LOW CARBON FINANCE GROUP
Submission to Electricity Market Reform Consultation

The Low Carbon Finance Group ("LCFG") is a newly formed, and growing, informal group of senior renewable and conventional energy financiers from global equity investment funds, pension fund advisors, independent power companies and commercial and investment banks. We welcome the opportunity to comment on the Department of Energy and Climate Change's consultation on Electricity Market Reform (the "Consultation"). With experience over the last 15 years in investing in and advising on over £20 billion of global renewable energy investments, the LFCG is uniquely positioned to comment on the ability of DECC's proposals to attract capital to UK low carbon investments at a much more rapid pace.

We agree that the current electricity market structures are not delivering the necessary investment, and reform is necessary. In fact, we believe that DECC could be even more bold in some of its proposals.

Executive Summary

- There is growing global investor interest in low carbon investments, including global institutional investors that are considering many geographic markets, including the UK.

- The UK's low carbon investment requirements are unlikely to be met by UK investors alone. To attract global capital, the UK needs policies that create an investment climate that is attractive relative to its peer countries. Capital will flow to the most attractive opportunities in those markets with straightforward regulatory regimes, and with superior risk / return balances.

- The UK's current market / regulatory structure is one factor that makes it less attractive to financiers - lack of grid and the planning system are other key factors, as government is aware.

- The suite of policy proposals in the Consultation and the Treasury Carbon Floor Price Consultation provides the basis for an overall improvement that can attract more capital. However, modification and clarification will be needed to maximize capital flows to the UK.

- Key factors that would spur international financiers to allocate to the UK more low-cost, long-term capital to low carbon investment include:

    - Effective grandfathering to protect existing investments, specifically:
        - Preserving the economic expectations of financiers under the RO
        - Respecting and preserving existing contracts under the RO

    - Improved investment conditions:
        - Electricity price stability and predictability, including
            - Long-term revenue certainty and visibility
            - Bankable markets and structures
            - Inflation-linked revenues
        - Certainty that electricity can be sold on a level playing field for all market participants
        - Simplicity and transparency

    - DECC's preferred option - the Contracts for Differences (CFD) feed-in tariff – can be made to work. However, as outlined in the Consultation, at present it is not simple and risks falling short in key areas. To fully deliver for financiers it requires modifications, including:

- Increased pricing stability and predictability through:
  - Credible index design
  - Implementation to eliminate price unpredictability stemming from "basis risk", linked to the above
  - Inflation linked revenues

- Level playing field with incumbent utilities:
  - A firm purchase obligation from suppliers (*or* a central buyer) to assure that all generators that they can sell their output
  - Balancing market reform
  - Strong coordination with Ofgem's Liquidity Review

- Absent modification of the CFD in these areas, we prefer DECC's second choice, the Premium FIT, with consideration of a cap and floor on prices to avoid 'excess' remuneration and reduce costs to consumers. A firm purchase obligation and balancing market reform would also be necessary.

- The use of auctions to set pricing levels is not supported at this point in time. Auctions remove long-term visibility on prospective returns to investors, especially vanguard investors and new entrants from outside the UK, at the crucial phase of project formation and early development.

- There are many elements needed to attract capital, and all of them need to be in place, to ensure that the goals of the Consultation are delivered in practice, at least cost, and avoiding an unnecessary investment hiatus. We note that the cost of capital analysis underpinning the Consultation does not fully reflect the complexity of real-world financial analysis or decision-making. We would be happy to work with DECC to ensure greater understanding of these areas in more detail, and the important linkage with the policy development.

LCFG remains at the disposal of Government and DECC to provide further input and advice on the EMR process and linked areas, to ensure results are implemented in a manner most likely to attract the capital required.

CONTENTS

1. Low Carbon Finance Group

The Low Carbon Finance Group (LCFG) is a newly formed, and growing, informal group of renewable and conventional finance practitioners from equity investment funds, pension fund advisors, independent power companies and commercial and investment banks, from leading international and European institutions. LCFG financiers have invested in and advised on over £20 billion of global renewable energy investments over the last decade. Their experience covers many markets and support schemes. It also covers capital markets, bank lending and raising and investing global pension fund capital. This broad experience makes this group uniquely positioned to comment on the ability of DECC's proposals to attract capital to UK low carbon investments at a much more rapid pace.

LCFG professionals, from the institutions listed at the end of this submission, have contributed to this submission.

2. Approach to this submission

This submission focuses on assessing the Consultation proposals from both debt and equity financiers' perspectives. We evaluate the proposals against the need for banks and institutional investors to allocate more low cost, long-term capital to UK low carbon investments, whether from existing sector financiers or 'new entrant' institutional investors and independent power producers. To that end, we suggest modifications that we believe will attract more capital. Our comments focus on areas in the Consultation that are priorities from this perspective.

This investor perspective is critical. As DECC and others have observed, utilities, the traditional source of capital for the electricity sector, are capital constrained and cannot deliver the capital needed. Thus, new sources of capital and new entrants are required to meet the UK's investment objectives. Understanding the approach and needs of those new investors to regulation is critical.

This Consultation must also be viewed in light of current European and global economic and regulatory conditions. Financiers perceive increasing European regulatory risk for renewable energy and low carbon investments. Retroactive tariff changes in Spain, windfall profits taxes on Czech PV, French moratoria on new solar, Italian review of green certificate prices and the UK review of solar PV FITs are unsettling investors. The difficult UK, EU and international macroeconomic conditions, and consumer pressures, are leading some financiers to question whether low carbon investment is affordable, and whether governments will keep their promises.

Finally, there is an increasingly acute timing issue. The long lead times for committing capital to low carbon infrastructure projects intersect with the 2020 targets. To meet the targets, substantial capital must be mobilised over the next 3-5 years. This Consultation (and others such as the RO banding review) is causing some projects to suspend or slow down investment decisions. This could lead to an extended investment hiatus, which would require finding even more capital in a shorter period of time in the latter half of this decade.

3. Grandfathering and Transition

Effective grandfathering of existing investments under the RO, and a clear and supportive transition period, are critical to attracting new capital. In fact, they may be more critical than the ultimate shape of the market reforms. If the reasonable economic expectations of existing financiers are not fully grandfathered and protected, the UK will lose those pioneering investors and potentially damage their appetite for further investment. In addition, a bad experience of pioneering investors is likely to frighten off the more cautious, second and third wave investors from both inside and outside the UK.

If the transition rules are not clear, an investment hiatus will ensue until the new rules are set. In fact, we are already seeing an investment hiatus developing. Utilities are becoming reluctant to enter into new power sales agreements under the RO, and equity and debt financiers are uncertain about the long-term electricity price implications on RO projects emerging from the reforms proposed in the Consultation. For these reasons, we strongly encourage that the White Paper contain extensive details on grandfathering and transition to ensure that current and near-term projects happen, as necessarily much of the detail of market reform will still have to be worked out.

There are two key principles for effective grandfathering:

- Preserving economic expectations – focus on grandfathering the economics and not the system

- Respecting the existing contracts and financing agreements – the changes cannot be seen as triggering default clauses under contracts or altering the economic benefits

3.1 Preserving economics

Preserving investors' reasonably expected economics under the RO is critical, and more important than preserving the system itself.[1] This means preserving the expectations of financiers under the RO, specifically including:

- the RO buyout price

- the recycle benefit

- Climate Change Levy Exemption Certificates

We believe that this is best achieved by adoption of "Option B" in the Consultation – maintaining "guaranteed headroom" for RO projects. We do not support fixing the recycle benefit ("Option A") as it does not fully reflect both financier and power purchase agreement counterparty expectations. We note three specific issues:

1. Under Option B, the guaranteed headroom, which sets the supplier obligation, potentially needs to be adjusted both up and down, to take account of new projects that elect the new support scheme in lieu of the RO but also to reflect any projects within the RO which might, for any reason, cease generating credits under the RO.

2. RO projects benefit from LECs, the income from which is factored into equity and debt investments. It is critical to confirm that the LEC income stream will also be grandfathered.

3. In a meeting with DECC officials it was suggested that maintaining guaranteed headroom post 2027 may present liquidity and administrative problems as many existing projects will

[1] Investor expectations under existing NFFO projects, which at the end of their lives join the RO system also need to be grandfathered.

move out of the RO. We recognize this may be an issue, and switching from guaranteed headroom to a fixed price post 2027 would be acceptable, as existing projects are protected and new RO projects built in the transition period can take into account the post 2027 pricing.

