



Making business sense
of climate change

Investor Perspectives

on

A study funded by the Carbon Trust and
carried out by L.E.K. Consulting for the
Renewables Advisory Board

Renewable Power in the UK

December 2003

Foreword

The Government has set a target to increase the proportion of electricity produced from renewable sources to 10.4 per cent by 2010. Substantial investment will be required to meet this target, as well as to ensure that UK plc is capturing associated economic opportunities.

The Finance and Investment Working Group (FIWG) of the Renewables Advisory Board was established to provide evidence-based advice on issues associated with securing and delivering the required finance and investment to realise the Government's target on renewables. The FIWG identified the need for an independent assessment of renewables amongst the investment community to determine the likelihood of finance being made available at scale in the current policy regime. The Carbon Trust, with the FIWG acting as a steering group, commissioned L.E.K. Consulting to undertake this study - the findings of which are summarised in this document.

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Objectives and methodology

Principal objectives of the study

- To ascertain the conditions under which finance would be available at the appropriate scale and lowest cost:
 - are risks and rewards for investment in renewable energy projects in balance? If they are not in balance, what key investment criteria are not being met?
 - how do investments in renewable energy compare with alternative segments and markets/countries? If the funding gap is significant, what needs to change to make a difference?

The key objective of this study was:

- To assess the likelihood of private sector finance being available at scale to support the delivery of the Government's 2010 target for renewable energy:
 - what are current attitudes towards investment in renewable energy? What is the perception of Government policy?

41 interviews with 39 organisations have been completed as part of this study

Interview programme and methodology

- The study has been effected through direct engagement of the investment community in order to establish a firm evidence base to support further work in this area:
 - this included interviews with large utilities, project finance and private equity providers. Independent developers, engineering companies, and oil and gas companies as well as industry observers such as professional advisers, fund managers and analysts were also interviewed
- Feedback from the interview programme has been collated and evaluated against the project objectives to develop perspectives on:
 - investor perceptions of the major opportunities and risks associated with investment in renewables in the UK
 - potential evolution of the renewable sector in the UK with particular emphasis on wind technology
 - comparison of incentives in the UK versus those available in other countries
 - identification of the scale of potential funding available from the private sector and Government actions required to support such investment

Organisations Interviewed

Large Utilities	Other Industry Participants	Project Finance/ Banking	Private Equity	Observers/Fund Managers
Centrica	AMEC	ANZ Investment Bank	Barclays Private Equity	AON
EdF Energy	Developments*	Bank of Tokyo Mitsubishi	Charterhouse Development Capital	Augusta Finance
Innogy (RWE)	BHP Petroleum	Dresdner Kleinwort Wasserstein	Electra Partners	Baker & McKenzie
Powergen (E.on)	BP Wind & Solar	HBOS	Hg Capital	CO2e
Powergen Renewables	CWS	Hypovereinsbank		CSFB
Scottish and Southern	Energy Power Resources	Investec		Deloitte & Touche
Scottish Power	GE Wind	Royal Bank of Scotland		Ernst & Young
United Utilities*	Impax			Henderson Global Investors
	PB Power			KPMG
	Shell Wind Energy			Merrill Lynch
	Wind Prospect			

Note *Two meetings with different individuals for both AMEC and United Utilities

Summary conclusions

(1) Utility view

- As a consequence of the structure of the UK electricity market and renewables policy, the large utilities occupy the central role in the achievement of the renewable energy targets:
 - the obligation and the targets have been placed on them as the suppliers of electricity
 - under the New Energy Trading Arrangement (NETA), only the large utilities are able to manage effectively the market and balancing risk
 - long-term Power Purchase Agreements (PPAs) are only acceptable to the banks if backed by creditworthy counter-parties
 - balance sheet strength is required to finance higher risk developments for which project finance is unavailable
- Achievement of the Government's target for 2010 is largely dependent on the rate of development of onshore and offshore wind capacity which together represent the vast majority of the potential UK renewable capacity in this timeframe
- The financial viability of wind generation is largely determined by the value of Renewable Obligation Certificates (ROCs) over the life of the investment
- It is very unlikely that the 10.4% target will be met under the circumstances which currently face the large utilities. The following concerns were raised:
 - lack of targets beyond 2010/11 create a high level of uncertainty over the value of the ROCs after this date
 - the recycled premium creates a collective incentive to undershoot the annual renewable targets
 - there is uncertainty over the future eligibility of renewable technologies (including co-firing) and the impact of the EU carbon trading scheme

(2) Independent developer view

- The role of smaller, independent generators is dependent on their access to commercially attractive PPAs, and is thus controlled by the large utilities. Very few smaller players, therefore, can be expected to take full responsibility for the supply of renewable electricity
- There are, however, opportunities for smaller players in other aspects of the renewable energy value chain covering activities such as project development and management, site operations and maintenance, etc.

Key features of the ROC framework

Obligation	▶	• An obligation is placed on the electricity supply companies to source an increasing proportion of their electricity from renewable sources
2010/11 Target	▶	• The obligation sets a target level for renewable power for the electricity suppliers starting with 3% of electricity in 2002/03 rising annually to 10.4% by 2010/11
Certificates	▶	• OFGEM issues a Renewables Obligation Certificate (ROC) to a renewable power generator which can then be sold along with the renewable power or sold separately
Eligibility	▶	• Renewable energy sources eligible for ROCs are precisely defined in the Order but the inclusion criteria are currently under review
Buyout Price	▶	• To the extent that an electricity supply company does not meet its obligation, it must pay a buy out price of £30/MWh* to OFGEM. £30 is thus the floor price for ROCs (providing the target has not been met) and a cap on the increased cost of electricity paid by the consumer
Recycle Premium	▶	• The buyout price received by OFGEM is distributed back to the electricity supply companies in proportion to the volume of ROCs each company actually holds. This provides an incremental value to the ROC (above £30/MWh) which decreases as the target is approached

