



scottish
renewables[®]

ONSHORE WIND

INVESTING IN SCOTLAND'S
ENERGY FUTURE





INTRODUCTION

Renewable energy like wind, hydro and biomass is Scotland's largest source of power.¹

Onshore wind provides the bulk of that capacity affordably, predictably, and alongside a whole raft of other social, environmental and economic benefits. Early investment has allowed the UK to become one of the global centres for wind energy.

Onshore wind employs 8,780 people² from the central belt to the Borders, Highlands and Islands. These are skilled jobs in areas like manufacturing, installation, operation and financial and legal services which bring prosperity and investment to communities where opportunities for this type of employment may not otherwise exist.

Wind power is popular, too: recent UK Government figures show a growing number of people² - almost 80% - support its use. Onshore wind is also cheap. The UK Government's own figures³ show onshore wind is already the lowest-cost form of new power generation: cheaper than gas, and around half the cost of electricity from new nuclear power stations⁴.

Scotland's onshore wind industry had a turnover of £2.4 billion in 2019⁵, and supports a thriving supply chain of businesses across the country. It also plays a large part in displacing the 13.6 million tonnes of greenhouse gas emissions avoided by our use of renewable energy each year.⁶

And that's on top of community benefit payments of more than £22 million a year made by onshore wind developers to communities close to their sites. That's money which would not otherwise have been available, and money which is providing a huge range of benefits to towns and villages in some of Scotland's most deprived areas⁷.

In short, onshore wind is doing what it is supposed to do: harnessing our weather to generate cost-effective, clean electricity and an impressive list of additional social and economic benefits.

This document has been produced by Scottish Renewables to show the real story behind Scotland's onshore wind industry. Please do contact us if you'd like more information on any of the statistics contained in it.

Claire Mack

Chief Executive | Scottish Renewables
chiefexecutive@scottishrenewables.com

¹ <https://www.scottishrenewables.com/sectors/renewables-in-numbers/>

² Fraser of Allander Institute: The Economic Impact of Scotland's Renewable Energy Sector, June 2021

³ <https://www.gov.uk/government/collections/public-attitudes-tracking-survey>

⁴ <https://www.nao.org.uk/wp-content/uploads/2016/07/Nuclear-power-in-the-UK.pdf>

⁵ Fraser of Allander Institute: The Economic Impact of Scotland's Renewable Energy Sector, June 2021

⁶ Scottish Energy Statistics Hub

⁷ <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2016-09-05/45055/>

⁸ <https://www.localenergy.scot/projects-and-case-studies/searchable-register-of-community-benefits/>

ONSHORE WIND IS CHEAP AND POPULAR

Affordable energy

When calculating the cost of energy from any particular source, many different factors must be considered.

Government figures show that new onshore wind farms are now the lowest-cost way to generate electricity in the UK⁹. Advances in technology, in particular a move to bigger and more efficient turbines, have been driven by a burgeoning global market which has reduced costs by a quarter since 2010.

Subsidy free

As onshore wind has matured as a technology the amount of support it receives from Government has fallen. Today, with onshore wind classed as a mature technology, industry is able to say with confidence that new large-scale projects would provide power at a level which the Government's own advisors, the Committee on Climate Change, say is subsidy free - and in many cases new contracts to supply power are signed at a rate which returns money to the taxpayer over the life of the wind farm.



LYNETTE PURVES
Renewable Energy Lawyer,
ERG

Having worked in the renewable energy sector for around a decade, onshore wind remains my biggest focus.

Here at ERG, we develop, own and operate onshore wind projects across Scotland and beyond.

In my role as in-house lawyer, I support colleagues across all our departments - from accountants to engineers, human resources to communications, and insurance to IT. I provide advice on the legal frameworks affecting our work, and I negotiate the contracts governing our relationships with our external stakeholders, such as our landowners, subcontractors and local communities.

It makes me proud to work in a sector which is helping to fight climate change and achieve net zero.



