

Did you know?

The electricity generation mix in Scotland has changed significantly in recent years driven by privatisation and subsidy schemes introduced to encourage the development of low carbon and renewable technologies. In 2019 low carbon sources provided 86.4% of electricity generation with just 12.7% generated from fossil fuels. Wind provided 47.7% of electricity generation.

Currently the amount of electricity produced from wind in the Scottish Borders is greater than the area's demand for electricity. There are continuing problems with the capacity of the grid to cope with Scottish Borders generated wind although these should diminish over the next 10 years.

There are currently 320 onshore operational windfarms in Scotland with 4,030 turbines. There are 119 onshore windfarms awaiting construction with 1,505 turbines, and 59 current applications for onshore windfarms with 879 turbines. (Scawd Law is not included in these figures because it is at the pre-application stage). Onshore wind capacity as at September 2020 is 8.4GW but the projects already in development will add a staggering 8.8GW because of technological improvements to turbines and the use of bigger turbines.

How wind farms work

Wind turbines produce electricity by converting the kinetic energy of the wind into electrical power. The rotor blades on a wind turbine transfer the power of the wind via a drive shaft to a generator in the nacelle. The rotor blades are adjustable to produce the largest amount of electricity, regardless of whether the wind is blowing hard or gently. Wind turbines are typically placed on hill tops or in coastal areas – places with abundant and stable wind. More efficient, not necessarily larger, turbines are constantly being developed, especially in countries where there are no government subsidies.

The Eastern Borders, particularly Berwickshire, is ideal for onshore wind farms but existing and planned developments have probably reached saturation point so developers are looking at other areas. These areas may be less suitable, and more expensive, to develop but the Scottish Government is very supportive and the short-term rewards for developers are great.

Economics

Prof Gordon Hughes, School of Economics at Edinburgh University is scathing about the economic worth of the wind farm industry. Whilst companies and landowners can make big profits quickly, he reckons that wind power is basically economically unsustainable in the way it operates at present.

A critique written by Prof Hughes in November 2020 concluded “Bailouts of wind farms and financial institutions are inevitable. The Government is creating a situation in which it will have no option other than to bail out failed and failing projects simply to ensure continuity of electricity supply. There will be a game of pass the parcel over how the losses will be distributed but ultimately they will fall largely on taxpayers and energy customers. Any business investor outside the renewable energy sector should plan on the basis that electricity prices in 2030 will be 3-4 times in real terms what they are today.”

Windfarms and Climate Change

Windfarms produce low carbon electricity BUT there is increasing evidence that onshore windfarms built too close together can have dangerous effects on climate and local temperatures. This is a cumulative effect and, apart from landscape concerns, is one of the reasons why there is increasing concern about the number of large windfarms in the Borders.

Spacing of Turbines

The spacing of turbines is critical to their efficiency – many developers produce an initial plan which is designed to ‘flush out’ opposition with turbine sites which would not be efficient. The plan is changed ‘to take account of objections’ but once initial planning permission is gained then the developer starts to expand the windfarm. A good example is the projected Lethans Windfarm on an old coal mine site near Ayr – approved in 2020 and building has yet to start but now an extension is proposed which will use the world’s largest turbines – 220 metres. Even though the windfarm site is flat and low these turbines would be visible from 30 miles away.

Norway

Norway has led the world in wind farm development but the Norwegian government is ending the subsidy regime for onshore windfarms this year and since June 2020 there have been stricter environmental safeguards for any onshore windfarms in the planning process. Many politicians are expecting that this year may see an end to all onshore windfarm development. Industry consultant StormGeo Nena Analysis say that it’s unlikely any more wind farms will be built on land in Norway.