SCOTTISH renewables

Scottish Renewables Response to DECC Consultation Electricity Market Reform

Scottish Renewables is the representative voice for the renewable energy industry in Scotland with over 300 member organisations, including 78 developers[1]. The industry is playing a crucial role in the UK's efforts to tackle climate change and increase the country's energy security, and its growth must be supported if we are to meet our renewable energy and greenhouse gas emission reduction targets.

1.0 Executive Summary

- It is vital that investment in renewables remains at least as attractive as at present in order to meet mandated climate change targets. However, we are concerned that under these proposals, the potential for undesirable yet unintended consequences is substantial. This is further exacerbated when considered against a backdrop of additional review and reform of market and regulatory arrangements.
- It is crucial that the interaction between the reform proposals and other wider initiatives is approached carefully and coherently to ensure consistency, and avoid any further unintended and unnecessary consequences.
- Broad principles that must be enshrined in any reform proposals include: Viable levels of income for typical projects, and not just the best; a clear route to market at initiation of development; certainty and stability for a reasonable period of time; protection of existing projects and of projects already in the pre-commissioning pipeline, and; avoidance of temporary or permanent deferral of investment in projects or the supply chain.
- We do not believe that the case for change has been well developed based on a number of factors.
- We have no confidence in the use of auctions as an effective means of determining either support levels or required capacity. The staccato nature of auctions coupled with substantial risks involving development and auction design creates a great deal of avoidable uncertainty and complexity in the market, and is not a sustainable and appropriate means of supporting low carbon investment. Such a system would create needless barriers to finance. We do not feel that comparisons to other tenders are appropriate or well developed, and the industry's experience of auctions under the Non Fossil Fuel Obligation and the Scottish Renewables Obligation, are generally considered to be negative.

[1] For more information please visit www.scottishrenewables.com

- Government's first preference for the Feed in Tariff with a Contract for Difference may theoretically appear feasible; however there are a number of significant complexities and fundamental pre-conditions for its operation that do not currently exist and we are concerned that these necessary conditions cannot be delivered in the timeframes required.
- The Renewables Obligation creates a clear and well signposted route to market for renewable investment. We are concerned that removing the obligation to source renewables removes an important incentive for suppliers to provide a clear pathway for renewable generation to reach consumers, consequently such a move could adversely impact smaller market participants.
- Any proposals should be evaluated not only on the basis of their ultimate suitability, but also on their impact in the transition. It is important that the development of projects and the supply chain are not significantly delayed. Indeed there is a real risk with the supply chain that any delay may see an irretrievable move to investment in facilities happening outside the UK.
- Until these points are addressed, and more detail provided on the market mechanisms that would underpin a Contract for Difference, our preferred option of the Feed in Tariffs presented in the consultation is the Premium Feed in Tariff.
- Investor confidence will be maximised by provision of additional detail and debate on the operation of the proposed mechanisms before Ministers commit to a definitive course of action.

2.0 Reform and Potential Unintended Consequences

The UK needs to attract £200 billion[2] of investment in electricity generation and associated network infrastructure in the run up to the 2020 renewable energy targets. This level of investment needs to be secured from a broader pool of capital than that found currently. Setting that £200 billion figure within a European context, whereby over £1 trillion[3] of investment in renewables is required, it is clear that the UK investment environment must remain *at least* as attractive as at present for the renewables industry to secure these scarce financial resources.

The intention of the Electricity Market Reform package is to ensure electricity is generated cleanly by promoting low carbon technologies and paving a clear pathway for investment in them, and at lowest cost to the consumer. The need to promote investment is also set within the context of maintaining security of supply, and in particular a 10% plant margin.

Scottish Renewables accepts the above intentions and we recognise DECC's imperative to enable a market for nuclear power and carbon capture and storage. However, it is vital that investment in renewables remains at least as attractive as at present in order to meet mandated climate change targets.

To this end, and acknowledging that such levels of investment must be at an affordable cost to the consumer, Scottish Renewables has developed the following broad principles that must be enshrined in any reform proposals:

- Viable levels of income for typical projects, not just the most profitable
- Clear route to market at initiation of development and for life of project
- Certainty and stability for the long-term.
- Protection of existing projects, and of projects already in the pre-commissioning pipeline
- Avoidance of temporary or permanent deferral of investment in projects or the supply chain.

Scottish Renewables is deeply concerned that there exists enormous potential for unintended consequences, given both the complexity of the proposals and the significant lack of clarity within the proposed package. Our members have

[2] Ofgem Press Release "Britain needs rewiring to the tune of £32 billion" October 2010
[3] HM Treasury consultation for 'Carbon Price Floor'. Published December 2010.

specified key areas where the reform proposals could potentially create unintended consequences for the renewables industry.

Our key points are as follows:

- No confidence in the use of auctions as an effective means of determining either support levels or required capacity.
- Government's first preference for the Feed in Tariff with a Contract for Difference may theoretically appear feasible; however there are a number of significant complexities and fundamental pre-conditions for its operation that do not currently exist, and we are concerned that these necessary conditions cannot be delivered in the timeframes required.
- Concern that removing the current obligation from suppliers to source renewables removes an important incentive for suppliers to provide a pathway for low carbon generation to reach consumers and may adversely impact smaller market participants.
- Investor confidence will be maximised by provision of additional detail and debate on the operation of the proposed mechanisms before Ministers commit to a definitive course of action.
- Government should tread cautiously with such a significant set of complex and inter-related reforms, and aim to transition by 2020 rather than 2017 as proposed, especially given the build out timeline for Round 3 and the potential for negative impact on our emerging, but internationally significant wave and tidal sector.

It must also be borne in mind that the reform package is an integral part of a much wider overall review of electricity regulation[4][5][6], market arrangements[7][8][9][10] and banding for the Renewables Obligation. It is crucial that the interaction between the reform proposals and the above initiatives is approached carefully and coherently to ensure consistency, and avoid any further unintended and unnecessary consequences. It is also important that any reform and additional change is aligned with stipulations at European level. This would avoid contradictions that would later have to be resolved at cost to both investor confidence in the market, along with additional costs passed on to the consumer.

[4] Project TransmiT is Ofgem's review of transmission charging and connection arrangements. Please visit the Project TransmiT homepage for more information.

[5] RIIO T1 is the transmission price control review that will now reflect the new regulatory framework resulting from Ofgem's 'RPI-X@20' review. Please visit the RIIO T1 homepage for more information.

