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PRIVATE FINANCING OF RENEWABLE ENERGY

- A GUIDE FOR POLICYMAKERS -

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PRIVATE FINANCING OF RENEWABLE ENERGY: A GUIDE FOR POLICYMAKERS

This Guide provides an outline of how financing renewable energy works, with a particular focus on more mature end of the market i.e. the proven technologies that can be deployed now and at scale. It aims to show how policy looks and where it fits in from a financing perspective; as well as the range of other factors that need to be taken into account in doing an actual project or deal.

A broad range of financial institutions are now investing or lending money into the renewable energy (RE) sector. Global investment grew exponentially from $22 billion in 2002 to $155 billion in 2008 when, for the first time, investment in new RE power generation capacity (including large hydro) was greater than investment in fossil fuel generation. The financial crisis in late 2008, first quarter 2009 did hit the sector heavily, although a bounceback was subsequently observed, and investor interest in the sector remained throughout (discussed below).

This guide covers:

- how finance generally works;
- what the different parts of the finance sector do;
- what issues financiers consider when investing, including the role of policy and regulation; and
- the challenges that face those seeking financing for renewable energy developments.

Certain complementary topics, such as carbon or 'climate' finance, including the use of public finance to leverage private finance in developing countries, have not been addressed in this guide, however, reports are available in this area[1].

1. For example, from the UNEP Finance Initiative (www.unepfi.org); Sustainable Energy Finance Initiative (www.sefi.unep.org); Sir Nicholas Stern at the Grantham Institute, http://www.lse.ac.uk/collections/granthamInstitute.

INTRODUCTION – FINANCE BASICS

The finance sector approaches investments in renewable energy in the same manner as any other investments. Renewable energy (RE) investments, however, have certain characteristics that require an additional level of understanding. These include the influence of policy and regulation on the viability of an investment, including the legal basis and durability of any subsidies, grants, tradable certificates or tax credits. These factors are layered on top of the basic financial analysis.

RISK AND RETURN

Central to understanding any finance and investment decision is risk and return. Financial institutions want to make a return proportional to the risk they undertake: more risk means a greater return will be expected.

As outlined below, different financial institutions will take different levels of risk, from the high risks investing in new technology companies, to lower risk in mature technologies such as onshore wind. The RE sector utilises finance from across the entire risk-reward spectrum.

All financiers will want to understand risks they may face, and set up legal or other means for minimising or managing them.

SOURCES OF CAPITAL

There are two ways a RE company can source capital: either by borrowing it from a bank, as a loan, or through equity capital from selling a stake in the business itself. Banks will lend money to RE projects and will focus on getting that debt repaid, earning a relatively small return on the transaction. Equity capital (there are various categories, described below), usually in the form of funds, seek opportunities to invest - take an equity position - in companies, projects or a portfolio of projects, and expect a greater return for the level of risk they take (Venture Capital, or VC funds, investing in new technology companies might expect 25% of their investments will fail, and therefore look for a very high return). A privately owned company may 'IPO' – make an Initial Public Offering of shares to raise capital from various investors, through the stock exchange; established companies may issue further share capital to fund expansion plans.

In addition, certain investors and companies such as utilities can finance projects 'on balance sheet' – from their own corporate funds - as part of their corporate strategy on RE. These companies draw on monies raised by their internal Treasury

departments from the financial markets through bond issuance or general corporate bank facilities which are available to the business as a whole, or following the sale of other parts of the business. Often a company will choose whether to use project finance or corporate facilities depending on which offers the cheaper source of funding to the project. Utilities with low corporate borrowing costs have typically financed RE activity on balance sheet.

Going back to risk and return, an important part of the risk side of the equation is what happens if a company in which the investor, or bank, has funds becomes insolvent. In this situation, there will be a hierarchy determining which entity gets their money out first. Bank debt is only lent into the company and therefore ranks ahead of equity which owns the company. That means that monies recovered from the insolvent company will be paid to the bank first, which makes a bank loan lower risk than an equity stake in the company. Therefore, banks command a lower return than equity investors.

THE FINANCIAL INSTITUTIONS – WHAT THEY DO

BANKS

Corporate Lending: banks provide finance to companies to support everyday operations. An assessment is made of the company's financial strength and stability, and debt is priced accordingly. These bank facilities place few restrictions on how the company can use the funds, provided certain general conditions are met.

Project Finance, or Limited Recourse Finance: debt is borrowed for a specific project, the amount of debt made available will be linked to the revenue the project will generate over a period of time, as this is the means to pay back the debt. This amount is then adjusted to reflect inherent risks, e.g. the production and sale of power. In the case of a problem with loan repayment, rather like a typical mortgage, the banks will establish first 'charge' or claim over the assets of a business, as described above. The first tranche of debt to get repaid from the project is usually called 'senior debt'.

Mezzanine finance: as its name implies, this type of lending sits between the top level of senior bank debt and the equity ownership of a project or company. Mezzanine loans take more risk than senior debt because regular repayments of the mezzanine loan are made after those for senior debt, however, the risk is less than equity ownership in the company. Mezzanine loans are usually of shorter duration and more expensive for borrowers, but pays a greater return to the lender (mezzanine debt may be provided by a bank or other financial institution). A RE project may seek mezzanine finance if the amount of bank debt it can access is insufficient: the mezzanine loan may be a cheaper way of replacing some of the additional equity that would be needed in that situation, and therefore can improve the cost of overall finance (and thus the rate of return for owners).

