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The UK Offshore Wind Experience

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The United Kingdom is...

The global market leader in offshore wind:

The UK has 5.1GW installed or under construction, and is on track to deliver 10GW by 2020, representing the largest expansion in any class of renewable energy technology.

The most attractive location for offshore wind investment in the world:

The UK consistently tops international rankings as the best place to invest in offshore wind, and has been successful in attracting investment from across the globe. The offshore wind pipeline presents an investment opportunity of between £16 to £21bn (\$24 to \$32bn) from 2014 to 2020. Innovative funding models are being created to attract new sources of capital into the sector.

A stable and predictable policy regime:

The UK enjoys a reputation for operating stable and predictable policy regimes to support investment in renewable electricity infrastructure. The UK's Electricity Market Reforms provide long term stable revenues for low carbon energy projects and reduce investor risk.

Home to a growing supply chain capability:

Industry and Government are working together to build a competitive and innovative UK supply chain that delivers and sustains jobs, exports and economic benefits for the UK. UK companies lead the world in services for the design, development, financing, construction and operation of offshore wind plant. Suppliers like Siemens have already chosen the UK as the site for future world class manufacturing facilities, and there are great opportunities for further investment in the supply chain.



Vision for the industry

Industry and Government are working together to build a competitive and innovative UK supply chain that delivers and sustains jobs, exports and economic benefits for the UK.

Government's work to support this vision:

- **Providing market confidence and demand visibility** – critical for investment by developers and the supply chain
- **Building a competitive supply chain** – to support UK based companies to develop the capability and capacity to bid for, and win, contracts in open and fair competition
- **Supporting innovation** – vital to achieve cost reduction and enable new players to enter the market with new product designs
- **Finance** – support to access finance for developers and the supply chain
- **Building a highly skilled workforce** – to deliver the right skills at the right time

UK offshore wind facts and figures

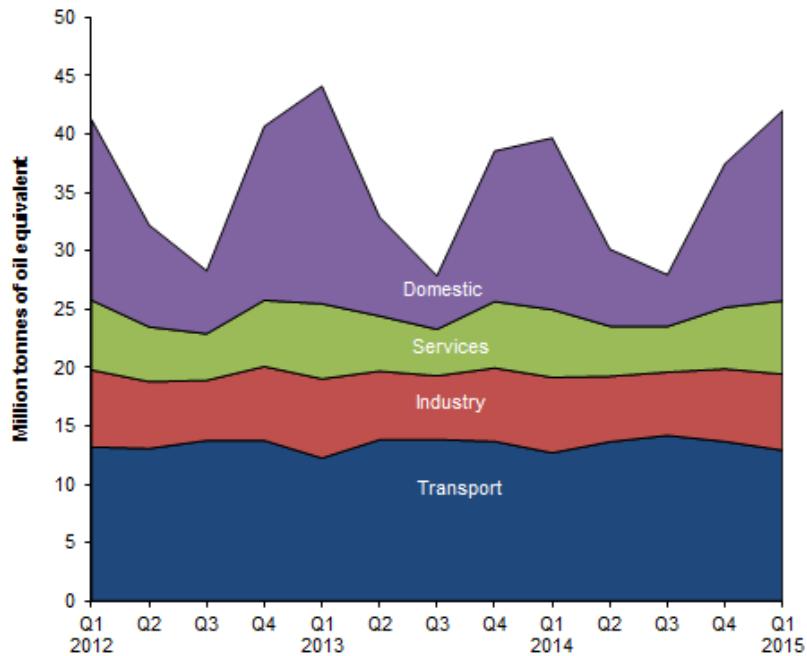
- 1,452 offshore turbines
- 5,105 MW capacity
- Almost 13 terawatt-hours of electricity annually – equivalent to the consumption of 3.5 million homes
- Target of 10GW of offshore wind by 2020 (effectively doubling current capacity), which will be 8-10% of annual UK electricity needs
- Approximately 6,830 full time jobs in the sector
- First offshore wind farm started operating in 2000 in Blyth, northeast England
- In the last leasing round in 2010, tracts were leased that will accommodate 24GW – plus an additional 2.5 GW in Scottish territorial waters.
- World's largest offshore wind farm, the London Array, commissioned in 2012 with 630 MW capacity



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UK offshore wind facts and figures