*02/03 price which increases annually according to retail prices index

Summary conclusions

(3) Investor view

- Availability of bank project finance is currently limited by the small number of projects of sufficient scale that meet their investment criteria for reasons that mirror the concerns of the larger utilities mentioned earlier
- Project finance providers also expressed the greatest concern about the impact of Government policy changes in the energy sector (this was a concern shared by other participants in the survey, but to a lesser degree)
- Mainstream Private Equity firms have not yet invested in the UK renewable energy markets; they are, however, interested in the sector and may well finance "support" activities and the technology and equipment providers
- The current level of returns for electricity supply are unattractive for the oil and gas companies who have relevant expertise derived from their involvement in large offshore engineering projects and who might otherwise be seen as a logical source of funding

(4) Wind economics

- Onshore wind projects (for good locations, coming on stream now) are economic under the existing ROC regime. After the end of 2004, projects will cease to be economic as the period of subsidised returns becomes too short and project approvals will dry up unless the regime is extended beyond 2010/11
- There are also a number of non-financial factors that were identified by the interviewees which are likely to constrain the rate of development of onshore wind, whatever the value of the ROCs
 - difficulties and delays in obtaining planning consents and MoD approvals
 - lack of incentives for DNOs to provide embedded generation connections
 - utilities' preference for internal development limiting the availability of viable third party PPAs
- Offshore wind is not economic under the current ROC regime although development activity continues in the belief that the target and the regime will be amended to make the economics more attractive
 - utilities remain the core driving force as guarantor of an off-take mechanism but are creating consortia with providers of offshore construction and operating skills

- even if the target is extended beyond 2010/11, the additional expected value of the ROCs is still not certain to provide returns high enough to compensate for the additional costs and risks of operating offshore

(5) Recommendations

- A number of specific themes and suggestions have arisen from this interview process:
 - the ROC mechanism is perceived by the majority of interviewees to be effective and should not be discarded
 - greater certainty around targets and Government policy post-2010/11 is the primary requirement to underpin the future value of the ROCs and the 2005/6 review should be brought forward
 - the intentions for eligibility of other technologies, such as co-firing, CHP and waste, which could seriously undermine ROC values unless the targets were adjusted accordingly, also need clarifying
 - many would like to secure grandfather rights for existing ROC projects and/or a guaranteed price for the ROCs to reduce the risks associated with any potential future policy changes and the impact of EU carbon trading
 - consistent communication and prioritisation across Government departments is needed, for example, to streamline the process of granting consents
 - incentives are required to encourage the DNOs to upgrade the network
- The implication of these recommendations is that the Government should be able to address the most important issues identified by participants in this study within the existing renewable policy framework and through mechanisms that are largely within their control

Will the target be met?

- utility view

The large utilities have the central role to play in the achievement of renewable energy targets

- The Renewables Obligation has been placed on the suppliers who therefore control the mechanism by which their target is met

“...Initially we sought to meet our obligation through the purchase of ROCs. The next phase in our strategy is to seek to meet requirements through generation, and we are gearing up our investment and support for renewables projects at present...”
Large utility
- The ability to manage the balancing risk under NETA means that the large utilities hold much of the commercial power in the system

“...We prefer to pay the buyout price [rather than purchase ROCs externally or write a PPA] and wait for our own capacity to come on stream over the next three years...”
Large utility
- The ability to manage the balancing risk under NETA means that the large utilities hold much of the commercial power in the system

“...We are somewhat beholden to the utilities to complete a project to ensure an off-take mechanism - the intermittence of wind means that we cannot guarantee uninterrupted generation placing the balancing risk with the utility...”
Independent developer

“...We clearly provide a critical part of an off-shore wind development by guaranteeing the off-take mechanism and would not be prepared to participate without an equity stake in the project to share in the upside potential...”
Large utility

The large utilities are reluctant to write long-term PPAs which underwrite the value of the ROCs beyond 2010/2011

- There are only half a dozen electricity supply companies that are regarded by the banks as creditworthy counter-parties for long-term PPAs

“...In terms of a creditworthy counter-party, we would require a company that had a rating better than BBB - that leaves the big 6 electricity suppliers as your possible set...”
Project finance provider
- These large utilities are reluctant to write PPAs beyond 2010/11 due to uncertainty over the value of ROCs

“...We are happy to write PPAs out to 2011, but won't go further. Although it would no doubt please the financiers of independent projects to write 15 year PPAs, there's no reason why we should assume the political risk of changes to the regime after 2011...”
Large utility
- This reinforces their control over the level of renewables investment

“...Utilities control this market. They will invest in and support renewables, and ensure ROCs retain value for their own projects, so as to maximise their returns; they can write external PPAs and internal PPAs on terms that suit them...”
Industry observer

Will the target be met?

- utility view

The large utilities are making significant investments in wind generation, mainly on balance sheet

- All of the large utilities interviewed have plans to invest in wind generation, often in conjunction with other organisations

"...Our company is interested in participating in Round 2 for off-shore wind projects and would likely do so in a consortium with a turbine manufacturer and a construction company..."

Large utility

"...We have identified 850MW of possible wind projects, of which we expect around 250MW is ultimately likely to come online..."

Large utility

"...Currently we are looking at the potential for development of a true offshore project, outside the current 12 mile consenting constraint. We are working in a joint venture alongside another energy company, an academic institution and banks..."

Large utility

- Utilities currently have a preference for on-balance sheet financing

"...We prefer to use our own balance sheet to invest as it provides us with the flexibility to use a variety of short and medium-term PPAs..."

Large utility

"...Our renewables investment will only be in wind - onshore or offshore. We are looking to invest in wind projects on a JV basis. We expect that finance will be on balance sheet, but would consider off-balance sheet financing in the future if it suited the project..."

Large utility

"...We have plans to develop an additional 500MW over the next 3-5 years, which will mainly be in wind. We will probably look for equity as well as debt contributions from third parties to support the investment..."

Large utility

Will the target be met?

- utility view

Within the 2010/11 timeframe, wind is probably the only proven technology that can meaningfully contribute to the 10.4% objective

- All of the interviewees believed that the most significant contribution to renewable energy generation prior to 2010/11 would come from wind

"...Wind is the only technology that can contribute in a meaningful way to the target for 2010/11. Other forms of technology are currently too expensive or are too early in their development..."

