

The Challenges of Onshore Wind: An Ecologist's Perspective

by Nick Henson

The lifting of England's de facto ban on onshore wind in 2024 has created new opportunities for development. Yet as suitable sites become harder to find, repowering existing wind farms may become increasingly important in meeting the UK's net-zero targets.

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A CHANGE IN POLICY

During my 20+ year career I have seen a marked shift in the renewable energy sector. In 2005, when I started full-time employment as an ecologist, much of my time was spent on onshore wind projects. Then in 2015, the UK Government introduced two footnotes to the National Planning Policy Framework (NPPF) that in effect banned new onshore wind developments in England. This revision to the NPPF meant that a strong burden of proof was required to show that there was no local opposition to any onshore wind farm development for it to be deemed acceptable and capable of getting planning permission; a near enough impossible position for a developer, given there is nearly always some local resistance to any development proposal. This naturally shifted my focus away from working on onshore wind projects in England, with that tap pretty much being turned off overnight.

Almost a decade later, in 2024, the new Labour Government lifted the de facto ban on onshore wind in England in a bid to double the amount of energy generated from this renewable source by 2030. Alongside this, they brought large onshore wind proposals into the Nationally Significant Infrastructure Project (NSIP) regime through a revised National Policy Statement, to support quick determination and help large onshore wind projects progress through the English planning system in a timely manner. The tide had turned, and once again I had the opportunity to work on some more 'local' onshore wind projects.

WHY IS RENEWABLE ENERGY SO IMPORTANT?

Demand for electricity is expected to increase by 50% by 2035 and double by 2050^[1]. To meet this demand and secure our energy supplies, we need cost-effective and sustainable solutions that reduce our reliance on other nations to be the source of our energy. This is ever more important when pressures from geopolitical instability and environmental shocks caused by extreme weather and climate change are so great, and when we are continuing to experience largescale biodiversity losses, caused in part by climate change.

Renewable energy generated from onshore wind is essential for meeting our sustainable energy aspirations. According to the National Energy System Operator (NESO)^[2], in the 12 months leading up to June 2026, renewable energy accounted for 47% of the UK's energy use, with wind (onshore and offshore) being the leading contributor, providing almost 26%. The energy produced by onshore wind alone is equivalent to the needs of 26,400,744 homes and represents 39,302,893 tonnes of CO2 reductions per year. This is significant! However, the burning of fossil fuels still provides a high proportion (24%) of our generated energy^[2]. This reliance needs to change if we are to tackle climate change, and although the contribution made by renewable energy sources has steadily increased year-on-year during recent history^[3], there is still a long way to go to achieve net zero and address our burgeoning demands for energy.



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WHAT ARE THE KEY CHALLENGES FACED BY THE ONSHORE WIND INDUSTRY?

Whilst the lifting of the de facto ban on onshore wind in England is, in my opinion, positive and necessary for achieving a more sustainable future, we're facing many significant and often competing challenges in achieving net zero. Meeting such commitments will require renewable energy developers to construct more large-scale onshore wind farms, alongside other renewable energy developments such as solar. But where they go will be determined by more than just where there is sufficient space.

One of the key limiting factors that influences where renewable energy developments can take place is the need for a viable grid connection. This in effect encourages developments to be located close to existing electricity substations, which are usually located near populated areas where energy demand is highest. This clearly creates an obvious source of conflict, when the sight of wind turbines is so often offensive to people that are protective of their local views and 'natural' landscapes.

To avoid a myriad of objections from local residents and other stakeholders, developers are pushed to find sites away from populated areas. Whilst this may help lessen landscape and visual impacts, it does tend to create a trade-off, as such sites are usually some considerable distance from a viable grid connection and, being away from sources of human disturbance, they are also all too often ecologically sensitive, supporting valuable wildlife and habitats.