3.2 Respecting existing contracts

A large number of existing RO (and NFFO) projects have been financed using long-term bank project finance. Most of those project financings rely on 12-15 year power purchase agreements (PPAs) between the projects and usually the "Big 6" utilities. Effective grandfathering requires that the PPAs remain in full force and effect, and the benefits that are expected to flow to the parties do not change. Any legal changes cannot, or cannot be seen to, terminate or void any existing PPA. We strongly recommend that there is language incorporated into the White Paper to ensure that no default clauses can be triggered citing terms such as 'Change of Law'.

Grandfathering must also consider the project financing agreements under which the projects operate, so as to not allow the lending banks to declare the loans to be in default in certain circumstances.[2] We emphasize the critical nature of this because a large amount of existing RO projects were financed by lenders prior to the credit crunch on terms that are no longer obtainable in the market. In other non-renewable energy sectors, some lenders are using technical defaults or requests for routine waivers as a way to reset lending terms to current market standards which invariably result in a loss of value to the generator.

We strongly suggest that Government retains advice from one or more of London's leading energy law firms on how wording in the White Paper, legislation and regulation can be drafted to avoid these defaults. If the legislation does not protect the existing PPA and project financing arrangements, a huge amount of effort will be expended protecting or re-structuring existing operating projects and limited effort or capital will be deployed in new investments.

We also suggest that in the White Paper DECC make explicit statements about its intent on grandfathering, specifically something along the lines of:

"DECC recognizes that regulatory stability is critical to financiers, and that preserving the legitimate economic expectations of financiers who have committed and continue to commit capital under the Renewables Obligation is critical. Our goal in grandfathering and transition is to fully protect those economic expectations. Further, it is our express intent that the changes proposed going forward are not intended to interfere with or abrogate any existing power sales, financing or other contract to which RO or NFFO projects are a part. We do not intend that the changes to the energy market proposed should be interpreted by parties to such contracts as a "change of law" that would entitle them to amend or terminate any such contracts, permit the charging of additional interest, fees or other charges or otherwise deprive the parties to those contracts of their legal or economic rights or expectations."

3.3 Transition

There is a real risk that the Consultation will lead to an investment hiatus as financiers sort out the long and short-term implications of the changes proposed. There is already anecdotal evidence emerging of an investment hiatus. Utilities appear to be becoming reluctant to enter

---

[2] Circumstances where loans could be declared in default typically include:

1. any change in law or regulation which would have a material impact on the expected economics of the investment;
2. any termination of any material contract on which the project financing is based, specifically including the termination of any power sales contract between a generator and utility;
3. any change in regulation or law that would lead to the loss of either RO accreditation or any material permit.

into new power sales agreements under the RO. Equity and debt financiers are uncertain about the long-term electricity price implications on RO projects emerging from the reforms under consideration. We encourage DECC to focus on providing detailed and clear transition guidance in the White Paper to avoid such a hiatus.

Specific transition concerns include:

- The long lead times for many projects, especially offshore wind, mean that a RO accreditation deadline of 2017 may exclude a number of offshore wind projects currently under development - an offshore wind farm in development electing to be in the RO will probably have to make that election by the end of 2013. This means that the alternative to the RO needs to be clearly in place by that date, or project deployment will slow down because projects will not be assured of reaching the 2017 accreditation date.

- Between 2013/14 and 2017, project sponsors can choose the RO or the new regime. Banks and equity financiers are likely to require sponsors to choose a regime as a condition of securing finance. At present, that would favour the RO, but as we note above, the Consultation is reducing appetite for PPAs. Uncertainty about which income stream will apply is likely to lead to a prolonged hiatus until the new scheme is fully determined by Government and understood by financiers.

We understand that DECC is considering allowing offshore projects, that are partially complete by 2017, to have later phases included in the RO. We support this, but note that it would also require extending the RO termination date past 2037 to allow a full 20 years of ROCs.

Another solution would be to grant RO status to any project that elects the RO and commences construction by the 2017 cut-off date.

3.4 Transition and timing to 2020

There is an increasingly acute timing issue arising with the need to secure large-scale capital in the next 2-5 years for investment to meet the EU Renewable Energy targets in 2020[3], in particular for offshore wind Round 3.

This highlights the importance of managing the transition to maintain momentum, and avoid unnecessary policy uncertainty, not only linked to EMR but also other relevant areas including the Ofgem review and liquidity review, the green investment bank, planning, grid availability and the like.

We believe that an exercise, mapping policy targets and the current regulatory reforms against both the timing and volume of investment needed over the next decade, would be helpful. There is an intersection of the volume of capital required, the times at which it must be committed, the detail of the regulatory environment required and the ability of investors to respond[4]. These all need to be evaluated and understood to deliver the capital needed in the relevant policy timeframe.

---

[3] Useful recent analysis is: 'Mountains or Molehills', Paradigm Change Capital Partners, In Association with Norton Rose, March 2011, available from: http://www.paradigmchangecp.com/reports_and_news.php.

[4] Pension fund investors took nearly 20 years to recognize "infrastructure" as a viable investment class. Today infrastructure receives only about 10-15% of the capital that flows to private equity and venture capital funds. Thus, the ability and timeliness of investors to deliver must be included in the policy equation, with a clear understanding of what will enable these types of investors to respond.

4. CFD, Premium FIT, Fixed FIT

The Consultation outlines three options to support new low carbon generation:

- Fixed Feed-In Tariffs (FFITs)
- Premium Feed-In Tariffs (PFITs) and
- Contract for Differences (CFDs)

DECC's preferred option is for CFDs, underpinned by the Redpoint modeling analysis (i) suggesting a faster deployment rate under the CFD and (ii) marginally lower costs of capital under the CFD. This conclusion, however, appears based on analysis of the cost of capital and needs of vertically integrated utilities and independent power producers, and does not focus on the investment return expectations of the pension funds and other institutional investors that DECC seeks to attract to the sector. We provide further detail on cost of capital issues in Section 6 below.

The CFD, as briefly outlined in the Consultation, does not appear to provide the regulatory signals and long-term certainty that investors seek. It requires clarification and modification to meet investor expectations and to make it more attractive than the current RO system.

We have analyzed all three RO replacement options against the general attributes that debt and equity financiers seek in order to invest. These attributes are critical to securing the long-term capital (up to 15-20 years) necessary to reduce costs to consumers. Broadly speaking, for the UK market to be attractive vis-à-vis other low carbon markets, financiers are seeking:

- Price stability and predictability, including
    - Long-term revenue certainty and visibility
    - Bankable markets and structures
    - Inflation-linked revenues

- A level playing field for all market participants, including
    - A power purchase obligation with a creditworthy counterparty
    - Fair, reasonable, and equal balancing charges for utility and non-utility generators

- Simplicity and transparency

There are additional measures of interest to both Government and financiers:

- Affordability (important to Government, consumers and financiers)
- "0-60" speed, a measure of how long it takes financiers to become comfortable with the new regime and to commit to investments (important to Government for delivering public policy goals)
- Consideration of potential unintended consequences

Long-term Revenue Certainty and Visibility: Both debt and equity financiers strongly favour regulatory support mechanisms that provide long-term electricity price stability and visibility. It is central to creating bankable projects that will attract the longest term and lowest price capital. The longer, and more stable and visible, prices are, the lower the cost of capital, and the more likely banks and pension funds will invest and commit increasing allocations of capital.

Bankability: This refers to the willingness of banks to lend to projects. It is determined not only by the 'overall package' of factors outlined in this response, but also familiarity. Both

debt and equity tend to favour policies and systems that they know and have been proven to deliver, not new and untried systems.

Inflation Linkage: Most of the pension and other institutional investors that the Government seeks to attract to the sector have long-term liabilities (pensions, annuities, insurance companies) that are linked to inflation. Therefore, they are increasingly seeking investments that are linked to inflation. Thus, a system that includes inflation linkage will attract more of this class of investors and will ensure higher allocations to the UK.

Purchase Obligation: As critical as price is a market for the power sold, price stability without an assured market or purchaser exposes independents (and their investors) to revenue risk there may be no buyer. If there is a possibility that a developer faces this uncertainty after a project's Capital Costs are fixed, it will be impossible to invest.

