clean energy technologies, CESA staff are now seeking channels to place these market challenges directly into the typical curriculum.

So what lies ahead? The CESA clean energy funds strongly believe that, on both sides of the Atlantic, innovation and investment are the keys to bringing forward new low carbon technologies and driving them to market. And that potential market is large.

We see an increased willingness by states in the US to fill the gaps in financing and technology innovation support. These funds are a key new set of actors, willing to work with international financing partners. This is how a clean energy revolution will likely sustain itself – from the bottom up, with public and private investors solving real problems, learning from each others’ experiences and working to convert environmental problems into economic opportunities. It’s a promising beginning to this century’s major environmental challenge.

Cameron Brooks is project director at Clean Energy Group. Lewis Milford, president, and Allison Schumacher, project director, also contributed to this article.

E-mail: cameron@cleanegroup.org

More information about the Clean Energy Group can be found at www.cleanegroup.org, and the Clean Energy States Alliance at www.cleanenergystates.org