⁹ <https://www.nao.org.uk/wp-content/uploads/2016/07/Nuclear-power-in-the-UK.pdf>



ANDREW WHITE
Geospatial Manager,
Natural Power

My role as Natural Power's Geospatial Manager gets me involved in almost all aspects of the company - nearly everything we do from surveys, through to the construction and asset management of onshore wind projects involves location information at some stage.

We have a great team of 10 technicians, analysts and modellers which gives you an idea of the amount of the work we get involved in. It's always varied and interesting!

Cheapest option

Ensuring that the UK continues to replace its aging power stations with the cheapest form of electricity generation will help keep consumer bills as low as possible. Onshore wind, along with solar, is the cheapest form of new power generation available, so using it to replace the power stations which need to close will not only help us meet our net-zero climate targets, but also save consumers money.

¹⁰ www.aldersgategroup.org.uk/asset/download/993/1802%20UK%20industrial%20electricity%20prices%20E2%80%93%20FINAL.pdf

¹¹ UCL (2018) UK Industrial Electricity Prices: Competitiveness in a low-carbon world; Commissioned by the Aldersgate Group

¹² <https://www.gov.uk/government/statistics/energy-and-climate-change-public-attitudes-tracker-wave-33>

¹³ <https://www.gov.uk/government/statistics/energy-and-climate-change-public-attitudes-tracker-wave-24>

¹⁴ Survation for Scottish Renewables, 2018

¹⁵ <https://www.gov.uk/government/statistics/energy-and-climate-change-public-attitudes-tracker-wave-24>



Popular

Public support for onshore wind in the UK is near an all-time high according to the Government's own research, with 77%¹² of those polled stating their support for the technology¹³. People living in rural areas are also supportive of onshore wind, with research in 2018 finding 66% of rural Scots support the use of onshore wind energy, with 22% saying they have no opinion or don't know and only 11% opposed to new onshore wind farms.¹⁴, and support is particularly strong among younger people¹⁵, a reflection perhaps of the importance that they place on climate change as the most significant threat facing society today.



LAILA HASSAN
Associate Financial Analyst, Red Rock Power Limited

Having previously worked in advisory services and for clients in a number of different sectors, I was eager to move into the renewables industry and use my skills to support the green recovery.

As a member of Red Rock Power's Investment Management team, I am actively involved in analysing and assessing a number of opportunities to acquire or invest in onshore (and offshore) wind farms at varying stages of the lifecycle. It's extremely fast paced and interesting to see the level of potential within the sector at the moment, and how much is being planned and developed for the future, not just in Scotland but across the UK and Europe.

ONSHORE WIND IS PROVIDING A LIFETIME OF ECONOMIC BENEFITS



MARK MCRAE
Director
Martin Aitken & Co

The changes in the onshore wind sector over the last few years have been challenging, but one thing is certain: the need for renewable energy is only going to accelerate.

New technology and the right financial support will allow new modern onshore wind to flourish and play an important part of our energy mix going forward, creating commercial opportunities for those who adapt and push ahead with well-planned and structured development projects.

The repowering and refinancing of existing wind farms will also present opportunities in the sector, but regulatory frameworks at both Scottish and UK levels must be clear, aligned and predictable to support this new growth.

Wind farms generate a variety of economic benefits: jobs during construction and operation and local revenues through business taxes, rents and benefits paid to communities.

Growth is generated indirectly, too, as new jobs produce extra demand for secondary services such as food and accommodation in surrounding areas.

Scotland and the UK capture the majority of the economic value generated by wind farms which are built here. On average, 66% of the total economic value of a Scottish wind farm accrues to the UK; 51% of that in Scotland. Local areas also benefit, with on average 16.5% of the total value staying in the local region¹⁶.

Onshore wind currently employs 8,780 people¹⁷ across Scotland, with revenues of £2.4 billion in 2019¹⁸.

One study has estimated that a single wind turbine will bring £981,000 to the UK economy over the course of its lifetime. Of this, £160,000 of this goes to the local economy, and £504,000 to Scotland¹⁹.

The following section explains how the UK makes money from its abundant wind resource.