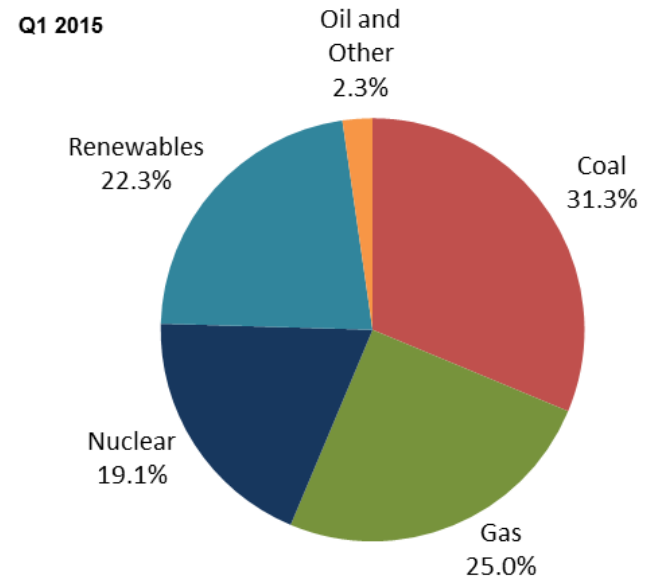
ENERGY



Energy consumption

Source: Energy Trends June 2015

ELECTRICITY



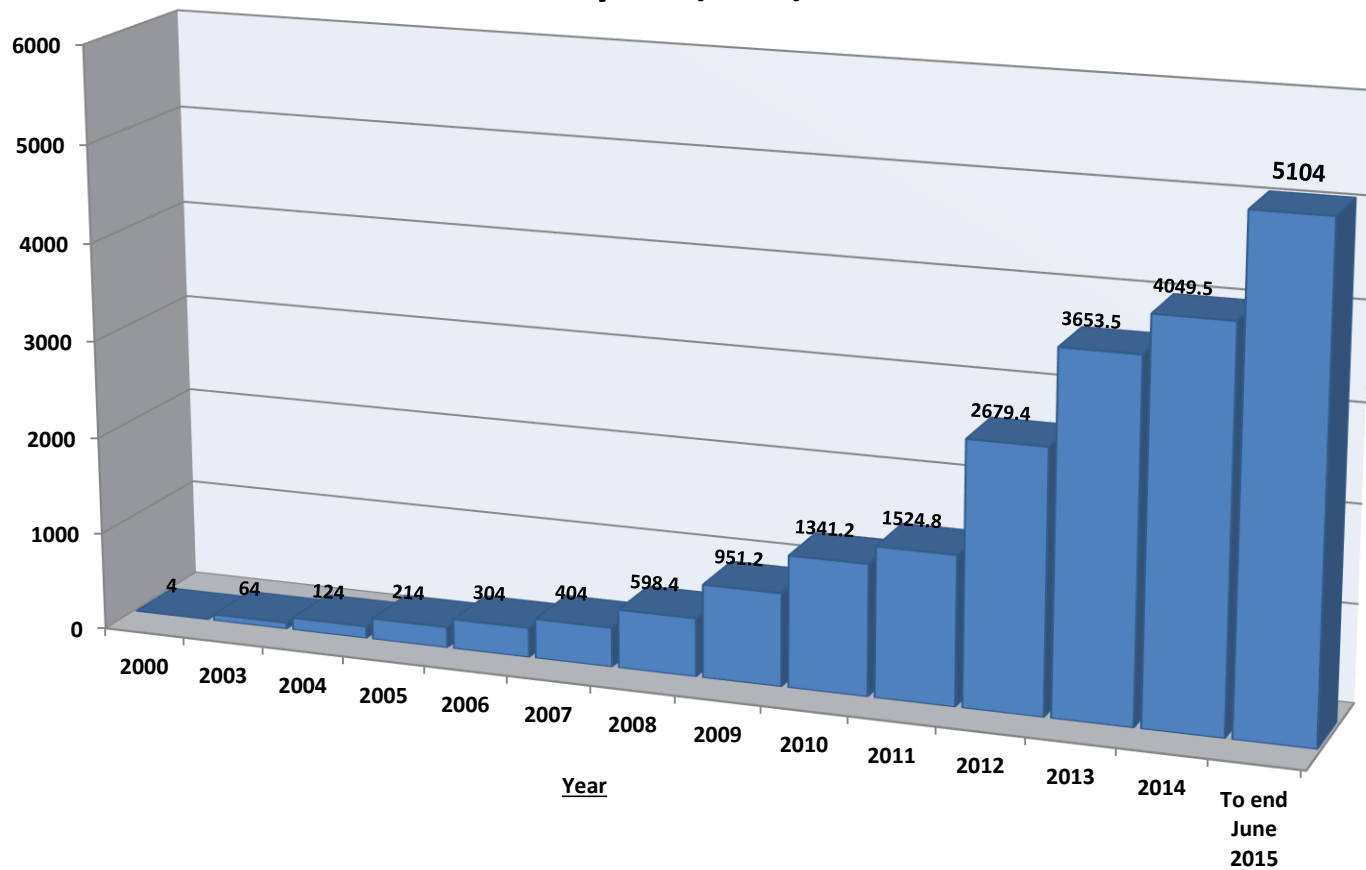
Electricity generation

Source: UK Energy Trends June 2015