[6] The Ofgem Review is being overseen by DECC, and will review Ofgems role within emerging market arrangements.

[7] Ofgem's assessment of liquidity within the wholesale market. The next assessment to be published in Spring.

[8] Please visit the Carbon Price Floor homepage for more information.

[9] EU Third Package

[10] Ofgem will consult on a regulated approach to interconnector investment from early 2011.

In summary, we understand the intentions of the reform package as a means of accelerating investment in renewables technologies. However, we are concerned that the potential for undesirable yet unintended consequences is substantial. This is further exacerbated when considered against a backdrop of additional review and reform of market and regulatory arrangements.

As such, Scottish Renewables has provided a set of principles that need to underpin reform, and throughout the response we intend to measure each of the proposals and the consequences the proposals could have upon the renewables industry against these principles.

Until these points are addressed, and more detail provided on the market mechanisms that would underpin a Contract for Difference, our preferred option of the Feed in Tariffs presented in the consultation is the Premium Feed in Tariff.

3.0 The Case for Change

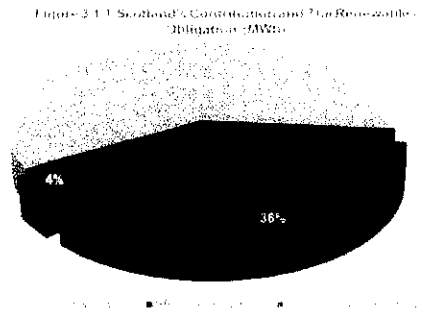
The Renewables Obligation was introduced in 2002 to provide a mechanism for supporting renewable energy developments, and it has since undergone various operational reforms. Through these, the initial concerns about the system have now been addressed. It is our view that the system works well, and is well understood across the industry and by financiers.

It has seen considerable success and has incentivised billions of pounds of investment in the UK's renewable energy resource. There is now a thriving renewable energy sector operating in the UK, which has created over 10,000 direct jobs[11] in the wind, wave and tidal sectors alone. The renewables industry brings in much needed revenue nationally, regionally and locally. This is in large part due to the Renewables Obligation.

The latest Ernst & Young 'Renewable Energy Country Attractiveness Index[12]' has placed the UK fifth in the world for both its untapped renewable resource and the attractiveness of the Renewables Obligation. The attractiveness of the UK's Offshore Wind industry has been ranked No 1 globally.[13]

3.1 Success of the Renewables Obligation and Scotland

Currently, Scotland's renewables industry plays a considerable role in delivering the UK's low carbon renewable energy future. Given its outstanding natural resources, Scotland has the potential to deliver further significant proportions of the UK's renewable energy.



This is highlighted by the Scottish Government setting a target of 20% of energy to be derived from renewables by 2020, rather than the EU target of 15% for the UK as a whole. The rate of development supported by the Renewables Obligation has given the Scottish Government the confidence to raise its renewable electricity target to 80% by 2020. Scotland has the strongest wind, wave and tidal resources in Europe and has a global lead in marine energy research and testing, with the current RO framework attracting significant private investment into the wave and tidal sector.

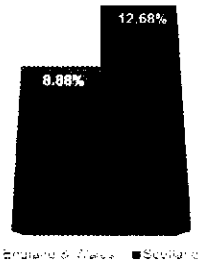
Scotland has seen significant growth in its renewables industry in recent years, and this is largely due to both the Renewables Obligation (Scotland) in conjunction

[11] **Renewable UK** 'Working for a Green Britain' **Published February 2011.**
[12] **Ernst & Young** "Renewable Energy Country Attractiveness Index" **February 2011.**
[13] **Ernst & Young** "Renewable Energy Country Attractiveness Index" **February 2011.**

with a more focussed planning system. Scotland is able to deliver levels of support for marine energy that attract crucial investment into an emerging technology of strategic value. These factors have given the industry an opportunity to flourish.

Figure 3.1.1 shows that across the UK, the Renewables Obligation (Scotland) incentivised over 36% of all renewable generation between 2009/2010. This accounted for 7.4TWh of the 20TWh of renewable power generated across the UK in 2009-10. Scotland is on track to achieve its target of 31% of electricity consumed in Scotland provided by renewable energy for 2011.[14]

Figure 3.1.2 The Renewables Obligation and Year on Year Growth (%)



The renewables industry in Scotland has seen year-on-year growth of 13% since the introduction of the Renewables Obligation[15]. These positive growth figures across the UK confirm the system has been effective and continues to encourage significant levels of new investment in renewable generation each year. On top of the 7.3GW of renewables capacity already operating and currently under construction, the Scottish Renewables database shows Scotland currently has 1.9GW of capacity consented, 3.9GW in planning and 14.6GW in scoping. This would make a significant contribution to progress towards the UK's 2020 targets, and demonstrates investor confidence in the sector and in the Renewables Obligation across the UK.

The Scottish Government's commitment to renewables as a means of generating clean energy is fast making Scotland an ideal location for inward investment and for indigenous growth in the fields of equipment, supply-chain and infrastructure. Damaging investor confidence in this market at a crucial time in its development will undermine Scotland's ability to grow its renewable economy. Scottish Renewables support the Scottish Government's rights of differentiation when setting support levels, and as such we would urge that these powers remain with the Scottish Government.

If any of those proposals pertaining to revenue support are brought into place, they need to become at least as effective as existing arrangements, and avoid hiatus in project or supply chain development, if progress towards binding targets is to be maintained and accelerated over the coming years. There is value in recognising the importance of avoiding or minimising regulatory change, and in particular, the impacts these changes could have upon investment signals and the confidence of a highly competitive investment market. There is little point replacing price risk,

[14] **Scottish Renewables Press Release** "Scottish Renewables Industry Meets a Quarter of Electricity Needs" **December 2010**
[15] **Data taken from** "The Renewables Obligation Annual Reports". **Available on Ofgem website.**

which investors can manage, with political and regulatory risk that investors cannot manage. As such, change should only be made where there is clear and demonstrable benefit to reaching government priorities.

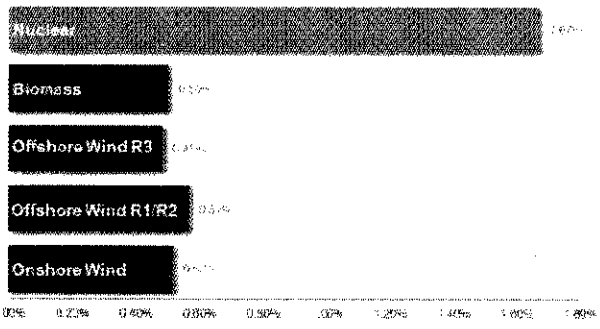
If the Government's objective is to meet existing targets for renewable generation by 2020 then it would be advisable to retain the Renewables Obligation mechanism.