Level Playing Field: In the UK, the incumbent utilities currently have pricing advantages which, if eliminated, could attract more investment from new entrants.

Simplicity: This refers to lower barriers to entry for new investors in terms of ease of understanding of the regime and becoming comfortable with the asset class. FFITs and PFITs both have a track record in other markets, and are easier to explain to credit committees and pension fund trustees, who are the ultimate decision makers about the investment of funds.

Transparency: Whichever support system is chosen, it should have clearly defined policy goals and have a transparent mechanism for review and change. It must be seen as sustainable beyond the current Parliament. To retain confidence in the support mechanism, and for it to be an effective and continuing driver for investment, there has to be transparency regarding the rules under which it will operate. Any proposed changes must be consistent with the original objectives, where possible scheduled from the outset, and provide for suitable grandfathering. There should not be a repeat of what has happened with the ROC, i.e. continuous 'tweaking' every year.

Affordability: We understand and support DECC's concerns in wanting to ensure sufficient capital inflows without interested parties making returns that are considered too high. Unless the system is affordable across the medium to long term, there is a high risk of amendment or change, which undermines market stability. However, socialising the cost of any support mechanism through to the consumer is key for investor confidence that future Treasury budgetary constraints will not trigger retroactive action to reduce costs. The balance between adequate pricing, to provide appropriate investment signals, and avoiding excessive profit for developers and operators requires setting support prices based on extensive analysis of costs and returns with a wide range of industry participants.

0-60 Speed: '0-60mph' can be defined as the speed of getting comfortable with the new system in the marketplace, reducing the time period of a hiatus. This adds greater confidence for government in the timing of investment and ability to meet public policy goals. Obviously, this is increasingly important in the next few years as large amounts of capital must be deployed to hit the EU targets. This aspect will be facilitated by retaining the elements of the RO which are already working and supporting investor confidence.

Unintended Consequences: Using a CFD structure for all low carbon generation may have unintended consequences for the UK power sector. As part of the Reform process, we suggest an exercise to anticipate potential outcomes. This will be important for market stability.

The following table shows how, in our view, each of CFDs, PFITS and FFITs, as outlined in the Consultation paper, measure against the factors outlined above. We have also ranked the factors by importance to financiers. This table shows that CFDs, as proposed, fall short in a number of areas. We have, however, suggested CFD modifications (discussed in greater detail below) that would make CFDs more attractive to investors.

FACTOR	SCORING Fixed FIT	Premium FIT	CFD: as proposed	Factor importance to financiers	CFD FIX
Price stability and predictability					Minimize/eliminate index basis risk (e.g. Irish model). No auctions as they increase price and outcome uncertainties increasing cost of capital and reducing investor appetite.
Simplicity for new entrants					CFD has many variables, increasing perceived complexity; price stability and purchase obligation can cure.
Level playing field: Firm purchase obligation					Create mandatory purchase option by utilities or other creditworthy central buyer.
Level playing field: Reform of balancing market					Reform balancing market with fixed charge for all generation, or ban utilities from balancing market (Spain).
Price stability: Inflation linkage					Pension and insurance investors' desire for inflation linked assets. Analysis assumes linkage.
Bankability					Adopt other solutions, especially price stability, purchase obligation, no auctions and balancing reform.
0-60 Speed					Accelerate review; fix elements above.
Transparency					CFD parameters (indices, balancing costs, strike price, no auctions) must be visible and established quickly.
Affordability					CFD addresses this well. A Premium FIT, with consideration of a cap and floor price, could also achieve this result.

The level of dark green in each ball indicates the effectiveness of each regime against each factor. The fourth column shows the relative importance of the factors.

5. Factor Analysis and Solutions

This section analyses the factors that financiers focus on when making their investment decisions, and suggests changes that could be made to CFD and PFITs to make them more attractive to financiers and to ensure the UK is competitive with other low carbon markets. The focus is on the factors that impact two priority areas: a) price stability and b) a level playing field for all market participants.

5.1 Price stability and Predictability

The CFD, as proposed, does not appear to have optimum price stability as we outline and explain further below.

5.1.1 Index Risk

The risk that the 'average' or market price against which the strike price in the CFD is measured is not closely correlated to actual power prices achieved by low carbon generators in the market. This needs to be clear and predictable, and there is not enough detail in the proposal at present.

5.1.2 Basis Risk

This is the risk that the price low carbon generation is actually sold at is lower than the average price on which the strike price is based. This is not only about intermittent generation not getting the full strike price; discounts are being taken on other low carbon sources such as biomass, which is not intermittent. Note that in the current RO structure most renewables are 'price takers' and sell power at a discount to prevailing market price. This is due both to intermittency risk and the market power of the incumbent utilities. This means that risk is introduced into the revenue stream. Wind may sell at below market price, simply because it may be generated at the "wrong" time of the day.

Generators are unlikely to gain from any upside, i.e. earning above the average price. This is because of either intermittency - wind is a price taker and cannot actively control whether it can operate at peak price periods - and utilities, as the sole route to market, can extract price concessions from biomass and other less intermittent generation. Utilities have market power in the balancing market and, unless this is effectively managed or reformed, benefits are unlikely to flow back to generators at the expense of consumers.

CFD Solution

Careful selection of a long-term credible index to mitigate index risk and provide greater certainty. Consideration should be given to moving to a model where CFD payments are based on an actual market price and not an indexed average. We recommend that DECC evaluate the Irish REFIT scheme, which is a CFD. Under REFIT, low carbon generators are paid to receive the market price at the time of generation, and then receive an annual top-up payment or repay an overpayment price equal to:

> Total power generated during the year
>
> *times*
>
> the CFD strike price (inflation linked)
>
> *less*
>
> actual receipts received during the year from the power market

This provides strong revenue certainty, while not over-rewarding generators. It has attracted debt and equity investment. Generators can elect to enter into monthly payment contracts with utilities at the strike price (who then collect the top up payments) or they can trade in the market themselves.

5.1.3 Inflation linked revenues

There is no discussion in the Consultation about inflation linkage. We have assumed that, as with the RO, there will be linkage. Inflation linkage will be a critical factor in attracting pension funds to make long-term low carbon investments.

CFD/PFIT Solution

Link CFD strike price, FFIT or premium of PFIT to RPI.

5.1.4 Auction price uncertainty

The UK current market structure, and the relative immaturity of many renewable energy technologies, make auctions unworkable at this point in time. They increase pricing uncertainty for participants and discourage investment. There are many examples around the world of the relative failure of this price setting tool to produce operating assets (see below for more detail).

CFD/FIT solution

DECC should use the same process as it currently uses for setting RO bands: consultation with industry and periodic examination of costs, to set the FITS or CFD strike price. Because of the long lead times for building projects, especially offshore wind, these tariffs should be set for as long as possible, but flexible enough to address rapidly falling costs should they occur, as they have with solar PV.

5.2 Level playing field for all market participants; attract new entrants and capital

It is well known that utilities, the traditional source of capital for new generation projects, are capital constrained and thus new entrants are required. The countries that have high levels of non-utility investment in low carbon generation all have "level playing fields", where the incumbent utilities cannot use their market power to disadvantage smaller generators.

This will result in savings for consumers and has an important role to play in attracting more capital. Part of this would involve much closer coordination between DECC and Ofgem in the current electricity market liquidity review, or DECC taking over that review.

5.2.1 A power purchase obligation with a credible counterparty

Renewable energy projects have technology and resource risks (intermittency), which are significant and reduce the predictability of revenue streams. If there is no purchase obligation (or clear route to market), volume risks are introduced, increasing the unpredictability of revenue streams. Because of these risks, and the non-despatchable renewable energy, successful renewable schemes enjoy a purchase obligation, giving renewables "must run" status, protecting them from volume risks.

The CFD outlined in the Consultation does not have a purchase obligation, and the current UK market structure does not ensure a route to market for low carbon generation, especially for intermittent generation such as wind, wave and tidal. This lack of obligation, plus the pricing risks and lack of a level playing field, make the CFD potentially less attractive to investors. Further, the volume risk is likely to rise as intermittent generation increases as a proportion of UK generation, and it is unclear how utilities will approach large-scale wind PPAs in that scenario.[5] Failure to address this issue would make the UK a very unattractive place to invest relative to its peers.

