

>>> Evolution of Wind Energy in Scotland

CHANGING TURBINE TECHNOLOGY

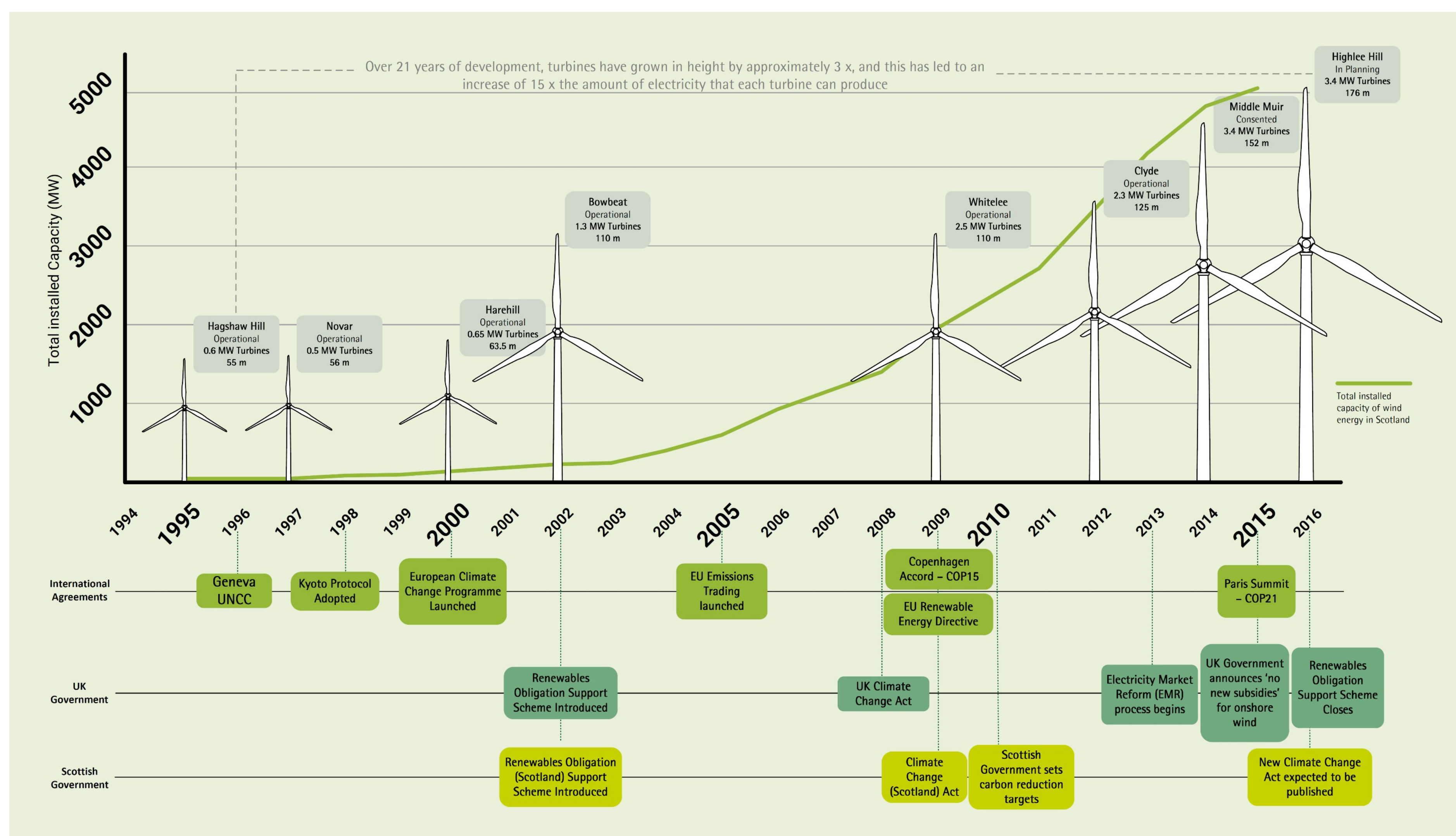
Since the first commercial wind farm was constructed in Scotland, turbine capacities have increased by over 550%.

This increase in capacity, combined with improvements in technology, has resulted in a 15-fold increase in the amount of electricity generated by each turbine.

A commercial scale 3.4 MW turbine is now capable of generating enough electricity to power almost 2,800 homes on an average Scottish site^[1].

FACTS & FIGURES

- Onshore Wind supported 5,400 full time jobs in Scotland in 2015^[1]
- Community benefit from onshore wind projects now pays out over £8.8 million per year to local communities in Scotland^[2]
- In 2014 renewable energy surpassed all other forms of generation to become the main source of electricity supply in Scotland^[4]
- On eight days in April 2016, wind energy produced 100 % of Scotland's domestic electricity demand^[5]
- Renewable energy provided approximately 57.7% of Scotland's electricity in 2015^[4]
- In 2015 Scottish wind power provided enough electricity to power the equivalent consumption of 3,425,237 average UK homes^{[3][*]}



EU RENEWABLE ENERGY DIRECTIVE

Directive 2009/28/EC of the European Parliament sets an overall EU target of 20% of energy from renewable sources by 2020.

It also set a UK target of 15% of energy from renewable sources by 2020.

UK NATIONAL TARGETS

The UK Government has set targets for 30% of electricity from renewable sources by 2020 and carbon reduction of 80% since 1990 by 2050.

SCOTTISH GOVERNMENT TARGETS

Interim target of 47 % reduction in carbon emissions by 2020, set in 2013

Target for renewable energy in Scotland to generate the equivalent of 100 % of gross annual electricity consumption by 2020.

REFERENCES

- Scottish Renewables: <https://www.scottishrenewables.com/sectors/renewables-in-numbers/>
 - Scottish Renewables: www.scottishrenewables.com/news/wind-farm-community-cash-hits-88m-year-record-high/
 - Renewable UK: www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/figures-explained.cfm
 - The Guardian: <https://www.theguardian.com/environment/2014/nov/27/renewable-energy-overtakes-nuclear-as-scotlands-top-power-source>
 - BBC News: www.bbc.co.uk/news/uk-scotland-36187324
- * To calculate the number of homes, EnergieKontor calculated the expected net production for a Senvion 3.4M114 turbine with a hub-height of 119 m, and an average expected hub height wind speed of 8.1 m/s: this produced a net figure of 11,500 MWh (or 11,500,000 kWh) per annum. EnergieKontor then divided this by the average annual household energy consumption figure for the UK (4,115 kWh) [data available for 2015, as published by DECC (2016)] to work out the estimated equivalent number of households supplied by wind energy to arrive at a figure of 2,795 households per turbine"
- * To calculate the number of homes, EnergieKontor took amount of electricity produced by onshore wind in 2015 (14,136GWh as published by Scottish Renewables) and the average consumption per household (4115kwh as published by Renewable UK) giving a figure of 3,425,237