sse Renewables

Renewable energy for people and planet

SSE Renewables Sustainability Report 2024

About SSE Renewables

SSE Renewables is a leading developer and operator of renewable energy, headquartered in the UK, with a growing presence internationally. Part of energy infrastructure company SSE plc, UK-listed in the FTSE100, our strategy is to lead the transition to a net zero future through the world-class development, construction and operation of clean power assets across a diverse mix of renewable technologies. SSE plc plans to invest around £20.5bn to 2027, or over £10m a day on average, on its fully funded, five-year Net Zero Acceleration Programme Plus (NZAP Plus) infrastructure delivery programme to help drive progress towards a cleaner and more secure homegrown energy system. This includes plans to invest around £7bn to increase installed renewable energy capacity to around 9GW by 2027, including the delivery of the world's largest offshore wind farm in construction. SSE Renewables has a team of around 2,000 renewable energy professionals based across the UK and Ireland, Continental Europe, and Japan, all committed to delivering the green energy the world needs now and in the future.

About this report

This Sustainability Report discloses information on the most material economic, social and environmental impacts of SSE Renewables business activities over the reporting period of 1 April 2023 to 31 March 2024 unless otherwise indicated. The report includes information on key initiatives, including: information on progress against net zero ambitions and our biodiversity net gain targets, ongoing work to ensure a just and fair energy transition, as well as progress and performance against our key goals. The report is complementary to the SSE plc sustainability report, which discloses additional information on behalf of the SSE group, of which SSE Renewables is a part of. The report is available here: **www.sse.com/sustainability/**. Throughout the report, reference is made to projects and assets which are joint ventures between SSE Renewables and other partners. A full list of joint ventures referred to through the report with their ownership structure can be found on page 61.

Bringing the report to life

We recognise that engaging with our peers, suppliers, and the international and research community are essential to create the enabling ecosystem for a sustainable scale-up of renewable energy, while ensuring we engage in the right collective action to make systemic change.

Throughout this report, we highlight key examples and stories where we are working collectively or with partners to advance our sustainability performance.

We also recognise that advancing multiple sustainability goals isn't always easy, and can result in trade-offs. To highlight this, we are also transparently showcasing real-life dilemmas throughout this report which our teams are striving to address, and we are seeking to overcome them.

Stories in action
Throughout this report, SSE's sustainability policies, practice and performance are brought to life through stories in action, which include examples of strategic stakeholder engagement. They are identified with the following icons:

Engagement in action

Innovation in action

Partnering in action

Dilemma

Contents

Focusing our energy on what matters most

Stephen Wheeler,
SSE Renewables Managing Director

It's said that with great power comes great responsibility, and that certainly rings true for us in SSE Renewables. Like the famous superhero who popularised that phrase, it's up to us to harness our very own superpower – the kind that comes from renewable sources – to help protect the planet.

As the climate crisis continues to intensify, with record temperatures across the globe, that imperative is greater than ever. The world needs more renewable energy, and the scale and pace required is immense. COP28 last year saw a milestone agreement on the need to triple worldwide renewable capacity – to 11,000GW – by the end of this decade. But the reality is that the sum of individual country targets, and the rate of projects actually entering construction, means we remain a long way from hitting this ambition. We need far greater action to limit global warming to 1.5°C and avoid the worst impacts of climate change.

It's action that defines SSE Renewables. Our operational portfolio already generates enough green energy to power four million homes, and we have an active pipeline of projects that would quadruple our capacity over the next decade. In the last year, we've brought both Scotland's largest offshore wind farm and the UK's most productive onshore wind farm into commercial operation. We've switched on our first solar and battery assets, and expanded our portfolio into Europe, with projects in Spain and France. And we're growing our international impact further, with developments in the Netherlands, Poland, and Japan.

What we do matters, and how we do it matters just as much. It's not enough to build out the clean energy infrastructure needed – we must do so in a truly sustainable way. That means ensuring we're fully decoupling our industry from high-carbon activities while minimising waste through circular solutions. It also means working to solve the climate crisis in a way that addresses the nature crisis. That's why we've committed to a 10-point plan to deliver 'biodiversity net gain', ensuring that we're protecting, restoring, and enhancing our natural environment.

Crucially, we need to bring people with us on the journey to net zero, with the benefits felt across society. A fair and just energy transition means delivering secure and affordable power, creating good, green jobs, investing in our communities, and helping to build a more inclusive and diverse industry. Last year, our investment activities contributed £2bn to the UK and Irish economies, while we worked with communities to grant over £10m directly into local initiatives through our community investment funds. Meanwhile, we supported over 16,000 jobs, and we continue to champion the Living Wage movement and our commitment as we expand across new markets and supply chains.