[5] The RO does not obligate suppliers to purchase RE, as they can pay a buy-out price instead; however with the low volumes of RE to date, a 'non-PPA' situation has not been tested.

CFD/PFIT Solution
Either a purchase obligation from a central buyer or a utility, with the costs passed through to consumers. Renewable energy must be given highest despatch priority.

Purchase obligations and strike price setting should deal with the second point under the CFD.

5.2.2 Reform of the Balancing Market

The UK balancing and power sales market means that independent generators must sign PPAs with utilities to get power to market; this is creating higher costs in the UK relative to those costs in other EU markets, and acts as a disincentive for new entrants.

In the UK, approximately 10% of the wholesale price of power is taken from independent wind and biomass generators by utilities to compensate for balancing and intermittency risk. Under the RO, an estimated 10% of the value of the ROC, 10%-15% of the value of the recycle benefit and 10%-15% of the value of climate change levy exemption certificates are involved. This compares unfavourably with other markets[6]. Pension funds may choose to avoid this disadvantage by investing in other, more efficient, markets.

For reference: in the Spanish power market balancing costs are approximately 2% of the wholesale power price; in NordPool in Scandinavia, balancing costs are approximately 3% of wholesale power price. In Spain (with 20GW of wind capacity) utilities are prohibited from participating in the balancing market due to their oligopoly positions in that market; in NordPool (6.5GW of wind capacity) there are over 200 market participants, and over 70% of the power trades through the stock market.

CFD Solution

- A fixed balancing charge could be set for all intermittent generation, either as a whole or by technology, including utility-owned intermittent generation

  or

- Adopt the Spanish balancing market model[7].

5.2.3 Linkage with Ofgem Liquidity Review

The review of liquidity being undertaken by Ofgem needs to consider route to market and balancing risks *in conjunction with* rather than *in parallel to*, EMR.

5.3 Auctions

We do not support using auctions, at this time, to set the remuneration for low carbon projects for the following reasons:

1. Auctions deter development by introducing greater uncertainty. Permitting and capital cost risks are already high. Adding price uncertainty is likely to deter new developments and entrants, and will increase risks and costs to those players as development capital becomes more expensive. Follow through confidence is undermined, and there is the potential for 'dead-bid' costs, and uncertainty of investment volumes.

2. Banks are typically only involved once the offtake arrangements are known, and will not disburse funds until the offtake contract is in full force and effect.

---

[7] In Spain the market sets the balancing charge, but it applies to all market players.

3. Poor record of past auctions: the UK's experience with NFFO, and the current example of the 2010 offshore wind tender in the Netherlands, are examples of auction failures.

4. The auction process will deter some participants, potentially leading to situations where there are no bidders. There is a danger that speculative bidders will enter aggressively low bids to win these.

5. To secure build-out, bidders could be made to post substantial bid bonds, or face material penalties for non-construction. This would also actively discourage new entrants;

6. Bidders will factor the cost of failed bids into their bids for each project, increasing the price they are prepared to bid.

7. Pricing uncertainty is a negative for institutional investors. Pension plans would rather avoid wasting money on failed bids and invest in more efficient markets.

8. Lack of competitive tension. Even with a 'perfected' auction design, the limited number of players means cost reduction benefits are unlikely to be visible at this point in time. There is no surplus capacity to create competition, quite the opposite, the objective is to attract new capacity to fill the shortfall, making an auction process inappropriate for the purpose.

9. Auction design: there are several design factors that would have to be 'got right', building on international experience. As there is a strong likelihood of not getting this right first time round, this would add to delays and regime uncertainty.

Alternative to Auctions
As above we suggest using the same process as currently used for setting RO bands (see 5.1.4 for more detail).

5.4 Premium FIT/Fixed FIT

Pension funds in particular are nervous when it comes to new investment concepts. The CFD model has no track record and this will be a major detraction for pension funds (or even risks being a complete 'non-starter') in the context that they can access FIT and Premium FIT models elsewhere in Europe. This factor is important, as pension plans represent such a significant potential investment base that the UK market must access if it is to hit its investment goals.

5.4.1 Premium FIT
PFIT has less complex characteristics than the CFD. A PFIT leaves developers and financiers exposed to wholesale (WS) electricity prices. As such, it shares some of the risk characteristics of the RO. However, the model has a track record in Spain, it has the benefit of simplicity and investors have years of experience of hedging wholesale electricity prices to lock in an acceptable rate of return.

As this option has similarities to the current RO regime, it is likely to present least disruption during the transition.

P-FIT solutions
The liquidity/balancing market needs to be amended to ensure a level playing field for independents and the new entrants that this process is seeking to attract.

A transparent review process and/or cap and floor need to be considered to address consumer affordability (through the cap) and enhance bankability (through the floor).

5.4.2 Fixed FIT

If the primary intention of the EMR is to change the current regime to provide conditions to attract significant new pools of finance to the UK market, this is the most simple and most bankable option, notwithstanding greater attention on FIT design to minimise policy risk, following the Spanish PV tariff situation.

FFITs have a track record in other markets, and are significantly simpler for capital providers, not already active in the UK market, to understand.

FFIT Solutions

As with PFITs, transparent review provisions, as are used in other countries, can provide flexibility and secure affordability; clarity over review provisions will be essential. The level the FFIT is set at can be adjusted downwards for new projects in line with both wholesale power prices and falling costs, particularly in offshore wind as a more robust supply chain delivers economies of scale.

As this option takes RE out of the energy market per se, as penetration of RE in the power sector becomes substantially higher, this is a factor that may need to be managed, as the overall system will need to be managed for high quantities of variable power.

6. Cost of Capital

The Consultation acknowledges that creating a low carbon energy infrastructure requires unprecedented capital investment over the next decade.

DECC's preference for a CFD is based on analysis, which suggests that CFDs will achieve a lower cost of capital (although the table on page 49 of the Redpoint analysis suggests CFD cost of capital is the same as FFITs). That analysis is, in turn, based on hurdle rate assumptions in Appendix D.

Appendix D, however, only addresses the current cost of capital of Vertically Integrated Utilities (VIUs) and Independent Power Producers (IPPs). That analysis is also based on a classic academic application of the Capital Asset Pricing Model (CAPM). From a financier's perspective, however, this approach does not adequately achieve the following:

1. Address the investment expectations of the new investors that DECC is seeking to attract to the sector. This is critical because we know that VIUs and IPPs are capital constrained and, therefore, they are not likely to be the source of the capital the EMR process is targeting.

2. Reflect how banks, private equity and infrastructure funds, pension funds and other investors raise and allocate capital to investments.

3. Reflect real-world risk assessment of less mature technologies, at different parts of the project development cycle; and

4. Consider certain macroeconomic and investment trends that could increase costs of capital.

We encourage DECC to focus more on the cost of capital and return expectations of the new investors that it seeks to attract to the sector. We are very willing to continue to work with DECC on this matter.

6.1 Investor expectations and capital allocations

The institutional debt and equity financiers that DECC seek to attract have different investment objectives and capital allocation criteria than VIUs and IPPs. Fundamentally, VIUs and IPPs must invest in the power sector - it is their business. Financial investors, however, can and do invest all types of businesses, and have no obligation to invest in any particular business.

VIUs and IPPs grow shareholder value by building and operating a relatively small number of power generation assets, which they hold over the long term, producing capital appreciation and a dividend stream for their shareholders. A large, well organized management team helps each company mitigate risk.

In contrast, the spectrum of financial investors is much broader, with a wider set of investment objectives and strategies. Their key risk mitigation tool is diversification. Institutional investors typically use asset allocation models that are designed to (i) deliver returns commensurate with their objectives and (ii) to protect their capital from material loss in any one business, geography, industry or asset class (e.g. debt or equity). For example, pension funds typically hold both debt (fixed income - designed to produce cash flow) and equities (designed to produce capital appreciation or both capital appreciation and dividends), while a bank or bond issuer will seek low risk returns, backed by defined security or labeled with a credible rating.

