Opportunities in the journey to ‘subsidy free’

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Glasgow

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BVGassociates

Agenda

UK opportunities in the journey to ‘subsidy free’

Contents

1. Journey to ‘subsidy free’
2. And beyond…
3. Local benefit – key to continued support
4. Opportunities for doing business

Selected clients

BVG Associates

Business advisory

- Analysis and forecasting
- Strategic advice
- Business and supply chain development

Economics

- Socioeconomics and local benefits
- Technology and project economic modelling
- Policy and local content assessment

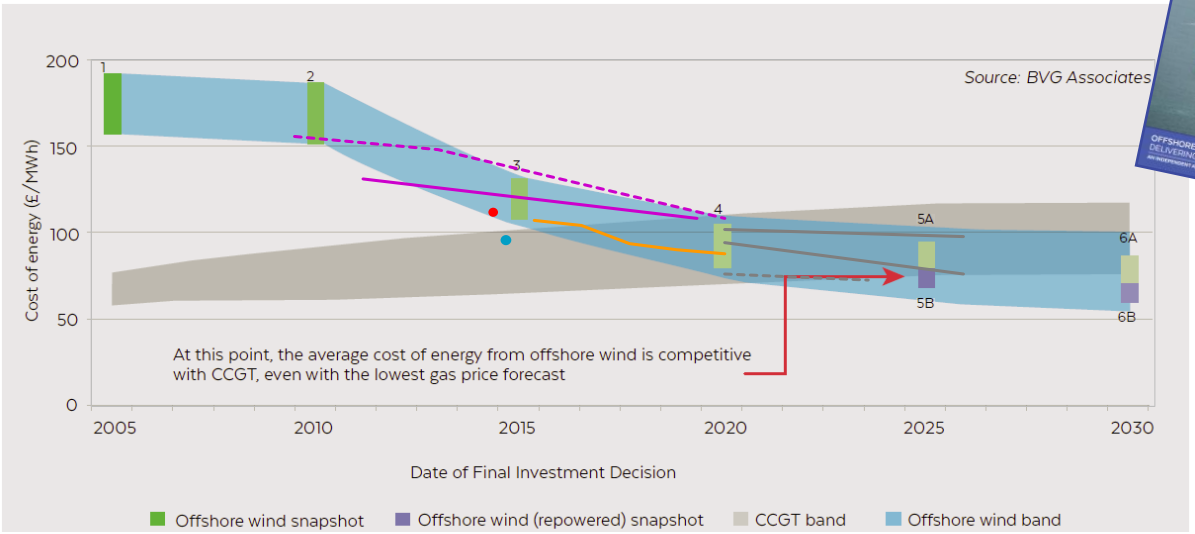
Technology

- Engineering services
- Due diligence
- Strategy and R&D support

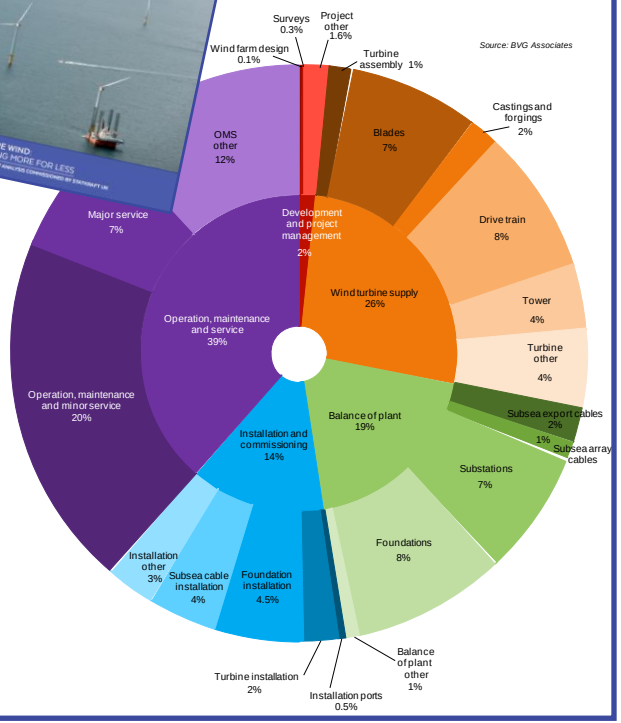
1. Journey to ‘subsidy free’

