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Unlocking Finance for Clean Energy: The Need for 'Investment Grade' Policy

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Summary points

- 'Investment grade' energy policy is a critical factor for unlocking significantly scaled-up capital flows into renewable energy and energy efficiency.
- To be 'investment grade', policy needs to tackle all the relevant factors that financiers assess when looking at a deal. It must be embedded in wider energy policy, and be stable across the lifetime of projects. Investors need to be confident, in a policy-driven market, that governments are serious.
- A target, a fiscal incentive, or the availability of public finance alone will not be sufficient if there are cumulative high risks associated with other factors. Risk-adjusted returns must be commercially attractive.
- Different market characteristics of renewable energy subsectors, and energy efficiency, mean that policy needs to be well designed and precise. On its own, a blanket 'low carbon' approach, or a carbon price, will not overcome specific market risks associated with differing technologies.
- Significantly scaling up renewable energy over the medium and longer term requires immediate government attention to the sequencing, planning and integration of the underlying infrastructure required to deploy renewable energy.

This Briefing Paper provides a summary of a more comprehensive Programme Paper of the same name (at www.chathamhouse.org.uk/research/eedp/papers), which provides both a bibliography of reports and articles in this area, and an Annex listing the Chatham House Finance Roundtables held between 2004 and 2009.

This paper can also be read alongside the short primer *Private Financing of Renewable Energy – A Guide for Policymakers*, co-published by Chatham House with New Energy Finance and UNEP's Sustainable Energy Finance Initiative, and available on the websites of all three institutions: www.chathamhouse.org.uk; www.newenergyfinance.com; www.sefi.unep.org.

Introduction

As the international community looks beyond the UN Copenhagen agreements on climate change, attention is focusing on implementing global emissions reductions on the ground. The requirement for significantly scaled-up finance and investment in the solutions to climate change is a central issue.

This paper draws on the insights from mainstream financiers[1] leading the exponential growth in renewable energy investment over the past five years. It draws out key issues for policy-makers seeking to foster conditions for even greater investment.

Following this period of dramatic growth, in 2008 investment in new renewable energy power generation capacity (including large hydro) was for the first time greater than investment in fossil fuel generation. Percentage growth in such investment in non-OECD countries such as China, India and Brazil, and in Africa as a whole, reached double digits. However, very significant additional investment will be required to shift to the lowest and most sustainable atmospheric concentrations of greenhouse gases.[2]

It is not only the scale of the financial resources but the timing, and competition from other investment alternatives, that are important: energy and infrastructure investments made in the next 10–15 years will largely lock in the greenhouse gas (GHG) emissions trajectory to 2050. This alone creates an immediate pressure to accelerate investment into clean alternatives.

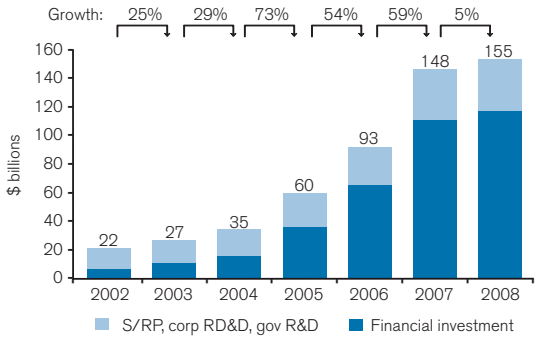
The problem is often characterized as one of finance: finding a large pot of money quickly to fill the 'finance gap' between current levels and those needed. However, a focus instead on *unlocking* finance by getting the underlying conditions right offers the opportunity to catalyse investment flows 'tomorrow'.