Institutional investor interest in the renewable energy sector is relatively new. Over the past 10-15 years, many asset allocation models have evolved to include "infrastructure" as a distinct asset class, offering inflation-linked, "real" assets that should have a low correlation with traditional listed (=stock market) equities. Renewable power projects often possess the attributes sought in this asset class. Renewables, however, must compete for investor attention alongside "traditional" infrastructure such as airports, ports, roads, pipelines, transmission networks, fossil fired power generation, all of which are well understood by those relatively small number of institutional investors (compared to buyout funds), which have made infrastructure investments.

Many institutional investors have started to add renewable power to their infrastructure portfolios. They are attracted by (i) growth potential, (ii) renewable projects returns not being closely correlated to other infrastructure assets and GDP, in general, and (iii) the relative simplicity of renewable power generation. However, in deciding whether or not to invest, they are benchmarking renewable returns against other infrastructure asset returns, which, in many cases, have been, or promise to be, higher. We are not aware of any institutional investors who use analysis similar to that used by Redpoint to quantify all risks and apply an "investment beta" risk premium to their prospective investments renewables. Rather, they will invest if the returns are consistent with returns from other infrastructure assets.

In this context, funding for renewable power generation is at a critical juncture. If institutional investors can be persuaded that investing in renewables has attractive risk-adjusted returns relative to traditional infrastructure, then the sector should attract the significant volume of capital needed to achieve policy targets. However, if investors perceive that either the returns from renewables are poor (for example because power prices are low), or that the risks are high (for example because government may apply retrospective changes to tariffs or because there is no guarantee that power generated can actually be sold), then investors will not commit capital. Even worse, those "pioneer" investors who backed the sector in the early days are likely to stay away from the sector for a decade or more, and are likely to share their "war stories" with their peers, i.e. with other institutional investors.

Viewed from this perspective, EMR provides government with a major opportunity to attract these investors and to establish a framework through which large volumes of capital can flow into the renewables sector over the next decade and beyond.

6.2 Cost of capital, technology maturity and project cycles

Notwithstanding our comments (above) about how investment decisions are taken in practice, we do not agree with Redpoint's analysis of equity risk premia. While Redpoint's comments on the required hurdle rates for corporate investors considering investments in "mature" technologies (such as onshore wind) are in line with our experience, we believe that the risk premium that investors require , particularly offshore wind, have been significantly underestimated.

This is reinforced as, for the purposes of the modelling exercise, Redpoint assumes a cost of capital held constant across the lifetime of a project, whereas, in practice, an investor's required hurdle rate will be actually reduce through the major project phases – development, construction and long-term operation. Further, over time, today's "emerging technologies" can become "established" and then "mature", provided they are built and managed by entities able to manage engineering and technical risks.

We also question Redpoint's statements on the relative risk premia of FITs compared to CFDs. FITS are well established elsewhere in Europe. Our experience indicates that FITs can (i) significantly reduce equity hurdle rates and (ii) increase gearing levels, reducing the weighted average cost of capital compared to unsupported schemes (receiving brown power prices). [8] In contrast, CFD structures, which, at the very least, reduce the predictability of cash flows, are largely untested with institutional investors. As a result, we would expect CFDs, as outlined in the Consultation, to lead institutional investors to seek higher returns. Furthermore, for CFDs, Annex 3 to this submission shows that, if banks perceive that the reference price and achieved price are mismatched, the whole revenue stream for a project may be considered as variable. This would (i) reduce project gearing and (ii) require higher interest rate margins, increasing the cost of debt. Thus, CFDs could result in both higher debt and equity costs, meaning either capital will not flow, or consumers will face higher prices.

These points are particularly important in the context of the long-term structure of the renewables sector – we are particularly cognisant of the potential for institutional investors to purchase a significant volume of renewables assets once they have been successfully built and commissioned by industrial companies. We would be happy to comment further on this thinking, if appropriate.

6.3 Macroeconomic and investment trends that could lead to higher costs of capital

There are several factors that point to rising costs of capital for all sectors, which could affect investor return expectations. This means that, without regular consultation with financiers, price setting may not reflect these macro-trends; and ongoing review mechanisms need to take these into account. These include:

- *Rising interest rates*. Interest rates are at an all time low. There is pressure on central banks to raise interest rates to fight inflation. The cost of debt is likely to increase.

- *Basel III*. Basel III imposes greater capital reserve requirements on banks and insurance companies, who make long-term loans (which may also be extended to pension funds). There is a strong possibility that these reserve requirements will add material costs to long-term project finance, which is very illiquid.

- *Pension deficits*. Broadly speaking, most UK, EU and global pension funds are "underfunded" – meaning that the present value of their pension liabilities exceeds the present value of their assets. This can be addressed by (i) increasing employer contributions, (ii) increasing employee contributions and (iii) investing at higher returning assets, or (iv) looking for greater certainty of cash flow to match their liabilities. Seeking

[8] An analysis by an LFCG member of 40 European power projects showed no material difference in lending margins above LIBOR or EURIBOR between FIT projects and green certificate projects (including the RO).

higher returns reduces employer and employee burdens. This is why pension funds are increasingly looking at unlisted private equity investments. In this context, many pension funds are applying higher return criteria to their infrastructure investments.

- *Changing utility risk profile*. The risk profile of UK and European utilities is changing. Primarily, they are being asked to take on large infrastructure investments in a deregulated market. As they are short of capital, they are selling off regulated assets, such as transmission lines and distribution networks, and increasing their exposure to unregulated assets, which increases risk and will increase their cost of capital.

- *Solvency II*. The EU is imposing new rules on banks, insurance companies and, potentially, pension funds to measure their solvency. This potentially increases the reserves that they must hold in respect of long-term investments, and could increase their costs, and, hence, the returns they seek on investment.

We urge DECC to consult more deeply to better understand the investment decision-making and capital allocation methodologies of the investors it seeks to attract, with reference to how this impacts power sector financing decisions, and to understand the broader investment context beyond the electricity sector.

SUPPORT

The following institutions have contributed, in part or in whole, to this submission, although it does not necessarily reflect the views of any single institution or individual.

Augusta & Co
BNP Paribas
Element Power
Falck Renewables Plc
HgCapital
Hudson Clean Energy Partners
Impax Asset Management
Lloyds Bank Group
Mainstream Renewable Power
National Australia Bank (Clydesdale Bank, Yorkshire Bank)
NIBC Bank N.V.
Paradigm Change Capital Partners LLP
Rothschild
Russell Investments
The Bank of Tokyo-Mitsubishi UFJ, Ltd
UniCredit Bank A.G.
Virgin Green Fund

* This submission will be circulated further within the financial community following the formal EMR submission deadline.

IIGCC

Institutional Investors Group on Climate Change

Electricity Market Reform Project
Department of Energy & Climate Change
4th Floor Area E
3 Whitehall Place
London
SW1A 2AW

9th March 2011

The Institutional Investors Group on Climate Change (IIGCC) supports this submission by the Low Carbon Finance Group (LCFG) to the Electricity Market Reform Consultation. LCFG's submission has been prepared by senior specialists in energy finance, many of whom represent funds and institutional investors that are members of IIGCC.

A huge amount of investment in renewable energy and other low carbon assets is required over the coming decades if climate goals are to be achieved. The largest share of the necessary capital will have to come from private sources, particularly from institutional investors who are increasingly exploring opportunities for investing in low carbon assets, including renewable energy and other low-carbon technologies.

Institutional investors can only make these low-carbon investments where these offer risk-adjusted returns that are competitive with other investment opportunities globally. National policies and regulatory regimes play a critical role in attracting renewable energy investments. Where policies are perceived not to offer transparency and long-term viability and if they are not seen as credible, private capital will not be mobilized. Specifically, key factors that will help to attract institutional investors to invest include effective grandfathering of existing investments, a clear supportive transition rules and long-term revenue certainty.

The IIGCC is the leading network of institutional investors focused on climate change. The group currently has 72 investors, representing assets of around €6.5trillion, including many of the largest pension funds in Europe, and therefore millions of public sector pension fund beneficiaries.

As IIGCC works closely with the LCFG, we urge the UK Government to consider this submission and to include national as well as international institutional investor representatives in a constructive dialogue on the issues covered by it.

Yours sincerely.

Institutional Investors Group on Climate Change
c/o The Climate Group, Second Floor Riverside Building, County Hall, Belvedere Road, London SE1 7PB
Tel +44 (0) 207 960 2887 Email [illegible] Web www.IIGCC.org

IIGCC

Institutional Investors Group on Climate Change

On behalf of the IIGCC.

