

Cross-sector innovation and routes into offshore wind

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Lowestoft

6 December 2016

BVG Associates

Our clients choose us when they want to do new things, think in new ways and solve tough problems

Our sectors



Our expertise: Economics

Economic impacts

- Levelised cost of energy
- Supply chain
- Policy
- Local content
- Modelling
- Forecasting

Our expertise: Business

Market assessment

- Competitive landscape analysis
- Voice of the customer review
- Levelised cost of energy impact assessment
- Product development plan review
- Customer value proposition
- Communication strategy
- Market entry strategy development
- Tendering support
- Industry and stakeholder introductions
- Mergers and Acquisitions
- Investor relations

Our expertise: Technology

Asset management

- Engineering services
- Life extension
- Due diligence
- Technology roadmaps
- Technical review



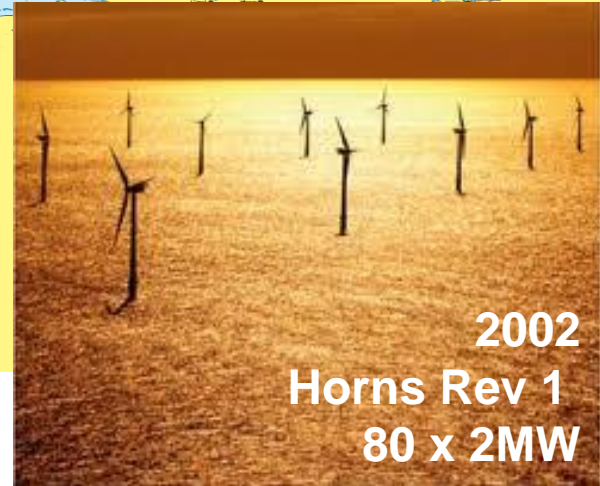
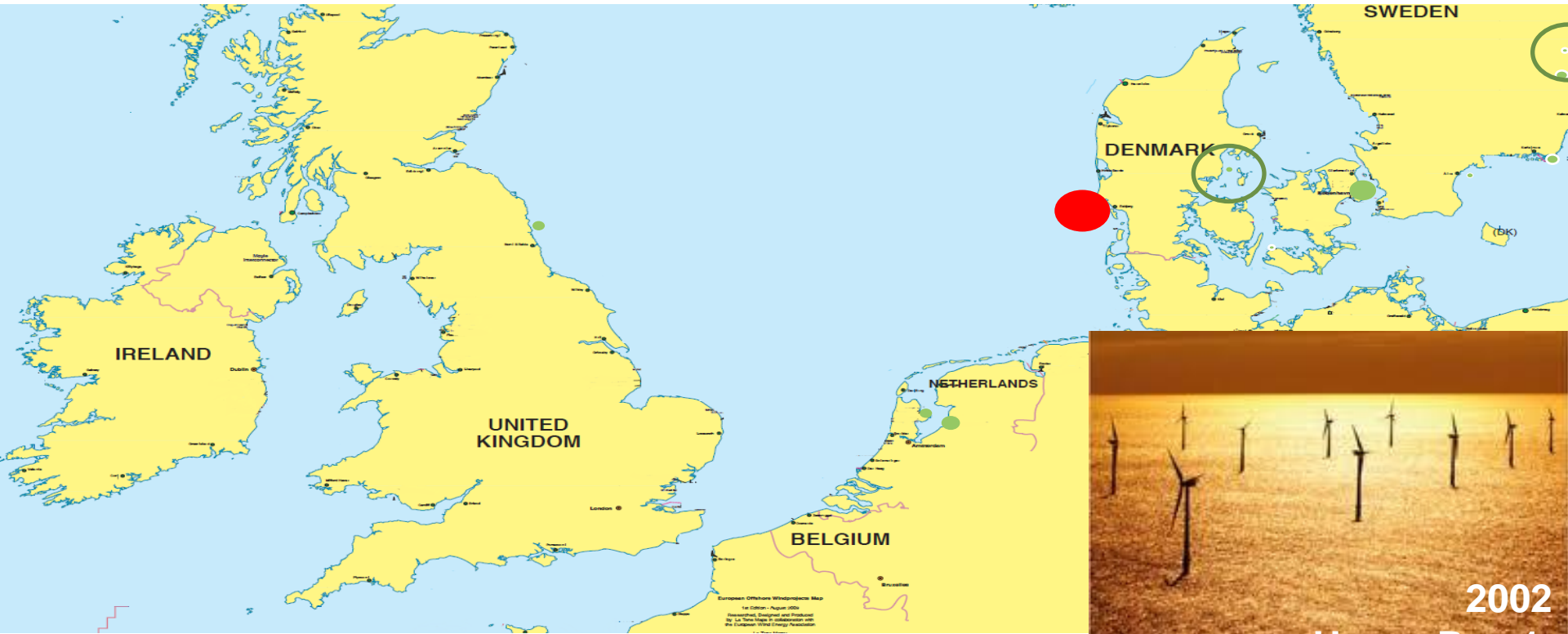
Offshore wind – a bit different...