Although the detail of this report draws on the insights of financiers predominantly operating in OECD markets, many of the issues around policy and policy design are similar in developing countries. Investors in these countries will also pay particular attention to a number of factors including political risk, the legal and regulatory environment, foreign exchange issues, and energy market and infrastructure more generally. These issues are the subject of a further paper by the author, based on preliminary work with financiers in emerging markets.[3]

Exponential growth of renewable energy investment

As Figure 1 shows, the exponential rise in mainstream renewable energy investment internationally started in 2004–05. It was driven by a range of factors, including rising global energy demand; rising oil and gas prices, exacerbated by geopolitical tensions; the rise of energy security rising on the political agenda; and climate change and the entry into force of the Kyoto Protocol (in February 2005).

Figure 1: Investment in sustainable energy, 2002–08 ($ billions)



S/RP = small/residential projects. New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals
Source: New Energy Finance

1 A series of Finance and Investment Roundtables was held on renewable energy financing and policy issues, involving leading private financiers investing in renewable energy, and organized through the Renewable Energy Finance Project between 2005 and 2009.

2 There is a range of estimates indicating that very significant investment is needed to achieve deep cuts in greenhouse gas emissions. The International Energy Agency (IEA) estimates that to reach a '450 Scenario' (where global concentrations of greenhouse gases are stabilized at 450ppm) cumulative energy-related investment will need to increase by US$10.5 trillion, over business as usual, between 2010 and 2030 (according to an October 2009 early excerpt of its *World Energy Outlook* 2009). Year on year, estimates from New Energy Finance and the IEA are in the region of $515 billion to $550 billion per year until 2030 for clean energy. This amounts to a threefold increase, at least, over 2008 levels, as New Energy Finance figures indicate 2009 investment will fall owing to the financial crisis and economic conditions.

3 Available from the Chatham House website, www.chathamhouse.org.uk; see also *Private Financing of Renewable Energy*, referenced on page 1 above.

Box 1: Types of finance

Debt: banks provide loans to companies and projects through, for example, corporate finance (to a company, e.g. a utility or project developer) and project finance. Project finance, as the name implies, involves loans to a specific project or portfolio of projects, often via a stand-alone 'special purpose vehicle' company. Banks focus on debt repayment, and assess and manage risks that would affect that repayment.

Equity: this involves different sources that invest directly into companies or projects. Equity investors will look for a return from the profits of the company or project, based on the risk they take and the money they invest.

Sources of equity include:

- *venture capital* (VC) funds, with a focus on early-stage technology start-up companies;
- *private equity* (PE), with a focus on a broader range of technology development stages, investing directly into companies or projects;
- *infrastructure funds*, with a focus on mature, low-risk, longer-term investment opportunities;
- *institutional investors* (pension funds, insurance companies, with large pools of money to manage for the long term), also interested in lower-risk options (they may allocate capital to specialized funds or invest in bonds, which could be issued to raise capital to lend for renewable energy financing).

In the United States, 'tax equity' is also used to finance renewable energy projects: firms with a sizeable taxable liability can use renewable energy investments to offset future tax obligations.

Private Financing of Renewable Energy – A Guide for Policymakers[a] provides further detail on how renewable energy finance and investment works.

a Referenced on page 1 above.

Yet aggregated single global investment figures hide a more variegated picture of where that money was going. It emerged from the outset that the national-level renewable energy policy and regulatory framework was a critical element, if not *the* critical element, influencing where capital was deployed.[4]

Finance basics: risk and return

Assessment of risk and return is fundamental to finance and investment decisions. It differs from cost-benefit analysis, which often underpins economic assessment of policy options. Financial institutions need to achieve an acceptable level of risk-adjusted return before deploying capital in a given project or company. In general, higher risk equates with an expectation of higher returns, or a higher premium for lending; different sources of finance have different appetites for risk, and different expectations of returns.

Risk factors

Financiers assess a number of risks for renewable energy projects. These are similar to those for other energy-related investments and include risks to the technical operation of the project itself; international market risks including energy market factors and foreign exchange risk (including between dollars, sterling and euros); and country or sovereign risk linked to the country of operation. Policy and regulation are also core risks in a policy-driven market.

The degree and type of risk have consequences for the cost of capital, and how value is shared between different players in the market. The higher the risk (to debt repayment or realizing returns) associated with an investment, the higher the cost of capital charged by lenders and the higher the returns required from equity investors for taking that risk.