[redacted]

IIGCC Membership, March 2011

Amundi
APG Investments
ATP Fund
Aviva Investors
Baptist Union of Great Britain
BBC Pension Trust
Bedfordshire Pension Fund
BlackRock
BMS World Mission
BNP Paribas Investment Partners
BT Pension Scheme
CBRE Investors
CCLA
Central Finance Board of the Methodist Church
Church of Sweden
Climate Change Capital
Co-operative Asset Management
Corporation of London Pension Fund
Earth Capital Partners
Environment Agency Pension Fund
Environmental Technologies Fund
Ethos Foundation
F&C Management Ltd
First Swedish National Pension Fund
Fourth Swedish National Pension Fund
Generation Investment Management LLP
Global Energy Efficiency and Renewable Energy Fu
Greater Manchester Pens on Fund
Grosvenor Investment Limited
Henderson Global Investors
Hermes
Hg Capital
HSBC Investments
Hudson Clean Energy
Impax Asset Management
Insight Investment
Invesco Capital
Joseph Rowntree Charitable Trust
Kent County Council Pension Fund
Kleinwort Benson Investors
London Borough of Hounslow Pension Fund
London Borough of Islington Pension Fund
London Borough of Newham Pens on Fund
London Pensions Fund Authority
Merseyside Pension Fund
Nordea Investment Funds
Northern Trust
Osmosis Investment Management
PGGM Investments
PKA
Platina Partners
PRUPIM
Ratipen Investments
Robeco
Roman Catholic Diocese of Plymouth
Roman Catholic Diocese of Portsmouth
Roman Catholic Diocese of Salford
Sampension
Samsin & Partners LLP
Schroders
Scottish Widows Investment Partnership
Second Swedish National Pension Fund
South Yorkshire Pensions Authority
The Church Commissioners for England
The Church in Wales
The Church of England Pensions Board
The United Reformed Church
Third Swedish National Pension Fund
Universities Superannuation Scheme (USS)
West Midlands Pension Fund
West Yorkshire Pens on Fund
William Leech Charitable Trust

cc: Low Carbon Finance Group

Annex 1

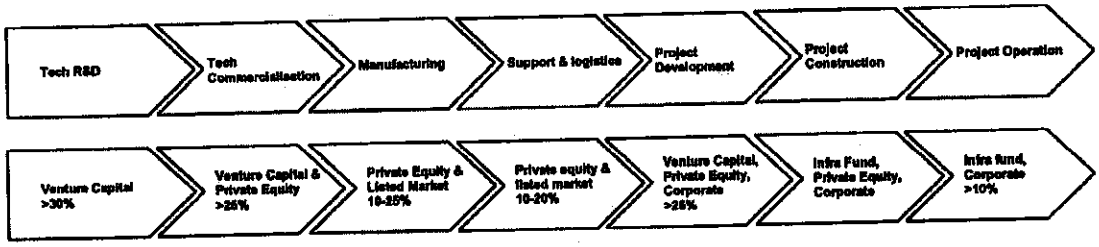
Overview of Finance Sector

In this section, we provide a short overview of current finance sector actors in the UK market and the role they play in capital provision to renewable energy, focusing on banks, private equity and institutional investors; although it is recognised there are a number of other sources of finances such as independent developers, manufacturers, EPC providers and utilities. More detailed and complete information is available in all areas covered.

Attracting new capital to the UK power sector is an important goal of the EMR. Delivering the UK low carbon infrastructure will require accessing a wide variety of investors and institutions, each of which have varying risk appetites and return requirements. Understanding what risks and returns each of these investors take, the returns they desire, and how they allocate capital is critical.

Equity investment in the value chain

The following chart shows the investment value chain, with capital sources and broad expected returns.



This Annex focuses primarily on the project development, project construction and project operation phase at the right hand end of this diagram, and the financiers and the needs of those financiers to provide debt and equity to projects.

To deliver the UK's required low carbon investment requires each investor in this value chain to have the potential to earn the required return, for the risk they are taking. Any changes in returns earlier in the chain, whether up or down, will be reflected the final costs of projects.

Barriers to investment

Clearly capital has not flowed to renewable energy or other low carbon investments at the rate at which the Government desires. There are several reasons for this, of which the Consultation seeks to address some. This section seeks to identify briefly some of the reasons why:

1. Capital is mobile and has many options – institutional investors have many investment options. Generally, within diversification requirements, capital will flow to the best returning investments. Investors do not have to invest in low carbon, nor in UK low carbon. To date, low carbon investments have not provided the necessary risk adjusted returns.

2. Little or poor track record – investors seek to invest where it is proven that they can make money. Low carbon investment suffers from being young and many investors, who rushed into the sector in 2005-2006, have seen investments decline in value, particularly in listed low carbon shares.

3. Regulatory risk – many investors do not like investing in subsidized industries, or industries dependent on regulation, to assure returns. The UK history of regulatory changes and recent developments in Europe (especially in PV) cause concern.
4. Affordability – this is related to regulatory risk. In the current economic climate, is it affordable and could governments change their minds (as happened in Spain).

5. Efficiency – many investors do not understand the technology and question its efficiency or reliability, especially in the case of offshore wind.

6. Public markets – the public debt and equity markets have had limited success in funding projects. On the equity side, markets generally reward growth. The nature of renewable infrastructure developers is that they are capital intensive, and the market does not like low margin companies with large capital requirements. The bond market has demonstrated a preference for corporates with a significant regulated asset base, such as electric, gas and water utilities. Single project financing in the bond markets remains scarce (although there was success at times in the PFI market[9]). Generally speaking, bank project finance loans have offered better economic and contractual terms, and greater leverage, than project bonds.

7. Further share issues often come at large discounts, which is why utilities avoid rights issues to fund capital expenditure.

8. Pension inexperience. – pension funds are seen as natural investors, but they have little direct experience in the renewable energy sector, and do not like construction risks. They will need further experience and to improve their teams.

9. New financial regulation – Regulatory reforms following the financial crisis, particularly Basel III and Solvency II (raised in the Cost of Capital section in the Submission) are creating issues for banks and insurance companies, and potentially pension funds. The requirements of these new regulations could make long-term lending, such as project finance, more expensive and less attractive to financiers.

Investors and Investment profiles

Broadly speaking, there are:

Four types of investors	Two types of investment	Two investment profiles
1. Pension funds & insurance companies 2. Sovereign wealth funds 3. Listed collective investment schemes 4. Banks 1-3 are usually known as Institutional Investors	1. Debt (Fixed Income) 2. Equity	1. Liquid; readily saleable on an exchange or other daily market 2. Illiquid; not readily saleable

And there are four investment profiles

	Public/Liquid	Private/ Illiquid
Equity	• What: Listed shares, listed Collective Investment Schemes • Return potential: unlimited gain or loss potential • Ranking: repaid after debt • Liquidity: immediate markets to buy and sell	• What: Real estate, Private Equity, Venture Capital, Infrastructure Funds, unlisted shares, called "alternative investments" • Return potential: unlimited gain or loss potential • Ranking: repaid after debt

[9] Billions of pounds worth of PFI bonds were raised from 1998 to 2006, with guarantees from 'monoline' insurance companies. This illustrates that, under the right conditions (in this case involving insurance company guarantors), bond markets are accessible.

	• Historic returns: ca 8% • Current returns: ca 6%	• Liquidity: no immediate markets; capital may be tied up for years • Historic returns: ca 12% for PE • Current returns: ca 12-15%
Debt (fixed income)	• What: Government and Corporate Bonds (usually rated) • Return Potential: Limited to agreed interest rate; loss risk related to quality of borrower • Ranking: Repaid before equity • Liquidity: Immediate markets to buy and sell • Historic returns: 5% Govt, 7% Corporate • Current returns: 3.5% Govt, 5% Corporate	• What: Bank loans, project finance loans, private bonds (not rated) institutional loans • Return Potential: Limited to agreed interest rate; loss risk related to quality of borrower, may include share of equity upside via options • Ranking: Repaid before equity • Liquidity: no immediate markets, usually asset backed • Historic returns: 6-10% • Current returns: 6-12%

Large power generation and transmission projects are financed with both debt and equity. Historically, most of the debt and equity capital has been provided by utilities, with their capital coming from the public liquid market, through share and bond sales or from a government owner (e.g., EdF, Dong, Statkraft).