Large utility

"...We have significant plans for investment, and will focus on wind, but not other technologies..."

Large utility

"...The premium for renewables does not differ by technologies in the UK, so most of the investment will flow to the most economic, scaleable technology - and that is wind..."

Industry observer

- Other technologies will become relevant in the future, but not within the 2010/11 timeframe

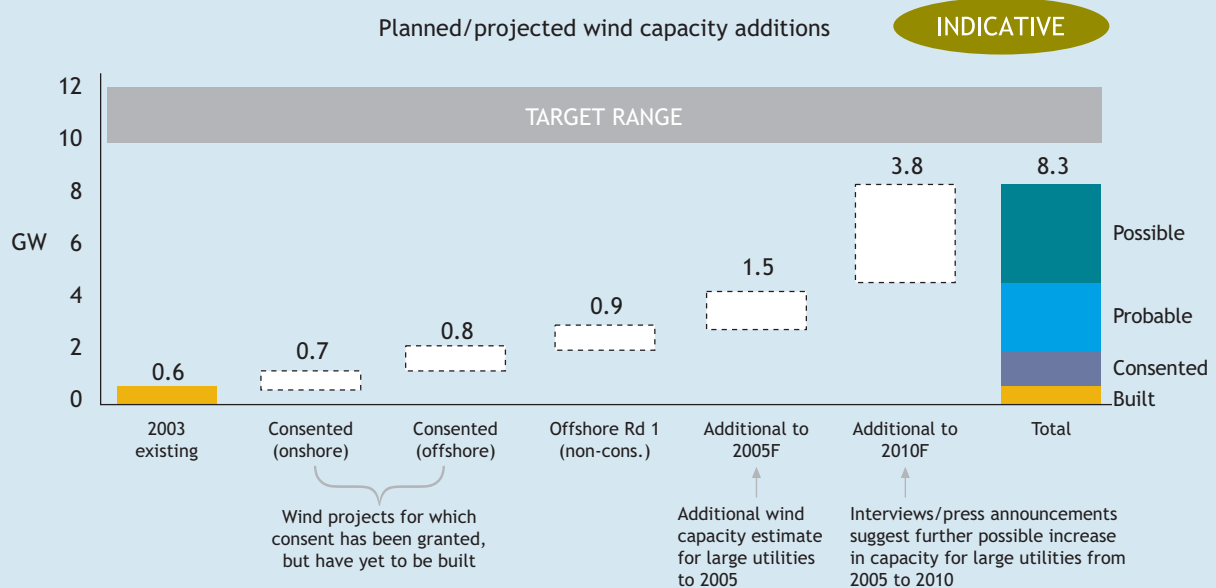
"...Wave and tidal are important, but are at least five years away from being commercially relevant..."

Large utility

"...Banks are not willing to carry operational risk from unproven technologies..."

Project finance provider

The Current Known Plans for Wind Investments might amount to c.80% of the 2010/11 Target



Will the target be met?

- utility view

It is very unlikely that the 10.4% target will be met under the circumstances which currently face the large utilities

- Greater clarity about the Government's intentions about the future of the ROC regime post 2010/11 will be required for the "probable" and "possible" projects to progress past internal investment committees

"...We will carry on with development work for offshore wind, but we have to assume that the policy framework will stabilise if we are to obtain investment committee approval..."
Large utility
- The recycle premium creates a collective incentive to undershoot the annual renewable targets

"...The value of the recycle premium is very important to the economics of a project so we model very carefully the extent to which we envisage generation capacity will undershoot the target..."
Large utility

"...If we overshoot the target, the value of the ROCs would fall significantly; if we believed that to be the case, we would not be investing in developing new capacity..."
Large utility

"...The 2010/11 target won't be hit - we might expect it to get to 7 or 8%. We view 10.4% as not a real target, but an aspiration that ensures that the ROCs will retain value..."
Large utility
- There is uncertainty over the future eligibility of technologies and the impact of the EU carbon trading scheme

"...The uncertainty over eligibility rules, particularly co-firing, is damaging due to the potential to change returns and augment utilities' power..."
Industry observer

"...The future interface between renewable energy and carbon trading isn't clear. Renewables aren't the most efficient way to abate carbon and this means that policy may shift..."
Project finance provider

Will the target be met?

- independent developer view

Very few smaller players are likely to take full responsibility for the supply of renewable electricity

- Independent generators are unable, under NETA, to assume the balancing risk associated with electricity generation from wind farms, and are therefore reliant on obtaining PPAs
- It is difficult for smaller developers to obtain a bankable PPA from the large utility companies. PPAs offered by utilities tend to be for 5 to 7 years only, not always matching financiers' requirements for high leverage lending of at least 10 years of locked-in demand
- Some large utilities are actively seeking to engage independent developers through joint ventures to assist them to meet their Renewables Obligation
- Independents are also seeking to establish specific roles, where they can extract value from accumulated experience such as planning, development of sites and the maintenance and operation of wind farms on behalf of 3rd parties

"...The trading of electricity is a critical step that can lead to enormous losses, and this risk can't be taken on by merchant generators..."

Industry observer

"...Longer-term PPAs are hard to obtain and in addition utilities are reluctant to offer PPAs other than for locations with high wind speed (8-9 m/s). The result is that small developers struggle to gear projects higher than 70%, well below target gearing of 80-85% they need to justify returns..."

Independent developer

"...The development talent is out there. We feel that the best way of meeting our Renewables Obligation requirements is through joint ventures; we can bring finance and PPAs to the table, and they bring development expertise

Large utility

Will the target be met?

- investor view (project finance)

Although some banks are keen to provide project finance for wind projects, there are currently few projects with significant scale that meet their criteria

- Banks have clear criteria for determining whether a renewables investment proposition is suitable for project finance

"...We require a strong sponsor, such as a large utility or financially sound OEMs (who are able to offer guarantees on the technology), as well as a long-term PPA from a creditworthy counter-party..."

Project finance provider

- Banks are prepared to accept wind risk but are not prepared to accept operational and technical risks

“...We need to offload market risk on ROCs and trading risk, and won’t back any project where there remains technology risk. But we are happy for the merchant we back to assume the risk of the wind not blowing as that should come out in our due diligence...”