Refinancing: this is where a project or a business has already borrowed money but decides, or needs, to replace existing debt arrangements with new ones, similar to refinancing a mortgage. Reasons for refinancing include: more attractive terms becoming available in the market (perhaps as lenders become more familiar with the technology, meaning more money can be borrowed against the asset); or the duration of the loan facility, e.g. loans are often

structured to become more expensive over time because of the increasing risk of changes to regulation or market conditions. One of the results of the financial crisis was that banks became extremely reluctant to lend for more than 6 or 7 years, which 'forced' projects that required longer-term loans, to refinance in the future, and take the risk of the terms available at that time.

Further useful terms for project finance: see end for *Underwriting and Syndication; Club Deals and Special Purpose Vehicles (SPVs).*

VENTURE CAPITAL, PRIVATE EQUITY AND FUNDS

Renewable energy equity investments taking an ownership stake in a project, or company, involve investments by a range of financial investors including Private Equity Funds, Infrastructure Funds and Pension Funds, into companies or directly into projects or portfolios of assets.

Depending on the type of business, the stage of development of the technology, and degree of risk associated, different types of equity investors will engage e.g. Venture Capital will be focused on 'early stage' or 'growth stage' (depending on how far from the laboratory and commercial roll out) technology companies; 'Private Equity' Firms, which focus on later stage and more mature technology or projects, and generally expect to 'exit' their investment and make their returns in a 3 to 5 year timeframe; Infrastructure Funds, traditionally interested in lower risk infrastructure such as roads, rail, grid, waste facilities etc, which have a longer term investment horizon and so expect lower returns over this period; Institutional Investors such as Pension Funds have an even longer time horizon and larger amounts of money to invest, with lower risk appetite.

Funds use Internal Rate of Return (IRR, or 'rate of return') of each potential project as a key tool in reaching investment decisions. It is used to measure and compare the profitability of investments. Funds will generally have an expectation of what IRR they need to achieve, known as a hurdle rate. The IRR can be said to be the earnings from an investment, in the form of an annual rate of interest[2].

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

2. More technically it is the discount rate that returns a net present value of an investment cashflow as zero. Net Present Value (NPV) is an assessment of investment value in current time; it is calculated from an analysis of the future cashflows generated from the investment adjusted for time and risk (by applying a discount rate), less the initial investment.

KEY FEATURES OF FUNDS PROVIDING EQUITY

- Venture Capital Funds

- Money raised from a wide range of sources with high risk appetite to include insurance companies, pension funds, mutual funds, high net worth individuals
- Target new technology, new markets
- Interested in early-stage companies
- High risk of failure in every venture
- Investment horizon around 4-7 years
- Return requirement, many multiples of original investment (50 – 500% IRR)

- Private Equity Funds

- Money raised from a wide range of sources with medium risk appetite to include institutional investors and high net worth individuals
- Target opportunities with possibility for enhanced returns (or 'upside')
- Interested in companies and projects with more mature technology, including those preparing to raise capital on public stock exchanges ('pre IPO'), demonstrator companies, or under-performing public companies.
- Shorter investment horizon, 3-5 years
- Higher return requirement, 25% IRR

- Infrastructure Funds

- Funds drawn from a range of institutional investors and pension funds
- Target 'infrastructure' i.e. an essential asset, long duration, steady low risk cash flow
- Interested in roads, railways, power generating facilities
- Medium term investment 7-10 years
- Low risk and return, 15 % IRR

-Pension Funds

- Typical investments include:
  - Public equity (via stock markets)
  - Corporate and government bonds
  - Real estate
  - Inflation-linked assets (such as commodities, inflation linked bonds, infrastructure and energy, forest land)
  - Private equity
  - Cash and cash equivalents
- Investing directly they seek 'cash yielding' investments, i.e. those that generate a stream of cash year on year, as opposed to an investment in which all cash is realised at the end of the investment period through an 'exit' (by either sale or IPO). These investments are required to support their long term liabilities;

- For these investments they display a low risk appetite, reflected in expectations of stable returns at around the 15% level;
- In RE they make very low risk investments e.g. a portfolio of operational onshore wind assets;
- As they have very large funds to invest, they do not commonly get involved in individual projects. They may allocate monies to specialised Private Equity or Venture Capital funds (including infrastructure or renewable energy funds) that manage the investments and provide the pension funds with a return;
- A handful of specialised RE bonds have been issued which have been of interest to pension funds. Risks are described in the project bond issue documents. Project risks will be extensively mitigated (such as reserve facilities, for example for maintenance problems, distribution restrictions, cash sweeps) in order for the project to attract "an investment grade rating"[3] making it attractive to investors (a higher rating suggests less risk that the project will default on its bond obligations leaving bond investors at risk of not being repaid).

The table below illustrates the different types of finance, the type of risk taken and an idea of the level of return, or margin, expected.

Note that there is some overlap between the categories, for example, infrastructure units within some Banks, Pension Funds, and Infrastructure Funds.