¹⁶ <https://bvgassociates.com/wp-content/uploads/2017/09/BVGA-18510-Economic-impact-onshore-wind-report-r3.pdf>

¹⁷ Fraser of Allander Institute: The Economic Impact of Scotland's Renewable Energy Sector, June 2021

¹⁸ <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/finalesimates/2016>

¹⁹ PWC - Clyde Wind Farm Extension - Impact Analysis



Development

Like any infrastructure development, the planning phase of a wind farm's construction lasts several years.

First, wind data for the site must be collected, typically by erecting a mast which can measure wind speed over an extended period. Planning permission must be sought and approved for this mast, so as well as the labour needed to erect the mast, a whole variety of planning experts and legal professionals are also required at this stage.



Once wind data has been collected, the site's developer can decide whether they want to proceed with securing planning permission for the wind farm. This requires a whole range of environmental surveys and visual analysis to inform an early wind farm design. At this point – and likely before – that developer will have begun to consult with local people about their views on the proposed scheme. It's not uncommon for significant changes to wind farm designs to be made pre-planning, based on comments made by local people at community exhibitions or meetings, or in writing.



The process of applying for full planning permission for a wind farm development involves teams of professionals working either at or near the site, or remotely. Their tasks might include drawing up plans to ensure the local environment is protected (see the Sustainable Development section on page 14), plotting how large pieces of equipment like turbine blades and towers will be transported to site safely and with minimum disruption, or

drawing up legal documents for the developer, investors, the local authority and sometimes the local community, should they choose to take a financial stake in the wind farm.

Once planning permission has been approved, there is another round of environmental surveys, legal agreements and regular community updates before construction can start.

Operational life

Wind turbines, like all machines, require regular maintenance if they are to run well.

That means that while the jobs may not be visible at site, wind farms provide employment for an enormous variety of skilled professionals.

These workers deal with all aspects of the wind farm's operation, from changing faulty parts and inspecting blades and towers for damage caused by extreme weather to working with advanced weather forecast algorithms to plot the likely output of the wind farm over the coming days, then trading the electricity which is produced in the energy market.

What that means is that onshore wind farms provide employment throughout their lives, not just when they are being built and workers are more obviously on-site. The local impacts of that employment are long-lasting, and Scotland is also a hub for the monitoring and operation of wind farms both at home and abroad. For example, ScottishPower's state-of-the-art Operations Centre at Whitelee Wind Farm near Glasgow monitors around 1,100 wind turbines at 38 wind farms across Europe. Technicians there are constantly in touch with ScottishPower's energy trading team and hundreds of supervisors, engineers and technicians working across each of the wind farms.



Renewable Parts, Lochgilphead/Renfrew
Renewable Parts is an established supply chain company which provides wind farm owners and operators across the UK and Europe with new parts and components, as well as running a unique circular economy-focused parts refurbishment service.

Formed in 2011 in Lochgilphead and introducing a second premises in Renfrew shortly after, this Scottish success story now supports more than 2,600 wind turbines and employs 30 people across the two locations.

There has been continued support for the community in Lochgilphead as Renewable Parts has grown with increased investment in a new premises in the town – four times the size of its previous location – and the introduction of a graduate scheme with local schools and colleges to create new technically-skilled jobs through Modern Apprenticeships.

The company is investing heavily in research to increase its reach in the renewable energy industry to a wider range of components and technologies to meet the growing consumer demand for greater sustainability in green energy technology.

Construction

Once planning permission has been granted and a contract for the electricity agreed, the wind farm can be built, a process that usually takes two years.

Although the wind turbines themselves are currently manufactured abroad (primarily in Germany and Denmark) Scotland still captures around 25% of the value in this phase thanks to the site preparations (turbine foundations, cable trenches, roads and grid connections), the transport of the turbines to site and their installation.



“The Scottish Government has said in future that its ‘long-term strategy [on panning] will be driven by the overarching goal of addressing climate change”

The Scottish Government, National Planning Framework 4 Position Statement, Nov 2020



Local economic benefits

Wind farms bring significant economic benefits to the areas in which they operate.

