Onshore wind

In 2013 Ireland had a nominal 1.8 GW of onshore wind capacity (installed). This figure excludes small wind turbines (micro and mini turbines), which are considered separately.

Trajectory 1

Trajectory 1 assumes that only turbines that are in the planning process today are built. Onshore wind capacity peaks at 2.5 GW before 2020 and falls to zero in 2050 as the turbines reach the end of their useful life.

Trajectory 2

Trajectory 2 assumes that capacity rises to 4 GW in 2025 and is maintained at that level by replacing retired turbines. Trajectory 2 represents an additional 300 MW/y from 2015 onwards, consistent with the build rate under the National Renewable Energy Action Plan for Ireland up to 2020. By 2025, there would be a total of around 1,600*2.5 MW turbines. This would be just over double the onshore wind capacity in 2025 compared to today, with a repowering rate of around 120 turbines per year post 2025. The electricity output from 4GW of onshore wind is about 10 TWh/y.

Trajectory 3

Trajectory 3 assumes that capacity rises to 4 GW by 2025, then to 6.6 GW by 2050. Trajectory 3 assumes that capacity is built at the rate of 800 MW/y from 2030 onwards. That means building about 2,650 2.5-MW turbines across the country. The total area of the wind farms would be about 220 km^2. 6.6 GW of onshore wind turbines generates around 17 TWh/y in 2050.

Trajectory 4

Trajectory 4 assumes that capacity rises to 8.6 GW in 2050 with a sustained build rate of about 400 turbines a year from 2035. Interconnection and storage requirements are large, as discussed in the section on 'Storage, demand shifting and interconnection'. The Trajectory 4 output of 22.3 TWh/y could be delivered by about 3,500*2.5 MW turbines in 2050, although in reality turbine capacities will likely increase over that time period. The total area of the wind farms would be about 300 km^2, or about 0.4% of Ireland's land area.

While up to 16GW of onshore wind potential in Ireland has been identified in SEAI's Wind Energy Roadmap up to 2050, we have constrained the growth of onshore and offshore wind to a level similar to current electricity consumption to align with domestic demand rather than export potential.

Figure 18: Electricity generated by onshore wind under 4 trajectories in TWh/yr.