Venture Capital	Private Equity	Infrastructure Funds	Pension Funds	Bank Mezzanine Debt	Bank Senior Debt
Start ups, new technology, prototypes	pre IPO companies, demonstrator technology	Proven technology, Private companies,	Proven technology	Demonstrator / Proven technology, New Companies	Proven technology, established companies
>50% IRR	35% IRR	15% IRR	15% IRR	LIBOR + 700 bps	LIBOR + 300bps

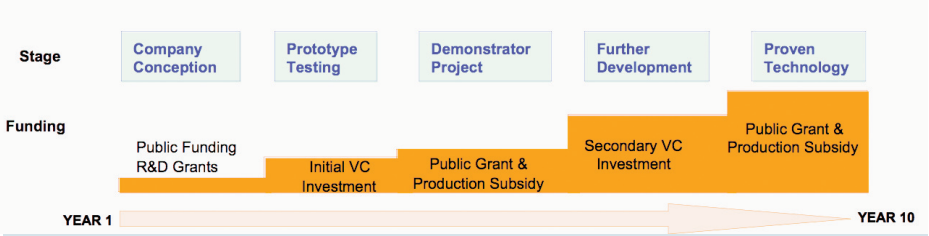
** This diagram is reflective of current market conditions and is valid as at June 2009

Further useful finance terms (see end): ***cost of capital, cost of debt (explaining LIBOR); debt to equity ratio, tax equity.***

3. Credit rating agencies are private companies that assess the financial strength of countries, companies, and certain financial products such as project bonds. An investment grade rating is awarded when a bond for example is judged likely to meet its repayment obligations. The two largest rating agencies Moodys and Standard and Poors describe investment grade to be between Aaa to Baa3 and AAA to –BBB respectively (each have different labelling).

The box below illustrates the types of financing likely to be involved at different stages of new technology development – from the point at which it comes out of the laboratory (or equivalent) to readiness for commercial roll out as proven technology, after which banks, private equity and other funds will become interested.

BOX 1. BUILDING THE SUPPLY CHAIN: FINANCE FOR EARLY STAGE TECHNOLOGY INVESTMENT E.G. WAVE POWER



This example demonstrates the phases of investment from public grants, VC funding and production subsidies required to develop a new RE technology through to the point it can begin to demonstrate a track record and attract second stage funding. This might be through an Initial Public Offering (IPO) on a stock exchange to raise equity from external investors, as well as project finance debt from banks, to enable further project build out. The term, the 'valley of death' is often used during the phase illustrated above which describes the difficulties of accessing commercial finance between the initial VC investment and demonstration; or from demonstration to commercial roll-out with secondary VC investment. The diagram shows where public grants or specific subsidies can be essential.

In its final stages of development where a technology steps into 'Proven Technology', it is then assumed to be fully commercial and to compete with other forms of RE, when standard grants, support or incentive mechanisms or other subsidies will become available. Investors such as private equity firms are likely to be attracted at this point, although there are overlaps between stages and financial institutions.

RISK AND RETURN: KEY FACTORS

This section illustrates, what financiers consider when investing in RE assets on the ground; this would typically be the case in a project finance, fund and private equity context. There are a range of variables that impact project success and many that will change over the project lifespan: these need to be understood and managed or mitigated. Prior to investing both debt and equity providers will undertake a detailed assessment of these risk factors, which is known as due diligence. Technical experts and advisers will be brought in during this process, where specific technical knowledge or insight is needed. This is where RE and energy policy fit in, as covered in more detail below.

Typical risk assessment will include:

Country and Financial Risks

- Country risk – this is a broad term and covers a range of economic and political risks including government stability, status and maturity of the legal system, transparency of business dealings and currency risks. It also includes general instability due to wars, famine and strikes.
- Economic risks – inflation, local regulation.
- Financial risks – interest rates[4], refinancing risk, insurance (business interruption, asset rebuild), asset liquidity.
- Currency risks – exchange rate risks, currency controls, devaluation. Exchange rate risk, for example, is faced by investors in emerging markets if revenue is generated in local currency and loans are to be serviced in hard currencies. In this situation, the lenders are likely to require the project to 'hedge' the risk using a financial contract, but in many emerging countries these contracts can be expensive and for short durations. Equally, a UK or US investor buying plant or equipment in Euros finds project costs rise as a result of the falling sterling-euro or dollar-euro exchange rate. Often purchasers will arrange a concurrent currency hedge with the supplier or a bank at the time the supply contract is signed to manage this risk for an individual project.
- Political risk – this incorporates not only the stability and durability of political regimes but also the risk that for example tax laws are suddenly changed, central bank rates are increased etc. directly affecting project viability. Policy and regulatory risk are subsets of political risk.
- Security risks – can the lender actually take possession of a plant if there is a default on the loan, and will it be permitted to operate the

4. Banks lend on a floating interest rate basis: e.g. the LIBOR inter-bank rate, which will change throughout the life of the loan to reflect the current market rate. It is typical for a bank oblige a borrower to 'fix' around 80% of the floating rate at a fixed rate to reduce the risk of project insolvency in conditions where interest rates rise rapidly.

plant and maintain the revenue generation? Although in most developed countries the right to security over an asset has a solid legal basis, this is not always the case in some emerging markets and can add significant complications.

