Investment Considerations for Offshore Wind

Ensuring Success

Abstract

Offshore wind investment provides an exciting opportunity with huge potential for renewable energy production. This paper lays out the principal areas in which investors and lenders should focus on keeping in mind the 'new' aspects of offshore investment. We discuss some examples where debt and equity departed from traditional/proven investment to develop a new industry or sector. Many sectors flourished, some failed.

We then progress to look at the current state of the offshore sector, evaluating performance against the key success factors identified above. In concluding, we propose actions or recommendations the industry, government and finance profession must take to ensure success.

Author:

Vivek Mittal – Director and Head of Power Project Finance, Bank of Scotland Corporate
Level 6, Bishopsgate Exchange, 155 Bishopsgate, London, EC2M 3PE
Email: vivek_mittal@bankofscotland.co.uk Tel: +44 207 (0) 012 9276

Vivek has over 10 years experience in Debt, Equity and Financial Advisory for renewable & power sectors.

1 Risk Considerations for 'new' markets/developments

The prominent issues that have arisen during the development of 'new' project finance markets/ developments can be categorised as:

- ***Economic Analysis*** – diagnostic and in-depth analysis is fundamental in assessing the envelope of possible risks and appropriate rewards that should be considered for each project
- ***Government policy*** – the key to ensuring security of long-term cash flow and an autonomous operating life cycle
- ***Trophy projects*** –the deal economics should prevail over the kudos of the project
- ***Investment market appetite*** – visibility and certainty of cash flow are the main drivers of investment market appetite. It is fundamental that all elements of the sources and uses of cash are conservatively assessed and understood

Clearly, the onset of new markets and developments lead to greater uncertainty in the above elements and as such *lead to a balancing act between what Project Financiers want and what they will get*.

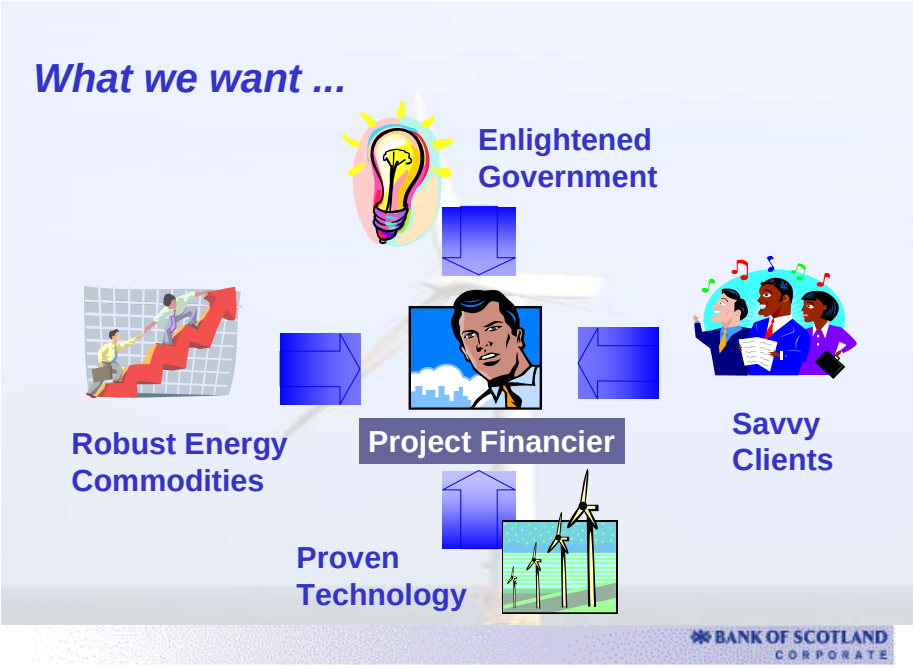


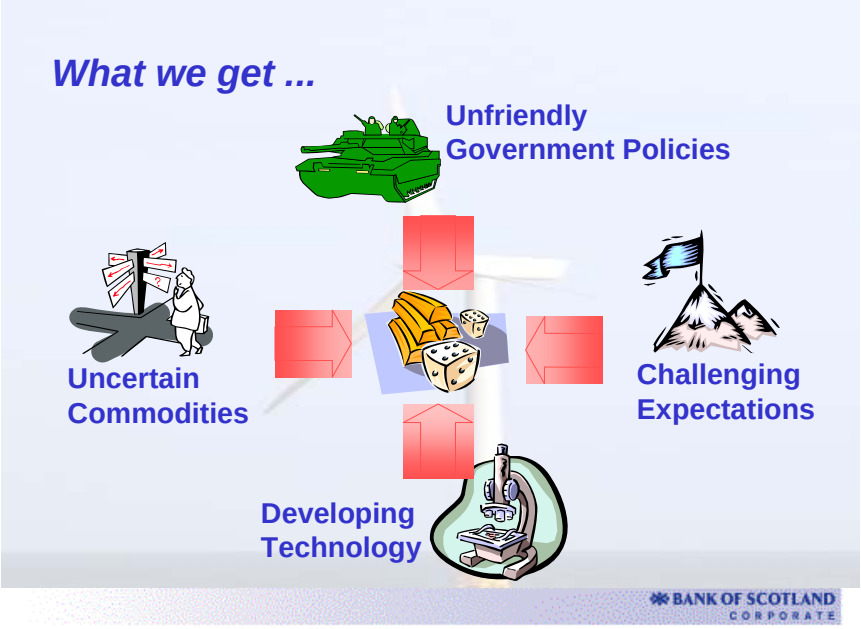
Figure 1.1: What Project Financiers would like

