



## ***WS 9 Economic analysis of variability and penetration***

Micro- and macroeconomic  
analysis for marine energy

# Progress in year 2



- Contributing to our understanding of the interactions between marine energy development, UK and national regional policy and micro and macro economics of marine developments.

## *Four areas*

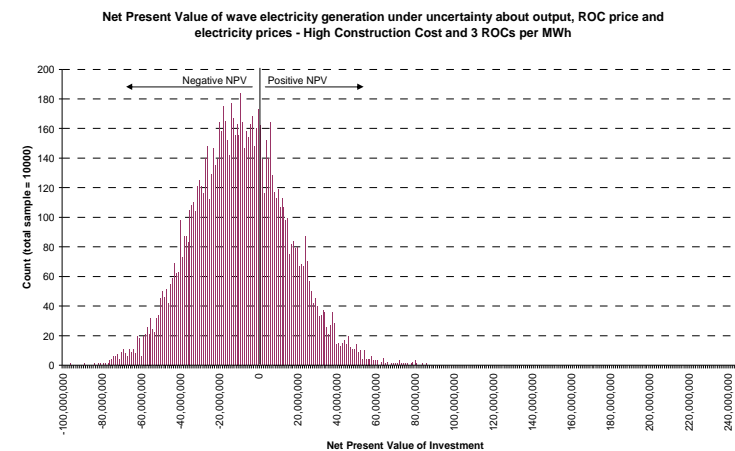
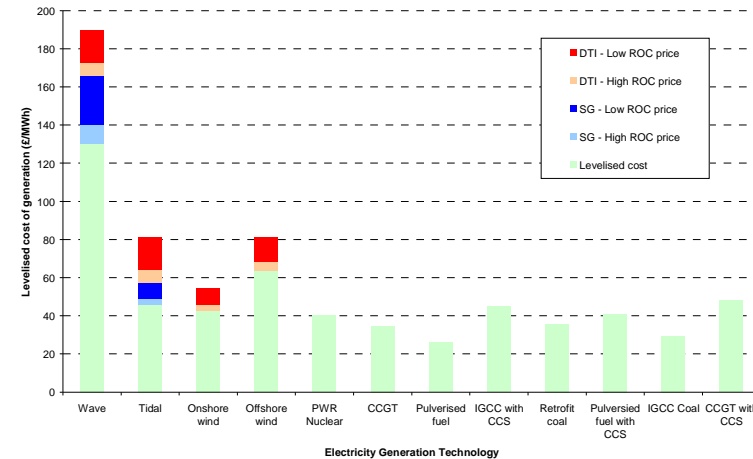
- Levelised costs of wave and tidal energy and impact of banding on “cost competitiveness”
- Portfolio theory applications for wave and tidal energy in UK and Scotland
- Macroeconomic impacts on UK economy of marine energy sector for domestic and exports market
- Renewables policy as regional policy?

# Levelised costs



We have:

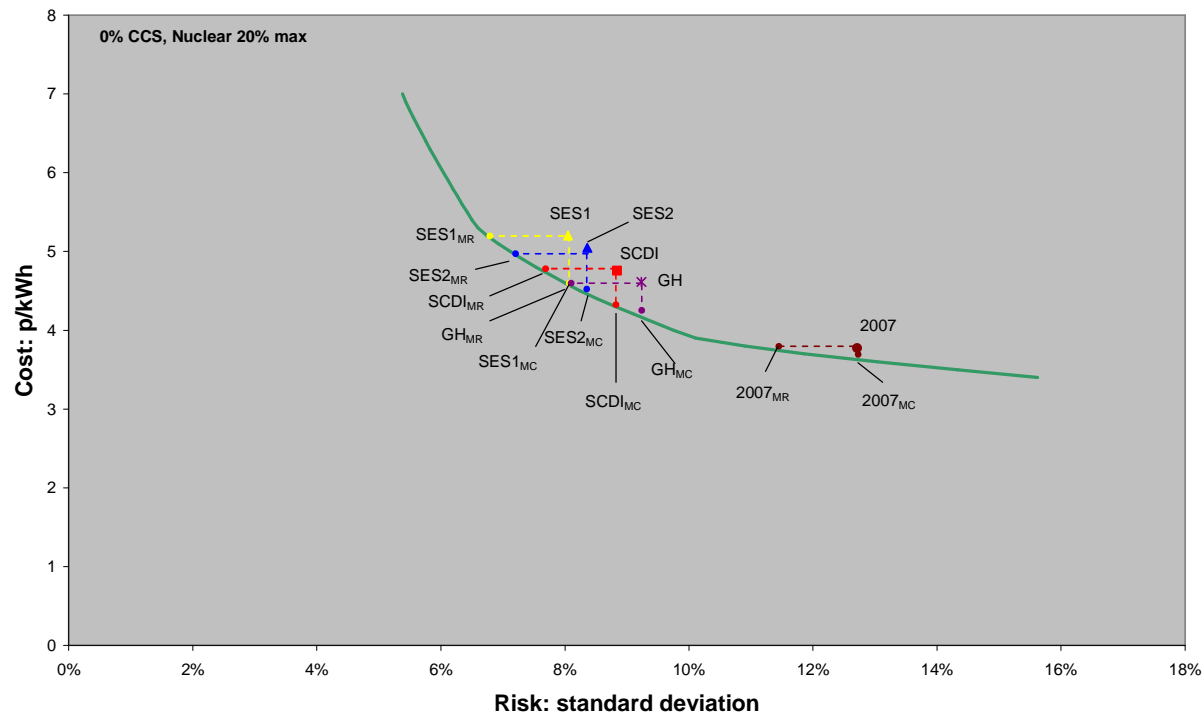
- Shown how wave and tidal levelised costs compare to those for other renewable and non-renewable technologies
- Shown how the cost comparisons are affected by “banding” of support mechanisms



