Energy Policy 38 (2010) 3263–3265

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Viewpoint

Mobilizing private finance to drive an energy industrial revolution

John A. Mathews [a,*], Sean Kidney [b], Karl Mallon [c], Mark Hughes [c]

[a] Eni Chair in Competitive Dynamics and Global Strategy, LUISS Guido Carli University, Viale Romania, 32, 00197 Roma, Italy
[b] ClimateRisk Ltd, London, UK
[c] ClimateRisk Ltd, Sydney, Australia

ARTICLE INFO

Article history:
Received 8 February 2010
Accepted 12 February 2010
Available online 26 February 2010

Keywords:
Climate bond
Renewable energies
Private financing of investment

ABSTRACT

While uptake of renewable energies as a solution to climate change is widely discussed, the issue of public vs. private financing is not yet adequately explored. The debates over the Kyoto Protocol and its successor, culminating in the COP15 Climate Change Conference in Copenhagen in December 2009, maintained a strong preference for public over private financing. Yet it is also clear to most observers that the energy revolution will never happen without the involvement of private finance to drive private investment. In this Viewpoint, we discuss the ways in which private financing could be mobilized to drive the energy industrial revolution that is needed if climate change mitigation is to succeed.

While global warming is now recognized to be a major, if not the single largest threat to humanity due to the relentless increase in greenhouse gas emissions from industrial and transport sources, nevertheless there remains wide divergence over what to do about it, and how to finance mitigation measures. The Copenhagen COP15 Climate Change Conference staged in December 2009 demonstrated that there is considerable willingness to canvass raising large sums to finance investments in new low-carbon technologies, energy efficiency improvements and renewable energies generally. But delegates to the COP15 Conference were unable to agree on the role to be played by private finance and so ended up emphasizing the role of public finance (taxation and government expenditure) as the source for mitigation efforts. While the Conference was able to endorse a proposal to create a Copenhagen Green Climate Fund that would channel up to $ 100 billion per year to climate change mitigation and adaptation efforts, the role that private finance would play in this process remained unexplored.

We take this commitment as a starting point and ask how the funds are to be raised in such a way that the uptake of renewable energies worldwide will be accelerated. Public finance will clearly play an important role, but we take the view that the mobilization of private finance to help solve this single greatest threat faced by humanity is just as important. If capitalist industrialism created the problem in the first place, then in our view a way has to be found for capitalist processes to solve the problem. And indeed there are various solutions to hand, which consist in the creation of various forms of favorably-rated debt instruments that will be backed by renewable energy and low-carbon futures and will be attractive to institutional investors.

Such instruments could and should be constructed as sound investment vehicles (at a time when institutional investors are looking for safe havens) in renewable energy futures. They should be capable of raising the trillions of dollars needed for a complete overhaul of the fossil fuel-based energy system. One term being floated for the designation of such financial instruments is 'Climate Bonds'. We see such instruments as providing a way around the vexed issue of carbon taxes (or cap and trade schemes), which whatever their merits in advanced regions such as Europe and the United States in slowing carbon intensity, cannot be expected to play any significant role in developing countries, where low energy prices are a means of development and a source of international competitiveness. Nevertheless in developing countries, some means of accelerating the uptake of renewable energies is desperately needed. Our argument is that Climate Bonds could meet that need.

The key to getting renewable energy projects off the ground is long-term financing. Let us take a couple of examples from the recent financial press. The Spanish wind energy company Acciona is building Mexico's largest wind power farm, the 250 MW Eurus farm, involving construction of 167 1 and 2 MW turbines. It has a 20-year power purchase agreement with Mexico's largest cement producer, Cemex, for all the energy produced by the Eurus farm. Cemex in turn has electricity selling rights to the national grid, as well as the right to use the power for its own plants (and supplying one quarter of the energy needs of its Mexican cement

* Corresponding author.
E-mail addresses: jmathews@luiss.it (J.A. Mathews), seankidney@gmail.com (S. Kidney).
URL: http://climatebonds.net/ (S. Kidney).

0301-4215/$ - see front matter © 2010 Elsevier Ltd. All rights reserved.
doi:10.1016/j.enpol.2010.02.030

plants). The Inter-American Bank (IDB) approved a $ 50 million loan (line of credit) for the project, based on these long-term contracts. The total project will require investments of $ 600 million, and the IDB loan will trigger lines of credit to be made available from other financial institutions. The IDB approval in other words sends a strong signal to the markets that renewable energy projects in Latin America are viable.[1]

A smaller project in Mexico, at La Ventosa, being developed by the French energy company EDF Energies Nouvelles, at a total cost of $ 190 million, has also received approval from the IDB for its part in a $ 103 million funding package. This project has a 15-year power purchase agreement struck between EDF and the Mexican subsidiary of Wal-Mart.