When I attended the All Energy Conference last year in Glasgow, I heard a reoccurring message, that the low hanging fruit for onshore wind farm sites in the UK has already been picked and the remaining sites are now increasingly constrained by ecology, presence of deep peat and landscape considerations. Recent case studies highlight this well, with the likes of the Calderdale Energy Park^[4] in West Yorkshire (where RSK Biocensus is heavily involved) and Dengie Marshes Wind Farm^[5] in Essex proposed within landscapes that are highly constrained by ecology and other environmental factors. Such projects would be likely to have significant adverse effects on internationally designated sites (Special Protection Areas and Special Areas of Conservation) as well as other important ecological features. To gain consent, these projects will need to demonstrate that they are in accordance with the requirements of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') and, where likely significant effects on European sites are predicted, the developer will need to demonstrate that the three 'HRA derogation' tests can be met^[6]. Whilst a precedence has previously been set for HRA derogation with offshore wind, to date, no onshore wind project in the UK has achieved this.



Whilst the trade-off between landscape and visual impacts, ecology and other factors such as engineering considerations aren't a new challenge for the onshore wind industry, they are clearly becoming more profound, as finding suitable sites for new large-scale developments becomes increasingly difficult. It therefore feels like we are facing some tough decisions: should we be more accommodating of change and accept that sometimes our views of a 'natural' landscape need to be altered in order to meet our energy needs, or should biodiversity pay a heavier price to lessen the impact on people? Clearly, the right balance needs to be struck, which isn't easy to achieve.

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SO, WHAT'S THE ANSWER?

The UK energy industry must be reliable, affordable and resilient and to achieve this, we need to accommodate additional large-scale onshore wind developments as best we can. But there is also a key role here for existing developments. There have been considerable technological advances in energy generation and transmission in recent years, with big improvements in infrastructure efficiency and the generating output of wind turbines^[7].

We are now seeing many of our original onshore wind farms reaching the end of their operational lives. The repowering of these existing wind

farms can help deliver our ambitious UK growth targets. A recent demonstration of the potential of repowering can be seen at the Hagshaw Hill Wind Farm in Scotland^[8]. The original 26 turbines installed in 1995 have now reached the end of their operational period and are being replaced with 14 modern-day turbines. However, although fewer in number, the new turbines are larger and more efficient, meaning that the repowered wind farm will produce five times more energy than before. This can be achieved within an environment that is already accustomed to the presence of wind turbines, and so the ecological impact of this repowering should be much less than an equivalent new 'greenfield' development. Our existing fleet of onshore wind farms therefore has great potential to help meet our future sustainable energy needs.

In a world where the climate crisis and widespread biodiversity loss are intertwined, we have a responsibility to future generations to strike the right balance and ensure that adverse impacts from new renewable energy developments are minimized as far as is feasibly possible. Indeed, future policy and regulation must continue to support sustainable growth, encourage continued technological improvements, but also put biodiversity at the forefront and continue to promote the delivery of overall net gains for biodiversity, to help overturn years of persistent biodiversity declines.

Key Takeaway:

As suitable sites become increasingly constrained, the future of onshore wind will depend on balancing competing environmental priorities and embracing smarter solutions such as repowering existing wind farms.



ABOUT THE AUTHOR

Nick Henson MEnvSci (Hons) CEnv MCIEEM is an Associate Director with RSK Biocensus and has a background in ornithology, protected species ecology and ecological impact assessment. Whilst much of his focus has been spent working on onshore wind developments, he has experience across a broad spectrum of sectors, having worked with public and private sector clients throughout the UK and Ireland.



REFERENCES

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2. Great Britain's Monthly Energy Stats | National Energy System Operator – <https://www.neso.energy/energy-101/great-britains-monthly-energy-stats>
3. Renewables contributed 14.5% and fossil fuels contributed 49.9% of our energy usage in 2016
4. Calderdale Energy Park – <https://www.calderdaleenergypark.co.uk/>
5. Dengie Marshes Wind Farm – <https://www.dengiemarsheswind.co.uk>
6. First, that there is no reasonable alternative solutions that meet the project objectives but which would be less damaging to European sites; second that the project is of Imperative Reasons of Overriding Public Interest (IROPI); and third the likely significant effects can be sufficiently compensated.
7. The average rated capacity of turbines that are installed across our existing onshore wind farms is 1.8 MW per turbine. By comparison, modern day contemporary turbines have a generating capacity of upwards of 4-5 MW each (RenewableUK website, available at <https://www.renewableuk.com/>)
8. Hagshaw Hill Windfarm – ScottishPower Renewables – <https://www.scottishpowerrenewables.com/onshore-new/onshore-scotland/wind-scotland/operational-windfarms/hagshaw-hill-windfarm>

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