3.2 Hurdle Rate Reductions

With this in mind, the case for change does not seem particularly well developed. When replacing the Renewables Obligation with a Feed in Tariff, the Redpoint analysis details reductions in hurdle rates for both renewables and nuclear technologies.

Figure 3.2.1 demonstrates that even the theoretical hurdle rate reductions for renewables technologies are relatively insignificant, especially compared to the significant reductions experienced by nuclear power.

Figure 3.2.1 Hurdle Rate Reductions Under Feed in Tariff



Data sourced from Redpoint "Electricity Market Reform Analysis of Policy Options" Please refer to Annex 1 on page 27 for calculations

When contrasting how renewables fare under a move to a Feed in Tariff, regardless of its design, the magnitude of that reduction is approximately 3.2 times smaller than what is to be achieved for nuclear power[16]. We acknowledge that a market for nuclear should be enabled, but any change to the Renewables Obligation must also be of sufficient benefit to renewables technologies.

Everything being equal, any reduction in hurdle rates is an encouraging and positive outcome for the industry. However, we do not see that the rates detailed in the Redpoint analysis are representative of the Returns on Investment for both utilities and independents. Secondly, these intended reductions are relatively slight and there exist significant complexities and fundamental uncertainties yet to be resolved relating to revenue support mechanisms (and namely a Contract for Difference) and across the wider policy and regulatory landscape.

[16] The average hurdle rate reduction across all renewable technologies and Feed in Tariff's, compared to the average hurdle rate reduction for nuclear technology across all Feed in Tariff's. Please see Annex 1 for calculations and figures.

Such enormous amounts of complexity and uncertainty create further barriers to market entry as well as increase development risk and cost, and could actually outweigh such slight reductions in the cost of capital associated with operating risk. There exists the potential for reversal of these intended reductions, and the possibility of an actual increase in hurdle rates for renewables technologies. We come back to this very real possibility throughout the response.

4.0 Auctions

Scottish Renewables has significant concerns over the ability for auctions to set sustainable support levels for renewable technologies.

4.1 Staccato nature of auctions

By their very nature, auctions inherently assume a surplus of potential capacity and seek to identify the most cost effective of that surplus. Presently, the UK does not have enough capacity in existence, or firmly committed to in the near future to meet requirements. As such, the renewables industry requires a system that provides longer term incentives for the development of additional and more economic capacity, rather than a snapshot contest between current limited resources, which could lead to bottlenecks in both the supply chain and planning system.

Auctions will inevitably act as a growth constraint and cannot deliver the rapid growth of installed capacity which is required by policy objectives and the need to meet environmental targets. This would impact upon the realisation of such policy objectives as the Scottish Government's 'Zero Waste Plan'.

4.2 Non Fossil Fuel Obligation and the Scottish Renewables Obligation

The renewables industry has had relevant experience with an auction based system through the Non Fossil Fuel Obligation and the Scottish Renewables Obligation, which is generally considered to be negative.

There is a strong feeling within the industry that a return to such a system would not serve to maintain current investment levels, nor accelerate them. In fact, it could result in quite the opposite. There were five rounds of the Non Fossil Fuel Obligation between 1990 and 1998. Within this period, onshore wind costs reportedly fell 78% from 10p per kWh in 1990 to 2.88p per kWh in 1998.[17]

The Artificial Fall of Onshore Wind Prices under NFFO

Year	Price	
1990	10.00p/kWh	78% fall in prices
1998	02.88p/kWh	

On superficial examination, these headline figures may look attractive, especially within the context of basic economic theory discussed in the consultation

[17] Figures taken from the University of Cambridge Electricity Policy Research Group publication "UK Renewable Energy Policy since Privatisation", published January 2010.

document. However, the realities were quite different. Between 1990 and 1999, of the 302 contracts awarded to wind projects only 75 projects were actually built.[18]

The Unintended Consequences of NFFO

Awarded	Actually Built	
302 projects	75 projects	**Only 25% of winning projects**
2659MW	391MW	**actually built and 14% of capacity**

In this instance, failure occurred primarily because the NFFO auctions did not possess those price discovery characteristics referred to in the consultation document. Successful bids did not realistically reflect costs, which often meant the majority of projects did not come into fruition. It has been suggested that the aim of some bids was to secure a contract while having no intention of fulfilling it in order to prevent a competitor from gaining a contract. The very nature of a least cost auction encourages bidders to be over optimistic in the estimation of how much revenue support is required. In this case, the winning bids were far too low to realistically support projects, and consequently, the vast majority of projects suffered from the 'winners curse' and were not built out. The final NFFO round (NFFO-5) awarded 33 projects, yet only 5% of these were actually built.

Figure 4.2.1 Build Failure under the the NFFO

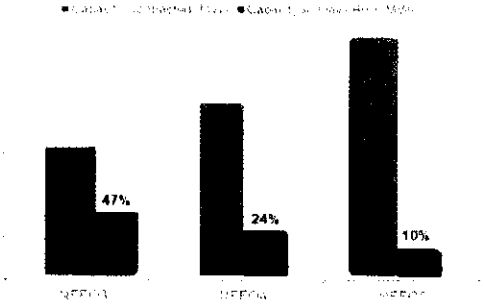
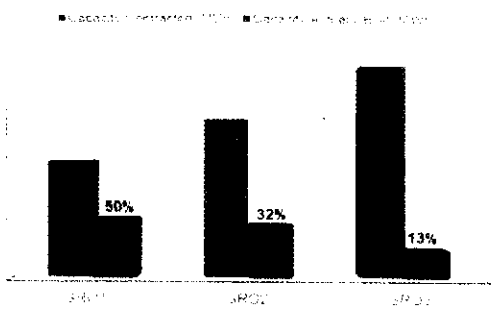


Figure 4.2.2 Build Failure under the the SRO



Data sourced from NFPA (March 2011)

The above graphs show that between NFFO 3 and 5, and similarly, the Scottish Renewables Obligation 1 to 3, the build out rates fell dramatically in spite of poor initial build rates. When compared to the capacity contracted, which was projected to increase, it is difficult not to conclude that such a system failed in its intentions, and as such did not provide price discovery as originally hoped.

