

Wind energy: economic, social and environmental analysis

Dr Grant Allan
Fraser of Allander Institute, University of Strathclyde

SuperGen Wind Energy Hub General Assembly
Manchester, 16th November 2017

Outline

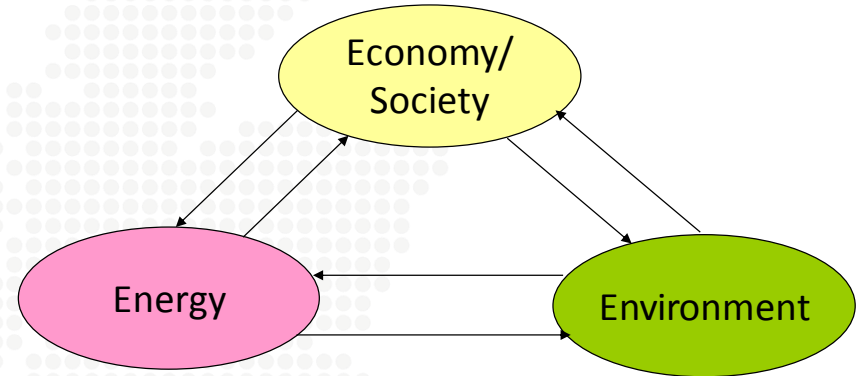
- Current policy developments
- Economic datasets and the supply chain
- Modelling of economic impact
- Future plans

Policy developing in the UK

- 2017 has been a busy year!
- **Scotland:** *Draft Scottish Energy Strategy* (January 2017); and *Onshore Wind Policy Statement* (January 2017)
- **UK:** *Industrial Strategy: White Paper* (January 2017)
 - “We will also review the opportunities for growth from the energy sector and the opportunities for the UK.”
 - “Britain is well-placed to benefit from the transition to a low-carbon economy. In many parts of the energy sector – from decommissioning to new build – the UK has a depth of expertise and experience that present a major opportunity for domestic employment and export earnings.”
- CFD auctions in September 2017 for second CFD round
- Publication of “Cost of Energy Review” by Prof Helm last month

Economic accounts: a structure for meaningful economic analysis for wind energy

- Are existing measures of economic impact fit for purpose?
- Can formally identify through economic analysis;
 - *vital* rigour to policy-essential discussions of jobs in the low carbon transition
- Whole economic system, including detail on all generation options;
- Detailed bottom-up disaggregation on- and off-shore wind *within* the economy.



Economic modelling: inform future impacts of wind energy

- Multi-sectoral modelling can provide framework for exploring economic impacts;
- Undertaken analysis for Scotland and UK, and provided methodological advice to Crown Estate Scotland;
- Typically demand-driven analysis – able to capture *all* financial links between project and economy



Economic impact of the proposed Neart Na Gaoithe offshore windfarm

August 2017

Introduction

We have been asked by Mainstream Renewable Power Limited (MRP Ltd) to evaluate the economic impact on the Scottish economy of the proposed Neart Na Gaoithe offshore windfarm project. Specifically, we will focus on the GDP and employment effects of the anticipated size and profile of expenditure for this project.

There are different methodologies that can be employed to arrive at such estimates, and this note sets out one such approach and the key results that follow. As with all such analysis, these figures are estimates and should be viewed as such. In particular, we would note that the development is not currently in place and tendering for the different components has not yet been completed. Therefore, this analysis is based on detailed information on the anticipated supply chain for this project provided to us by MRP Ltd. These data identify anticipated spend in Scotland and in the rest of the UK, and were compiled for the Neart Na Gaoithe supply chain plan which was submitted to the UK Government.

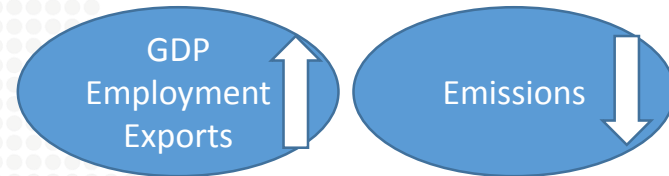
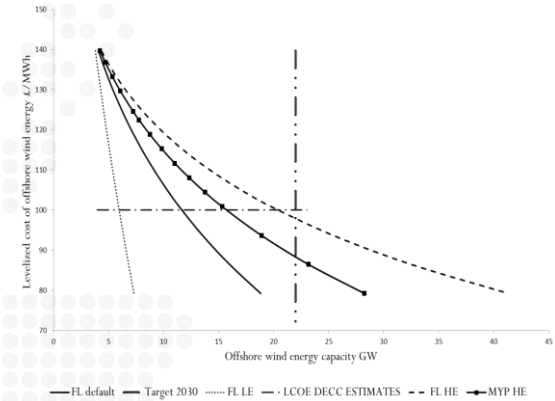
Economic modelling: inform future impacts of wind energy

- With projections of UK market size, expenditures and local content we can inform scale of impact possible;
- Relevant multipliers for calculating knock-on effects derived from analysis itself, not selected in an ad-hoc manner;
- We are analyzing “home market” effect in offshore wind;
 - Requires trade costs and agglomeration effects
- Future trade costs and market size will impact on location of supply chain

2035 Impact	Gradual Growth		Accelerated Growth	
	Low Wind	High Wind	Low Wind	High Wind
Demand disturbance (£million)	1,181	2,577	1,751	3,922
Direct FTE jobs	9,091	19,630	13,228	29,059
Direct GVA impact (£million)	463	937	642	1,337
Type II Impact on total production				
<i>£million</i>	5,090	10,991	7,494	16,644
<i>%change from base year value</i>	0.24%	0.51%	0.35%	0.77%
<i>Output Multiplier- Type II</i>	4.31	4.27	4.28	4.24
Type II Impact on GVA				
<i>£million</i>	1,775	3,776	2,575	5,638
<i>%change from base year value</i>	0.17%	0.36%	0.25%	0.54%
<i>GVA Multiplier- Type II</i>	3.83	4.03	4.01	4.22
Type II Impact on Employment				
<i>FTE jobs</i>	38,467	83,164	56,574	125,535
<i>%change from base year value</i>	0.16%	0.35%	0.24%	0.53%
<i>Employment Multiplier- Type II</i>	4.23	4.24	4.28	4.32

Economic modelling: bridging “micro” and “macro” perspectives

- CGE framework for the UK developed with details on energy system, including offshore wind
- Lets us *explain* the scale of capacity changes as a consequence of private sector investment decisions
- LCOE reductions, linked to improved productivity in offshore wind sector
- Macroeconomic effects traced across objectives for energy and sector policy



Next Steps

- Further develop “home market” effect in trade model and take to the offshore wind data;
- Quantify impacts on UK of alternative development paths reflecting; 1) latest cost reductions and projects, and 2) possibilities for the sector;
- Identify economic impacts of existing offshore wind energy activity, and scale of the opportunities in the supply chain, linking to *important policy priorities*;
- Linking to whole systems models to better capture whole energy-economy systems.



University of Strathclyde Glasgow

FRASER OF ALLANDER INSTITUTE

ly, registered in Scotland, with registration number SC015263

www.strath.ac.uk/fraser