Whenever a project is constructed, local businesses like hotels, cafes and taxi firms are all needed to supply and house workers. Specialist contractors from towns and cities near the new wind farm are awarded work on site and use vital local knowledge to build tracks, plan for the movement of large parts and make day-to-day decisions about the development. Without their know-how these schemes couldn't proceed.

Alongside these tangible economic benefits are a whole host of other, less obvious effects. Farmers and other local landowners receive rent for the turbines which are erected on moors and fields, meaning land which is often otherwise of little value for farming is repurposed to provide an income.

That money is spent in the local area, further reinforcing the wind farm's enduring legacy of investment. Farmers and even local people also receive payments from developers who may want to dig a trench to carry cabling, or ensure access to site is kept open at crucial times.

Voluntary community benefit payments made by onshore wind developers have provided a boost to rural communities across Scotland – learn more in the Communities section on page 18.



JAMES T. MILNE

Analyst, K2 Management

In Analysis Services we use climatic measurements recorded at a site and turn them into a prediction of how much energy a wind or solar farm could be expected to generate in the

future. In the same way that you wouldn't agree to starting a new job without knowing what your salary is, you can't build, buy, sell or value a project without knowing how much energy it's likely to produce.

I work in the Operational Wind Analysis team, so I focus on SCADA data that is recorded by wind turbines that have already been built to assess how a given project is performing. We support our clients, generally owner/operators, in getting the most out of their operational wind farms, providing insight into the data that they have collected and offering advice that they can trust. We also support those looking to invest in wind projects to validate operational data, giving them confidence in their investment.



CLARE FOSTER

**Partner and Head of Clean Energy
Shepherd + Wedderburn**

The onshore wind sector forms a significant part of our clean energy practice and we act for many sector participants including regulators, developers, funders, investors and supply chain partners. Earlier this year, the Scottish Government updated its Energy Strategy, refocusing its objectives to include the delivery of a green economic recovery from the COVID-19 pandemic. There is real cause for optimism as onshore wind will play a vital role in the Scottish Government's Energy Strategy and will also be included in the UK Government's next Contracts for Difference round.



JIM STEELE
Managing Director,
Morrison Construction

At Morrison Construction we take great pride in our achievements as a business and in particular the fact that we have been integrally involved in the delivery of onshore wind power for around 15 years.

During this time we have built up knowledge and expertise in the delivery of the associated infrastructure required to complete the many wind farms helping Scotland meet its carbon targets.

During this journey we have created jobs and a level of skill unsurpassed in our industry. I'm concerned that if this industry is not supported into the future we will lose this capability and jobs from our sector.



YVONNE KISSANE
Operational Controller,
RES

From Neilston in East Renfrewshire to Murra Wurra in Australia, more than 150 renewable energy developments across the world are monitored 24/7/365 from RES' Control Centre in Glasgow.

As an Operational Controller I'm in regular contact with site managers to update them on the health of assets and to get their approval for site access. We also work with teams across the world on work control, health and safety, emergency response, and grid related services.

Currently, we're answering over 5,000 calls a month relating to the asset management and operations and maintenance of renewable energy projects globally. This helps to keep us busy through the wee small hours!



JAMIE CORSER
Business Development Manager,
RJ MacLeod

The last few years have seen markets such as site infrastructure for houses, or road construction, in decline, which would have undoubtedly meant a significant reduction in our employee numbers, as well as reduce our ability to employ site specific local staff, workers and services.

Wind farm construction has provided the pipeline and visibility of work to allow us to maintain and invest in our workforce, staff and equipment, as well as that of our local supply chain. We have been able to provide opportunities for individuals to progress through the company as well as continue to recruit several engineering graduates year on year.



PEOPLE, PLACES & WILDLIFE

Tourism

As the onshore wind sector has expanded, there has been discussion about the impact of the industry on the tourism sector in Scotland.

Reports from BiGGAR Economics have consistently established that there is no link between onshore wind development and trends in tourism jobs²⁰.

Both sectors have been growing in Scotland, with employment in sustainable tourism increasing by 15% while the installed capacity of onshore wind increased from 2 to 5.3GW between 2009 and 2015.