Policy and Regulatory risk

As the policy or incentive mechanism may be a key part of making RE project economics attractive, changes to these factors pose a risk: a long-term, stable policy regime with a sound legal basis is essential for serious investment to occur. Regulatory risk is also considered in depth for the permits, authorisations and licences required to plan, construct, operate and decommission RE projects. A sound track record of stable and consistent regulation, well managed price or other reviews, and clarity over the development of regulations or policy to implement new RE legislation, would be sought. This is covered in more detail in the section below.

Technical and Project Specific Risk

Typically this will include a review of the technology, its suitability for the proposed conditions, operational track record, source and accessibility of spares, a feedstock/energy resource assessment and a capital expenditure cost review for a construction project. These factors are generally assessed by a technical expert on behalf of lenders and investors.

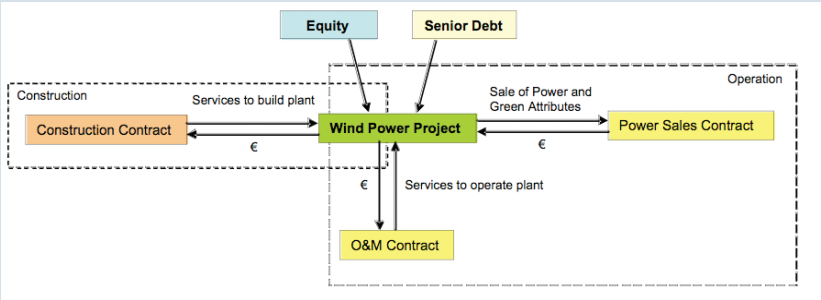
- Construction risk – this will cover the risks involved with the build, the interfacing of different contracts, the degree of protection from liquidated damages for project delays, other damages, build timing.
- Technological risk – each RE technology will be assessed in the light of its maturity, operating history, fitness for purpose and warranties. The assessment will be undertaken by appropriate specialists often working closely with the technology supplier.
- Environmental risk – environmental and social risks associated with the project, often subject to legal requirement for an impact assessment.
- Operation and Management risk – once a project has been commissioned the plant will need to be properly maintained and staffed to ensure optimal performance. An assessment will be made of staffing and costs, as well as contracts required during the operational period and provisions required for decommissioning.

Market Risk

These assessments are typically provided by market specialists who report on topics including future electricity prices, future green subsidy prices, future carbon prices, and the prospect of new competitors.

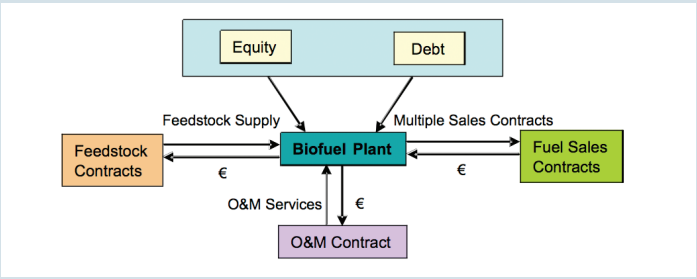
The boxes below show finance and contractual arrangements for a wind power and biofuels project. These illustrate differences in the RE subsectors, and the kinds of issues financiers will examine.

BOX 2. STRUCTURE OF AN OPERATIONAL WIND POWER PROJECT



This diagram sets out the typical contractual structure for a wind power project. Technical studies of the wind resource, a review of the proposed technology and the construction, operations and maintenance will have been completed. The construction contract may well feature multiple contracts, in which case detailed analysis of how the contracts interact will be completed. Legal due diligence including all land title will be reviewed. If the project is only viable due to the power and green attributes it sells, a thorough review of the offtake contract and subsidy regime will be performed.

BOX 3. STRUCTURE OF A BIOFUEL PLANT



This example of a biofuel project highlights some challenges project promoters often face, not including policy risks linked to the sustainability of feedstock.

Issues include:

- Stable feedstock supply: if multiple contracts with suppliers are involved the actual ability of the plant to produce the biofuel at a forecast production capacity carries a greater risk.
- Sales contracts: on the output side, producers will want to find sales contracts for biofuels that line up with long term project finance debt. This can be challenging.
- Lack of correlation between the prices for the feedstock and the final product being sold (associated with the commodity markets and the oil markets respectively). This can mean that the biofuel plant can be squeezed in between two separate markets.

POLICY AND REGULATORY RISK IN DEPTH

Renewable energy is most typically attractive in a policy-driven market. This is because it is often only marginally competitive, if at all, compared with conventional power on a stand alone basis as economies of scale have yet to be realised, and existing market structures may contain inbuilt systems or subsidies that favour conventional energy. Additionally, financial institutions may have less familiarity with some of the technologies or sub-sectors of the RE industry and therefore may overestimate the risk. Some form of fiscal support is imperative for the projects to be attractive to equity investors and lenders, as they will be comparing the RE investment against alternative uses of that capital that may provide higher returns, including conventional forms of energy.

Support mechanisms or subsidies focus on making returns from investing in RE more commercially attractive, whether via a feed-in tariff (as in much of Europe), Renewable Obligation on suppliers (with an associated certificate trading), Portfolio Standards, or tax-based incentives (such as the Production Tax Credit in the US which has been used to incentivise companies with a large taxable income to invest in RE).