Financiers are not looking for a risk-free environment, but rather one in which risks can be understood, anticipated and managed. As capital is mobile, investors and lenders will favour the sector or

4 This was reiterated more recently in 'The Challenges of Financing Renewable Energy Projects', an article in *Environmental Risk*, Summer 2008, by Nick Gardiner, Director, Energy and Utilities Group, Fortis Bank.

Box 2: The financial crisis

The financial crisis, producing severe liquidity constraints in the banking sector and impacts across the financial world, also affected renewable energy investment from late 2008. By early 2009 a sharp fall in overall investment figures was evident. The impact is discussed in detail in other publications, but it is important to highlight that financiers remained interested in making renewable energy investments throughout this period. Under the right conditions, deals continued to be done, and funds continued to be raised, albeit on a considerably reduced scale.

During this period, financiers reinforced the importance of stable and strengthened public policy to maintain confidence in government renewable energy strategies, and also a renewed role for public financing to ease conditions and maintain momentum in the sector.

Although New Energy Finance statistics showed signs of a 'bounce back' by mid-2009, it is expected that impacts will continue to play out during 2010.

a An informal Chatham House paper, 'Impact of the Financial Crisis on Renewable Energy Financing' (8 April 2008) provides a detailed account of impacts experienced in London (as a global financial sector); these are outlined in the full version of the current paper. A useful overview is also provided in an article on renewable energy financing in a capital-constrained world, 'The good, the bad and the ugly', by Tom Murley, a Director, and Head of the Renewable Energy Team, HgCapital; Point Carbon, June 2009.

subsector, project or country that provides the best returns, balanced against appropriate risk mitigation.

Policy basics: the finance perspective

In 2004, the finance community indicated that policy design was key to making actual investment decisions. However, what was required was not simply the existence of a policy, but crucially, precision in policy design. Put succinctly, policy needed to be 'loud, long and legal':[5]

Loud: incentives need to make a difference to the bottom line and improve returns to make investment more commercially attractive;

Long: sustained for a period that reflects the financing horizons of a project or deal (renewable energy investments typically have higher upfront capital costs than conventional power generation, but lower operational costs);

Legal: a clear, legally established regulatory framework, based around binding targets or implementation mechanisms, to build confidence that the regime is stable, and can provide the basis for capital-intensive investments of long duration.

A further important starting point is that in a policy-driven market the policy and regulatory environment itself is a risk. A change in government, or a change in economic or public expectations, can result in policy changes over which the investor or lender has no control, but which negatively affect or even wipe out expected returns.

Characteristics of 'investment grade' policy

Building on the 'loud, long and legal' characteristics of policy described above, evidence from the finance sector indicates that there are a number of additional features which will help unlock investment flows.

Establishing clear objectives

Mandatory renewable energy targets, in legislation at national or regional level, do provide confidence that governments are taking renewable energy seriously. But in addition, a strong level of *ambition* when setting the target is important in creating the market demand and growth prospects needed to drive investment.

However, it is not just about the target number: precision in the objective of the policy itself is also of

5 Finance roundtables were organized in 2004 by Virginia Sonntag O'Brien, UNEP's Sustainable Energy Finance Initiative, and Kirsty Hamilton, Chatham House, at the request of the German government, to provide input from the finance sector to its International Conference on Renewable Energies, Bonn, June 2004. This phrase originated there and has subsequently been used by other investors and businesses.

Box 3: Investment grade renewable energy policy – key features

- Clear, unambiguous policy objectives, with clear enforcement mechanisms;
- Policy and regulation covering all the factors within the 'boundary of the deal' – e.g. from planning approval to transmission grid access;
- Carefully designed incentive or support mechanisms to achieve set objectives;
- Policy stability across a project-relevant duration;
- Simplicity – reduction of complexity and variables that might add risk;
- Immediate attention to infrastructure – planning, sequencing and regulatory considerations;
- Integration of infrastructure across the energy system and regulation in energy markets, to ensure the overall system is optimized for significant uptake of renewable energy, and 'demand-side' options.

fundamental importance. As a key part of assessing policy stability, investors want to anticipate whether, or when, a government might intervene in a policy framework if it is perceived as failing to meet objectives (a sign that the government is taking the policy seriously).

