

Malcolm Garrity
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Senergy Alternative Energy

Agenda

- UK Offshore Wind History
- The Future
- Delivering

Senergy Mission Statement

"Evolve our Integrated Energy Services business model to attract, retain, develop and reward people through building a business which focuses on its core assets of intellectual know-how, internally developed intellectual property and application of technology creating significant value for stakeholders using innovative commercial models across the energy sector."



- Geoscience
- Geohazard
- Site Surveys
- Cable Routing
- Grid Connection, Commercial and Regulatory
- Project Management
- Offshore Wind, CCS, Geothermal

- **Round 1 announced 2000**
- **18 Projects, 30 turbines, 14 now Consented**
- **8-15km offshore, water depths to 20m**
- **Projected capacity: 1080MW**
- **Aimed to drive installed cost <£1m/MW**
- **2003 Round 2 launched**
- **3 Strategic Areas: Irish Sea, Thames, Wash**
- **15 Projects, projected capacity 7.2GW, 6-12Nm from shore, water Depth up to 30m**
- **Installed cost £2.6m-£3.6m/MW**

UK Offshore Wind

Offshore Wind Farms - Round 1

- Operational
- Under construction
- Approved
- Submitted

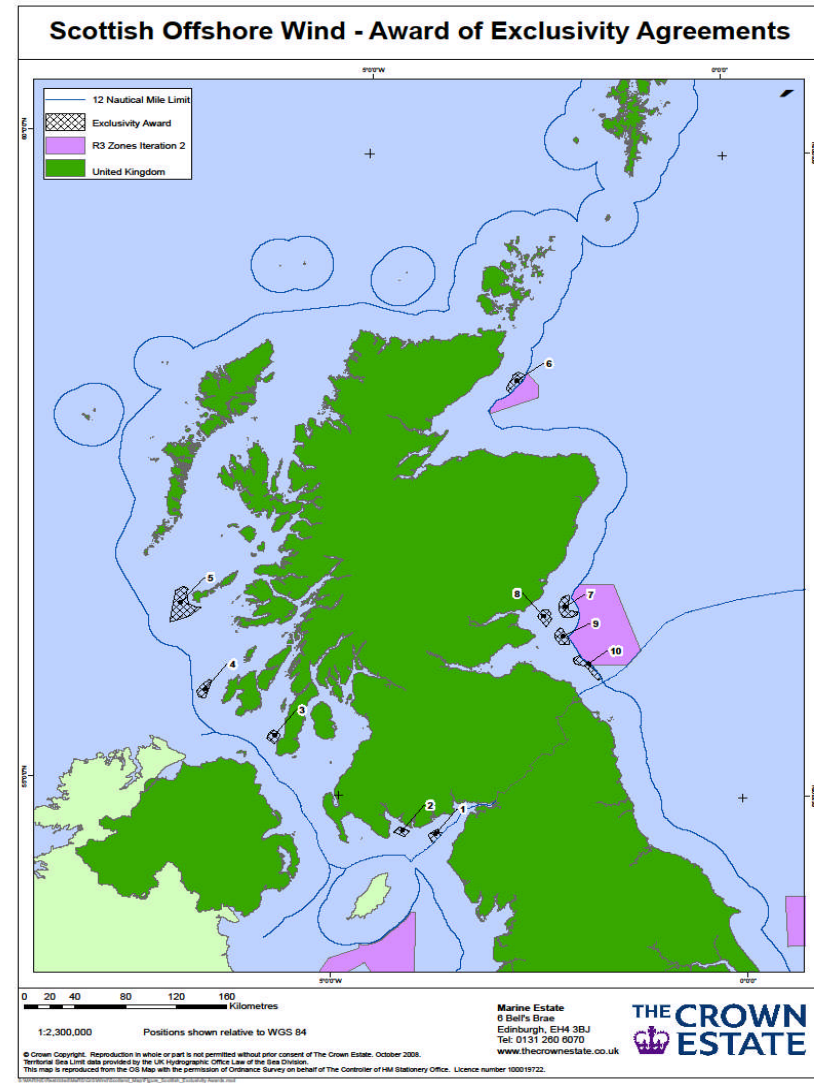
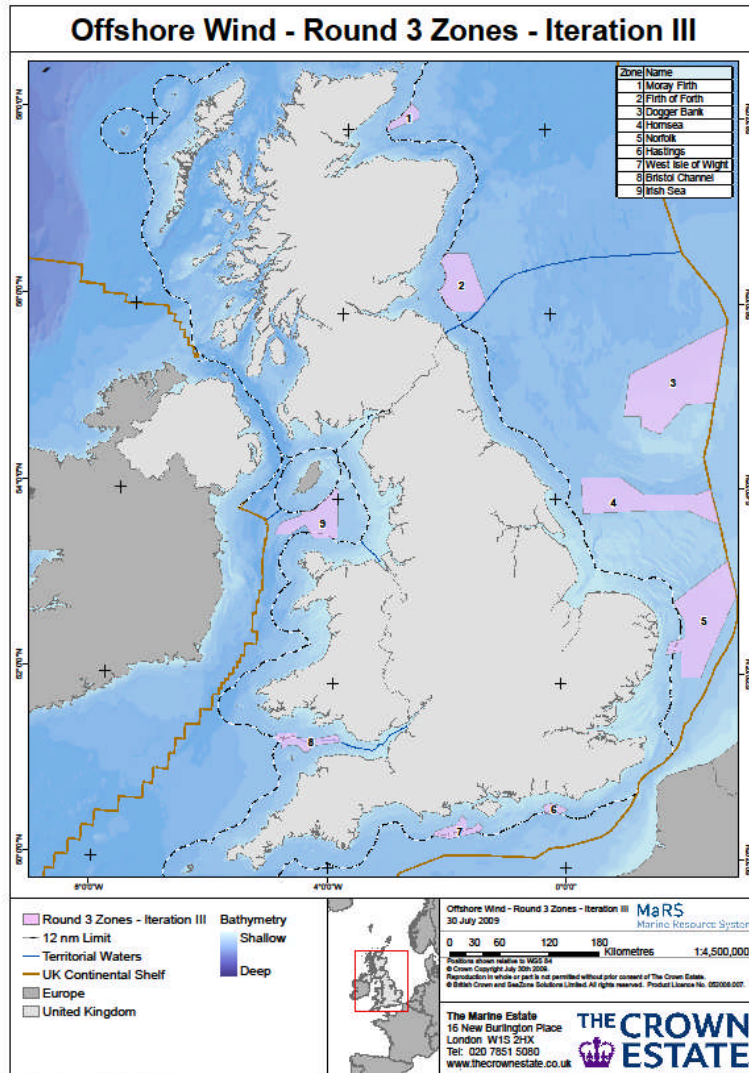