Going slow is not an option…

Cost of Energy Reduction = Offshore Wind



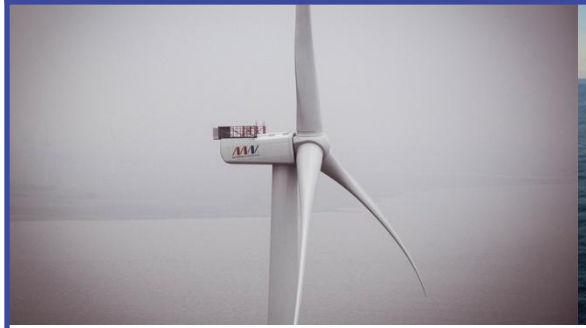
Subsidy free by ‘23

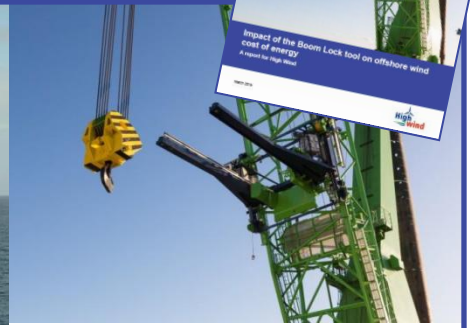


1. Journey to ‘subsidy free’

What progress needs to be made?

Nothing radical (except the largest rotating machines on earth)





Turbines		**Foundations**	**Transmission**	**Installation**
Large quantities offshore	130m diameter	Improved design & manufacture	Mounted on turbines	More capable vessels
Prototyped onshore	164m diameter	Extended use of monopiles	HVDC improvements	Decreased weather sensitivity
Soon to be prototyped (public)	180m diameter			Less use of crane vessels
FID in 2025	> 200m diameter			

Main per MW benefits			
Decreased foundation and installation CAPEX	Decreased CAPEX	Decreased CAPEX	Decreased CAPEX
Decreased OPEX			Decreased cost of capital
Increased energy production			

1. Journey to ‘subsidy free’

What progress needs to be made?

Well beyond technology…

SLIC
Structural Lifecycle Industry Collaboration

Bigger projects
Savings in development and installation
Savings in transmission
Other savings in procurement

Longer project life and repowering
Better use of assets

Improved competition
Increased focus on cost
Auctions target developers

Collaboration
Sharing of costs, benefits and experience

Main per MW benefits
Decreased CAPEX
Decreased OPEX

Decreased WACC

Improvements in all aspects of LCOE

Improvements in all aspects of LCOE

1. Journey to ‘subsidy free’

Will this just happen?

Needs governments and industry to trust each other

- Published alongside the CCC’s progress report on decarbonisation and fed in to its recommendations for the 5th carbon budget

Objective:

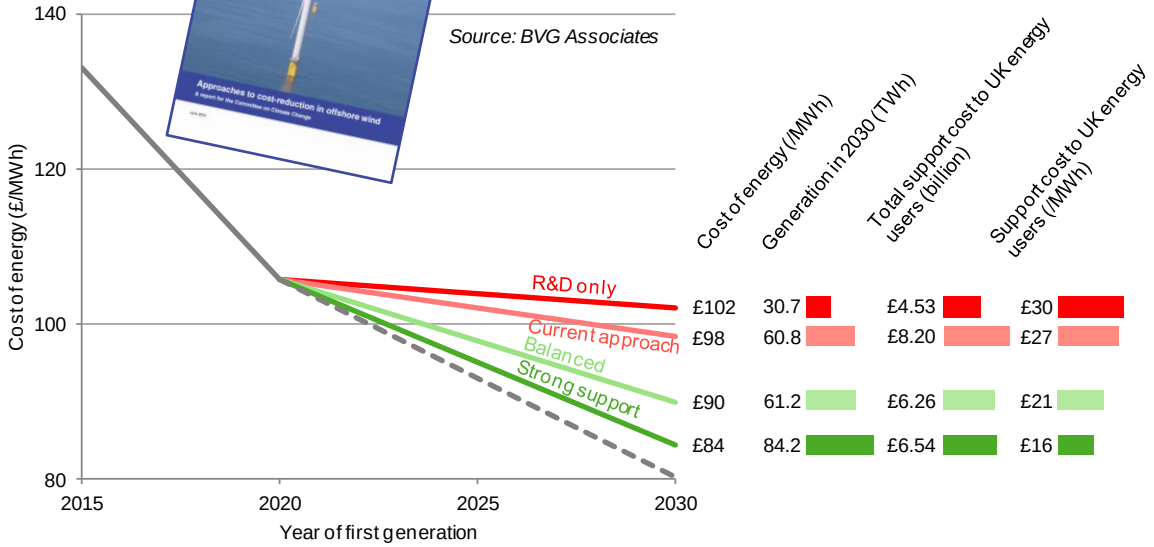
- To present recommendations to UK government about policies to drive down LCOE from offshore wind in 2020s and give value to UK energy users

Delivered:

- By quantifying the impact of government policy drivers on cost of energy and support cost for UK offshore wind in 2020s
- In a European market context, through robust industry dialogue