As the economics of the project or investment is linked to that policy regime's remaining in place, it is itself a risk, and every equity investor and bank will complete a detailed risk assessment prior to authorising an investment or a loan in a country. This will include analysis of the duration of the regime, its legal basis, its ability to be amended, a country's track record of continually adjusting or replacing legislation, and the impact of a change of political party in government.

In addition, the policy and regulatory regime will be assessed across all aspects of the project, not just the support or incentive mechanism. This would include: the planning and approval process, given the potential for costly delays to construction which defer the point at which a project will start generating revenue (as has been evident in the onshore wind area); grid or infrastructure access and availability (e.g. offshore grid, or delivery infrastructure for biofuels); power purchase agreements and so on – all aspects within the boundary of the project or that could affect company activity.

Banks and investors require stability to commit to long-term investments and this is particularly true of renewable energy schemes where returns are achieved over a number of years, e.g. 20-25 years for equity. Policy stability and 'grandfathering' will be a constant theme in policy discussions: will governments guarantee that policy

conditions existing at the time of a particular investment are 'carried over' in the event of any subsequent policy change.

ENERGY EFFICIENCY

While this Guide focuses on project finance of RE, energy efficiency (EE) is an important area with considerable potential for investment, although it has thus far lacked the scale and attractiveness of RE, particularly to the lending community[5]. Part of the reason may be that if financing for energy efficiency activity is usually channelled through general corporate finance and therefore does not 'show up' as a separate category. Specific EE entities or projects such as Energy Service Companies (ESCOs) face the challenge that revenues derived are not well understood as a traditional asset (although the EE technologies allowing savings may be). The structures to understand, share and mitigate risk are therefore more complex, and the opportunities may be seen as rather small scale.

Critically, the public policy that has driven growth in RE is generally for EE lacking in terms of correcting market failures to create large financeable opportunities. Although there are now new approaches being developed by the finance community, a considerably clearer policy framework is required to capture a wider set of options. There is strong interest in equity investment in firms with energy efficiency technologies or services, including emerging new 'digital' areas like smart grid management systems.

5. See, for example, UNEP Finance Initiative survey of public and private bankers on energy efficiency, March 2009, http://www.unepfi.org/fileadmin/documents/Energy_Efficiency.pdf.

COMPLETING A TRANSACTION

The process of completing a transaction generally follows a similar path for both equity or debt. All financial institutions will have a process of review and check against their own internal risk and return criteria. Depending on the precise nature of the organisation, there will be more or fewer steps in the process. The following are summarised steps undertaken by a bank:

- Opportunity arises, initial review and client discussions and interest confirmed.
- Signing of confidentiality agreements to permit exchange of relevant details, an initial review of risks vs. return and a check against internal risk appetite.
- Detailed transaction review including financial modelling of the project over its whole life; stress testing of high and low case risk scenarios and testing debt repayment ability.
- A full proposal is prepared for the internal credit committee which must approve bank transactions, this includes:
  - The nature of the company wishing to borrow, its management and experience, RE track record and financial strength,
  - The relationship between the bank and the borrower. Any other borrowings that the company may have with the bank,
  - The high level outline of the project, technology, lifespan, total capex (capital expenditure), required debt amount, subsidy support, contract review,
  - A detailed assessment of all the project risks and their mitigation,
  - The proposed debt profile and repayment schedule and series of stress tests (e.g. mechanical breakdown, lowering of subsidy, low electricity prices inflation etc),
  - The returns earned by bank for loan,
  - A detailed review of the project, the contracts and technology,
  - The term sheet setting out the proposed terms and conditions for the loan
  - The financial model.
- Approval will mean the bank can commit in a legally binding way to the outline of a transaction, and funds will be set aside to permit the bank to honour these obligations. Once approved, a submission is made to the client, and may include conditions required by the credit committee.
- The client enters into an agreement with the bank, which will prepare the loan documents and continue project due diligence. Due diligence will be extensive and will be tailored to the RE technology to be employed. For

example, wind transactions require analysis of an absolute minimum of 12 months site-specific wind data for direction and speed.
- Documentation is finalised reflecting any final negotiations between bank and client, or findings from due diligence.
- Financial close: documents are signed, lenders are awarded a first charge over the assets, equity is contributed by the investor and the debt funds are released.

BANK CREDIT COMMITTEES: KEY TO APPROVING FUNDS

Credit committees are composed of a range of senior management and include representatives from the lending business, and crucially the risk officers who manage the banks' overall risk exposure. The credit committee is therefore not the transaction team who specialise in that product type or sector. Given their risk management obligations, their comparative remoteness from the market and their likely lack of familiarity with RE, credit committees tend to be conservative in their views.

For international banks where credit committees are based in the home market with transactions occurring overseas, an added layer of complication is introduced. The committee is unlikely to be familiar with the business environment in that country, nor will it have the general background appreciation of the politics and current affairs. This can lead to a more conservative approach being taken to a transaction than would otherwise be achieved in a more familiar environment.