4.3 Imposing Penalties for Build Failure

An auction combined with a financial penalty or obligation compelling developers to build is not an adequate solution to the problems presented above.

[18] **Figures taken from the University of Cambridge Electricity Policy Research Group publication** "UK Renewable Energy Policy since Privatisation", **published January 2010.**

Considerable difficulties would present themselves when imposing such penalties, given the range of factors outside of a developers' control, such as obtaining planning consent and grid connection. These factors represent a greater influence on the ability to obtain financing and project build-out than the imposition of a penalty for build failure.

4.4 Development Risk

Fundamental flaws in the design and use of an auction process for setting support levels undermine any rationale for introducing such a system. Not only is the staccato nature of auctions unsuitable for achieving sustainable growth, but there is a significant risk that only very few parties would be willing to commit the substantial development capital and large amount of work required to submit bids without any guarantee of contract. Such a risk could rapidly outweigh the 0.5167% reduction in hurdle rates expected when switching from the Renewables Obligation to a Feed in Tariff[19]. Smaller projects would face significant upfront costs to participate in an auction, which would discourage these players from participating.

Auctions held at a pre-development stage will result in underbidding on the basis of expected CapEx reductions and could end up inhibiting the volume of developments necessary to drive down costs. On the other hand, a tender held at pre-close leaves the entire development stage fully exposed. Development costs for marine projects in the early years are likely to be two to three times higher and thus two to three times riskier than for equivalent onshore wind capacity.

4.5 Technology Neutral vs Technology Specific Auctions

Regardless of how the support level is determined, it would be necessary to band the support mechanism in the same way as the Renewables Obligation in order to incentivise the deployment of an array of technologies. However, the use of technology specific auctions would mean that cost uncertainties will encourage potential bidders to enter bids for established and well known technologies to the detriment of the lesser established, such as marine technologies.

Additionally, technology specific auctions would be difficult to execute successfully in that they require judgements on the appropriate level of generation mix. Whilst auctions would theoretically represent a move to a more market based approach for setting support levels, it is difficult to reconcile this logic to a situation whereby the technology mix is effectively centrally planned and no longer left to market forces.

[19]This is the average reduction in hurdle rates across both Utilities and Independent Developers when moving from the Renewables Obligation to a Feed in Tariff (Premium, Fixed and CfD). Please refer to Annex 1 for calculations.

4.6 Pre-commercial Technologies

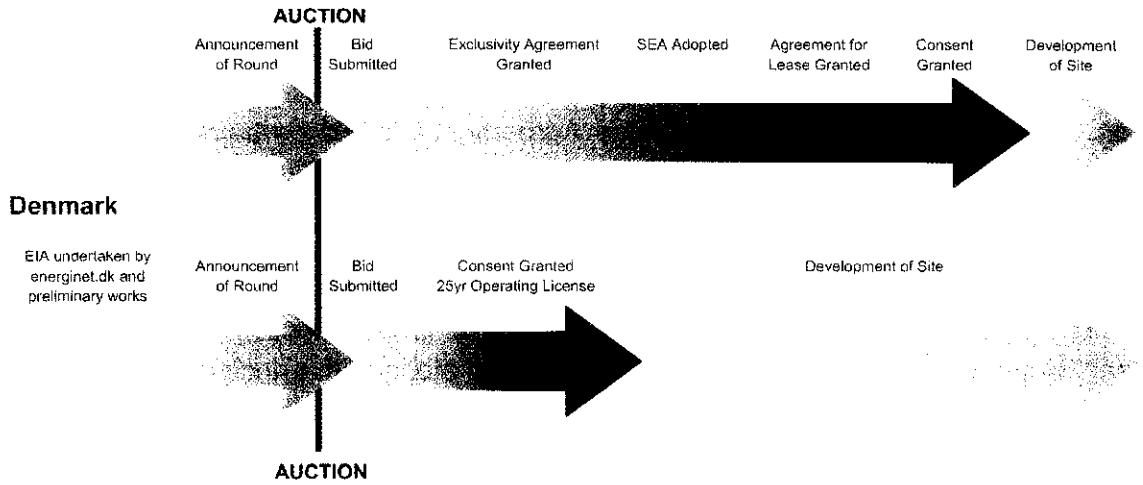
In addition to the problems outlined above, there also exists a significant lack of precedent for assessing the success of an auction based system for emerging industries, such as the wave and tidal sectors, and infant technologies. In particular, how are pre-commercial market participants able to realistically determine how much support they require for a prolonged period into the future? This lack of precedent only acts to increase the risk these industries are exposed to, and is not a sustainable means of determining support levels for them.

4.7 Appropriateness of Comparisons

As highlighted in the consultation document, there have been a small number of auctions used in Denmark to determine support levels for particular offshore wind projects, namely Horns Rev II, Rødsand II and Anholt. The use of these examples, and the support levels determined under these tenders is intended to provide an example of how a market based process has worked in Denmark and therefore potentially work in the UK.

However, the use of such a comparison is inappropriate given the vastly different circumstances investors are exposed to under the Danish regime. As an example, Figure 4.7.1 demonstrates that an investor looking to develop an offshore wind farm in Scottish Territorial Waters would be exposed to considerably more risk following bid submission than the same investor at the same point in the Danish process.

Figure 4.7.1 The UK and Denmark – an appropriate comparison?



At the point of auction, a site has already been pre-selected by the Danish Energy Authority, and an Environmental Impact Assessment has been undertaken[20]. The successful bidder is also granted consent, and the responsibility for the grid connection and the associated cost rests with the Danish TSO[21].

This is markedly different than Scottish arrangements, whereby the winning bidder is expected to undergo a series of progressions in order for consent to be granted. At each point, the project could fail as a consequence of not meeting Marine Scotland or The Crown Estate requirements. Accordingly, there is a great deal of uncertainty borne by the investor from the point of winning the tender up to the point of consent being granted. Regardless of design, such uncertainty will be factored into bids for revenue support and so cannot be compared to the figures provided in the consultation document[22].

Needless to say, it is difficult to see how applicable a comparison is between the Danish regime and a tender process for setting support levels in the UK. Denmark only had one bidder for one of the tenders, so the extent to which the outcome was competitive is deeply questionable.

4.8 Auctions, Liquidity and a Contract for Difference

The complexities and uncertainties surrounding the possible functioning of a Contract for Difference would mean that generators require the certainty of a Power Purchase Agreement. Consequently, generators would be compelled to accept payment for their power at a discount to the reference price. This discount would impact upon the support level these generators would require.