1st time been robust analysis of the LCOE impact of policy

Source: BVG Associates



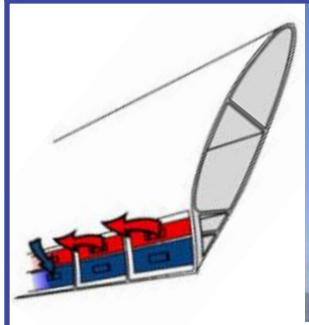
Key conclusions:

1. Substituting market with huge R&D funds isn’t the answer
2. Clear visibility of short-term plans for min 1GW/yr in UK & long-term intent saves 25% cost of support & increases UK activity
3. Increasing to 3.5GW/yr across EU hardly costs any more for 35% more output due to LCOE impact

2. And beyond…

Plenty more evolution but also disruption

Focus on the future



Aero control
Huge blades need better control

Float-out-and-sink
Avoid offshore crane cost

Floating
Access new area

Multi-rotor
Better use foundations

Kites
Aim higher

Main per MW benefits

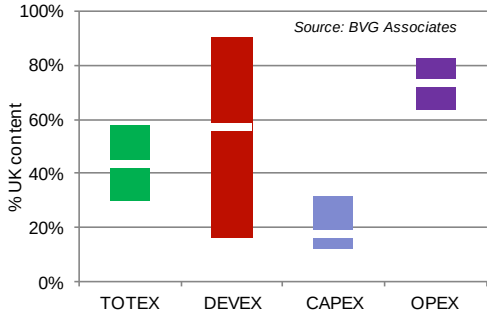
Increased AEP Decreased OPEX	Decreased installation CAPEX	Increased AEP	Decreased CAPEX Decreased OPEX	Decreased CAPEX

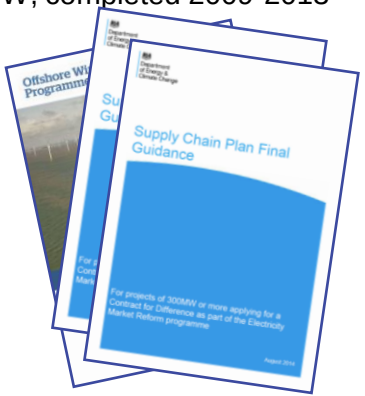
3. Local benefit – key to continued support

Right price for consumers, right for the planet and right economic benefit

Disjointed progress

- 10 UK wind farms larger than 100MW, completed 2009-2013





	UK content		
	Lower	Upper	Weighted average
TOTEX	30%	57%	43%
DEVEX	16%	90%	57%
CAPEX	12%	32%	18%
OPEX	64%	82%	73%

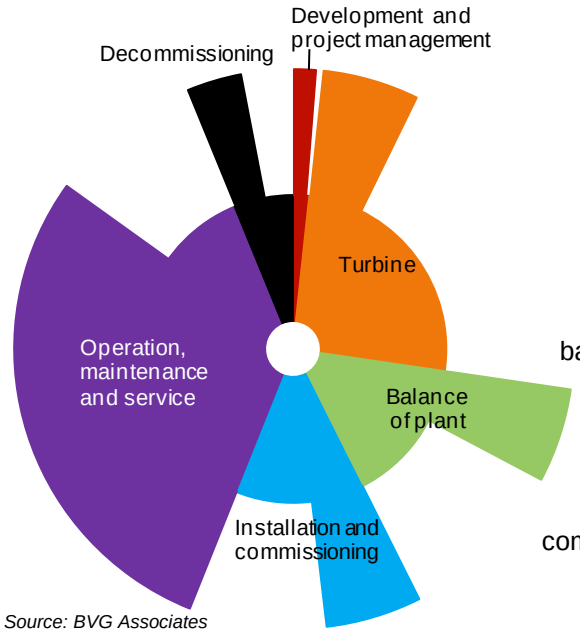
Supply chain plans

- Supply chain plan "gateway" into the CfD auction process
- First introduced for "FiDER" projects eg. Burbo and Walney extensions
- Three criteria: competition, innovation and skills
- Overall intent is UK economic benefit and lower cost of energy, ie. a more sustainable industry
- Supply chain plans not UK content beauty contests – about ensuring that all reasonable steps have been taken to enable UK supply
- Backed up by strong DECC, BIS and UKTI pressure!