Project finance provider

- Although the risk profile of on-shore wind is attractive for project finance, currently there is a shortage of suitable projects

“...To make project finance work, the investment needs to be of scale of at least £50-100m - there just aren’t enough economically viable onshore propositions in the U.K. to lead to activity in this sector...”

Project finance provider

- Offshore wind projects are currently not attractive for project finance, due to the high levels of technological uncertainty, which also constrain the availability of insurance

“...Offshore wind remains a big technological risk. Although the principle is great with the promise of big projects which are easier to finance, it remains uneconomic and unproven...”

Project finance provider

“...We would need to see 1-2 years of proven operating data for an offshore wind technology before we would consider project finance...”

Project finance provider

The reputation of the Government is poor amongst the project finance community and there are significant concerns about stability of policy

- The banks have incurred losses of £4-5bn on conventional power plants following the introduction of NETA

- Government intervention in the generation market has been inconsistent, a cause of concern to investors

“...We are nervous about the involvement of Government. In particular, the replacement of the Pool system, which was fundamental for the viability of Combined Cycle Gas Turbine (CCGT) projects, with NETA and the financial support for British Energy, mean that the Government has a poor reputation...”

Project finance provider

- The cost of renewables may become politically too high

“...We’re also concerned that if consumers felt that it was becoming too expensive to support renewable energy, the Government may react by removing the targets...”

Project finance provider

- There is already structural over-capacity in the UK electricity generation that will be exacerbated by additional renewable plant

“Due to overcapacity it is difficult to see an underlying economic rationale that can support scale renewable investment without long term certainty of revenue...”

Project finance provider

- These factors result in project financiers being cautious towards renewable investments and therefore charging higher lending premiums

“...It is not clear what will happen to the ROC system beyond 2010/11, which makes funding more expensive as banks price in higher risk premiums...”

Project finance provider

Will the target be met?

- investor view (private equity)

Private Equity's focus is on scalable and saleable opportunities, with a preference to invest in management teams rather than projects: the focus is likely to be activities such as technology and equipment providers

- All of the Private Equity firms interviewed are monitoring the UK situation carefully. However, none have yet funded a wind project in the UK and some have invested in other parts of Europe

- The returns for onshore wind projects under the current framework probably only reach levels acceptable to Private Equity if there is significant gearing in the funding (e.g. c. 80%)

"...With the ROC, the assets on a wind project can get a return of 8-12% pre tax, which comes up to a 15-17% IRR with around 80% gearing, which although low for Private Equity is acceptable for an investment of this kind..."

Private Equity provider

- There are very few companies, or credible management teams, to back in the UK and most funds are not set up to invest in individual projects

"...We struggle to find investment opportunities in the UK. Compared to other countries, the UK does not have companies with operational track records, established positions, a track record of generating cash..."

Private Equity provider

"...Private Equity is not the source of finance for the offshore. Those to take it up first, and prove it, are those with a strategic reason to do so, such as utilities, oil and gas companies and turbine manufacturers..."

Private Equity provider

- In addition, Private Equity firms are reluctant to be exposed to such a narrow perceived political risk

- The most likely route into this sector for Private Equity is through elements of the service and support activities or as technology and equipment providers or future refinancing of generating portfolios

Will the target be met?

- investor view (oil and gas companies)

Oil companies are showing some interest in investing in renewables; however, the scale of their projected investment in the UK remains unclear

- The oil majors have a different motivation for investment in renewables from other participants

"...We view investment in renewables as an energy option for the future, to ensure that our portfolio of assets takes into account the likely change in energy sources in the future..."

Oil and Gas Company

- Renewables projects, however, must still compete with other investments, many of which may offer higher returns

"...We have a working assumption that ROCs will retain value in the UK beyond 2010 - otherwise we cannot make a reasonable case for planning. However, significant investments still require main board approval and compete with other opportunities, and we will revisit our assumptions before any big outlay..."

Oil and Gas Company

"...Under the current ROC regime we do not see sufficiently attractive returns, versus alternative projects, to become actively involved in off-shore wind..."

Oil and Gas Company

- The UK does not compare well with other countries in which renewable energy investments carry less risk

"...A large part of all renewables' returns is based on Government sentiment, and this is particularly so in the UK. Other countries offer greater certainty through grandfathering rights and feed-in tariffs..."

Oil and Gas Company

Will the target be met?

- wind economics

Under the existing ROC regime, onshore wind projects are currently economic but will remain so only for those projects that come on stream before the end of 2004

- The existing ROC regime provides an adequate framework to make onshore wind projects financially and economically viable

“...The ROC value sets the threshold at which renewable projects become viable. Onshore wind projects currently pass this level but the majority of other technologies do not...”

Engineering company

- However, without value ascribed to ROCs post-2010/11, onshore wind projects will become uneconomic over the next 1-2 years. Many would like to see the 2005/06 review brought forward

“...Over the next 24 months, the development pipeline of onshore wind projects will dry up unless the Government provides more certainty post 2010/11, allowing investors to assume value to ROCs beyond that date...”

