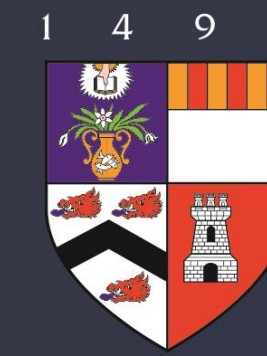


Illustrative Capital Budgeting of an Offshore Wind Farm

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Introduction

The following goals were set for this study:

- review several existing offshore wind projects on the topic of expenses
- examine the major items of expenditure in any offshore wind project based on industry reports
- present a discussion on potential cost reduction
- carry out a capital budgeting of a theoretical wind farm as an illustration of this discussion

Methodology

The constructed model introduces the following descriptive assumptions:

Wind Farm Assumptions			
Size of the wind farm / Number of turbines	Small / 20	Medium / 80	Huge / 150
Windiness / Load Factor Bonus (%)	Poor / 7	Ample / 10	Windy / 15
Machinery Quality / Turbine Lifetime (years)	Poor / 15	Average / 20	Excellent / 25

Considered Policies:

- Renewable Obligation Certificates
- Contracts for Difference
- Feed-in Tariffs

Methodology

The influence of introduced parameters on the model has been realized through according changes in load factor.

Net Present Value calculation has been carried out for two different projects given the assumptions and parameters according to the table below:

Parameter	Wind Farm 1	Wind farm 2
Size of the wind farm	Medium	Huge
Windiness	Windy	Ample
Machinery Quality	Average	Excellent
Applied Policy	CFD	FIT

Results

Comparison of the Net Present Values of the projects with given combinations of parameters has proven that economical performance is very site-specific and depends on the chosen parameters differently.

Cost Reduction Potential

The following list of cost reduction methods is discussed:

1. Construction process:
 - More sophisticated machinery
 - Onshore facilities involvement
 - Longer construction period due to new tech
1. Quicker cable connection to onshore facilities
1. Turbine improvements:
 - Installed cost reduction
 - Improved efficiency
 - Prolonged durability
2. Maintenance policy customization
3. Indirect impact of Science and R&D:
 - IT Software
 - Material Science

Conclusion

- The choice of assumptions and applied policies will result in radically different results
- The results of Net Present Value Calculations depend on joint impact of the combination of parameters
- There is still a lot of room for improvement in economical efficiency and competitiveness