In presenting a new transaction, it is crucial to clearly state the entire deal from its rationale, revenue generation, and risk assessment and mitigation. Often when covering a new country or technology, a very detailed level of introduction to the market mechanics is required in order for the committee to properly engage on the transaction. RE can be a complex area for credit committees to engage given that most countries have a different support regime, as well as a different process and legal standing for items such as awarding grid connections, generation licences and securing offtake arrangements. Simplicity, clarity and consistency around the policy and support regime is very helpful.

IMPACT OF 2008-2009 FINANCIAL CRISIS

The financial crisis significantly constrained the ability of banks to lend to each other and to external borrowers. This followed the collapse of some major financial institutions mid-2008, and raised questions over the creditworthiness of other financial institutions, due to risks they might have on their books. For a period, lending was severely impacted (volume, cost, and duration) across many sectors in the economy, including RE, which caused many projects to be postponed until more benign market conditions returned. Although selected commercially strong RE projects are being backed by lenders under the right conditions, the market remains very unsettled and year on year investment figures remain down, notwithstanding observed bounce-back.

While stimulus packages focused on getting credit flowing again (with focus on renewable energy in certain countries), the impacts on banks and equity players will take some time to play out. There has been a redefinition, to an extent, of the role of public financing, as well as more fundamental issues in the operation of financial markets and institutions.

The subsequent economic crisis has also had a variety of impacts in the energy area – from reduced demand forecasts to lower commodity prices as demand for commodities has fallen with the slowing of economic activity, and commercial activities have been cancelled or delayed.

That said, RE has remained an attractive sector for banks and equity investors throughout this period, and deals have continued to be done, and new funds raised.

The financial crisis impacted debt and equity providers in the following way, albeit with variations between institutions:

DEBT

- Banks found it difficult to secure money, even where an individual bank's performance is not in question, this means "liquidity" - money available for lending - is reduced within all banks; many banks have been 'on-hold' waiting for market conditions and bank liquidity to improve.
- Capital became particularly hard fought between different internal business units, meaning the case for a RE investment has to be very

robust.

- A complex matrix of factors determined whether or not a transaction gets approved, these include: existing strong client relationships (and ancillary client business); returns offered by an individual transaction; risk inherent to the transaction; existing experience in that sector or activity.
- The cost of lending rose substantially, for example, project finance fees have been seen to double and margins treble.
- Prior to the financial crisis, banks would routinely underwrite and syndicate loans, this enabled transactions above £30m/£50m to be completed. Following the financial crisis, lenders were not prepared to underwrite and so deals were being done on a 'club basis' (see end).
- The club deals also posed the risk that at an advanced stage in financing negotiations, a 'final bank' is missing or pulls out. A replacement bank would then either have to accept the terms and conditions as negotiated, or could put the entire project at risk if they sought to renegotiate.
- Reduced tenors: banks became extremely reluctant to offer debt for more than a 6 or 7 year period (or tenor), compared to the 15 year loans that were available before the crisis. This means project developers would have to refinance the project, taking the risk of what financial conditions will be like at that point in the future.
- Some banks returned to home markets, particularly if government capital injections or stimulus provisions have conditions linked to nationally focused activity.
- Non-core clients or new players found accessing debt very difficult.

EQUITY

- Investors became reluctant to invest or make acquisitions, the perception being that they were being asked to pay too much for some opportunities. Some investors considering multiple opportunities may have been unable to complete the marginal transactions because access to all funding was reduced.
- Companies, such as project developers, were forced to sell assets or equity because they cannot access capital elsewhere to construct assets or service debt.
- The lack of debt available in the market due to problems in the banking sector meant difficulty for investors completing acquisitions where debt is required to supplement the available equity, or to enhance equity returns to an acceptable hurdle level.
- Some investors were being requested by investment committees to justify investments made at the height of the market (ie pre October 2008) – as

these are now perceived as risky for current market conditions and the given level of returns.
- Owing to the general stock market sell off and the depression of equity values, the market capitalisation of some listed RE companies fell below the value of the assets they owned.
- Some institutional investors or pension funds may have a cap set on the amount of RE, as a proportion of the allocation within wider infrastructure funds. In this case if the non-RE infrastructure parts have been contracted, then the RE may be constrained by the mandated 'cap'.
- Reduced new build activity in the US by tax equity owners due to their lowered tax bases against which to offset the Production Tax Credit incentives.

Many of these conditions will take some time to play out, notwithstanding the bounce-back by the mid-to latter part of 2009.

ACTIONS TO MINIMISE CRISIS IMPACT

Different approaches have been undertaken, both by financial institutions and government stimulus packages to improve access to RE funding; alongside policies, these tools may also be relevant to the broader question of scaling up investment in clean energy to tackle climate change or energy security over the longer term.

A central issue for financiers is the timeliness and accessibility of the government-led responses, and whether these impact positively on a project pipeline.

On the finance side, these have fallen into two main categories:
1. Reducing risk and therefore the cost of financing;
2. Alternative sources of funds, including direct provision of additional capital from Treasuries or public financing institutions, to overcome lack of credit.

