

Modelling the Potential Economic Impact of Developments in the UK Tidal Energy Sector

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Research Topic

- This research considers the potential economic impact of an increase in domestic and international demand for UK-manufactured tidal devices and technologies.
- Environmental obligations, depleting oil and gas reserves and the projected closure of some existing coal and gas reserves have strongly influenced UK energy policy in recent years.
- Major changes in the composition of the UK's energy generation mix are inevitable, with a move in favour of a broad portfolio of generation techniques, and emphasis on electricity derived from local renewable sources.
- Tidal power is one such resource that has attracted significant investment and political interest in the UK.

Methodology

- Domestic expenditures on research and development, production, installation and maintenance of tidal turbine devices could provide an important demand stimulus for the UK economy.
- Significant worldwide tidal resources (Box 1) also provide opportunities to export UK tidal devices, technologies and expertise.
- We simulate the impact of a domestic and export stimulus using a 25-sector CGE model of the UK economy, UKENVI.
- The potential size of the domestic demand stimulus is informed by industry calculations of the UK resource installation capacity and estimates of installation and maintenance expenditures (Box 2).
- Export data for the Danish wind turbine industry provide an indication of the potential export demand for UK tidal turbines

Results

- We find that the demand stimulus could potentially deliver a significant UK economic benefit (Box 3).
- There are likely to be crowding out effects associated with the shock, and the characteristics of the national labour market, including wage-setting and migration relationships, are important determinants of these effects.
- We find that it is the export market for tidal turbines that perhaps has the most potential to contribute to sustained economic growth in the UK.
- The uneven spatial distribution of tidal power resources suggests that the impacts will likely be concentrated local areas (Box 4). This may give rise to issues of policy co-ordination between the regional and national governments.

Box 1. Potential export markets for tidal devices

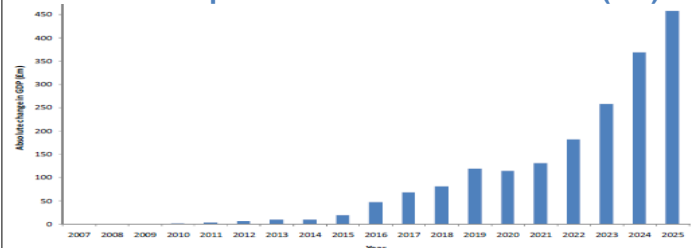


Box 2. UK Turbine installation expenditures

	capital cost of device	operation and maintenance costs (pa)
Binnie, Black and Veatch (2001)	£1,133,462	£42,050
Electric Power Research Institute (2006, 2008)	£1,447,695	£95,933
Department of Trade and Industry (2007)	£1,461,021	£57,233

Note: 2000 prices; based on 30MW farm

Box 3. GDP impact of the demand stimulus (£m)



Box 4. The spatial distribution of UK tidal resources