A clear regime of penalties or enforcement, setting out the consequences of non-compliance, is also a key factor for investors. This is another important aspect of assessing how serious the government is about implementation, i.e. how big the 'stick' is if things are not on track.

Policy coverage: assessing all elements affecting the deal

Before an investment decision is made, financiers will assess all the factors – from the planning and approval process to the final sale of energy to the end-user – that are required to make an overall project work. Risk assessment will include the structure and regulation of the power or energy sector, separate laws or regulations governing planning and approval processes, and regulation around infrastructure (grid and distribution). Thus policies and regulations that govern the energy *system* as a whole must be in place and streamlined.

Precision in incentive or support mechanism design

Within the overall energy policy, the support or incentive mechanism is a central plank of attractive investment conditions – in terms of improving returns, and overcoming the fact that many energy markets contain subsidies or distortions, whether these are feed-in tariffs, tax credits or renewable certificate trading.

Feed-in tariffs, where renewable energy delivered to the grid receives a pre-set tariff, have a clear track record of delivering significant volume increases in the deployment of renewable energy: the stable revenue stream across a pre-established timeframe reduces risk around cashflow. However, no system is inherently perfect, and with feed-in tariffs improvements to the design and stability of these tariffs will have a positive impact on their effectiveness in providing conditions for steady market growth.

Other incentive mechanisms are also being implemented. These include renewable certificate trading schemes, where energy providers have an obligation to supply a particular amount of renewable energy, and can trade with other suppliers to do so, such as the Renewables Obligation in the UK. In the United States, at least until the financial crisis, the federal incentive was based around a 'tax equity' structure for power production from renewables. This provided incentives for large businesses with a sizeable tax bill to invest.

While debates may rage around the 'best' system, financiers have pointed out that there is no perfect system, given different national starting points, and in practice, hybrid mechanisms are common.

The support mechanism, however, may not be the critical limiting factor for private investment. Secondly, and importantly, review of the policy support system (or even the threat of a change) will itself increase the perception of policy risk, bringing a significant 'chill', if not halt, to investment, from the first sign of change to the adoption of any new legislation.

Box 4: Technology from a financial perspective

The policy debate, including at the international level, is often characterized as being about 'low carbon technology', or technology research and development, diffusion and deployment (R&DDD). However, while useful in terms of overall political direction, the term 'low carbon' lacks the precision needed for effective policy development.

The public policy tools needed to incentivize renewable energy use and energy efficiency are likely to be very different. Even incentives for subsectors of renewable energy, such as offshore wind, or biomass, will have to be designed to meet the different characteristics, supply chains and risk profiles of these technologies, as well as their different stages of development (from the lab to commercial rollout).[a]

a Note that the 'finance continuum' of the types of finance that will be invested at each stage of technological development, and the role of policy at each stage in helping to fill the gap, have already been described in some detail; see, e.g., V. S. O'Brien and E. Usher, 'Mobilising Finance for Renewable Energy Technologies', 2004, available from: www.renewables2004.de; and 'Global Trends in Sustainable Energy Investment 2009', UNEP, available from www.sefi.unep.org.

Stability and duration

Given the higher upfront costs and long payback periods of renewable energy, confidence in policy stability and clarity over circumstances that might lead to policy change are important.

This is illustrated by the importance financiers give to legislated 'grandfathering' provisions as a way of providing confidence that a set of policy conditions will continue to apply to investments made under those conditions, regardless of subsequent policy changes. In the United States, before the financial crisis, financiers argued strongly for greater longevity and stability of the federal 'production tax credit' incentive, as this affected steady growth in the renewable energy sector.