In the 1980s and 1990s, non-utility participants (independent power producers and renewable energy companies) pioneered "project finance" for power projects. Most project finance debt and equity comes from the private illiquid markets. The debt side is predominantly bank debt, although there have been US insurance companies that have provided debt.

Bonds have not to date played a material role in the renewable energy project finance market. There is range of possible bond solutions, however one of the key obstacles to attracting large pools of capital has been achieving the appropriate rating. For bonds backed by pools of project finance loans for instance, the requirements imposed by rating agencies to secure "investment grade" status – which are of most interest to pension fund investors – are more severe than those of internal bank ratings. This creates a cost gap that can only be bridged under occasional circumstances.

In the last decade utilities have increasingly used project finance, especially in the renewable area, as their balance sheets become more constrained.

Types of Investors

Of the types of institutional investors, the ones most suited to long-term low carbon investments are, in order, certain pension funds and insurance companies, banks, increasingly sovereign wealth funds, large university endowments with a targeted level of scholarships each year and, lastly, listed collective investment schemes (mutual funds). These are currently only involved to an extremely limited degree.

Pension Funds and Insurance Companies.

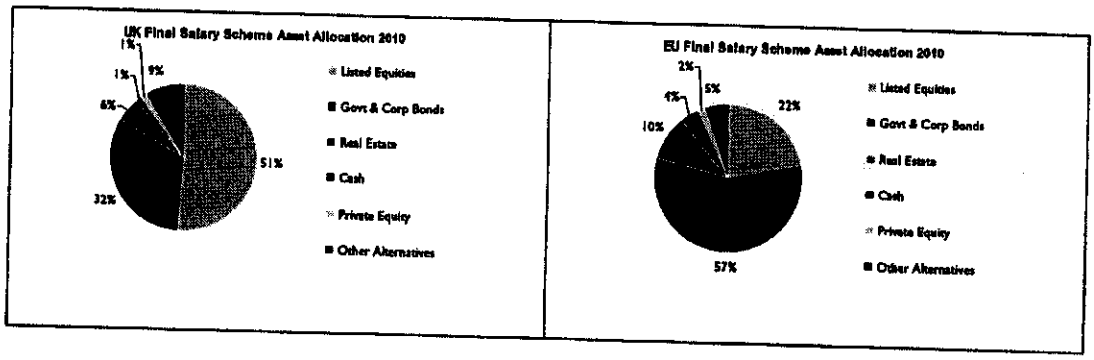
Pension funds come in two types - Defined Benefit (DB) (or final salary schemes) with approximately $1 trillion in assets in the UK, and Defined Contribution (DC) schemes. DB schemes are semi-permanent pools of capital and have the ability to make long-term private illiquid investments. DC schemes are less permanent pools of capital and tend to make shorter term public liquid investments. The purpose of insurance companies (IC) and DB schemes is to invest the premiums and contributions to pay life insurance and pension obligations, as promised. DB scheme obligations are usually inflation linked. DBs and ICs have three main investment objectives:

1. Diversification - spread investments among many companies and "asset classes" to avoid impairing the ability to pay pensions or insurance claims, due to investment losses in any single investment or industry.

2. Liquidity and Yield - investments need to earn income or be readily saleable to pay pensions and insurance claims. Liquidity requirements drive DBs and ICs to allocate the vast majority of their capital to listed securities and government and corporate bonds.

3. Prudence - pension funds are not risk takers. They are rarely at the vanguard of new investment areas. It took 25 years for UK DBs to increase private equity allocations from nil to today's 1.3% average. It took close to 20 years for pension plans to consider index-linked gilts as a significant asset class to match liabilities.

The following charts show the average current asset allocations of UK and European DB schemes. What little pension capital that has been invested in renewable energy projects is predominantly through unlisted funds in the "alternative" category. In the broader infrastructure area, DBs have exposure through listed utility shares and bonds, and a few have begun to invest in unlisted PFI and infrastructure debt, most often as part of their real estate allocations. [10]



A typical UK DB scheme needs to earn about 7.5% per annum on all of the assets to meet its obligations. If it is "underfunded", it will need to earn more.[11]

The following table shows the returns funded DB plans would need to make from a diversified portfolio, using historical returns for listed equities and real estate (which are higher than current expectations) current expectations on bonds. The swing is "alternative investments", which are usually unlisted equity investments in private equity, infrastructure, venture capital and hedge funds. Some pension funds may also make alternative direct investments in unlisted assets and companies, but usually alongside a private fund manager with whom they have invested at the fund level. Some DB's make private debt investments as well (such as in distressed debt funds), but generally their debt or fixed income exposure is through the liquid public markets.

The latter are where most of the current activity relating to EMR is occurring in private equity, PE, and infrastructure; the tables, below, illustrate the higher returns expected for the risk that is perceived in those areas, relative to the other categories.

UK Final Salary	Portfolio Allocation	Expected Return
Listed Equity	51%	8.0%
Govt & Corp Bonds	32%	5.0%
Real Estate	6%	9.0%
Cash	1%	2.0%
Alternatives	10%	13.0%
Weighted Avg		7.5%

EU Final Salary	Portfolio Allocation	Expected Return
Listed Equity	22%	8.0%
Govt & Corp Bonds	57%	5.0%
Real Estate	10%	9.0%
Cash	4%	2.0%
Alternatives	7%	27.0%
Weighted Avg		7.5%

[10] Source: UBS, Mercers Consulting, OECD

[11] A pension is "underfunded" if the net present value of its assets is less than the net present value of its future pension obligations. Most DB schemes are currently underfunded.

Thus, in the current environment, pension funds are seeking superior returning investments.

There has been discussion of green bonds. As noted above, most DB alternative investments are in unlisted equity investments. Unlisted debt investments are far less common, with DBs preferring to hold tradable debt. Thus, pension funds and ICs may be interested in green bonds or project bonds if (i) they are rated investment grade (difficult), (ii) are freely tradable and liquid and (iii) have interest rates superior to other government and corporate bonds relative to risk. However, they are not likely to increase their debt allocations to buy more; rather they will simply invest in less other government or corporate debt.

What do pension funds want?

1. Very long-term regulatory stability – specifically a stated plan for support, that is not exposed to reduction – any possible reduction will be treated as a certain reduction when pricing an investment
2. Price stability
3. Minimal exposure to construction risk
4. Inflation linkage, although this may be limited to say, 5% in line with their liabilities
5. Exit strategy, or route to market,
6. Level playing field – specifically not at a disadvantage to investing via utilities

Banks

Banks provide debt. They lend capital at a margin over their own borrowing costs (LIBOR), with the amount of the margin reflecting the risk and duration of the loan. Banks, generally, are not equity providers. Generally, outside of infrastructure projects, banks are not long-term lenders. They generally favour loans of 3-7 year terms. In the power and renewable sector, banks have been sources of long-term capital, lending to projects during construction and up to 15-17 years of operation. There are about 25 European and global banks that are currently active in lending to renewable energy projects.

Like any other investor, banks seek diversity and balance in their loan portfolios, so they will finance projects in many countries and different technologies.

Banks face four main issues in increasing their lending to renewables:

1. Diversification. There is a limit to how much banks will lend to any given sector. In the renewables area, with offshore wind still in its nascent stages, there will be absolute limits as to what banks will do.

2. Regulation/Shorter loans. Banks are not natural long-term lenders, preferring to lend for 3-7 years. New bank capital requirements, under Basel III rules, will increase the reserve requirements for long-term loans, which may make long-term capital more expensive.

3. Competition for capital. Banks have many lending opportunities such as mortgages, corporate loans, other infrastructure assets (water, pipelines, PFI), and, today, they are capital constrained. Renewable lending must compete with other opportunities.

4. Syndication Market. Prior to the credit crunch, banks would "underwrite" large loans with the expectation of selling or "syndicating" them to other banks. The banks would, in turn, "recycle" the syndication payments into new loans. With the credit crunch, the syndication market is much reduced, and banks have to hold loans for longer and have less capital to recycle.

Banks will play a major role in financing low carbon investment through two routes: (i) lending to utilities and investors on a corporate basis, and (ii) lending to individual projects or

portfolios of projects on a limited recourse "project finance" basis. In project financings, there is no corporate balance sheet backing the loans. The sole source of repayment is the project itself. Therefore, the long-term technical and economic robustness of the project is critical.