Essentially, figure 1.1 shows the ideal wish list for a successful project finance project. An enlightened government providing clear and consistent long-term policies. Savvy clients who have undertaken a detailed analysis considering the relevant risks and planning for/adopting the appropriate mitigants. Proven technology that enhances visibility on energy production, hence cash generation but also, importantly, operating life cycle cash costs. Finally, robust energy commodity markets are essential in monetising the operating performance of the project.

In essence, these fundamentals allow risks to be properly allocated and to ensure that early problems do not jeopardise the establishment of a liquid debt market.

However, this wish list is rarely achieved in the development of new markets.

Figure 1.2: What Project Financiers get



What we are faced with are;

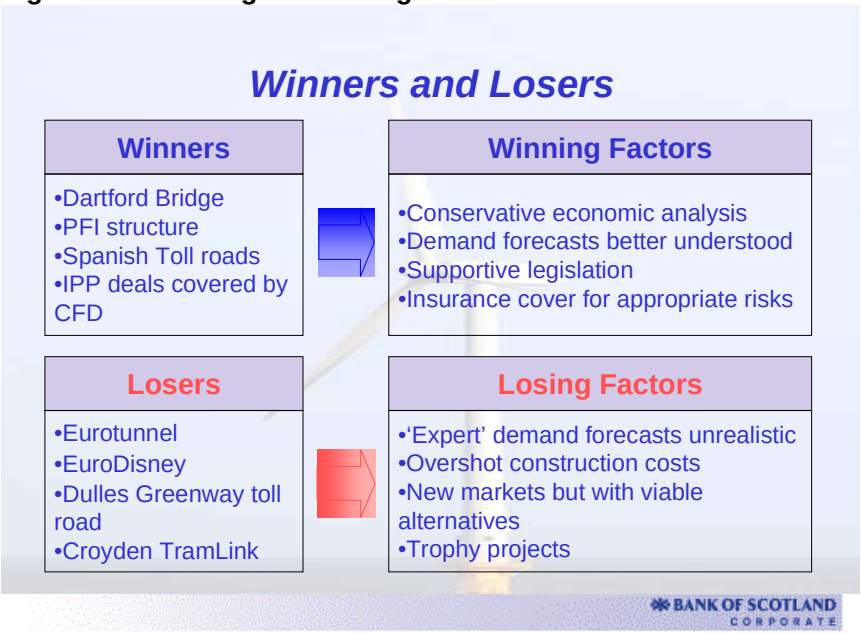
a) Government Policies that are rarely certain beyond the next term of government – though exceptions exist.
b) Clients and equity investors who often have incentives that lie outside the the success and viability of the investment in question, or do not have the necessary track record, or expect the project to bear risks that belong on-balance sheet.
c) Technologies, at least in the wind sector, which is rapidly evolving – 10 MW turbines are now being talked about, where multi MW turbines are only two years old.
d) Energy commodities (oil, gas and power) are volatile and un-predictable.

In reality, each project, whether 'Proven' or 'un Proven' presents a unique mix of risks and rewards, and it is our task to structure financing around these.

2 Winners and Losers

As a result of the above conditions there have been many examples where debt and equity have departed from traditional/proven investment to develop a new industry or sector. Many sectors flourished, some failed. Figure 2.1 below, considers some winners and losers, identifying the key success and losing factors.

Figure 2.1: Winning and Losing Factors



The Off-shore Wind sector has all of the above factors. Success will depend on emphasising the winning factors and steering clear of the losing factors.

3 Economic drivers to ensure Offshore Success

Below we identify the key economic drivers for success of offshore wind:

- ***Government support*** – long-term visibility and consistent policies including quasi government departments.
- ***Off-take arrangements / market risk*** – creditworthy counterparties enjoy a win-win scenario. Security of supply for the off-taker and price/volume visibility for the financiers.
- ***Technology and Construction Risks*** – learning from the wider experience of the North Sea Oil & Gas industry plus offshore experience to date will assist in analysing and developing appropriate strategies for successful project completion that ultimately beat budget.
- ***Operating Life Cycle*** – technology that works, a life cycle that is understood and the availability of the appropriate technology all gel towards visibility of operating costs and availability levels.
- ***Insurance costs and availability*** – fundamental that there are appropriate insurance products to cover both construction and the operating life cycle.