Offshore Wind Farms - Round 2



- **2009 Round 3 bids invited**
- **9 Zones identified**
- **6-62 Nm from shore, water depth up to 50m**
- **Zone Capacity range 0.7-13GW**
- **Work commenced Q1 '10/Q2 '10**
- **Development costs £5-10m/1000MW**
- **Scottish Territorial Waters same timescale**
- **Truly Offshore**

UK Offshore Wind Round 3 Map



UK Offshore Wind

Picture courtesy of RePower



UK Offshore Wind

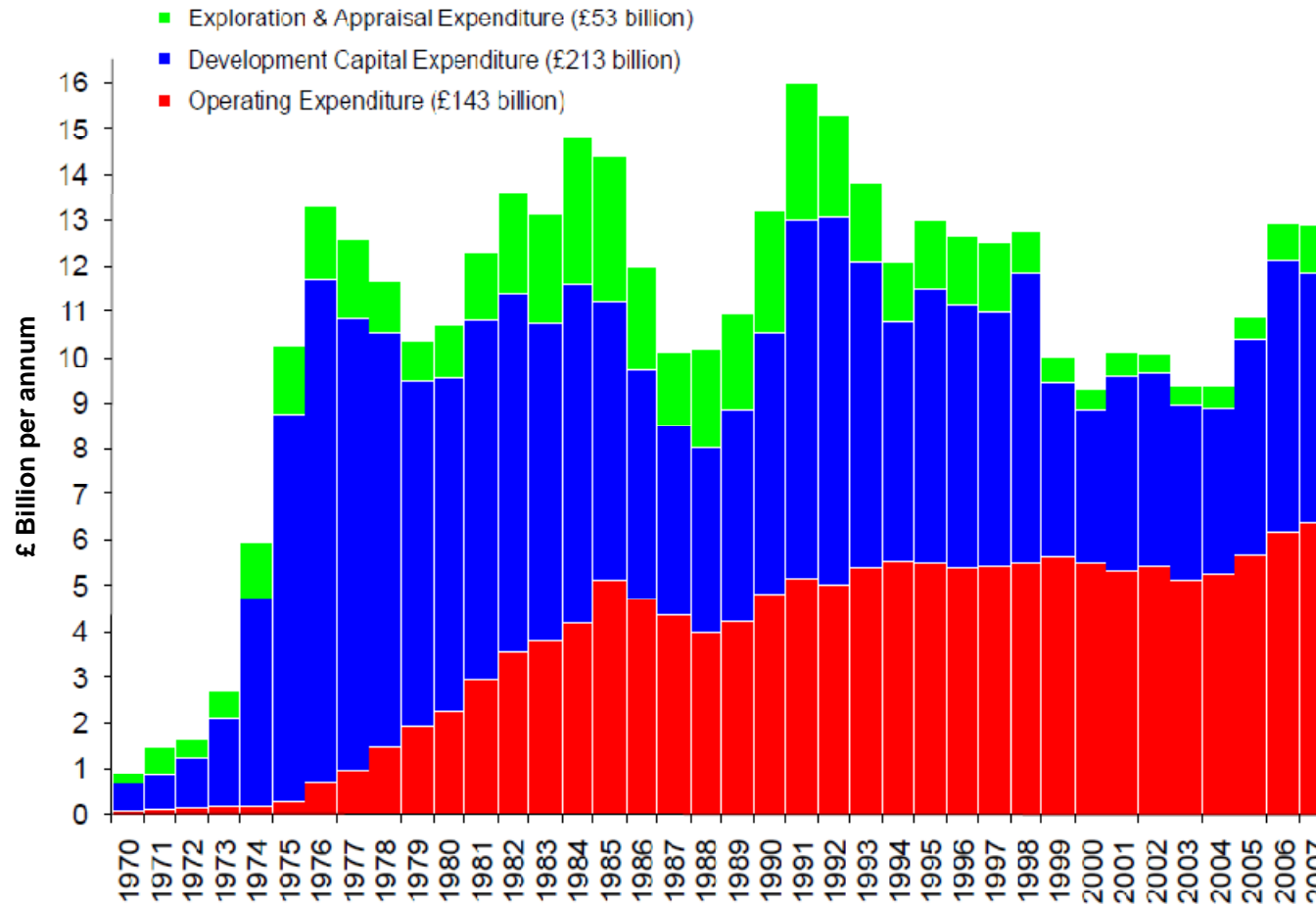


Pic courtesy of NFFO

- **9 zones, Dev costs £7m/GW => £54m 2010-2014**
- **Development costs of ~£45m/year will continue 2014-2020**
- **Current market price of £2.6m/MW installed**
- **40GW equals spend > £100bn to 2020**
- **Market value £20bn/year 2015-2020**
- **Development/Installation likely to continue post 2020**

Grand Prix level of acceleration: £0 to £13Bn p.a.
annual investment in ~ 6 yrs

UKCS Expenditure 1970–2007 (2008 prices)



OSW investment by 2020+ if UK targets to be met →

OSW investment by 2015-2020 if UK targets to be met →

Current level of OSW investment →

Source: UKCS analysis - Professor Kemp, University of Aberdeen

- **Distance from shore**
- **Seastate and Weather Windows**
- **Vessel capability**
- **Offshore logistics**
- **Equipment lead times**
- **Cable supply and installation**
- **Port & Harbour facilities**
- **Laydown areas**

- **Construction commence 2015**
- **Target: 40GW by 2020**
(Rd 3 32GW, Scotland 6GW, Rd1&2 ext 2GW)
- **2015-2020 requires buildout ~7GW/year**
- **>1000 structures**
- **Transport and installation spreads**
- **Logistics**
- **Project Management**

- **Offshore wind moving truly Offshore – a very challenging environment**
- **Parallels with Oil & Gas in 1970s**
- **Technology/IPR developed in UK will be exportable worldwide**
- **New Markets opening up: Germany, China, US,**
- **Technology for the future and a Future for the technology**

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