Stability and duration are also important for building the supply chain (with the employment that will bring). These factors will enable potential manufacturers or service providers to better assess the demand for a particular technology or set of technologies in a given jurisdiction.

Keeping things simple

Financiers consistently emphasize a preference for straightforward policies, support mechanisms and regulations. The greater the complexity and number of policy variables, the greater the risks that need to be managed. As capital is mobile, financiers within their mandated geographic range will opt for the most attractive overall regime.

Financiers have to explain to their credit committees, in head offices which may be far from the country concerned, how a support mechanism or regulatory environment works, particularly as this may be a crucial factor in attractive project economics. If this is complex, it is likely to make things more difficult.

Where a policy based on a renewable energy trading is created, financiers will have to assess supply of and demand for the traded commodity (renewable energy certificates, for example) the value of the certificates and how that value might change. It may take time for such a market to bed down. This may mean that the cost efficiency resulting from traded mechanisms may not be realized in the same way as in modelling exercises. This highlights the importance of considering 'financeability' at the outset of policy design, rather than just market efficiency.

Carbon finance

The Clean Development Mechanism (CDM), under the Kyoto Protocol, has stimulated a variety of renewable energy CDM projects. With some notable exceptions where there has been strong use of CDM for such projects,[6] the general view of financiers involved is that, to date, carbon pricing is 'the icing on the cake' in actual deals; well-designed national renewable energy policy and incentive frameworks have so far had a consider-

6 In September 2009, New Energy Finance noted that 90% of new Chinese wind projects were applying to qualify for credits, 'China wind CER yields drop as domestic turbine manufacturers increase share', *Carbon Markets*, Global Research Note, 2 September 2009.

ably greater impact. Carbon pricing is not currently a primary factor driving economy-wide renewable energy investment, although CDM project developers focus attention on such projects.[7]

As the international regime and its rules are under evolution, reliance on 'carbon finance' will remain uncertain until the policy system has longer-term visibility. However, a greater number of options for risk mitigation around carbon financing are coming onto the market.

Infrastructure and integration

Planning, regulation and the timing and sequencing of infrastructure development – the availability of grid connections, transmission or other delivery infrastructure as the project proceeds – are vital aspects of closing renewable energy deals. As mentioned above, if the power generation, fuel production or heat supply project cannot guarantee delivery to market, and the resulting sales revenue, then financiers are unlikely to provide funds.

The early, strategic decisions on infrastructure that are needed, given the long planning and construction lead times, will be difficult to make without a degree of centralized decision-making at national (or regional) government level. This will also inevitably involve 'picking winners' in terms of technology; or at least understanding timing, such that the *option* to plan and construct specific technology-linked delivery infrastructure (e.g. infrastructure for plug-in electric vehicle charging) remains possible. This is likely to be one area where public finance, as well as public policy, must play a central role.

In the medium term, delivering an energy system optimized to enable an ultra-low carbon energy economy will require a considerably more integrated approach. This will involve both the physical infrastructure mix to enable the energy system to use a diversity of renewable energy technologies (alongside demand-side energy efficiency options), and integration across policies and regulation.

Understanding linkages between energy and agriculture, food and water security, trade policy, fiscal and financial regulation will be required, particularly where there are transboundary issues such as electricity transmission and distribution networks, or globally traded biomass feedstock.

Conclusion

'Investment grade' policy is a critical factor in creating the conditions, or 'enabling environment', to unlock considerably larger financial flows for renewable energy in the near term. It will need to be considered alongside the evolution of other parts of the global architecture on climate change, energy security and so on.

Beyond the immediate term, government policy needs to provide investors with a coherent 'story' about a forward vision not just for the next decade to 2020 but towards 2030 and beyond. This needs to outline how the system is likely to change, what the investment opportunities are, at what scale and over what timeframe.

7 The Global Wind Energy Council commissioned research into how sector-wide CDM could work to simplify and improve the current project-by-project CDM approach.

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