Now let us suppose that the Mexican government had gone to the IDB with a proposal to float a bond for $ 1 billion on the New York and Tokyo bond markets, where the bond would be designated as a 'Climate Bond'. In this hypothetical case, IDB would act as the issuer, taking responsibility for the framing of the bond and its wording and the manner of offering regular payments to the institutions that take up the bond offer. (They would be largely pension and super funds from around the world, all looking for safe investments as well as opportunities to invest in a low-carbon and renewable energy future.) The Mexican government would act as the guarantor, and proffer the long-term offtake agreements between Acciona and Cemex (over 20 years) and between EDF and Wal-Mart (for 15 years) as the assets that underpin the long-term profitability of the two wind energy projects and others that might be financed by the bond issue. Once the $ 1 billion bond had been placed and taken up by the markets, IDB would then have financing to put $ 50 million into the Eurus project, as well as its part of $ 103 million for La Ventosa, and then have around $ 900 million of further funds to channel towards other low-carbon and renewable energy projects. Many of these projects would otherwise have no hope of getting up, either because they are too small on their own (diseconomies of scale) or the financial institutions approached by their promoters to finance them are too conservative (or ignorant) and demand too high an interest rate.

IDB could float the bond (in this hypothetical example) either with regular annual interest payments, which it would meet in the early years from its own resources (perhaps with Mexican government help, based on taxation) or it would structure the bond as a zero-coupon offering that pays no interest for 10 years and then provides a one-off payment that is guaranteed in advance (and for IDB would be underwritten by the profitability of the wind farm projects based on existing support regimes, but after 10 years could be producing electricity at prices better than those generated by fossil fuels if carbon pricing has been introduced by that stage).

Everybody benefits from this arrangement—Acciona, which gets favorable financing; Cemex, which gets guaranteed renewable energy at a favorable tariff; and the IDB, which fulfils its mandate as a development bank; not to mention the Mexican government ,which would have tangible carbon emissions reducing commitments to take to international negotiations. Such a win–win outcome is based on the external economies generated by the aggregated investments, which overcome the diseconomies of scale of individual projects by aggregating them into larger investments enabled by the bond.

Of course there are already some financial instruments being issued under the name 'Green Bonds'. For example, the US Treasury in its 2009 stimulus package issued US$ 2.2 billion of Green Bonds to generate financing for renewable energy initiatives. These are known as 'Clean Renewable Energy Bonds' and the government will pay interest in the form of a tax credit to bondholders.

The World Bank has issued an approx US$ 350 million bond with maturity of six years, through the Scandinavian bank SEB. The first tranche of the bond was denominated in Swedish Kronor to a total value of SEK 2.325 billion; interest payable on the bond was 0.25% above current Swedish government bond rates, giving investors a yield of 3.15% p.a. The investors are for the most part institutional investors such as Swedish pension funds. Six subsequent tranches have been issued, always appealing to institutional investors. The State of California purchased US$ 300 million of the second issue, again managed by SEB but denominated in US$, as a sign that California wanted to contribute tangibly to climate solutions.

Likewise the European Investment Bank (EIB) issued Climate Awareness Bonds 2007and 2009. These were Euro 600 million five-year bond, issued by the European Investment Bank (the financial arm of the European Union) through the services of the merchant bank Dresdner Kleinwort. The EIB enjoys the highest credit rating possible, and offered the Bond to a wide range of investors contacted by Dresdner Kleinwort; it was fully subscribed, and the funds raised have been used in EIB renewable energy and energy efficiency projects. A second tranche, also over-subscribed, was issued in 2009.

When we look back at the history of financing of major infrastructure projects, we see that private debt finance instruments (bonds or debentures) have done the heavy lifting in getting the projects off the ground. How was the vast interstate highway system in the US built and financed? How were the sewer systems of London, Paris and Berlin built and financed in the 19th centuries? The answer is—by specially designated bonds, offered to the investing public. The bonds were earmarked for financing of the infrastructure, and offered a guaranteed rate of return over a designated time span, 20 years or longer. Even World War II was largely financed by bonds; the UK paid out its last 60 year War Bond only in 2005.

The Industrial Revolution in energy systems, by which the world will move off the fossil fuel systems that have been the driving force behind industrialization and modernization for the past two centuries, and through which the world will move to renewable energies and low-carbon technologies over the next decades, will likewise have to be financed in novel and imaginative ways. The sums involved will be vast: the International Energy Agency has talked of a figure of $ 10 trillion over and above business as usual.

We see an urgent need, in the somewhat confused atmosphere created by the collapse of talks at Copenhagen in December 2009, to reformulate the climate change mitigation problem in new and realistic fashion. Privately financed instruments (that may tentatively be termed Climate Bonds) will have to play a significant role in the transformations that lie ahead. Countries issuing climate bonds will not only raise finance to drive their efforts to create new energy systems, but will also be held to account; the bonds will act as a feedback loop giving a degree of credibility to statements and promises that countries will achieve 'such and such emissions reductions by such and such a date'. Until now, in the framework of Kyoto, such utterances were cheap—they were nothing but 'hot air'. Now, with Climate Bonds being likely to be issued to the bonds markets, which are the capitalist financing vehicles par excellence, such insouciance, will no longer be feasible. The efforts to date, in issuing so-called 'Green Bonds' must surely be seen as mere first steps when compared with the scale of the financing required to drive a real energy Industrial Revolution.

In our view, it is time to call a halt to the discussion over the 'costs' of climate change mitigation, where the issue now lies

[1] See the story in the *New York Times*, at: http://greeninc.blogs.nytimes.com/2009/12/15/mexican-wind-farm-gets-key-loan/?scp=1&sq=Mexican%20wind%20farm%20gets%20key%20loan&st=cse