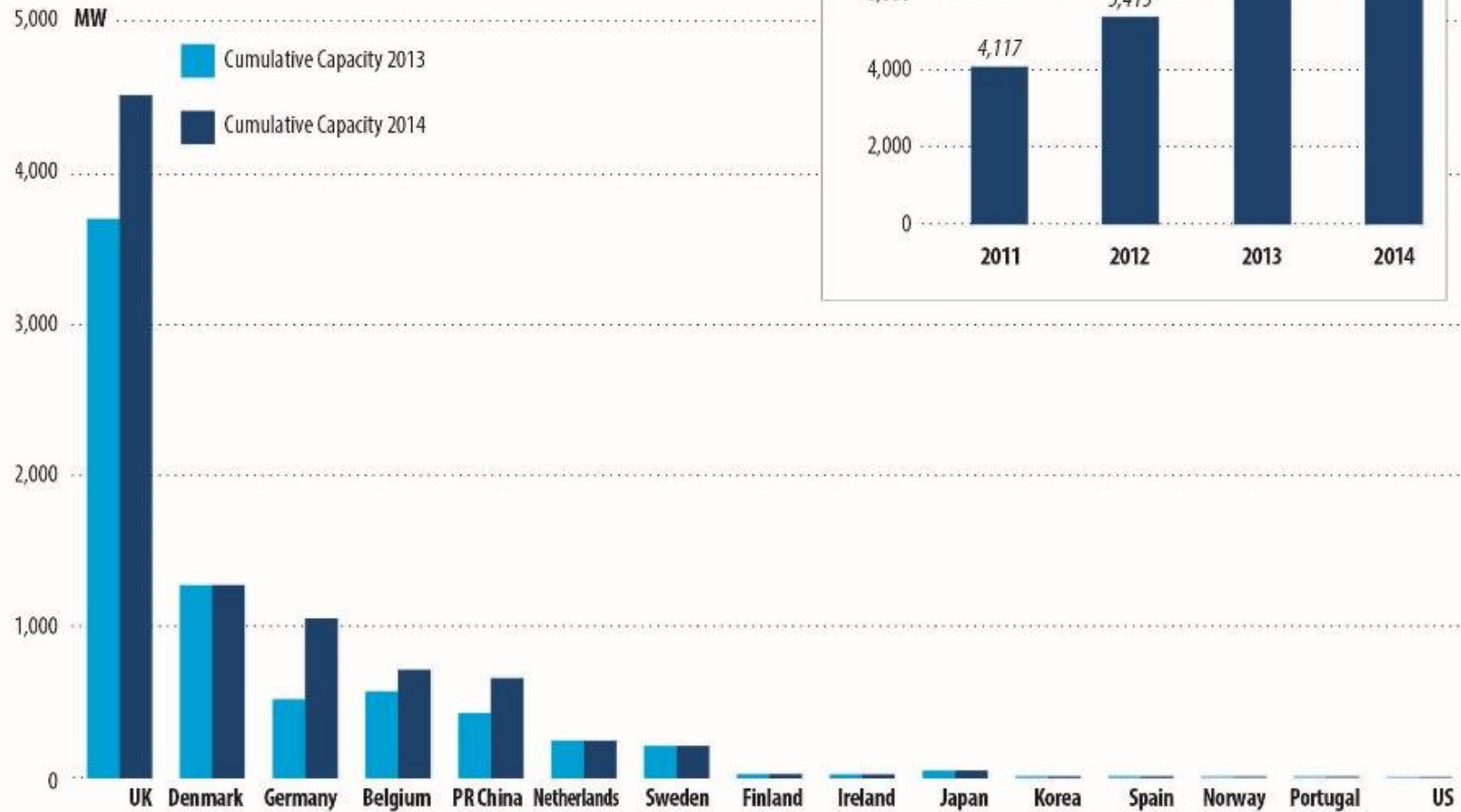


UK offshore wind facts and figures

**Cumulative installed capacity by
year (MW)**



GLOBAL CUMULATIVE OFFSHORE WIND CAPACITY IN 2014



ANNUAL CUMULATIVE CAPACITY (2011-2014)