The Scottish Government, alongside VisitScotland, has conducted surveys and reviewed evidence on this issue numerous times²¹, including looking at 40 studies from the UK, Ireland, Denmark, Norway, Sweden, Germany, the United States, and Australia. That work concluded: "Overall, there does not appear to be any robust evidence to suggest a serious negative economic impact of wind farms on tourism²²."

Wind farms can be tourist attractions in their own right, too. Whitelee Wind Farm Visitor Centre near Glasgow is a member of the Association of Scottish Visitor Attractions and welcomes around 100,000 people every year²³.

The wind farm itself has 100 miles of accessible tracks spread over 30 square miles, as well as its own dedicated mountain bike trails. It's even been described as "the most Instagrammed [wind farm] in the world²⁴". In fact, a study by Scottish Renewables found that more than 13,000 miles had been covered by runners and cyclists in less than four years on infrastructure tracks installed for onshore wind farms and hydropower schemes.

These studies join the growing body of evidence that clearly shows there is no negative impact on the tourism industry from the development of onshore wind.

20 <https://biggareconomics.co.uk/wp-content/uploads/2017/11/Wind-Farms-and-Tourism-Trends-in-Scotland-Oct17.pdf>

21 <http://www.visitscotland.org/pdf/VisitScotland%20-%20Wind%20farms%20Policy.pdf> [https://www.climateexchange.org.uk/media/1686/the_impact_of_windfarms_on_scottish_tourism.pdf]

22 <http://www.gov.scot/Publications/2008/03/07113554/0>

23 <https://www.scotsman.com/news/scotland-s-whitelee-windfarm-the-world-s-most-instagrammed-1-4245469>

24 <https://www.scotsman.com/news/scotland-s-whitelee-windfarm-the-world-s-most-instagrammed-1-4245469>

Climate Change targets

Policies to support the development of renewable electricity to date has seen capacity in Scotland almost treble in the decade to 2020²⁵.

Onshore wind provides 66% of Scotland's green energy capacity²⁶ and renewables as a whole now provide enough power to meet 97.4% of the equivalent of Scotland's electricity consumption. This success means the industry is responsible for making sure 13.6 million tonnes²⁷ of harmful CO2 which would otherwise have been emitted from our power sector don't enter the atmosphere, demonstrating the industry's ever-growing contribution to tackling climate change.

Sustainable Development

Onshore wind developers must complete years of environmental monitoring before new developments can be considered by planners.

Most onshore wind planning applications require research into local birds and habitats, with developers producing reports which contribute to valuable scientific evidence that can be used by others. In recent years industry has spent hundreds of thousands of pounds on that research²⁸. In addition, onshore wind farm developers may be required to monitor sites for up to 15 years after construction - extensive programs which produce additional large quantities of high-quality data.

The Scottish Windfarm Bird Steering Group (SWBSG) was formed to examine the relationship between bird populations and wind farms, and to act as a platform for dialogue between the renewables industry, conservation organisations and government on these issues. In addition, the SWBSG has commissioned a series of specific studies and developed best practice guidelines²⁸. The Group is made up of representatives from the Scottish Government, NatureScot, Scottish Renewables and RSPB Scotland.

25 <https://www.scottishrenewables.com/sectors/renewables-in-numbers/>

26 <https://www.scottishrenewables.com/sectors/renewables-in-numbers/>

27 <https://www.scottishrenewables.com/sectors/renewables-in-numbers/>

28 www.swbsg.org



**LOVAT HOTEL
Fort Augustus**
The Lovat Hotel attributes 40% of winter business

to energy company SSE and its sub-contractors.

Martynas Salkauskas, Reservations Manager, said: "We really appreciate the trade SSE's projects bring. Although the area enjoys a busy summer thanks to tourism, the area quietens down during the winter months and projects like SSE's wind farms mean we have continued footfall throughout the seasons."

"Climate change is one of the biggest threats faced by our natural world"

**Stephen Cornelius
Chief Adviser for Climate Change, WWF**



"Switching to renewable energy now, rather than in ten or twenty years, is essential if we are to stabilise greenhouse gases in the atmosphere at safe levels. Wind power is the most advanced renewable technology, available at a large scale, over this time period. For this reason, the RSPB supports a significant growth in offshore and onshore wind power generation in the UK. We believe this growth can be achieved in harmony with, rather than at the expense of, the natural environment"²⁹.

