

Frequently Asked Questions

Below are some frequently asked questions (FAQ's) to help you understand more about wind farms and their operation and development.

How does onshore wind contribute to the renewables mix in Scotland?

The Scottish Government has set an ambitious and challenging target to deliver at least the equivalent of 100 per cent of our electricity needs from renewable sources by 2020¹. This will help to contribute to the UK's renewable energy targets of 15 per cent by 2020 and the European Union's target of increasing the final proportion of energy consumption from renewable sources to 20 per cent by 2020.²

Onshore wind currently makes up the largest proportion of Scottish renewable energy generation and is crucial to reaching this ambition, through generation of renewable electricity and its role in financing major grid upgrades and research and development in less mature technologies, such as offshore wind and marine energy.³

Wind energy was the largest contributor of renewable generation in Scotland in 2012. Wind farms in Scotland also produced a record amount of electricity in 2012, totalling 8,296 GWh⁴ and contributing the equivalent of around 22 per cent of Scotland's electricity needs. Scotland is now home to over 3.8 gigawatts (GW)⁵ of installed onshore wind capacity, enough to power the equivalent of over 1.9 million homes.⁶

Does wind energy contribute to tackling climate change?

Wind power is a clean, renewable source of energy which produces no greenhouse gas emissions when generating electricity.⁷

It is estimated by the UK Government that in 2011, renewable electricity generation in Scotland displaced over 8.3 million tonnes of carbon dioxide.⁸ This is equivalent to over 15 per cent of Scotland's total carbon emissions.⁹

¹ Renewables revolution aims for 100%, Scottish Government Press Release (2011)

<http://www.scotland.gov.uk/News/Releases/2011/05/18093247>

² European Union Committee, 27th Report of Session 2007-2008, The EU's Target for Renewable Energy: 20% by 2020 (2008). <http://www.publications.parliament.uk/pa/ld200708/ldselect/lddeucom/175/175.pdf>

³ http://www.scottishrenewables.com/static/uploads/publications/sr_onshore_wind_briefing_040613.pdf

⁴ Renewable Electricity Statistics for Scotland, Scottish Government (March 2013)

<http://www.scotland.gov.uk/Topics/Statistics/Browse/Business/Energy/energysummar2013>

⁵ Renewable electricity capacity and generation, DECC (March 2013)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/172946/et6_1.xls

⁶ http://www.scottishrenewables.com/static/uploads/publications/sr_onshore_wind_briefing_040613.pdf

⁷ As above.

⁸ Hansard HC, 10 Sep 2012 ,col 70W

<http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120910/text/120910w0003.htm#1209103700>

How efficient are wind turbines?

Over a year, the output from a single turbine will vary depending on wind speeds. A typical turbine is expected to generate approximately 20 to 40 per cent of its theoretical maximum output over a year.¹⁰

However, it is important to consider that this is the average output and that turbines will be active and producing power for around 6,000 to 7,500 hours each year, or about 70 to 85 per cent of the time¹¹, albeit not at full capacity.

No energy generation technology works at 100 per cent capacity 100 per cent of the time.¹²

Is wind power expensive?

The Renewables Obligation is the main financial support mechanism for investment in renewable energy.¹³ Renewables Obligation Certificates (ROCs) are issued to operators of accredited renewable generating stations each time they generate a certain amount of electricity.

The Renewables Obligation does have an effect on consumer energy bills, with ROCs for onshore wind costing the average UK household £6 in 2011.¹⁴ However, it is important to put this in context with support for other parts of the energy industry. Annual UK Government support for nuclear decommissioning is greater than £2bn.¹⁵

How long do wind turbines last?

The design and quality of turbine manufacturing is improving all the time, but generally and according to international standards, wind turbines are built to last over twenty years.

⁹ Scottish Greenhouse Gas Emissions 2010, Scottish Government (2012)

<http://www.scotland.gov.uk/News/Releases/2012/07/GHG17072012>

¹⁰ http://www.scottishrenewables.com/static/uploads/publications/sr_onshore_wind_briefing_040613.pdf

¹¹ Section 3.1, Wind Turbine Technology, Wind Power in the UK: A guide to the key issues surrounding onshore wind power development in the UK, Sustainable Development Commission (2005)

¹² http://www.scottishrenewables.com/static/uploads/publications/sr_onshore_wind_briefing_040613.pdf

¹³ What is the Renewables Obligation?, Ofgem (2013)

<http://www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Pages/RenewablObl.aspx>

¹⁴ Q6, Onshore Wind FAQ's, DECC

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48356/5197-onshore-wind-faqs.pdf

¹⁵ Nuclear Decommissioning Authority Business Plan 2011 to 2014 (2011)

<http://www.nda.gov.uk/documents/upload/NDA-Business-Plan-2011-2014.pdf>

As wind turbines are machinery with many moving parts it is inevitable that they will have to be maintained and sometimes repaired during their lifetime, boosting this can boost the number of local jobs and also helps to add economic value to the area.¹⁶

What are wind turbines made of?

The towers are mostly tubular and made of steel, generally painted light grey. The blades are made of glass-fibre reinforced polyester or wood-epoxy. They are light grey because this is the colour which is most inconspicuous under most lighting conditions. The finish is matt, to reduce reflected light. The final turbine colour specification would be determined by consultation with the relevant planning authority.

Are wind turbines noisy?

Noise assessments are a key part of the planning process and will be considered by the relevant planning authority. There are strict guidelines on wind turbines and noise emissions to ensure the protection of residential amenity. Aerodynamic noise generated by air moving over turbine blades is the most prominent sound turbines create, although there is also a degree of noise from moving parts.¹⁷

What happens when a wind farm is decommissioned?

Wind farm developers must satisfy the local authority that they have a suitable and robust plan for decommissioning and restoration as one of the conditions of being given permission to build and operate the wind farm, and must also satisfy the local authority that a financial bond is in place to meet the expected costs.

The plan must be agreed and the financial bond must be in place before any site works can commence. The purpose of this condition is to return the site to as near to its original state as is feasible in a practicable and environmentally sound way. Consent decisions are time-limited, with a requirement that the decommissioning and restoration take place at the end of this period or sooner if the wind farm ceases operational use before then.¹⁸

To find out more about onshore wind turbines, please visit the following industry body publications:

[Scottish Renewables, Onshore Wind – What You Need To Know](#)
[RenewableUK, Onshore Wind, Direct and Wider Economic Benefits](#)
[Centre for Sustainable Energy, Common Concerns About Wind Power](#)

¹⁶ http://www.scottishrenewables.com/static/uploads/publications/sr_onshore_wind_briefing_040613.pdf

¹⁷ As above.

¹⁸ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17852-1/WindFAQ>