Large utility

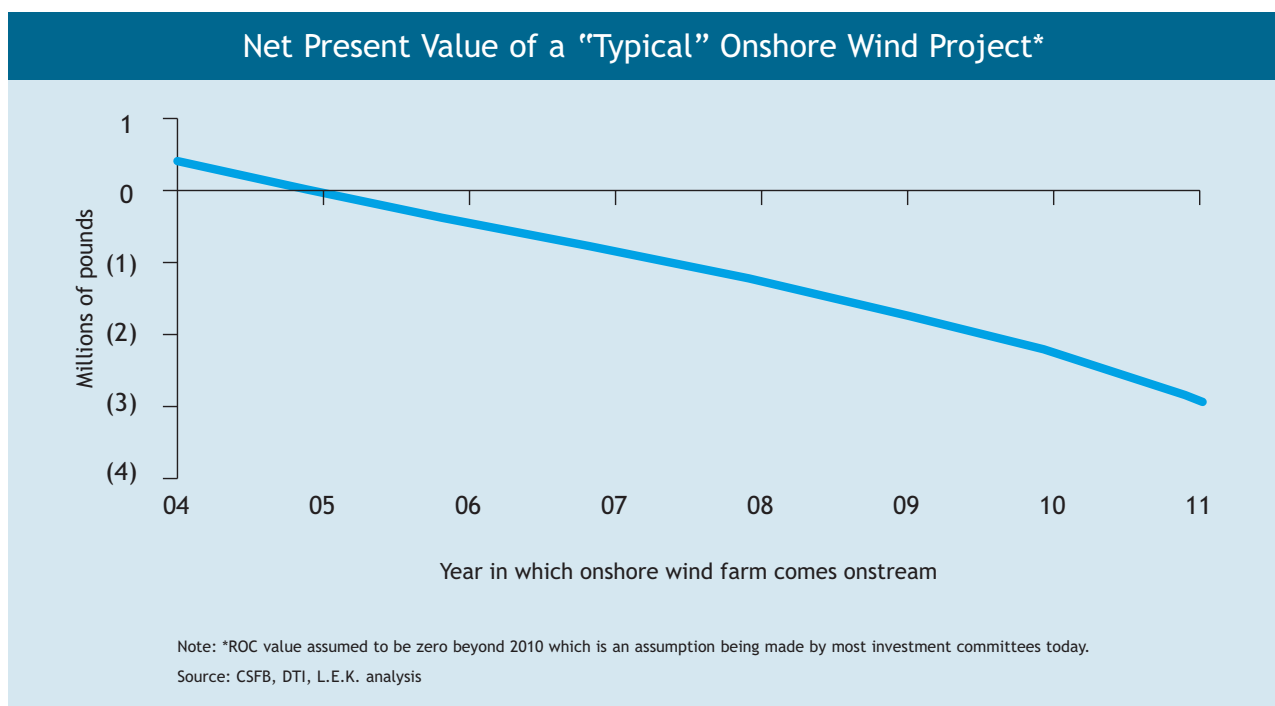
“...Bringing the planned review forward is essential to have any hope of meeting the 2010 target...”

Industry observer

- Electricity suppliers are not willing to close the uncertainty gap in regulation by writing long-term PPAs that extend beyond 2010/11

“...We are reluctant to write long-term PPAs with independent developers because the regulatory framework does not provide sufficient certainty after 2010/11...”

Large utility



Will the target be met?

- wind economics (onshore)

Apart from uncertainty of ROC values, onshore wind projects are being limited by planning and connection constraints

- The drawn-out and uncertain planning process for onshore wind projects is preventing a significant increase of wind capacity

"...The planning process is currently the biggest obstacle for a rapid development of onshore capacity..."

Large utility

"...A big problem to getting consent has been MoD approval. The DTI doesn't seem to have any power in relation to the MoD, and the MoD is currently blocking onshore projects that only marginally affect defence zones..."

Large utility

- To accommodate a large number of renewable projects, the local networks will need to be reinforced. Currently, the Distribution Network Operators (DNOs) are not incentivised to carry out this work and the costs can be prohibitive for the developers

"...The fact that Ofgem does not allow DNOs to earn returns on network reinforcements for renewable projects disincentives them to enhance the network in regions where renewable projects could be viable..."

Large utility

"...In the UK the developer has to pay for the connection as well as the deeper network cost, which can be substantial particularly in areas with weaker networks, and can be prohibitive for the project economics..."

Engineering company

Will the target be met?

- wind economics (offshore)

Offshore wind is not economic under the current regime although development continues in the belief the regime will be extended post 2010/11 and additional benefits may potentially be made available

- Offshore wind projects are being developed mainly by consortia of large utilities and other providers of offshore engineering skills

"...The risk profile and capital requirements cannot be met by independent developers..."
Independent developer

"...The majority of Round 2 bidders will be joint ventures in order to be able to share risk, knowledge and experiences..."
Large utility

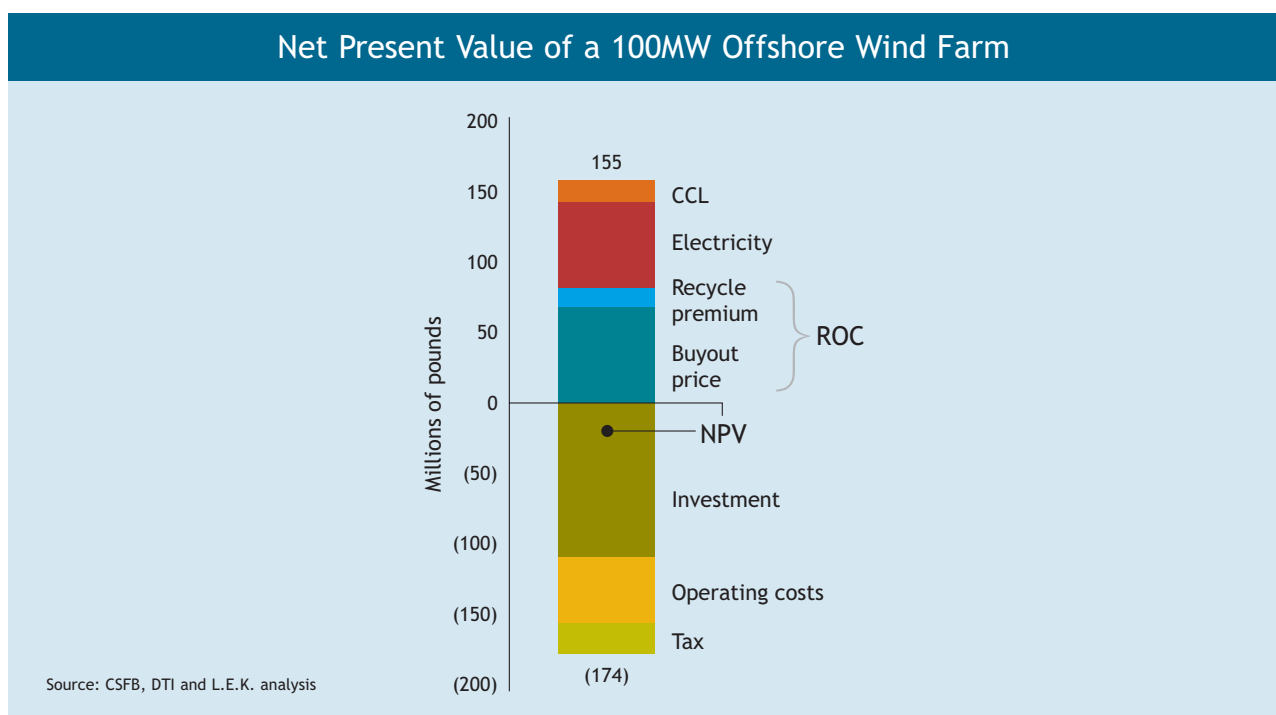
- The development of a viable financial case for offshore projects requires significant value from ROCs post 2010/11