1. Reducing individual project risk by applying structural solutions to financing, these include loan guarantees from government-owned institutions, and export credit agencies (ECAs). This works by helping to reduce the risk associated with the project to a more acceptable level and increase the likelihood of credit committee approval; or by improving the cost of borrowing by making it economically attractive for the developer or sponsor. This can augment risk reduction strategies used by commercial banks themselves, including reducing loan periods and other measures.

The provision, by ECAs, of both supplier and lender guarantees to offshore wind

for example, lower risk for owner and lender resulting in more attractive returns. Government guarantees to lending institutions also reduce the risk inherent in transactions and thereby widen the pool of participating lenders and lower debt pricing.

2. Public sources of finance: this has had a very important renewed role, particularly to ease conditions in parts of the banking sector. This includes direct provision of government grants; specialised government lending facilities to maintain infrastructure investment (which may or may not include RE); and considerably increased involvement of government-owned finance institutions, such as the European Investment Bank (EIB), and the multilateral financing institutions. The latter provide slightly lower cost debt, either co-lending directly into projects (up to 50% in the case of the EIB) or providing credit lines for banks to on-lend.

Alongside public financing decisions, there have been short term or structural changes to the fiscal RE incentive mechanisms to tackle specific impacts of the financial crisis. These have targeted improving the project economics (alternative: the improvement of project economics); or the structure of the incentives to attract new forms of finance, e.g. in the US, to overcome the lack of available tax equity.

BOOSTING PRIVATE FINANCE

Following the immediate aftermath of the financial crisis, there has been some focus on methods of bringing in alternative sources of commercial funds into the RE sector (and 'low carbon' more generally). Options include raising debt from the capital markets through project bonds, and greater involvement of other financial institutions such as pension funds.

The project bond market remains a potential means to raise debt, as discussed above, and to be of interest to investors bonds would have to be rated as investment grade. However, even prior to the financial crisis the requirements imposed for an investment grade renewable bond were comparatively onerous, given high perceived risks, in this relatively new sector, by rating agencies. This is because RE projects are often small in scale and owned by small companies or special purpose vehicles (SPVs), in addition they either have variable energy inputs (wind/wave) or are subject to complex or short term feedstock contracts as well as being exposed to offtake and regulatory risk.

More generally, pension funds and institutional investors, have been identified as a major potential source of new funds directly to the RE sector. They are already

active in the RE sector, outlined above. However, these funds will often require a sizeable investment, of perhaps a €250 million or greater equity investment, with debt taken on to support the investment (although it should be said that this is not a fixed amount and will change with market sentiment). There are not many well-diversified, low risk RE opportunities of this scale available at present: RE projects are commonly €50m - €500 million with only a few in the upper end.

Notwithstanding the financial crisis, and the interest in RE from institutional investors[6], for RE to access greater flows from pension funds and institutional investors, the market needs to continue to grow and mature so as to offer RE investment possibilities with the scale and risk profile built on a longer track record. Discussions have been opened up by governments, and within the financial sector, about new avenues for facilitating investments, even if not all of the RE sector will be positioned to benefit in the short term.

ADDITIONAL ISSUES FOR EMERGING MARKETS

RE projects in emerging markets, or developing countries, must address the typical due diligence and investment scrutiny, outlined above, but face additional complications that require careful mitigation.

Particular focus will be placed on:

The stability and maturity of the political system: this influences the ability for projects to reach a successful conclusion, as the greater the instability, the smaller the pool of investors and commercial lenders to fund projects. Mitigation can include political risk insurance provided by bodies such as the Multilateral Insurance Guarantee Agency (MIGA) insuring against contract default, currency inconvertibility, expropriation and war and strife.

Overall legal, regulatory, tax and business environment: if it is difficult to do any business on a legal and transparent basis then implementing an RE project for long term power generation will prove challenging. Investors will naturally favour countries which engage in standard business practices for example for board appointments and annual reporting. Availability of long term power offtake contracts, concessions and sound legal rights over project land improve the overall risk profile.

6. A survey by New Energy Finance and Deutsche Bank Climate Change Advisors, 'Institutional Investors Warm to Clean Energy Despite Turmoil', 6 April, 2009, found that a majority of institutional investors expect to be putting more capital into the clean energy sector by 2012, with particular interest in renewable energy

Emerging markets and developing countries with their smaller economies feature less mature stock markets and supporting regulation and therefore experience comparative liquidity restrictions. As mitigation, investments can be structured in a manner that recognises this, for example with strong government or sponsor guarantees confirming the on-going revenue stream.

Local currency: investments made in local currency can be subject to exchange rate fluctuations, devaluation or the vagaries of domestic monetary policy. Partnering with local financial institutions, potentially to structure dual currency loans, can provide the required mitigation to the lenders and project sponsors. Alternatively, projects can be structured with credit guarantees, risk guarantees and hedging products provided by development banks and ECAs.

Energy market and infrastructure: Lenders and investors need to be conscious of market differences, hence the need for different technologies, off grid solutions and smaller or discrete RE projects. Projects can be hampered by a shortage of credit worthy offtakers for the power generated by proposed RE projects. Also consideration needs to be made of the challenges posed by lacking infrastructure and the impact it can have on project construction and ongoing operation.

As with the situation in OECD markets, technologies perceived as marginal may be shelved during financial troubles. Working with a respected local party frequently improves project quality and accelerates delivery.