3. Local benefit – key to continued support

We have the largest market, but…

Confidence and market size are key to how far we get



Source: BVG Associates

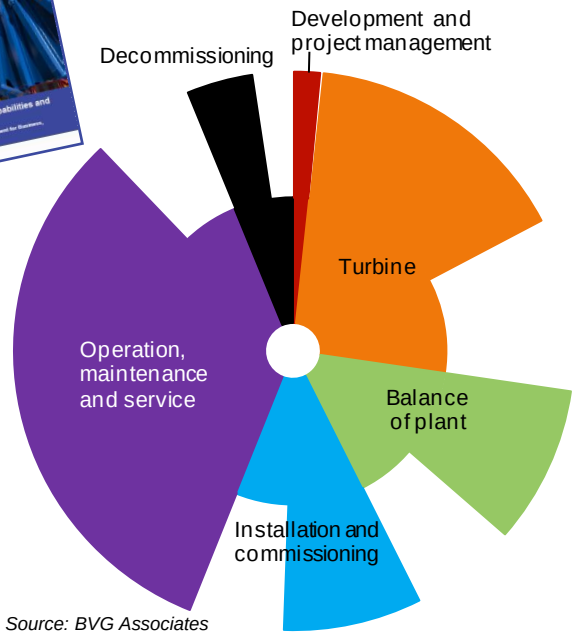
50% UK content – good target for current projects

Nacelle assembly and main component supply

Export cable and increased UK-based foundation supplier success

Increased UK-based supplier success

UK manufacture of replacement components and UK SOV operators



Source: BVG Associates

70% UK content – not in current environment

3. Local benefit – key to continued support

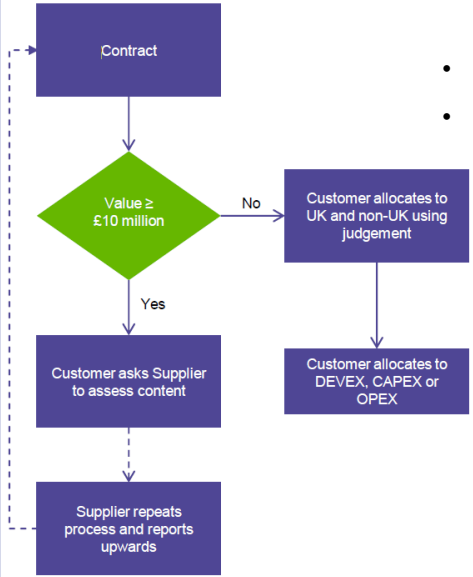
Without transparency, claims mean little

UK Content methodology

- Robust & consistent way to communicate about UK content
- Built on early work published by E.ON
- Principles used in most 2014 supply chain plans
- Developed for Offshore Wind Programme Board with support from DECC, The Crown Estate and Industry
- Developers committed to reporting on all projects reaching FID after 1 Jan 2015

- Suppliers winning contracts over £10m on a given wind farm will be responsible for formal reporting to developers
- RenewableUK will publish annual progress report on UK content
- Proactive suppliers using methodology to help communicate opportunities for increased UK content
- Methodology includes guidance how to calculate – not onerous

Keep it simple…



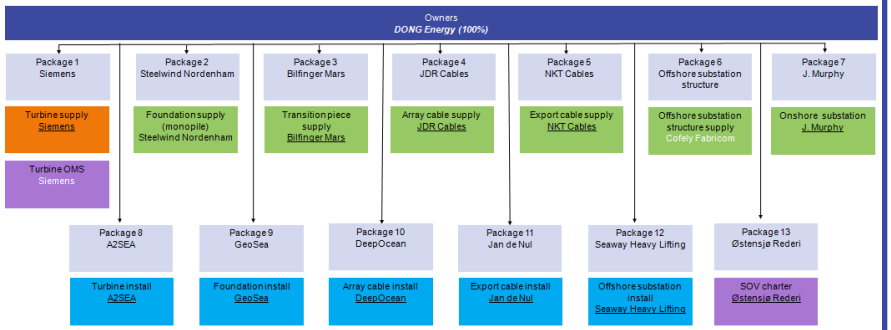
A supplier with order ≥£10m needs to:

- Assess its own UK content
- Pass on requests to do same to each sub-supplier if value ≥£10m or estimate for each sub-supplier if value <£10m based on:
  - Any information provided by the sub-supplier
  - Sub-supplier's address
  - Currency in which the payment was made
  - Knowledge of sub-supplier's activities, its supply chain and of similar companies

4. Opportunities for doing business

Race Bank

Soonest project



Project details	
Total potential capacity (MW)	580
Most recent milestone reached	Post-FID
Subsidy	ROC
First turbine installation	2017

Useful links

Race Bank website

DONG Energy supplier registration

Enquiries about Race Bank

No upcoming events

Project location

Ask for help

Scottish Enterprise Offshore Wind Expert Support Framework

- 2-day consultancy support free, plus more at reduced cost

We can help with:

- Benefits analysis - cost of energy, local content
- Route to market – UK and export
- Connections to regional programmes / R&D grants
- Industry contacts

Thank you

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