In order for generators to establish their required support level before entering the auction, bidders would need to enter a Power Purchase Agreement prior to bid submission. The current lack of liquidity in the market, which has a knock on effect on the availability of Power Purchase Agreements, could perhaps allow Power Purchase Agreement providers to shape the outcome of the auction.

4.9 Setting the Support Level

Currently, we have an 'administrative process for setting support levels', as referred to in the consultation document. There is an effective mechanism for setting parameters and monitoring performance, along with principles established within the Renewables Obligation banding review process that effectively balance flexibility and the need for fine tuning with the need for long term stability. As such

[20] **Energy Research Centre for the Netherlands** "Preliminary qualitative assessment of proposed measures to foster renewable and low carbon sources in the Dutch electricity mix". **Published February 2010.**
[21] **Energy Research Centre for the Netherlands** "Preliminary qualitative assessment of proposed measures to foster renewable and low carbon sources in the Dutch electricity mix". **Published February 2010.**
[22] **Energy Research Centre for the Netherlands** "Preliminary qualitative assessment of proposed measures to foster renewable and low carbon sources in the Dutch electricity mix". **Published February 2010.**

the industry is keen to see the retention of a transparent administrative support setting process.

4.10 Auctions Summary

Along with the above trepidations, we are concerned that there has been very little detail communicated to the industry as to how an auction process applicable to the UK could be designed, especially given the need for the UK to accelerate investment in renewables.

The uncertainty and increased risk that investors would be expected to bear under an auction process is not an attractive proposition for the industry. As such, it is difficult to see how this proposition would be attractive to that broader pool of capital needed to accelerate investment levels.

We oppose the introduction of auctions as a means of setting support levels, and support the retention of a transparent administrative process for setting support levels.

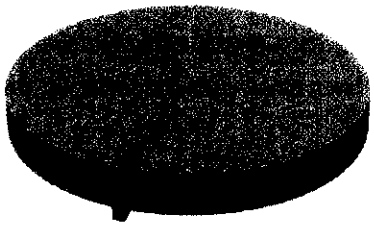
5.0 Contract for Difference

With the right conditions in place, we believe this mechanism has the potential to bring forward investment in low carbon technologies. However, there are major complexities and fundamental uncertainties to be resolved before the industry as a whole can be confident of its success.

5.1 Reference Price Suitability

The success of the Contract for Difference, and indeed the assessment of its merits against current arrangements, is based on the assumption that a suitable reference price can be found.

Figure 5.1.1 Volumes of Electricity Traded (Liquidity Assessment 2009)



However it is difficult to establish what a suitable reference could be, given the domination of bilateral trading agreements in the market rather than an exchange based structure that represents significant volumes of electricity traded in the market. Power traded on the APX and N2EX exchanges still represents only a small proportion of the volume of electricity traded over the entire market.

The 2009 'Liquidity in the GB wholesale energy markets'[23] publication saw Over The Counter trading accounting for 1,100TWh of electricity, yet trading on the APX Power UK exchange accounted for 11.5TWh. The 2010 Ofgem assessment[24] saw a slight improvement in these arrangements along with the introduction of a second exchange, 'N2EX', in 2010. However, there remains very low levels of exchange based trading in the GB market, particularly compared to other European electricity markets.

5.2 Basis Risk

With an increasing proportion of wind within the generation mix, and the potential for correlation in generation from this resource, Redpoint advised that settling the difference via a longer term average (rather than on a half hourly basis for instance) would provide an incentive for wind to locate in a different area than that already populated by wind farms, and thus reduce incidence of 'wind cannibalisation'.

However, the use of an index based contract and the prospect of averaging the index is not an attractive proposition for wind generators. Firstly, generators do not

[23] Ofgem "Liquidity in the GB wholesale energy markets" **Published June 2009.**
[24] Ofgem "GB wholesale electricity market liquidity: summer 2010 assessment" **Published July 2010.**

know in advance and with certainty the volume of their generation, and selling this power against long term indices as opposed to 'as close to' market trading will expose generators to a degree of basis risk between the index used to determine a Contract for Difference payment and the market into which power is sold.

However, the requirement for settlement on a half hourly basis, or on whatever basis the reference price is calculated, could make the mechanism difficult to calculate for smaller market players, and transferring such trading responsibilities to a third party is likely to further reduce revenues expected under this mechanism.

5.3 Basis Risk and Efficient Trading

The different payments under a Contract for Difference will be calculated by reference to an average index, with generators permitted to keep the upside if their power is sold above this index, but suffering if sold below the index.

Figure 5.3.1 shows how this would work in practice. The green line represents upside gains from efficient trading for low carbon technologies under a Contract for Difference, and the red line demonstrates the downside losses of selling power inefficiently. In these instances, generators receive the reference price for power sold, in spite of the power being traded below this price.

Figure 5.3.1 Basis Risk and Efficient Trading

Theoretically, such a risk provides an incentive for generators to trade efficiently. However, such downside risk is particularly sizeable for renewable generation, such as wind and marine technologies. Power generated from these sources is less attractive in the market due to its intermittent nature, and particularly in the absence of a supplier obligation to purchase this power. These generators are unlikely to capture market price peaks given the non-dispatchable nature of their generation.

5.4 Counterparty

Clearly it will be necessary to establish the institutional arrangements to manage the complex reconciliations and cash flows arising from the respective commitments in a Contract for Difference. If the reforms are to meet their objectives, it is vital that these meet the business requirements of energy suppliers by providing a predictable and relatively accurate forecast of revenue if these are to be used to calculate tariffs or long term supply contract decisions. It is also vital that adequate funds are available to make payments due to generators, and that

these arrangements are sufficiently straightforward to allow independent generators to engage with them.

5.5 Counterparty Risk

The proposed Contract for Difference will see generators making payments to an as yet unidentified counterparty when the reference price exceeds the strike price. The risk of generator default in these circumstances could mean the counterparty will need to assess credit worthiness, and add clauses into contracts for the purposes of ensuring the counterparty recovers this payment, such as providing some form of security against default risk.

Similarly, if the agency is not the Government, the generator could be exposed to default risk when the reference price is below the strike price. If a government agency is the counterparty, the industry could be assured that there would be sufficient funding to meet the agency's obligations.