RSPB UK energy policy 2018

29 <https://www.rspb.org.uk/our-work/our-positions-and-case-work/our-positions/climate-change/action-to-tackle-climate-change/uk-energy-policy/wind-farms>

ONSHORE WIND AND THE ELECTRICITY SYSTEM

The UK's energy system is currently undergoing huge changes, brought about by the need to both reduce carbon emissions and replace old, polluting fossil fuel power stations which are reaching the end of their lives.

In the past, those fossil fuel power stations provided 'base load' generation: the minimum amount of electricity that has to be supplied by the network over a certain period to meet demand.

Today, our energy system is much more flexible. In fact, National Grid has said that the idea of base load is now "outdated", and batteries and new techniques to shift demand are helping to make demand flex with the varying output from renewables.

While the electricity generated by wind turbines is dictated by the strength of the wind, forecasters can now predict with a high degree of accuracy when that wind will blow, meaning the output of wind turbines can be predicted days in advance.

No power plant is 100% reliable, and the electricity grid is designed to cope with power plants shutting down unexpectedly, as well as times when the wind is not blowing.



ANNA CAMERON
Head of Legal & ESG,
Ventient Energy

I head up the legal team within Ventient Energy, one of the largest independent generators of onshore wind energy in Europe.

Our focus is on all legal documentation required for the management, development and growth of a portfolio of operational windfarms. I am also responsible for our ESG strategy, ensuring that we live our values in the work that we do.

Ventient Energy is maximising returns for investors through the experienced, efficient and sustainable management and operation of our assets. Our sustainable growth is driven by our passion for the people, the environment, and excellent environmental, social and governance policies and practices across the whole business.

Modern turbines generate some power around 80% of the time. Along with other renewable energy sources like solar, hydro and biomass, they can now provide the power that the UK needs, when it's needed.

Security of supply

Today, more than a third of the UK's energy is imported.

Using wind energy means we have less need to buy in gas, oil or nuclear fuel from other countries, increasing the security of our energy supply.

Balancing the network

National Grid, as system operator, balances the electricity system and ensures power is available when it's needed, and not generated when no-one requires it.

All generators - gas, coal, wind, solar etc - have a contract with National Grid to get the power they produce to its market: the consumer.

Sometimes the electricity network is not capable of transmitting that power, and National Grid must ask all generators to flex their output to reflect this. In those cases, the generator may receive a 'constraint payment' from National Grid to cover changes in income from not generating.

Crucially, the compensation received by all generators is governed by the Transmission Constraint Licence Condition, which prohibits generators from being paid an "excessive amount" of compensation. In practice, that means National Grid is able to keep the cost of balancing the electricity system as low as possible while also taking advantage of clean power from renewable sources when it's available.

As these constraint payments are needed because the grid is not able to transmit electricity which is being generated, delivering a modern electricity network capable of getting power generated to customers must be a priority over the coming years, and is the best way to minimise the costs of balancing the electricity system.



MARK GAILEY
Head of Control
Centre Operations,
ScottishPower Renewables

In some jobs every day is different, but in this role it can change by the minute. There's a lot of variables to keep on top of when managing over a thousand wind turbines. We also monitor thousands of miles of High Voltage networks, ensure regulatory compliance and manage IT systems and cyber security infrastructure.

Our office in East Ayrshire is the largest renewable energy control centre anywhere in the UK, keeping over 2 gigawatts of clean energy flowing efficiently on to the grid. We supervise all of our sites from one location, optimising performance and availability 24/7, as well as planning maintenance at optimum times to minimise energy loss. The ability to have detailed 24 hour monitoring is invaluable, especially given that some of our sites hundreds of miles apart, with many located in remote areas.

COMMUNITIES

Like all forms of renewable energy, onshore wind developments offer the communities in which they are situated an enormous amount of potential benefits.