# Portfolio theory

We can:

- Quantify contribution of wave and tidal technologies to reducing overall electricity portfolio cost variability
- Compare alternative scenarios for electricity generation mix in Scotland to “efficient portfolios”

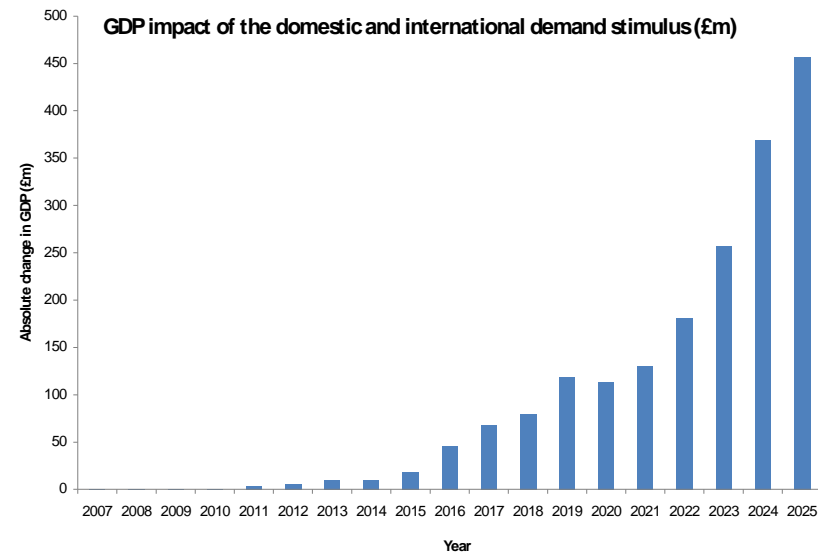
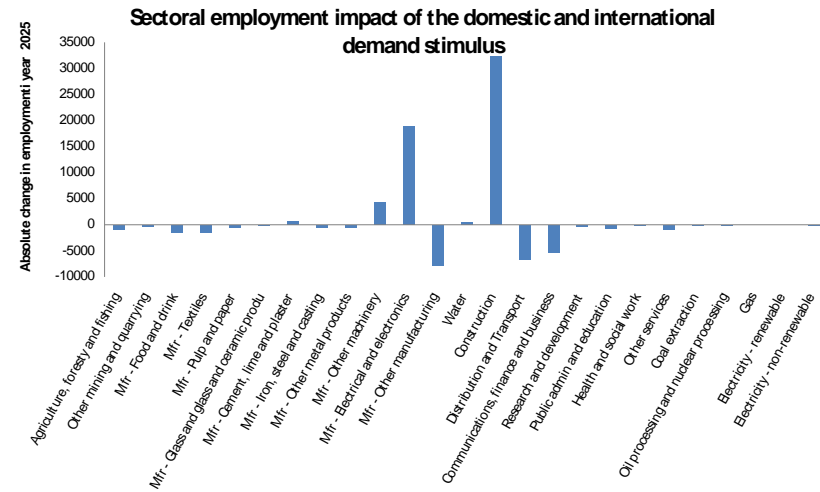


# Macroeconomic impacts



We can

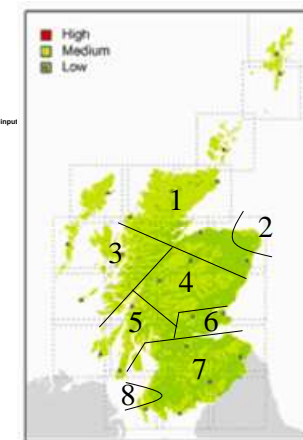
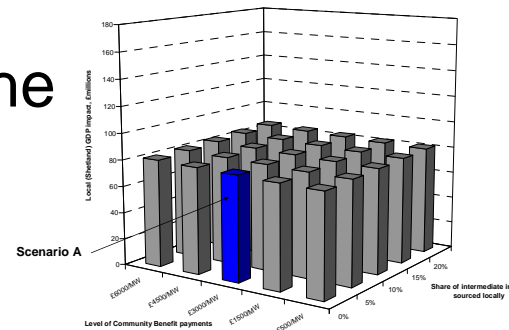
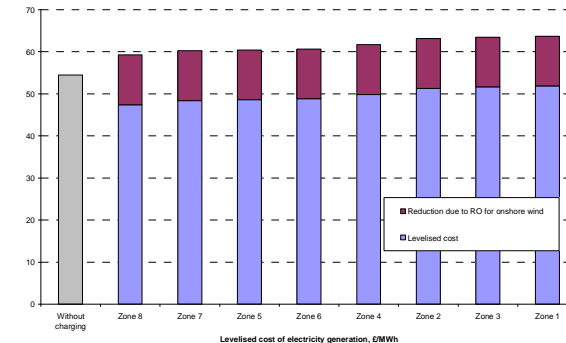
- Quantify the macro- and sectoral distribution of impacts from marine energy development on UK economy
- Economic potential for the UK, acknowledging possibility for supply-side impacts



# Renewable policy as regional policy?



- Indigenous renewables industry offers possibility “triple dividend”:
  - stimulating GDP
  - lower emissions
  - security of supply.
- But regional policy only to the extent that explicit policy purpose is to influence regional economic activity.
- If renewables are used as a regional policy, is this policy a *good* policy, or within regions?



# Year 3 and beyond



- Range of policy options for marine renewables, both at regional and national levels.
- Examine variability and “compensation” for intermittency, and system-wide implications
- Potential impact of marine renewables on optimal generation portfolios
- Time-inconsistency in energy policy and role/powers for Climate Change Committee
- Interaction between carbon tax and existing fiscal energy measures, such as ROCs, using CGE models