5.6 Contracts

It is unclear how contracts would be administered, indexed and reviewed. All of these create political risk and have the potential to impact on investor confidence and negate the small impacts on the cost of capital.

5.7 Ofgem Review of Liquidity

The Ofgem liquidity review has a crucial interdependency with the reform proposals. So far, the review has identified shortfalls in the current market arrangements, yet it remains to be seen whether the upcoming assessment will make the headway required to secure high levels of liquidity and in the timeframes required, for a Contract for Difference mechanism to operate in its intended state.

Liquidity is particularly important for the effectiveness of Contract for Difference as the mechanism is reliant on an effective reference price and the assurance that generators will find a route to market in the absence of a supplier obligation.

5.8 Route to Market

The replacement of the Renewables Obligation with a Contract for Difference (and similarly a Premium Feed in Tariff) will pose particular difficulties for some generators. The Renewables Obligation currently incentivises suppliers to enter Power Purchase Agreements with renewable generators.

Under a Contract for Difference and Premium FiT, there is no equivalent incentive to purchase renewable power. In the absence of such an incentive and within an illiquid market, it is difficult to see the incentive for suppliers to enter into a PPA with intermittent generators.

Further, under a Contract for Difference there is no guaranteed route to secure the necessary support over and above the power contract as a project could be developed over a period of two to three years at a cost of up to tens of millions, and then there may not be a suitable contract available that both parties would be willing to sign. The revenues generated by the Renewables Obligation are known in advance and the decision to proceed is entirely within the control of the developer, and this would also be true under both a Fixed or Premium FiT.

5.9 Design and Appropriateness of Comparisons

Contract for Difference reduces risk when the electricity price falls below the strike price but also removes the possibility of gains when the electricity price is above the threshold level. This effectively caps the level of return a developer could potentially earn. Enabling developers to gain from upside risk would enhance the attractiveness of Feed in Tariff support.

The consultation document highlights the use of a Contract for Difference in the Netherlands to support renewable technologies. As pointed out in the consultation document, if the electricity price rises above the strike price, the generator is able to keep the upside. This is a very different proposition than that made in the reform package, whereby any potential upside must be paid back.

In spite of this advantage in the Dutch system, the 'Sliding Premium' system has seen criticism in recent years and is now undergoing review. Criticism of the mechanism relates to whether it is able to sufficiently accelerate investment in renewables over the next decade to meet 2020 targets, and in particular the deployment of offshore wind.[25] As such, there is currently a consultation on introducing a more specific supplier obligation very similar to the Renewables Obligation. An obligation and tradable green certificate scheme is seen as a stable market based solution for securing these targets at lowest societal cost.

With respect to the points already made regarding technology specific auctions, the use of specific technology allocations within the Dutch 'Sliding Premium' has been criticised due to a great deal of uncertainty and political gaming that it presented, which has resulted in an impact upon investor confidence in the market[26]. This criticism is also behind the rationale for switching to a mechanism very similar to the Renewables Obligation, or a hybrid with the current 'Sliding Premium' system.

[25] **Energy Research Centre for the Netherlands** "Preliminary qualitative assessment of proposed measures to foster renewable and low carbon sources in the Dutch electricity mix". **Published February 2010.**
[26] **Energy Research Centre for the Netherlands** "Preliminary qualitative assessment of proposed measures to foster renewable and low carbon sources in the Dutch electricity mix". **Published February 2010.**

5.10 Independent Generators

The proposal to implement a Feed in Tariff over a low carbon obligation is intended to reduce or remove exposure to the volatility inherent in wholesale electricity prices. By removing or reducing this exposure, the financing costs generators face are reduced accordingly, and in turn so are the costs transferred to the consumer. However, many independent generators are fearful that the Contract for Difference mechanism will actually increase financing costs.

The Contract for Difference system could require liabilities to sit on a generator's balance sheet for an as yet unidentified period of time. These liabilities will be difficult to forecast, especially for those generators who do not have a trading function. The bankability of such a proposition is questionable, and this is likely to further enhance the risk these generators are exposed to. This could then increase the financing costs they are expected to bear. Not only will this affect the feasibility of investment in renewable resources, but could affect those marginal projects that may have gone ahead under current market arrangements.

5.11 Auctions, Liquidity and a Contract for Difference

The complexities and uncertainties surrounding the possible functioning of a Contract for Difference would mean that generators require the certainty of a Power Purchase Agreement. Consequently, generators would be compelled to accept payment for their power at a discount to the reference price. This discount would impact upon the support level these generators would require.

In order for generators to establish their required support level before entering the auction, bidders would need to enter a Power Purchase Agreement prior to bid submission. The current lack of liquidity in the market, which has a knock-on effect on the availability of Power Purchase Agreements, could perhaps allow those providing Power Purchase Agreements to shape the outcome of the auction.

5.12 Market Imperfections

A fundamental area that has not been incorporated into either the EMR proposals or the Ofgem work is the need for reform of the Cash Out provisions in the current trading arrangements. These operate in such a way as to differentially penalise variable, low carbon generation and result in the effective realised price for such generation being at a significant discount to the 'headline' or published index price, even if sufficient liquidity were to exist. Addressing this defect is an essential part of the market reform process and will enable the final choice of low carbon support to operate in a more effective and efficient manner

5.12 Scottish Circumstances

Scottish Ministers' powers over ROC banding have allowed the development of a framework responsive to the circumstances in Scotland. The investor confidence delivered by Scottish Ministers' support for the wave and tidal sectors, with 5 and 3 ROCs respectively, has contributed significantly to the ambitious levels of planned developments in the Pentland Firth and Orkney Waters (1600MW).

We therefore see value in continuing to allow some level of variability over levels of financial support to allow incentives to be targeted on the challenges facing developments in Scotland.

5.13 Contract for Difference Summary

If the right conditions are in place, a Contract for Difference could potentially bring forward investment in renewable generation. However, these necessary conditions are not currently in place, and we have significant doubts that such conditions could be in place and in the timeframes required for the industry to be confident that the mechanism will actually bring forward investment.

There is a significant lack of clarity in the consultation document, along with significant complexities and fundamental uncertainties underlying the structure and functioning of such a mechanism. This is in addition to widespread concern across the industry relating to the on-going review of liquidity, and in particular, whether the Ofgem work will make necessary improvements to secure the high levels of liquidity within the wholesale market for a Contract for Difference to work. Understandably, financiers will need time to understand and become comfortable with the mechanism. The unfamiliarity of such a mechanism, along with numerous associated risks detailed above is likely to increase financing costs. These issues raise questions about the likelihood of the renewables industry actually achieving that relatively minor 0.5167%[27] average hurdle rate reduction outlined in the proposals.