A highly visible income stream is essential. If the revenue streams are not fully certain, banks will lend based on the most conservative revenue stream, not the highest or average, based on the projections of a respected market consultant. Though it appears complicated, for decades, bank project finance has consistently delivered the lowest average cost of long-term loans for projects.

Generally, project financing allows higher gearing levels than corporate debt. Project finance debt is rarely rated by the major agencies as, to date, bond finance is not typically used. Some operational projects with limited volatility are "rated" investment grade through the banks' internal rating models, but those in construction, particularly in less mature technologies are less likely to be rated "investment grade". Project finance debt is relatively illiquid and is typically traded only between banks. Therefore, pension funds and insurance companies rarely participate in project finance. Were investment grade treatment available, there could be an increase in liquidity. The more certain the revenue streams, generally the higher the leverage (and the lower the average cost of capital). Feed-in tariffs have delivered the highest leverage, for example

Country	Support System	Gearing
UK onshore wind	RO (Green Certificate)	75-80%
UK offshore wind	RO (Green Certificate)	60-70%
Ireland onshore wind	Fixed CFD FIT (not same as EMR)	80-85%
Spain onshore wind	Premium FIT with cap and floor	80-85%
Spain solar PV	FIT	80-80%
France onshore wind	FIT	80-85%
Sweden onshore wind	RO (Green Certificate)	55-75%
Italian solar PV	Premium FIT	80%-85%
Germany onshore wind	FIT	80-85%
Germany offshore wind	FIT	65-75%

It is very important for banks that a long-term supportive regulatory regime is perceived as sacrosanct, and not open to frequent or retrospective changes. It is therefore extremely important that the changes to the Renewable Obligation are understood to be of limited risk to existing projects, with projected revenues expected to remain comparable to those originally determined, within the levels of volatility anticipated. It must be remembered that, for most banks, their involvement in the UK renewable sector is a small part of their overall business, and such projects must compete for capital with other countries, sectors and banking products. Any loss of confidence in the stability of the regulatory regime is likely to limit lending appetite.

ANNEX 2

Types of Investment by Stage of Technology and Project Development

Low carbon investments fall into four broad categories:

1. New and innovative technologies, such as wave and tidal power and advanced biofuels. These investments involve substantial technological, business and market risks, and investors in them accordingly seek high returns. These investments rarely support bank debt.

2. Expansion and scale-up of proven technologies and supporting services. These investments involve lower technology risk, but need long-term capital for growth to reach economies of scale. These investments can generally attract some bank debt. Investors in them seek medium level returns.

3. Infrastructure investments; such as onshore and offshore wind farms and transmission lines. These investments have low technical risks, but have high capital costs relative to conventional energy. Investors in these projects are long-term, and banks will lend to such projects. Returns are relatively lower, as the risks are less. Within the infrastructure space, there are three separate phases, each of which carries its own cost of capital and risks:

    a. Project Development - this involves securing the site, measuring the resource, preparing risk assessments and other work needed to secure planning permissions and grid connection. For wind, this typically takes 3-5 years (longer for offshore wind), and bears a high degree of risk that permits will not be granted, or the site will be unsuitable for resource, environmental, permitting or other reasons. In the vast majority of cases development is funded by equity alone and not debt. The amount of capital required is relatively low (but offshore wind and nuclear are more expensive), but investor return targets are commensurately high.

    b. Project construction - this takes projects from planning, to equipment procurement through actual construction and commissioning, plus in many cases 1-2 years of operation to de-risk the project and chase down any technical issues. The risks are cost overruns, delays and technical performance. The return requirements, here, differ by technology, with low infrastructure-like returns for technologies such as onshore wind, and medium returns for higher risk projects like offshore wind. This is financed by a combination of debt and equity.

    c. Project operation - this is long-term infrastructure investment, funded by debt and equity and typically commands the lowest returns. The levels of debt are higher and equity lower than the project construction phase.

4. Consumer / Retail / SME investments; primarily energy efficiency investments such as loft insulation, rooftop solar panels and biomass heat. Return expectations for these investments vary. Unlike the first three investments, the challenge is the small size of individual investments.

ANNEX 3

Debt Sizing and EMR

How do banks size the debt that can be raised for wind projects?

The following summary describes the debt sizing criteria currently employed in project financings of wind projects and considers how these criteria could be applied under the arrangements envisaged in the EMR consultation document.

The debt sizing criteria for any given project will vary depending on the specific conditions relating to that project (e.g. type of revenue stream, and degree of volatility in the MWh generated, the price received for each MWh and the fixed and variable operating costs, plus the risk profile of the project – this is very important, as the greater the risk the higher the margins and the less debt is provided.

Debt sizing parameters

Gearing
Lenders will want to see that the sponsors have some money at stake in the project. This is typically done through testing the debt: equity ratio, comparing the total amount of term loan type facilities to the amount of equity invested. The debt: equity ratio will vary depending upon the perceived risks.

Offtake arrangements
Lenders will require generators to have a defined route to market for both the MWh and the associated green benefits - this is currently normally in the form of a PPA, often with the trading arms of one of the major utilities. In the current market, lenders will typically attribute no value to revenues after the term of the PPA, although this has been possible when banks have been more aggressive. The tenor of debt is, therefore, currently largely dictated by the length of PPAs available in the market. The period over which the debt is sized is also critical to the amount of debt raised. The offtaker is required to be of investment grade.

Base case and downside case cover ratios
Lenders will expect debt to be sized such that the project is able to meet its debt service obligations in all reasonable downside scenarios. This is often the factor that actually limits the amount of debt available. A financial model is developed, typically using "base case" assumptions of P50 energy yield and Pöyry central case captured price forecasts (taking into account the price setting mechanism within the PPA, such as the level of any floor, the index used to set the wholesale electricity price and any discounts to the power and green benefit market prices). The ratio between the cash flow available for debt service and the principal, interest and other debt costs, is tested on a projected basis, for the life of the debt. The robustness of the ratios is then tested under a variety of downside sensitivity scenarios, for example using a combination of the P90 energy yield assumptions and Pöyry low case captured price forecasts.

Debt sizing under the RO

Under the RO, the revenue streams can be split into stable and more volatile variable revenues. Typically, floor price electricity revenues, and ROC buyout revenues, are considered "stable revenues", and all electricity revenues in excess of the floor will be considered variable revenues. The ROC Recycle and LEC revenues could be considered as stable or variable, depending upon the current view of the regulatory certainty surrounding those revenues. A debt service cover ratio would be targeted for the stable revenues. The exact size of the ratio will be determined on a case-by-case basis, relative to lenders' overall risk perception. For the variable revenues, a higher debt service cover ratio is generally

applied. Again, the exact size of the ratio depends upon the degree of volatility. Combining these cover ratios will give a blended debt service cover ratio.

Debt sizing under the scenarios envisaged under the EMR:

Lenders requirements in relation to base case and downside case cover ratios are expected to remain substantially unchanged. However, the revenues considered as stable and variable will be dependent on the green benefit scheme adopted.

1. **Contract for differences feed-in tariff -** treatment of this option will very much depend upon the way in which the reference price and achieved price are projected to interact. If it is possible to match these perfectly, all revenue may be considered stable, but the more likely scenario is that there will be some scope for mismatch, and therefore the whole revenue will need to be considered as variable, but perhaps at a lower level of volatility than under the RO example above.

2. **Premium feed-in tariff -** this scenario is substantially similar to the current regime. Floor price electricity revenues and premium feed in tariff revenues would be considered "stable revenues". All electricity revenues in excess of the floor will be considered variable revenues. The treatment of LEC revenues could also be classed as stable provided their continued existence appears certain.

3. **Fixed feed-in tariff -** lenders would consider a fixed feed-in tariff to be stable revenue, as long as there was long-term certainty and no risk of retrospective changes.

10 March, 2011

Submission to DECC
Electricity Market Reform Consultation Document

To: EMR-condoc@decc.gsi.gov.uk

Low Carbon Finance Group

Contacts:

[redacted]
Partner, Hudson Capital Management (UK) Ltd
[redacted]@hudsoncep.com

[redacted]
[redacted]Renewable Energy, HgCapital
[redacted]capital.com