"...The financial case for offshore wind projects stacks up only if you assume a stable ROC regime post 2010/11..."
Large Utility

- Even if the target is extended, the expected value of the ROC is not certain to provide returns high enough to compensate for the additional costs and risks of operating offshore

"...Offshore projects are a totally different game in terms of capital requirements, operating cost and risk profile. However, the ROC values are the same as for onshore wind which make offshore projects currently uneconomic..."
Engineering company

"...Projects that are currently being constructed are in shallow water with high average wind speeds..."
Engineering company



Source: L.E.K. interviews

Recommendations

Almost all the interviewees believe that some modification to the current incentive scheme is required to achieve the target

- The RO regime is considered to be an effective scheme to promote renewables investment and provide support for the lowest cost technologies

“...The ROC system is clear and well structured, and easy to communicate to investors...”

Large utility

“...We are positive about the regime. It is not a subsidy so it is more secure - it is the right kind of system with a demand and supply check...”

Project finance provider

- However, interviewees felt that to attract additional investment the target needed to be increased and extended beyond 2010/11

“...It may be technically feasible to hit the 10.4% target by 2010/11, but only if the Government firms up on the current 2020 aspiration of 20%...”

Large utility

“...We need certainty beyond 2010. At the moment, we can only project ROC value until that time - the result is that the projected returns don't justify investment in new facilities beyond 2005 - even for well-sited onshore wind...”

Large utility

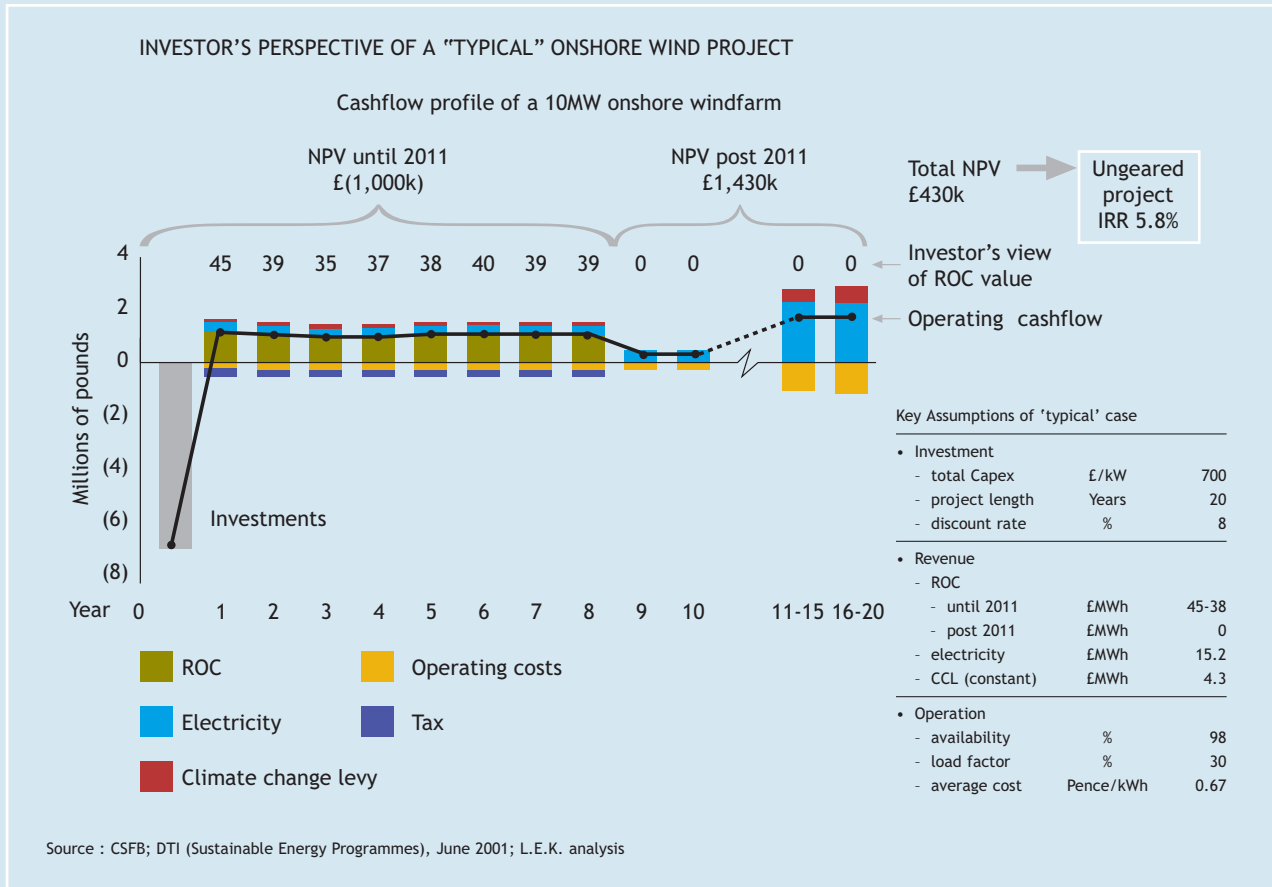
- Some interviewees suggested other modifications to the RO regime to provide increased certainty. These included:
 - guarantee of a base value for ROCs for the term of a project finance loan
 - having firm renewable obligations for a rolling period of 10-12 years forward, with future years updated on an annual basis