Until we have more detail on the points above, we are reluctant to support the introduction of Contract for Difference, and our preferred option of the Feed in Tariffs presented in the consultation is the Premium Feed in Tariff, which would retain many aspects of the current system.

[27] This is the average reduction in hurdle rates across both Utilities and Independent Developers when moving from the Renewables Obligation to a Feed in Tariff (Premium, Fixed and CfD). Please refer to Annex 1 for calculations.

6.0 Removing the Obligation and Route to Market

The Renewables Obligation is a statutory instrument that specifies the amount of electricity that must be supplied from renewable sources. Suppliers are incentivised to purchase renewable power rather than the financial penalty, and as such, the instrument provides a stable and challenging demand for renewables which creates a very well sign posted route to market for the country's renewable resource.

If suppliers are no longer incentivised to purchase renewable power, generators could be exposed to a significant degree of offtake risk[28]. The obligation is the main driver for investment in renewable energy projects, as it gives developers confidence that the power produced will be in demand. In these circumstances, higher discounts[29] could be applied to the terms of a Power Purchase Agreement. Consequently, the revenues a generator would expect to receive under this contract would decrease.

When securing financing, banks prefer the certainty of long term power contracts. If these are more difficult to secure because an obligation to provide them has been removed, the transfer of risk to the financial institution will be complemented with an increased cost of capital for the generator.

This potential squeeze on both revenues and costs has caused a great deal of concern for independents. It has the potential to offset any intended gains from a reduction in hurdle rates, and instead increase the overall cost to the consumer.

[28] Offtake risk is the risk faced by a generator of not selling electricity into the market.

[29] These rates determine the present value of future cash flows by discounting them to reflect a risk premium. The transfer of risk we refer to above will increase risk to the PPA supplier, and thus increase the discount rates they apply to the contract. This would reduce revenues for a generator under a PPA.

7.0 Transition & Vintaging Arrangements

Scottish Renewables recognises the trade-off between the speed of transition and the scale of reform. However, the time taken for transition is critical to avoid a hiatus in investment.

7.1 Protecting Existing Projects

The principles of transition must be to protect existing investments under the Renewables Obligation, and prevent a hiatus in renewables deployment. The majority of our members are concerned that there could be a decline in the value of projects following the Renewables Obligation Banding Review, and as such, it is crucial that the value of existing projects is not damaged. This would avoid impacting the confidence of wider investment markets, particularly when the industry needs to see significant levels of investment in coming years, and in the presence of an increasingly competitive investment market across Europe.

7.2 The Transition Period

Our members are nervous about the timescales proposed by the Government to review and introduce new electricity market arrangements and are anxious to avoid a similar situation as experienced recently with the announcement that the Feed in Tariff for sub 5MW technologies was to be reviewed and scaled back a year after the scheme was introduced.

A longer transition will assist in avoiding an investment hiatus, allow us to optimise the new arrangements and would also avoid a large amount of new projects simultaneously joining an untested system in 2017.

7.3 Optimising Transition - Legislation

There exists a concerning lack of clarity in the reform proposals and supporting analysis. The industry has not been given the opportunity to assess the detail of the package and quantify its associated risks. If those transition arrangements outlined in the reform package are implemented, the situation is perpetuated further. As such, there exists a very real possibility that investors will not been given the opportunity to make informed decisions.

It is therefore important to enable and create more information for investors to make informed decisions, which would be based on industry's ability to quantify risks.

As such, we would be looking for the Secretary of State to present primary legislation by 2012/2013, which is in effect enabling powers. This in turn sets out the general direction of travel for the new system, which we recognise may well be a Feed in Tariff. Following this, we would like to see DECC consult on what Feed

in Tariff this should be, and what levels of support is required for differing low carbon technologies. The detail can be presented through secondary legislation.

At this point, the industry would benefit from knowing the outcomes that remain unknown right now, including Ofgem's liquidity review, Project TransmiT, the Carbon Floor Price and the Renewables Obligation Banding Review. If this suggested timeline is followed, all market parameters would have been consulted on and concluded, and this would therefore make it an appropriate time to set the details around the design of the Feed in Tariff and support levels. If the Renewables Obligation were to be extended out to 2020, as discussed below, then the industry will have been given five years to experiment and work with the system prior to the replacement of the Renewables Obligation. The recent publication of proposals that would significantly increase transmission access and charging costs for Scottish generators[30] in a locational marginal pricing model, reinforced the uncertainty over individual costs and their interaction in the future.

If current plans concerning the legislative process are adhered to as outlined in the consultation document, it would be important for investors to know the proposed levels of support under the new mechanism within the same timescales as the banding review for the Renewables Obligation. This would enable developers to make an informed decision on which scheme best suits their investment requirements, and therefore which scheme to opt to operate under.

7.4 Optimising Transition – Timelines

Timelines for transition could be further optimised to ensure that investment in renewable capacity is not adversely affected in the run-up to 2020 EU Climate Change targets. Rather than limiting accreditation to 2017, the Renewables Obligation should remain open until 2020, and possibly extended to 2040. Further investor certainty could be created by extending the current Renewables Obligation Certificate banding period to 2015.

This will lessen risks to investment Round 3 Offshore Wind sites, which are key to progress towards the country's renewable energy targets. The time windows discussed in the transition proposals require accreditation by March 2017, which falls in the middle of the build out of 30GW of Round 3 Offshore Wind projects, and is equivalent to completing construction by Autumn 2016 as limited construction can take place over the winter period.

In addition, the schedules for Round 3 projects could mean that accreditation onto a revenue support scheme would occur close to 2017. This would put Round 3

[30] Prof. David Newberry, Electricity Policy research Group, University of Cambridge "High level principles for guiding GB transmission charging and some of the practical problems of transition to an enduring regime". To be formally published Spring 2011.

projects in a position where they are too late to take full benefit of the Renewables Obligation, but too early to factor in the details and any performance history of the new regime. This threatens to hold up investment in offshore wind and supporting infrastructure at this crucial time for the industry. This in turn has the potential to undermine government efforts to grow a competitive offshore wind industry and supply chain here in the UK.