The following sections consider the key requirements for each driver and a subjective evaluation of the current status.

3.1 Roles for Government

Requirements	Current status	Evaluation
❑ Ensure Regulatory and Planning certainty	❑ Danger of being timed out	6
❑ Clear long term Energy policy	❑ Long term renewable goals converging between countries BUT inconsistent policies with regards nuclear	?
❑ Incentivise new technologies through economic support mechanisms: – Revenue – Tax incentives – Grid socialisation costs – Grants	❑ A funding gap anticipated	6
❑ Stakeholder alignment ….. Navigation, MOD, Aviation, Fisheries, Conservation	❑ Stakeholders not in alignment including quasi governmental areas	6
❑ Public education / perception	❑ Limited public dialogue on wind farms. Sector driven information available.	?

3.2 Off-take Arrangements

Requirements	Current status	Evaluation
❑ Ensure that the contract is "bankable": – Commodity risk – Choice of offtaker – Fixed vs. variable price vs. minimum floor price – Term of PPA to match at least senior debt term – Potential European wide scheme?	❑ Appetite for PPAs in the market. Evaluation and benchmarking required to ensure the contracts are bankable	4
❑ Understand the energy available for capture	❑ Site conditions and quality of studies should be reasonably predictable? ❑ Uncertainty over future outage requirements?	4
❑ Long term price forecast	❑ Continued reliance on 'expert' electricity market	4

	price forecasts acceptable	

3.3 Technology and Construction Risks

Requirements	Current status	Evaluation
❑ Capital costs significantly greater than onshore	❑ Quantum shift of design, production and construction technique needed to cut costs but good historic record of progression	4
❑ EPC contractor wrap and robust completion guarantees	❑ Prevalence in onshore projects expected to continue	4
❑ Grid connection	❑ Considered the root of the funding gap.	6
❑ Larger machines	❑ Advances in turbine capacity historically good.	4
❑ Availability of equipment	❑ High oil prices - renewed North Sea E&P activity affecting availability of construction infrastructure	6
❑ Health & Safety issues	❑ Experience to be gained from North Sea oil operations and installation of 100,000 turbines onshore ❑ Weather windows make construction more difficult	4
❑ Insurance	❑ See later	

3.4 Operating Life Cycle

Requirements	Current status	Evaluation
❑ Understanding of asset life span	❑ Research tends to be in isolation and territorial	6
❑ Acceptable debt and availability assumptions with min guarantees	❑ Harsh marine environment leading to higher repair and replacement costs	4

❑ Technical solutions to access limitations (equipment available?)	❑ Expansion of markets may impact the service capability - the Human Resource Challenge & fresh capital	6
❑ Shortfalls covered by acceptable guarantees protecting economics	❑ All stakeholders not on-side	6
❑ Lifetime planned maintenance focus and decommissioning cover	❑ Impacted by the rush to roll out bigger, more efficient turbines	6
❑ Other considerations of marine environment	❑ Lessons and experience to be gained from N. Sea oil ops	4
❑ Clear allocation of O&M responsibility to creditworthy counterparty	❑ Prevalence in onshore projects expected to continue	4

3.5 Insurance

Requirements	Current status	Evaluation
❑ Insurability for project life	❑ Insurance industry not fully engaged to scale of offshore market	6
❑ Business interruption cover?		
❑ Cover required for UK offshore assets could exceed £10 billion	❑ Insufficient cost visibility but typical of insurance market?	6
❑ Can EPC contractors plug any gaps?	❑ Experience from large onshore wind projects	4

4 So how are we doing?

Economic Driver	Evaluation summary	Subjective view
❑ Government support	6?66?	?
❑ Off-take arrangements / market risk	444	4
❑ Technology and Construction Risks	446464	4
❑ Operating Life Cycle	6466644	6
❑ Insurance costs and availability	664	6

5 Summary

When considering the above analysis we make the following conclusions:

A ***supportive regulatory framework*** is imperative to support long term visibility and stability of revenue and hence cash generating activities. This is essential to support the debt tenor and project economics.

Clear analysis of revenue generation is supported by the availability of robust and creditworthy counterparties for PPAs. No unexpected news is key.

Proven technology and best practice construction methods developed through cross sharing experiences both on North Sea Oil & Gas and on the early offshore projects enable projects to be completed on time and on budget.

Critical mass and pipeline of projects are key to ensue that the substantial due diligence costs can be carried.

A ***partnership approach*** through working closely with Sponsors will build confidence and provide skills base necessary to satisfy all technical, political and financial challenges that the offshore market will face in both the near and longer term.

Bank of Scotland is committed to playing its part in ensuring Offshore Wind is successfully developed