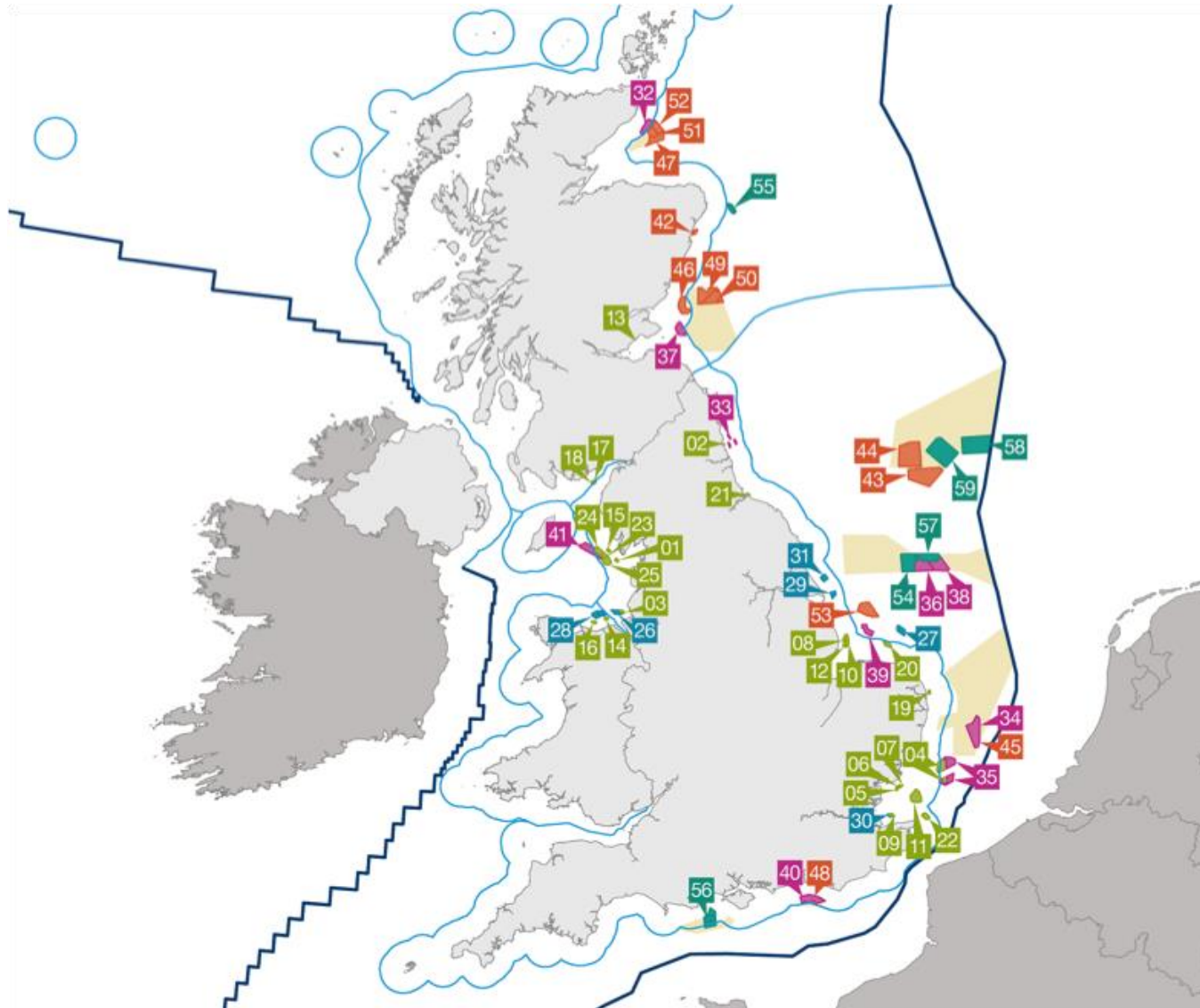
Total 2013	3,680.9	1,271	520	572	429	247	212	26	25	50	5	5	2	2	0.02	7,046
New 2014	813.4	0	529	141	229	0	0	0	0	0	0	0	0	0	0	1,713
Total 2014	4,494.3	1,271	1,049	713	658	247	212	26	25	50	5	5	2	2	0.02	8,759