PUBLIC FINANCE IN EMERGING MARKETS

This can be a very effective means of enabling RE projects, particularly given the higher level of risk often associated with developing markets. Direct grants and the provision of commercial or soft loans where either a project faces a funding gap or a commercial lender is unwilling to shoulder the entire project risk, can assist project deliverability considerably. However grants or loans need to be available, structured and delivered in a commercial and timely manner consistent with the project development and the timelines of the other project investors and lenders to ensure the RE project does not founder. The acceptance of a common risk profile between all participants will help address concerns over onerous documentation.

SUMMARY

Financial institutions operate on a risk and return basis evaluating each potential investment opportunity on its merits. Project assessment, documentation and due diligence are conducted in a manner consistent with investments in other sectors.

The range of RE risk profiles can be well matched to the spectrum of financial institutions from banks, pension funds, private equity and VC. However, the RE sector requires clear policy environment to deliver the project economics to attract private debt and equity. Policy and regulation continue to be central to ensuring the long term stability of projects from a revenue and operation perspective. It is imperative that both regulation and policy be clear, of a long duration, and legally based in order to deliver growing volumes of private funds into the RE sector.

RE projects in emerging markets and developing countries face additional challenges presented by a number of factors including unstable political regimes, volatile local currencies or lacking infrastructure. Mitigation of these risks can be achieved through local partnering and application of public funding in the form or soft loans, grants and insurance programmes.

FURTHER USEFUL FINANCE TERMS

Underwriting and Syndication: A lead bank agrees to provide a large bank debt facility to a client for a particular project, but the loan will be larger than the bank itself can provide on its own for the long-term. The bank receives a fee from the client for providing, or underwriting, the whole facility at the outset and taking the risk that it can 'sell' pieces of the agreed loan to other lenders required ('syndication'), on terms and pricing already agreed with the client. The underwriting bank takes the risk that it has achieved the right balance of risk and return to attract enough other lenders into the transaction.

Club Deals: One impact of the financial crisis (see above) is that banks have not had the capacity to underwrite large loans. Instead of syndication, banks are clubbing together on equal terms to provide the debt facility through a 'club deal'. This is where each bank commits to the level of funding they can provide to a particular deal and enough banks pool together to meet the total cost of the project to acquire or build. Each bank is involved in the negotiations of the terms and pricing. This is a long and complex process and for a £350m ($560 million) project it could involve around 10 banks.

Special Purpose Vehicle (SPV): A discrete RE business created around a project, in a legal form, to permit lending and equity investments, disconnected from other obligations or activities of a company. For example, a utility forming a joint venture with a partner will use an SPV as a clean legal structure for the enterprise; from a bank perspective providing project finance into an SPV can ensure it has a uncontested rights over the assets, an equity investor will invest into an SPV often restricting its obligations to that SPV company and not linking it to the ownership of other activities of the investor.

Cost of Capital: The weighted average of a firm's costs of debt and equity, in turn linked to risk involved in the underlying project or company. From an investment perspective, to be worthwhile, the expected return that an investor receives for putting money at risk must be greater than the cost of capital.

Cost of Debt: LIBOR is the London Interbank Offered Rate, based on the interest rates at which banks borrow from each other in the UK; the EURIBOR is the interest rate used for European transactions; in the US this is roughly equivalent to the US Federal Funds Rate, and reflects the cost of debt, without any risk. When making a loan, a bank will add a margin to LIBOR to adjust for the risk of being repaid. This is typically expressed as LIBOR + 'x' bps where the additional 'x' 'basis

points' ('x' hundredths of one percent) is what the bank charges for the risk of the loan.

One of the impacts of the financial crisis was to raise the cost of borrowing considerably, making the cost of capital much higher. For example, an operational UK wind farm generating revenue under a long term power contract could have borrowed money at a rate of LIBOR + 110bps in the first half of 2008 (even less in 2007), expected to pay in the order of LIBOR + 350bps for the same loan by mid 2009. In addition, the associated borrowing fees (charged by banks for negotiating the loan, documentation etc.) have also increased significantly.

Debt to Equity: This ratio simply indicates the amount of debt from banks and the amount of equity from the various sources in a given project. Owners will generally want to introduce debt into a RE project to reduce the overall cost of funds and enhance their returns, given that debt is cheaper than equity as it takes lower risk position. To give an idea of the relative role of debt and equity: a level of 80% debt to 20% equity might have been fairly common pre-financial crisis. However, the cost of debt increased during the financial crisis, and 60 – 70% debt funding became more common. This lower level of debt is due to the higher cost of debt, following the financial crisis, meaning greater project revenue would have to be used for higher interest payments to banks.

Tax Equity: This is an alternative way to structure renewable energy support – essentially through a reduction in tax liability for a company as opposed to enhanced revenue stream as seen in many other subsidy systems. In the U.S. this has been an important source of financing for renewable energy projects over the past decade, particularly larger-scale wind and solar facilities, through the Federal Production Tax Credit and Investment Tax Credit. Tax equity investors are typically firms with sizeable tax liabilities (such as banks or other large corporations) which can use investments in renewable assets to offset future tax obligations. Following the financial crisis, the U.S. Federal government introduced a cash grant program to compensate for the lack of tax equity investors.