Young: 1990: 1st project



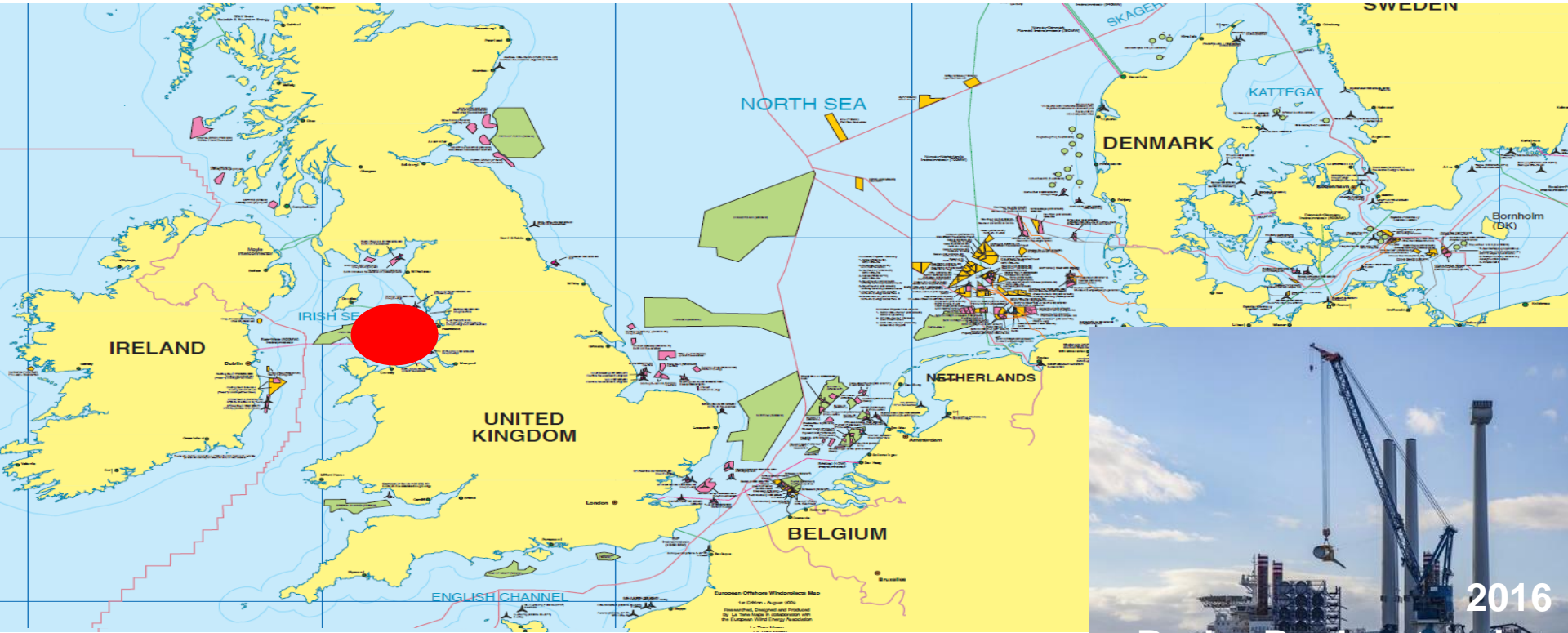
Offshore wind – a bit different...

2002: 0.25 GW installed



Offshore wind – a bit different...