Source: GWEC



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Existing and upcoming projects

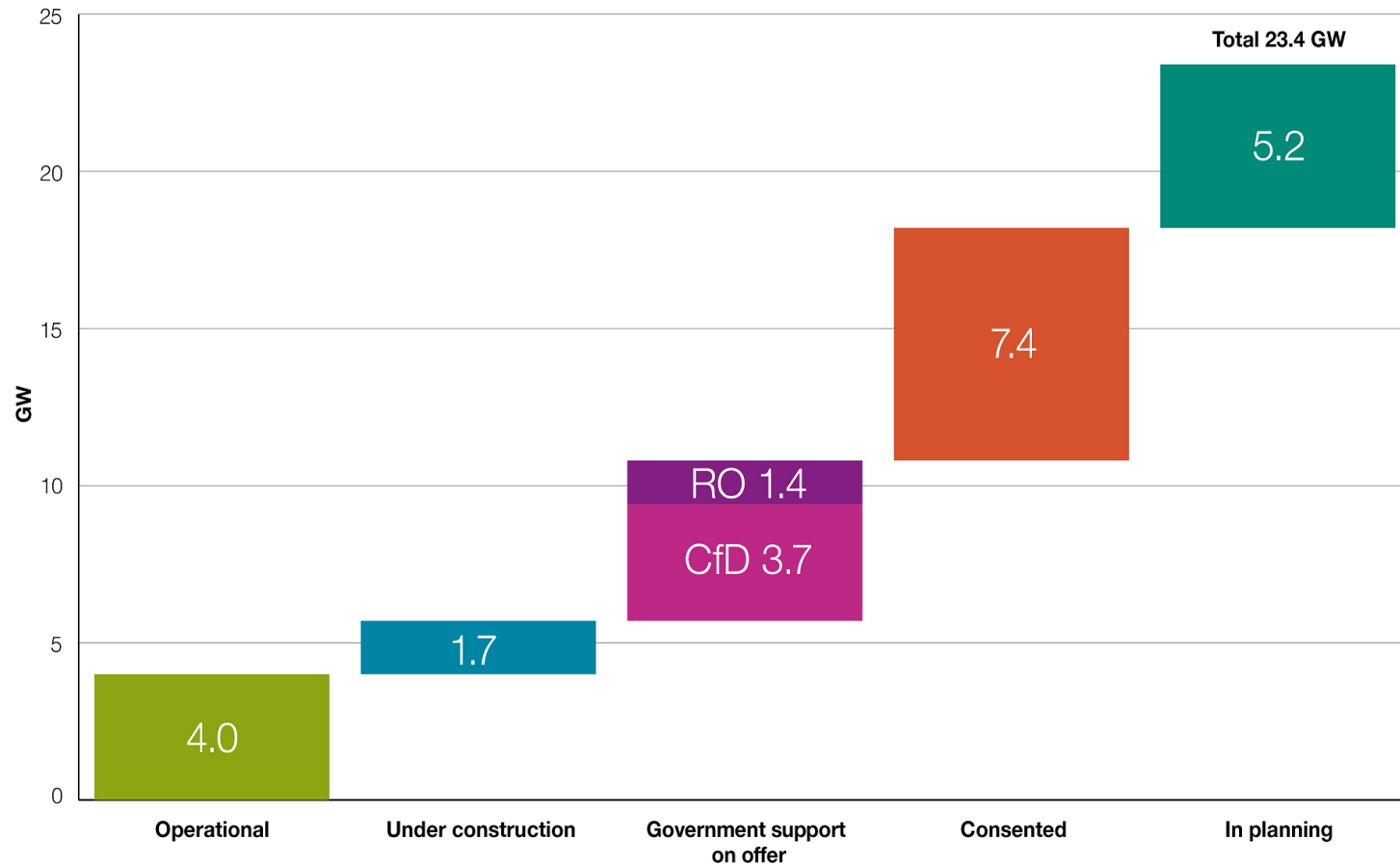


- Operational
- Under construction
- Government support on offer
- Consented
- In planning
- Wind farm areas of search
- Territorial Waters Limit
- UK Continental Shelf
- United Kingdom
- Rest of Europe

Project pipeline

Trajectory to deliver 10GW capacity by 2020

(as of May 2015)



The UK Government has introduced electricity market reforms to bring forward the necessary investment to build a low carbon, secure and affordable electricity system



The UK energy sector will require up to £100bn (\$152bn) investment to 2020. To support delivery, the Government has introduced a comprehensive Electricity Market Reform programme.

Through Electricity Market Reform, the UK aims to secure this investment and achieve a sustainable balance between its three policy objectives:

Decarbonisation: The UK has a target to source 15% of primary energy consumption from renewables by 2020, in line with the EU Renewable Energy Directive. To achieve this, around 30% of the UK's electricity will be supplied from renewable sources.

In the 2013 Energy Act the UK committed to an emissions reduction of 80% on 1990 levels by 2050. The UK is the first country in the world to set itself legally binding carbon budgets to define the trajectory to meet this goal. The latest budget commits the UK to emissions reductions of 50% on 1990 levels by 2027.

Reform introduced: A new support mechanism – Contracts for Difference (CfD) – has been introduced to secure the investment needed to meet this goal.

Security of supply: Around a fifth of the UK's existing electricity capacity is due to come offline in the next decade as aging coal and nuclear plants are decommissioned.

Reform introduced: A Capacity Market provides a regular availability payment to dispatchable forms of power generation (and demand reduction) capacity, ensuring that this plant is available during periods of high demand or shortfall in output from renewable generators.

Affordability: The Government is committed to minimising costs for the consumer.

Reform introduced: To ensure affordability for consumers, subsidies for low-carbon generation must fall within a Levy Control Framework. This framework provides a planning horizon for industry and transparency over liabilities facing consumers.

Financial Support for Low-Carbon Energy



The recently-introduced **Contracts for Difference (CfD)** and the established **Renewables Obligation (RO)** offer long-term predictable support.