Suggestion	SPECIFIC SUGGESTIONS FROM INDUSTRY PARTICIPANTS ON IMPROVEMENTS TO THE UK POLICY AND IMPLEMENTATION					
	Supported/Suggested by:					
	Large Utilities (8)	Project Finance (7)	Private Equity (4)	Other Participants (10)	Observers (10)	Total (39)
Provide greater certainty over the future ROC targets and Government policy beyond 2010/11 and bring forward the 2005/6 review	8	6	3	5	4	26
Provide greater clarity over the ongoing eligibility rules for renewables, including co-firing, CHP and waste and relationship with EU carbon trading	6	2	2	2	1	13
Do a better job of “joining up” Government priorities across different departments and encourage granting of consent	4		2	1	3	10
Consider a guaranteed price for ROCs/electricity to provide greater ability to finance projects or ‘grandfather’ existing ROC projects	3	2	1	2		8
Provide a State-supported back-stop for insurance companies to encourage provision of risk mitigation		2		1		3
Provide framework for local authorities to obtain some income from windfarm operations in their area					2	2
Develop cost sharing mechanism and incentives to enable DNOs to actively support network upgrades	2					2

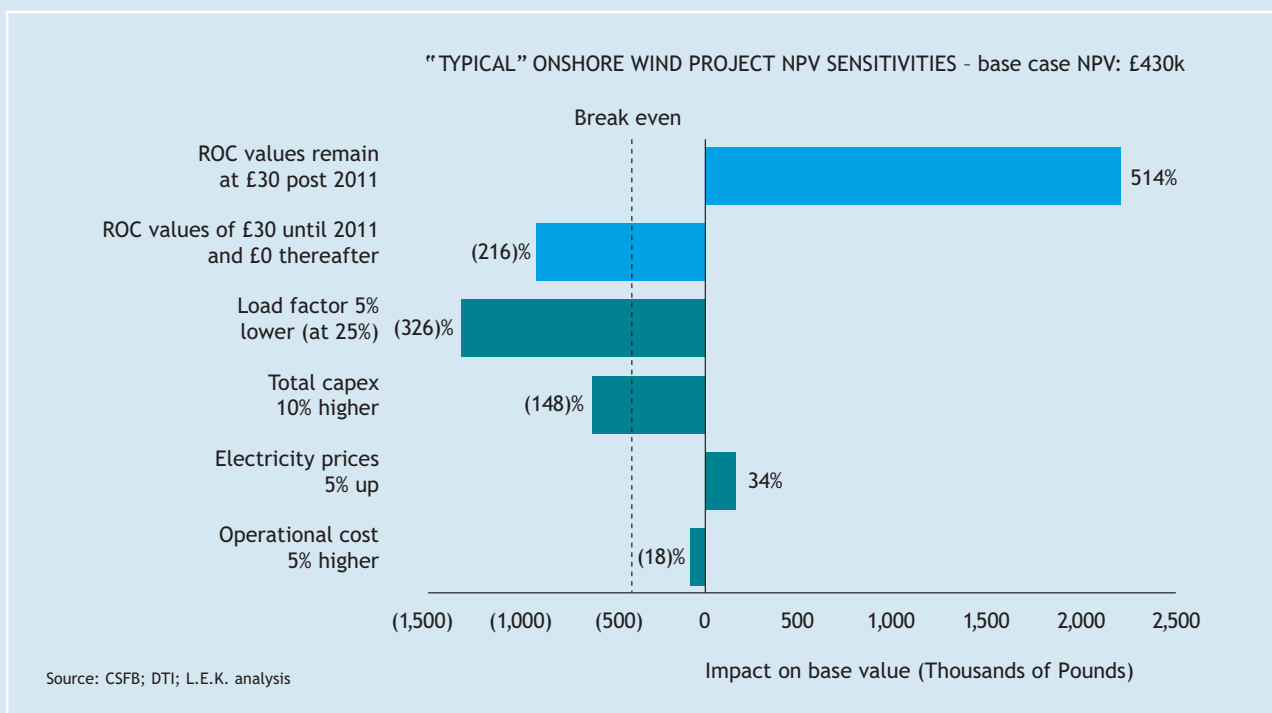
Source: L.E.K. interviews

Appendix

- economics of wind projects

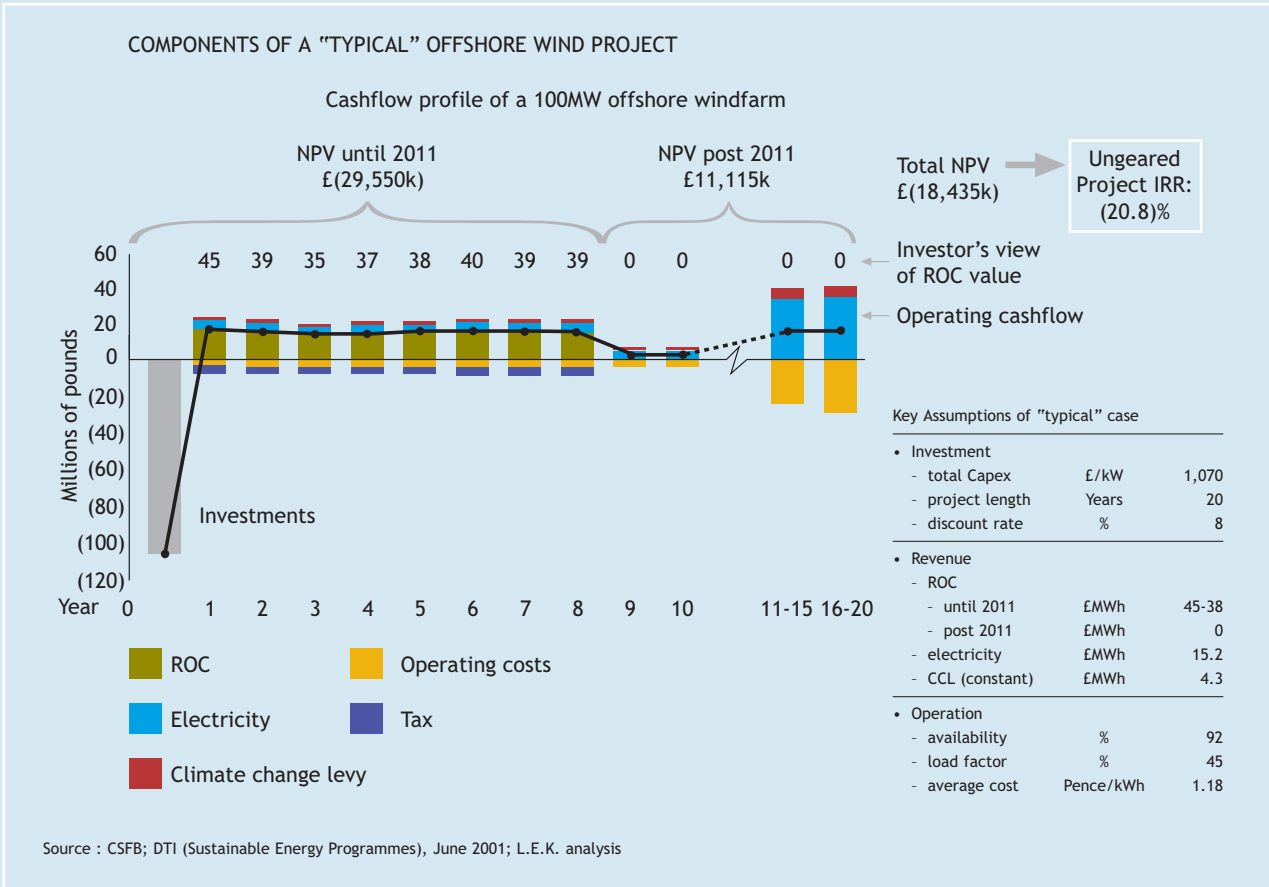


The ROC value is the single most important value driver in the economics of an onshore wind project