Maturing: 2016: 15 GW installed









MHI VESTAS OFFSHORE WIND

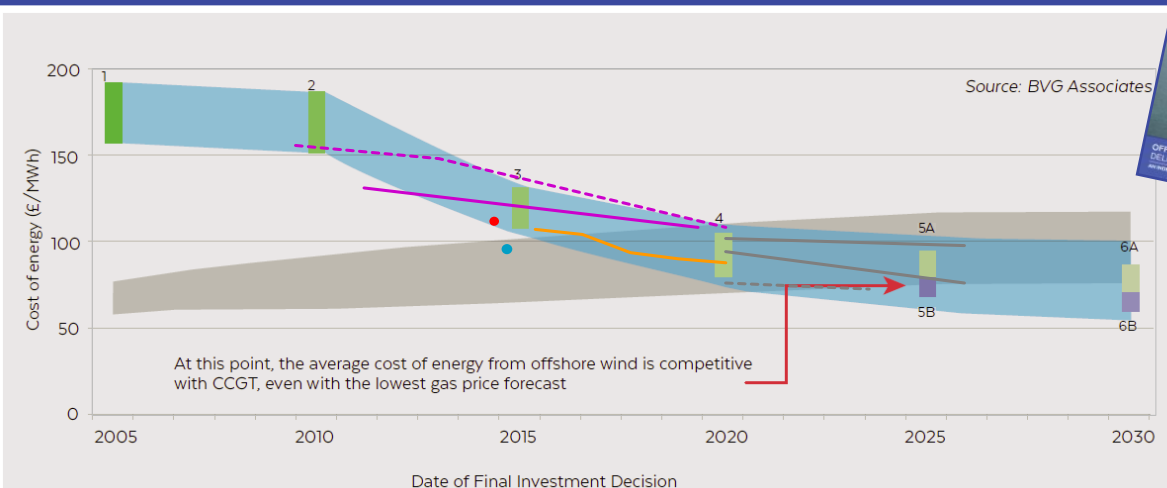


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PARAMETERS: U80-1.8MW_1-690V50HZ

Offshore wind – a bit different...

Going slow is not an option...

Cost of Energy Reduction = Offshore Wind



■ Offshore wind snapshot ■ Offshore wind (repowered) snapshot ■ CCGT band ■ Offshore wind band

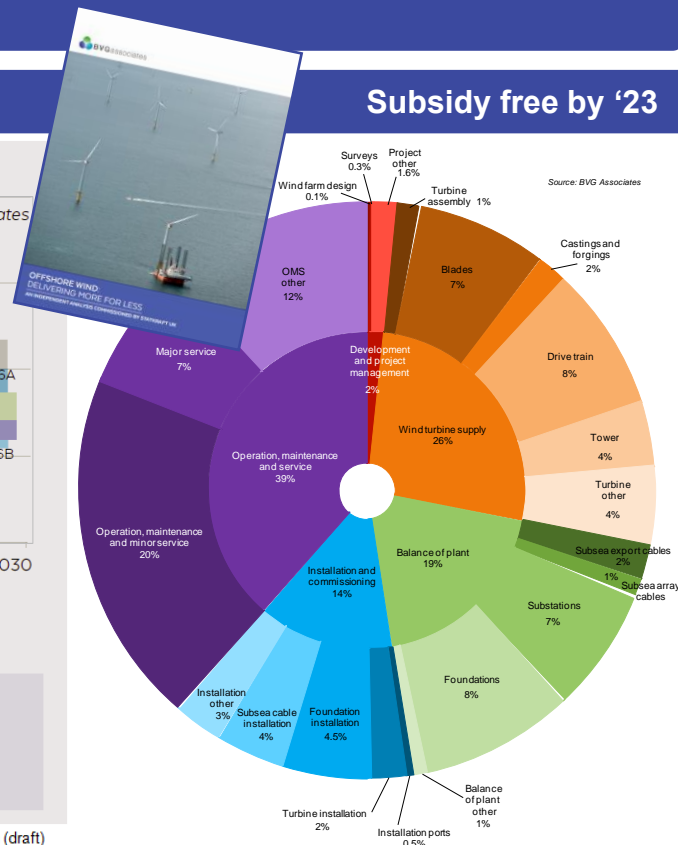
Comparison between cost from offshore wind and combined cycle gas turbine (CCGT) plant.

Offshore wind bars reflect range of cost of four representative, real-life projects reaching financial investment decision (FID) around each snapshot, taking into account site conditions and available technology. See description below of the status of technology, supply chain and finance at the time of each snapshot.

The broader bands incorporate the potential for fluctuations in commodity prices, including fuel, which affect the cost of energy.

● East Anglia 1 ● Horns Rev 3 — Netherlands auction - - - TCE Pathways study — TCE Cost Monitoring Framework — Upcoming publication (draft)

Subsidy free by '23





Making things easier

Public reports: free to download: bvgassociates.com

2006-11

2011-14

2014-16

2016



Making things easier

Success stories

Companies we have helped: O&G, defence and space



Lessons learnt

- Get in step with the **culture** – speak the right language:
 - Clear proposition
 - Adapt relevant competencies
 - Cost reduction
 - Be visible at industry events
- Get introduced to the right **contacts**
- Show **commitment** to the sector
- Consider **commercial** as well as technical innovation
- R&D Grant funding works

Thank you

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