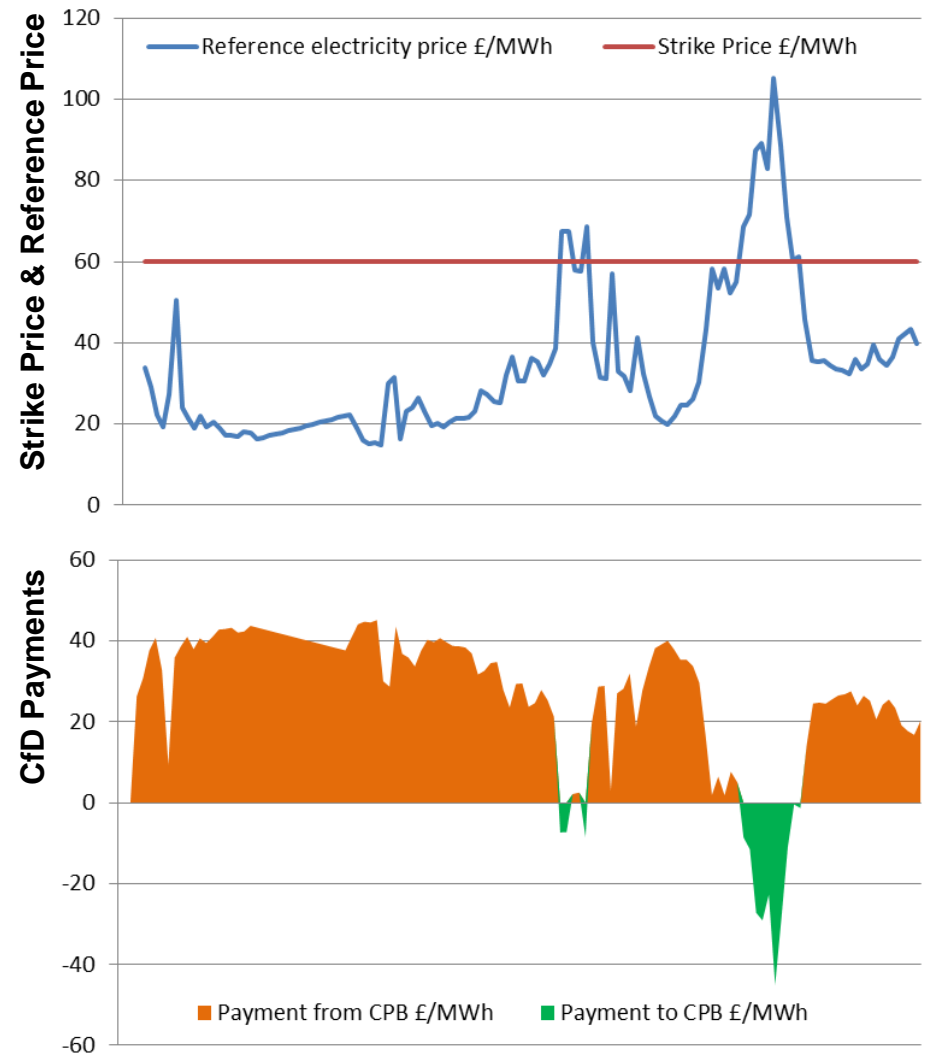
- Renewables Obligation requires electricity suppliers to source a percentage of their power from renewable sources – effectively a renewable portfolio standard.
- Renewable generators receive certificates (ROC) which have a value (around US\$68) on top of the power they sell.
- The RO support scheme will close to new offshore wind projects in 2017, leaving CfDs as the primary financial support mechanism for offshore wind.



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Contracts for Difference

- A private law contract between a low carbon project and the Low Carbon Contracts Company (LCCC, a Government-owned company)
- Contract guarantees a **strike price** – a payment is made to the generator for the difference between the strike price and the market electricity price
- Payment back the other way by the generator if the market price rises above the strike price.
- Protects investors from electricity price uncertainty and allows potentially greater gearing and a lower cost of capital
- 15 year contract term (no cap on output)
- Payments linked to inflation



Seven offshore projects have already been awarded investment contracts under the CfD programme.



Examples of other financial and innovation support mechanisms

Enterprise zone funding

- Various measures to assist companies that invest in specific “enterprise zones”
 - up to 100% business rates relief (worth up to £275,000 [\$418,000]) over a 5-year period
 - enhanced capital allowances in certain areas – allowing companies to write off plant, machinery etc. more quickly for tax purposes
 - simplified planning processes

The British Business Bank

- Brings expertise and Government money to smaller business finance markets.
