The Power of Onshore Wind

Graham Gow, 11 September 2018

BVGassociates

Onshore wind and the industrial strategy

Industrial Strategy: Onshore wind delivers on the five foundations of productivity

People

Good jobs and greater earning power for all

Onshore wind creates highly skilled and long-term jobs for the operational life of a wind farm.

Infrastructure

A major upgrade to the UK's infrastructure

Onshore wind provides new low carbon generating capacity, increasing the UK's security of electricity supply.

Ideas

The world's most innovative economy

Onshore wind is a proven technology and the lowest cost form of new generating capacity in the UK. It is developed within a technology-driven industry with a strong culture of innovation and cost reduction.

Business Environment

The best place to start and grow a business

Onshore wind supports new supply chain businesses and is an increasingly attractive industry in which to invest.

Places

Prosperous communities across the UK

Onshore wind creates local employment opportunities in areas where new economic opportunities are welcomed

BVG Associates

Overview

Who we are and what we do

Founded in 2006

Over 270 Clients

150 years staff industry experience

40 landmark publications

Engineering

Due diligence

Asset management

Technology support

Economics

LCOE/NPV Modelling

Supply chain analysis

Economic impact

Business

Market assessment

Business strategies

Industry enablement

Onshore wind

Offshore wind

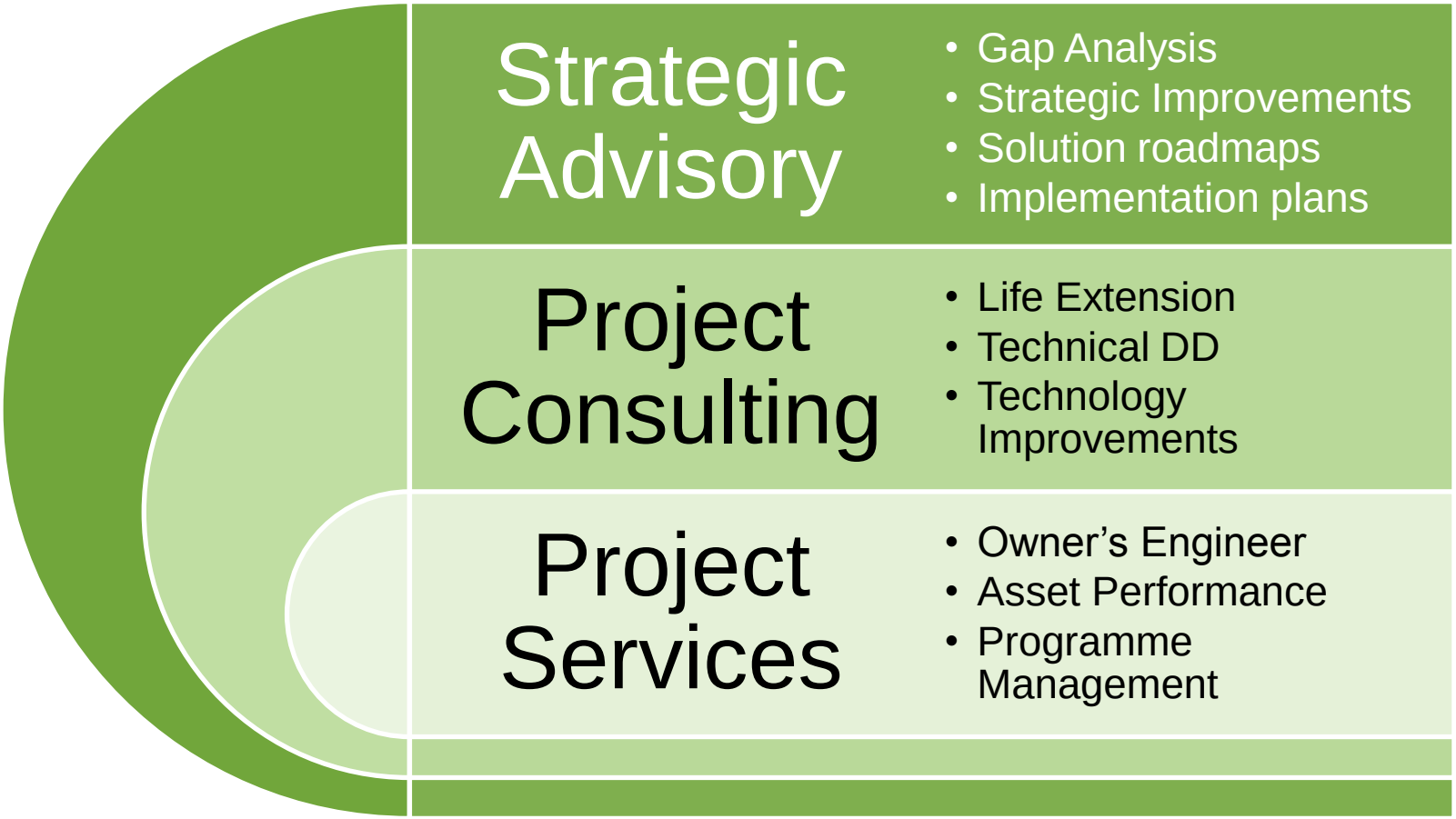
Wave and tidal

Energy Systems

BVG Associates

Services for Wind Farm Owners

Strategic advice, informed by project experience



Introduction

What are the economics of more onshore wind?

- Commissioned by ScottishPower Renewables, Innogy, Statkraft and Vattenfall.
- Five auctions of up to 1GW at 18 month intervals from Spring 2019.
- The work was undertaken in four stages:
  - Bid price forecasting and impact on consumer bills
  - CfD auction modelling
  - UK and national content modelling, and
  - Economic impact modelling.

- Onshore wind is the cheapest form of large scale new-build electricity generation in UK.
- Support for onshore wind across UK consumers remains high (~76%). [1]
- Long-term market certainty:
  - Critical for investment decisions
  - Regular pipeline of projects.
  - De-risk upfront capital investment.

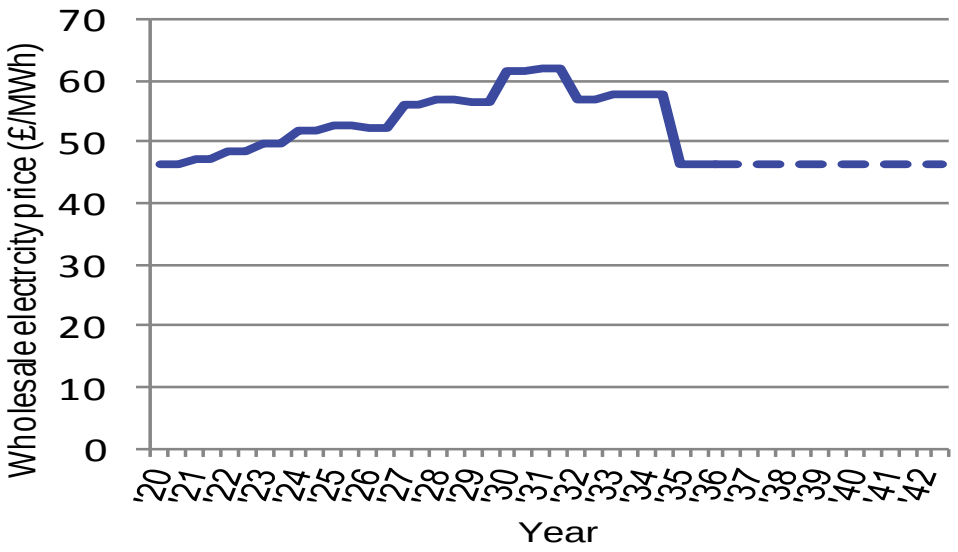
1 - The Energy and Climate Change Public Attitudes Tracker published in April 2018