7.5 Optimising Transition – Project Phasing

Currently, projects are only officially accepted onto the Renewables Obligation at the point of full accreditation, which equals the point of first generation. However, if a project's expected commissioned date is close to 1st April 2017, and experiences delay, the cut off date for receiving Renewables Obligation support will have been missed. It may also have missed out on the cut off date for receiving support under the new Feed in Tariff, if as suggested by Government, criteria for this will be based on financial close. To resolve this risk, there must be an element of flexibility around the cut off period for Renewables Obligation support. A point of preliminary accreditation has been used in the past for eligibility under the Renewables Obligation. This precedent could be used for allowing projects that receive pre-accreditation by 31st March 2017 to qualify for ROCs subject to achieving full accreditation by 31st March 2020 or alternatively, the project could be given the opportunity to go back and join the Feed in Tariff.

7.6 Calculating the Vintaged Obligation

Consideration must be given to existing Power Purchase Agreements, and in particular, the necessity to protect the value of existing projects. It is imperative that the confidence of the investment community, especially the broader community required in the next decade, is not undermined via policy and regulatory changes leaving projects financially injured.

Whichever road is taken, vintaging arrangements must address wholesale price and capacity payment changes post-EMR, as these will have a major impact upon the revenues of renewables projects.

8.0 Capacity Mechanism

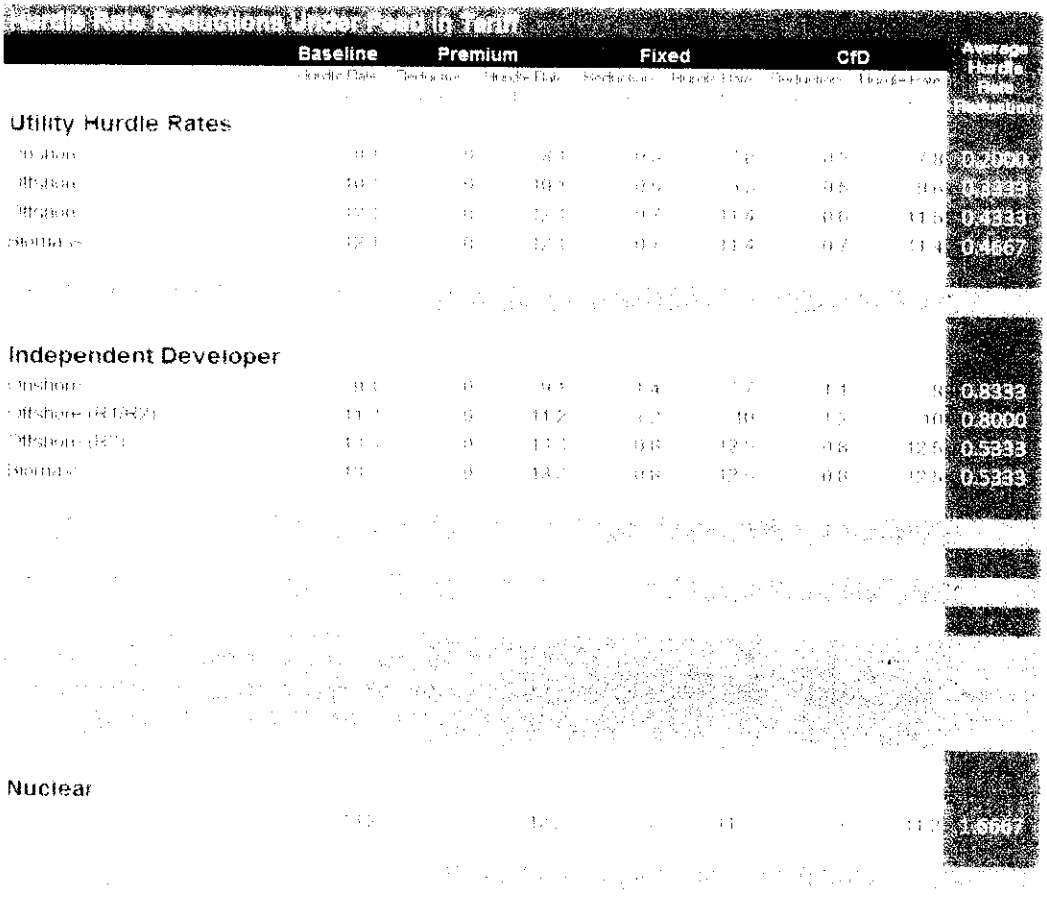
For renewables to achieve maximum penetration onto the electricity network, a flexible system is required. Scottish Renewables therefore support the Government's intention to facilitate integration of an increasing proportion of renewables onto the system whilst ensuring security of supply. A capacity mechanism has the potential to improve the investment case for demand response, whether this comes from generation, storage or demand side management.

Assuming a capacity mechanism seeks to ensure adequate supply at all times, we would see merit in designing it in an inclusive manner that would incentivise investment in a wide range of solutions, including ones best able to meet mandated climate change targets, for example renewable generators who have flexible capability to behave flexibly. The reform package should also ensure that carbon capture and storage is incentivised through an appropriate mix of capacity payments and energy income to operate in a complementary manner to renewables, rather than in a competitive manner which simply displaced renewable generation.

As such, the solution may not lie in a short-term targeted capacity market that provides very little certainty at the time of investment, and no stability over the longer term. If a capacity mechanism is implemented, it is essential that a long term and non-disciminatory approach is taken.

SCOTTISH renewables

Annex 1 – Hurdle Rate Calculations



Figures taken from Redpoint analysis on Page 56 of the DECC EMR consultation document:

Table 4: Reductions in hurdle rates in Redpoint modelling, compared to the baseline

Low carbon support		Baseline	Prem	Fixed	CfD
Hurdle rates (typical utility)					
Onshore wind	Emerging	8.1%	0.0%	-0.3%	-0.3%
Offshore wind (R1/R2)	Mature	10.1%	0.0%	-0.5%	-0.5%
Offshore (R3)	Established	12.1%	0.0%	-0.7%	-0.6%
Biomass	Emerging	12.1%	0.0%	-0.7%	-0.7%
Hurdle rates (independent developer)					
Onshore wind	Emerging	9.1%	0.0%	-1.4%	-1.1%
Offshore wind (R1/R2)	Mature	11.2%	0.0%	-1.2%	-1.2%
Offshore (R3)	Established	13.3%	0.0%	-0.8%	-0.8%
Biomass	Emerging	13.3%	0.0%	-0.8%	-0.8%
Hurdle rates (nuclear developer)					
Nuclear	Emerging	13.2%	-1.0%	-2.0%	-2.0%