- Maximises its impact by investing alongside the private sector and working through a range of over 80 established or newly-emerging finance market providers such as banks, leasing companies, venture capital funds and web-based platforms.
- In addition to finance, British Business Bank uses guarantees to share risk with the private sector and so create stronger incentives for lenders to extend credit to smaller or growing companies. Its programmes bring benefits to smaller businesses that are start-ups, high growth, or simply viable but underfunded.

Examples of other financial and innovation support mechanisms

UK Green Investment Bank

- GIB primarily invests in the offshore wind, waste and bioenergy, and energy efficiency markets. Since its launch in November 2012, GIB has committed £2bn (\$3bn) of capital to over 45 projects, mobilising more than £8bn (\$12bn) as of June 2015.
- In total, the bank has invested over £1.1bn (\$1.7) in the UK's offshore wind sector, with a total capacity of over 2.6 GW of renewable power.

UK Export Finance

- Provides guarantees, insurance and advice to support UK-based exporters across all sectors

Offshore Renewable Energy Catapult

- Offshore Renewable Energy Catapult is the UK's flagship technology innovation and research centre for offshore wind, wave and tidal energy. It delivers prioritised research underpinned by world-class test and demonstration facilities, collaborating with industry, academia and Government to reduce the cost of offshore renewable energy and create UK economic benefit.



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Thank you!

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And to colleagues at the Department of Energy &
Climate Change and UK Trade & Investment



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of Energy &
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