Bid price forecast and impact on consumer bills

CfD auction bid prices for onshore wind have continued to fall and we expect further reductions

Forward auction clearing price trajectory

- Baringa Report for Scottish Renewables, which modelled a 2019 clearing price of £49.4/MWh.
- Analysis showed clearing prices reducing to £45.0/MWh (£41.6/MWh in 2012 prices).
- Reductions forecast due to:
  - Developments in turbine technology with better energy production and increased reliability
  - Lower costs of finance from lower project risk and increased appetite from investors
  - Competitive pressures of auctions, and
  - Consolidation of learning



CfD auction modelling

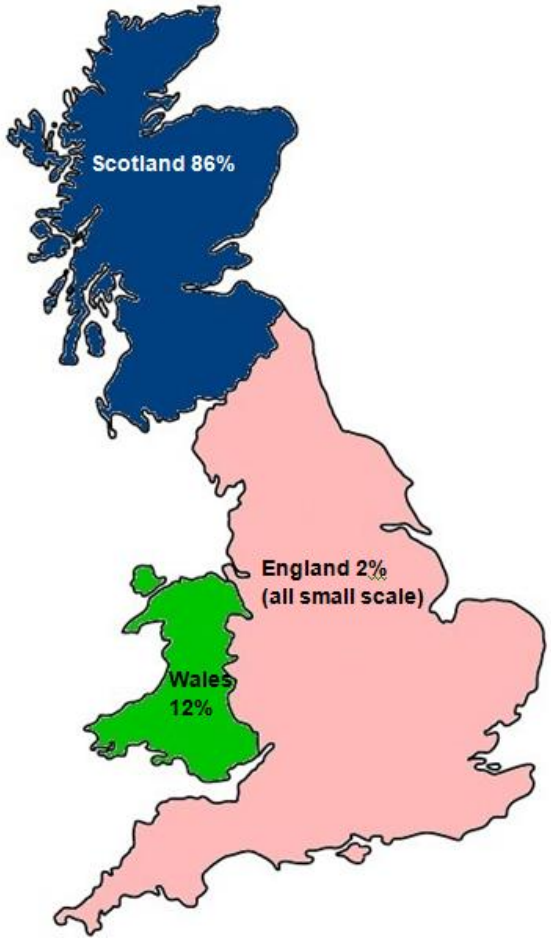
The indicative size and locations of projects was based on the April 2018 version of the REPD

Merit order

- Simple cost merit order using:
  - Site annual mean wind speed
  - Turbine size, as indicated in the REPD
  - Project size, as indicated in the REPD
  - Distance to grid, and
  - Land rent.

	Auction results		
	>50MW	≤50MW	Total
England	0	71.54	71.54
	0%	3%	2%
Scotland	2,206	1,877	4,083
	87%	84%	86%
Wales	321	289.9	610.9
	13%	13%	12%