Every onshore wind development comes with a package of benefits for the local community. As part of this, Scotland's onshore wind industry invests more than £22 million each year in local communities up and down the country³⁰. It is up to local communities how they spend the money and recent grants have been used to build a new community hall in Daviot, Aberdeenshire, send a dance school from West Lothian to the European Street Dance Championships in Germany and to buy a thermal imaging camera so residents in Sutherland can see where their homes need extra insulation.

These benefits ensure that Scotland's communities not only share in the benefits of the onshore wind industry, but that they are empowered to decide what matters most to them.

Local communities can go further than this and invest in becoming full financial partners in onshore wind developments themselves. This level of local 'buy in' means that local people own a proportion of an onshore wind

development and derive direct economic benefits from the project's output - as shown in Fintry (below). The Energy Saving Trust's figures show there are more than 40 projects with shared ownership in Scotland. 85% of these projects are already operational and provide more than 55MW of community and locally-owned capacity between them. This approach is increasingly popular, and allows highly-engaged communities to exercise control over the wind developments in their area. In its Energy Strategy, published in 2017, the Scottish Government said: "Shared ownership will play a key part in helping to meet our targets of 1GW of community and locally-owned energy by 2020, and 2GW by 2030. We expect community involvement in onshore wind developments to continue to play a vital role in reaching these targets."³¹ The direct economic benefits of onshore wind are clear, but less obvious are the indirect economic benefits. Local businesses across the country are supported and, in some cases, kept open by the business and trade that comes along with onshore wind developments. Onshore wind provides a lifeline for many of rural Scotland's local economies.

³⁰ <https://www.localenergy.scot/projects-and-case-studies/searchable-register-of-community-benefits/>

³¹ <http://www.gov.scot/Publications/2017/12/5661>

The Stirlingshire hamlet of Fintry was one of the first in the UK to invest in a nearby onshore wind farm.

Their decision to club together and buy one turbine at the 15-turbine Earlsburn project will bring around £5 million to the village over 25 years - and the benefits of that income are already clear to see.

The Fintry Development Trust has given free insulation to more than half of all households in the village and is now embarking on new ambitious projects to eventually make the village carbon-neutral.

Villagers have installed micro-renewable heating systems, planted a community orchard and opened a woodland learning area for the local primary school, as well as setting up a car club for the village, which had no regular public transport for more than two decades.



THE REPOWERING OPPORTUNITY

Modern onshore wind turbines are robust machines which can operate in all weathers for around 25 years before major repair or replacement is required.

The first generation of wind farms in Scotland were built in the late 1990s in some of the country's windiest places.

Hagshaw Hill in South Lanarkshire began producing power in 1995, but its turbines are only a fifth as powerful as those which are installed at the newest wind farms today.

As the turbines at sites like Hagshaw Hill reach the end of their lives, there is an enormous economic and environmental opportunity to replace these smaller machines with larger, more efficient models which are able to capture more power from the same winds.

Upgrading wind farms that will reach the end of scheduled operation in the next five years with the latest and most efficient turbines would increase the UK's generating capacity by more than 1.3GW compared with a scenario in which turbines are taken down at the end of their lives.

This would yield more than 3TWh of electricity per year, enough to power nearly 800,000 homes. It would save consumers more than £77 million per year on energy bills, compared to generating the same amount of electricity from gas-fired power stations³².

³² ECIU: 'Repower to the People' report, 2018



STUART DAVIDSON
Operational Director,
Arcus Consultancy
Services

I've worked for Arcus since 2008.

The company, a planning and environmental consultancy, was set up in 2006 and has since grown to employ around 60 staff, largely working in the renewables sector.

Arcus has been involved in multiple onshore wind repowering projects to date. Future repowering of onshore wind is critical to ensuring the country's most productive sites continue to generate even more clean electricity into the future, and we are fully supportive of this in Scotland.

"Repowering UK onshore wind farms as they reach the end of their scheduled operating lives would be a highly cost-effective way to increase generation of cheap, low-carbon electricity.

"Conversely, allowing them to close would lose some of the UK's best and most productive sites for wind energy."

Energy and Climate Intelligence Unit, 'Repower to the people', 2018.



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