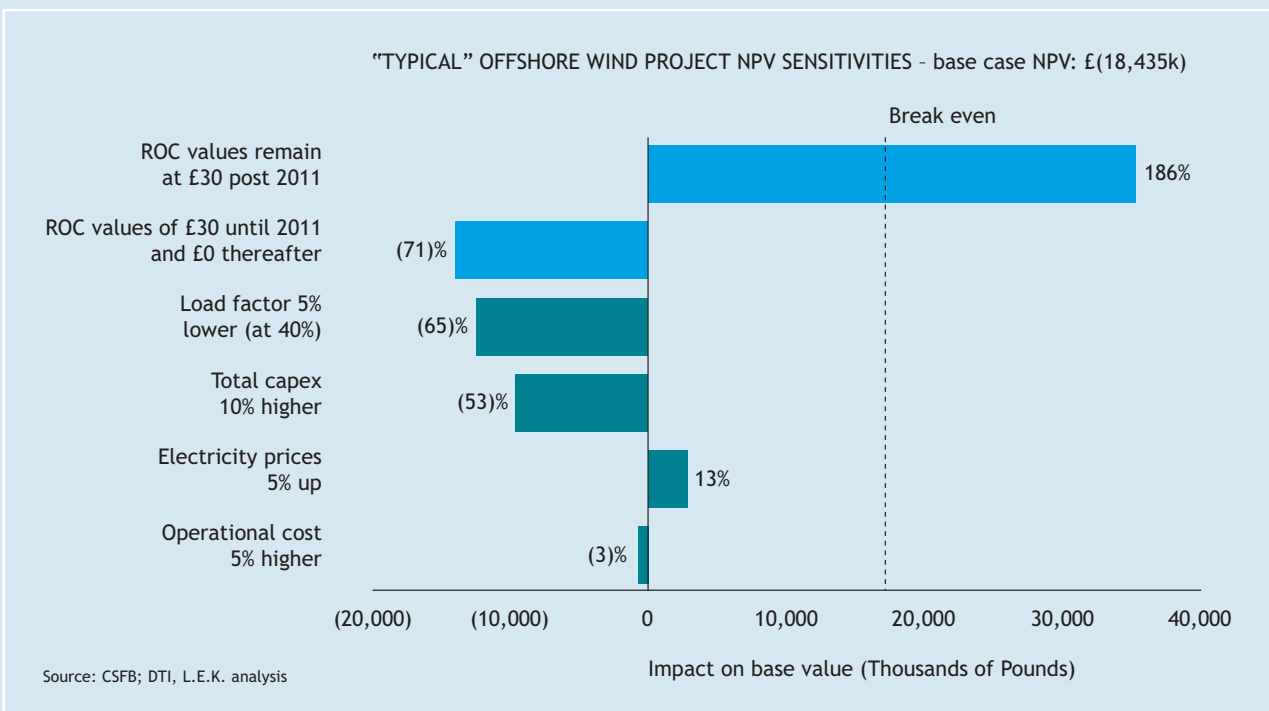


Appendix

- economics of wind projects



The ROC value is also the single most important value driver in the economics of an offshore wind project



L.E.K. DISCLAIMER

- This report has been produced by L.E.K. Consulting LLP ("L.E.K.") for the the Carbon Trust and the members of The Renewables Advisory Board ("RAB") acting solely on behalf of the RAB (together known as the "Addressees") and any ancillary reports or correspondence in connection therewith has been prepared solely with a view to
 - providing an assessment of the likelihood of private sector finance being available at scale to support the Government's 2010 target for renewable energy; and
 - ascertaining the conditions under which finance would be available at appropriate scale and lowest cost.
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Published in the UK: December 2003

The Carbon Trust is a company limited by guarantee.

Registered in England and Wales number 4190230. Registered at 9th Floor, 3 Clement's Inn, London WC2A 2AZ.

The Carbon Trust's funding is provided by grant from Defra (Department for Environment, Food and Rural Affairs), the Scottish Executive, the National Assembly for Wales and Invest Northern Ireland.

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CT/2003/11



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