Wind farm locations



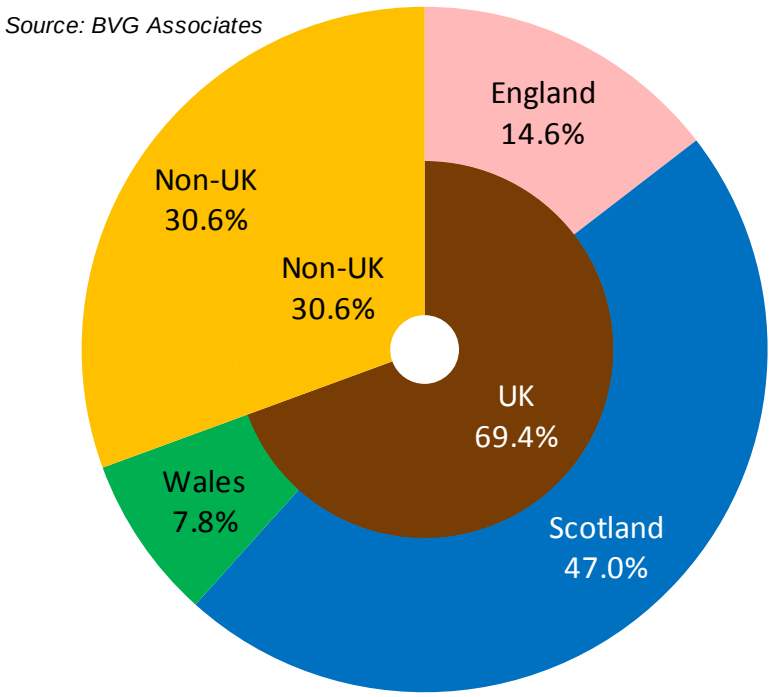
UK and national content modelling

'Content' analysed for England, Wales, Scotland and UK

Methodology

- "The value of all supplies sourced from within the area that accrues as earnings from employment and business profits. It is the sum of 'direct' plus 'indirect' impacts".
- Project specific supply chain (such as service technicians) depends on the precise location of the wind farm
- Non-project specific supply chain (such as tower manufacture) can be located well away from the wind farm, although there is likely to be a national bias.
- Based on:
  - Analysis of the onshore wind supply chain, previously undertaken for ScottishPower Renewables
  - Supplier lists from the funding partners of this study, and
  - RenewableUK membership and project data.

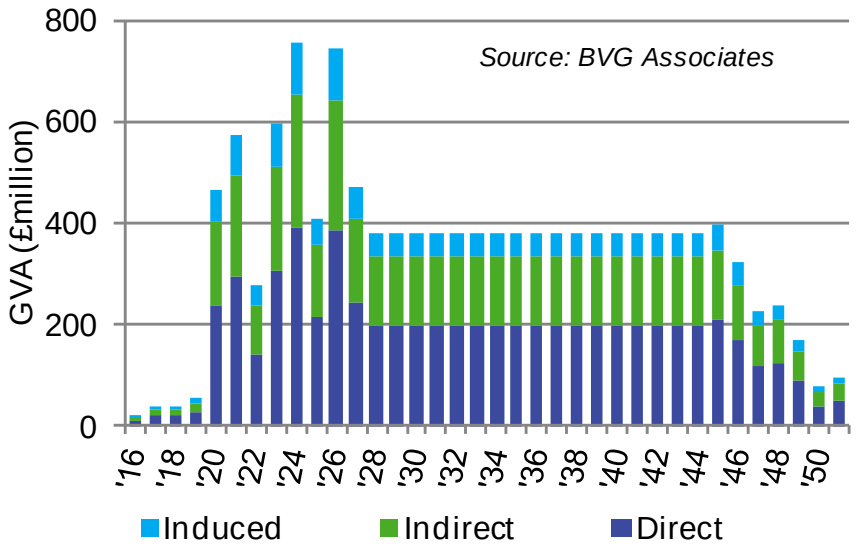
Results



Economic impact: results

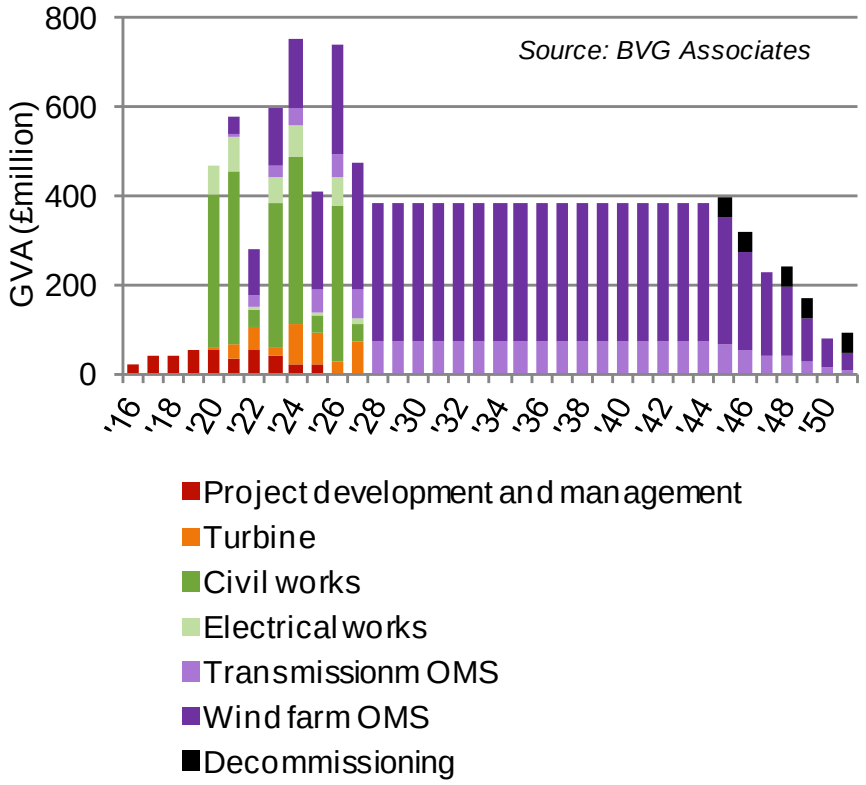
The construction of wind farms following the five CfD auctions will create over £12 billion in GVA

GVA by type of impact



- £6 billion private sector investment generating £12 billion in GVA

GVA by source of impact

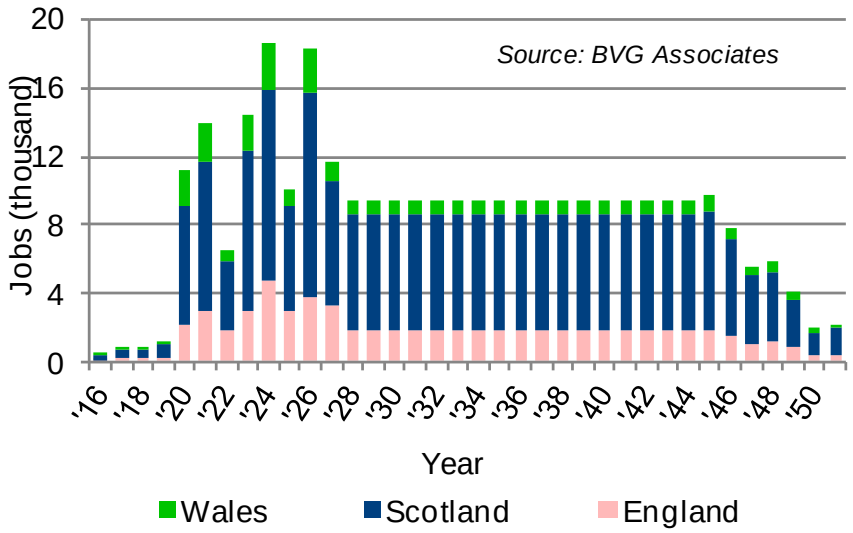


Economic impact: results

The number of jobs created by the five CfD auctions peaks in 2024 at about 18,000

Jobs by nation

- Five auctions will generate up to 18,000 jobs during peak construction.
- 8,500 jobs are created during the construction phase



What next?

What about the secondary market?

- Massive market to exploit (12GW UK)
- What does the supply chain and local content look like?
- Are we making the most of local content in the supply chain?
- What are the options to develop a zero waste/circular economy?

Thank you

BVG Associates Ltd
The Blackthorn Centre
Purton Road
Cricklade, Swindon
SN6 6HY UK
tel +44 (0) 1793 752 308

BVG Associates Ltd
Inovo
121 George Street
Glasgow
G1 1 RD UK
tel +44 (0) 44 212 0800

BVG Associates LLC
874 Walker Road
Suite C
Dover
Delaware
19904 USA
tel +1 (313) 462 0673

info@bvgassociates.com
@bvgassociates
www.bvgassociates.com