As we move forward to deliver the renewable energy needed for net zero, we look forward to continuing to work with governments, communities, partners, and everyone with a stake in our energy future, to power lasting change for people and planet.

Sustainability disclosure matters

Transparency and integrity are the foundations of any credible sustainability approach. This report, in disclosing our impacts for people, climate, and nature, highlights the progress we've made over the last year, but also the distance to go and the innovation needed to get us there. We know that our shared goal of net zero involves complex trade-offs, which is why openness on the challenges we face is just as important as sharing the successes. One thing is for certain – we won't get there alone – and we hope sharing our approach and learnings will add to the conversation on how we can collectively grow renewables sustainably. Feedback is always welcomed, and can be sent to **SSERsustainabilityteam@sse.com.**

Kate Wallace Lockhart
Head of Sustainability, SSE Renewables

Delivering world-class renewable energy assets

The most material contribution that SSE Renewables makes to a more sustainable world is the accelerated roll-out of renewable energy generation, which enables the critical decarbonisation of our electricity systems needed for a net zero economy. With an ambition to double our renewable generation capacity by 2027 and increase our renewable output fivefold compared to 2018 levels by 2030, we are at the forefront of developing, building and operating world-class renewable energy assets.

At the end of 2023/24, our total operational renewable capacity was 4,457MW (including pumped storage), an increase of 14% from 3,915MW from the year before. This is comprised of nearly 2GW of onshore wind capacity, more than 1GW of offshore wind capacity, and almost 1.5GW of flexible hydro power and pumped storage capacity. Over 2023/24, our total renewable generation (including pumped storage and constrained off GB wind) was 11,158GWh, an increase of 10% from 10,159GWh the year before.

Through our Net Zero Acceleration Programme (NZAP) Plus fully-funded investment plan, we aim to increase our net renewable capacity to around 9GW by 2027. We continued to make significant progress towards our NZAP Plus ambitions in 2023/24, reaching several important milestones on key flagship projects for onshore and offshore wind, and hydro, while building our pipeline of future developments. At the end of 2023/24, we had 2.8GW of renewable energy capacity in construction and also reached a Financial Investment Decision on more than 600MW of projects over 2023/24. In addition, we have around 12GW of additional future prospects in development.

2023/24 total renewable output (including pumped storage and GB constrained-off wind)	2023/24 total renewable capacity (including pumped storage) in operation	2023/24 total renewable capacity (including pumped storage) in construction	Renewable capacity which reached financial investment decision in 2023/24
11.2TWh	**4.5GW**	**2.8GW**	**600MW**

"Just because renewable energy provides the single most important antidote to climate change doesn't mean it doesn't come with wider social and environmental impacts. In fact, the opposite is the case. True sustainable energy creates value for communities and nature too."

Rachel McEwen
SSE plc Chief Sustainability Officer

Partnering to accelerate renewables in Ireland

In March 2024, we announced with Bord na Móna one of the largest ever joint venture renewable energy deals in the Irish market to accelerate delivery of up to 800MW of new onshore wind generation over the next decade. More than €1bn could be invested by the 50:50 joint venture partnership, with a portfolio of projects that could provide enough clean energy to power over 450,000 homes a year. The joint venture includes three projects already in preplanning development (c. 250MW) as well as a portfolio of 550MW of future prospects. These projects have the potential to make a substantial contribution to the nation's 2030 renewable energy goals set out in Ireland's Climate Action Plan.

Breaking ground in Continental Europe

Over 2023/24, we began construction on our first onshore Continental Europe wind projects. This included breaking ground on the eight-turbine Chaintrix (28MW) in France, in November 2023 with a ceremony attended by elected representatives and supply chain partners. In February 2024, construction also began on Jubera (64MW) in the La Rioja region of Spain, which when operational will generate enough low- carbon renewable energy to power around 55,000 homes annually. The projects are targeting commissioning at the end of 2024 and 2025 respectively.

Key highlights 2023/24

Offshore Wind

Seagreen Offshore Wind Farm, the world's deepest fixed-bottom asset, became fully operational in October 2023, more than doubling our offshore wind capacity. The initial installed turbines at Dogger Bank, which will be the world's largest offshore wind farm when complete, also generated first power in October 2023.

Onshore Wind

In August 2023, we installed the final turbines at Viking Wind Farm in Shetland, achieving first power in June 2024 with full operations expected in late summer 2024. Lenalea Wind Farm in Ireland moved into operations in December 2023. Installation of turbines at Yellow River, which will be SSE Renewables' second largest wind farm in Ireland when complete, began in January 2024. Construction began on SSE's first two Continental Europe wind projects, Chaintrix (28MW) in France, and Jubera (64MW) in the Rioja region of Spain.

Delivering green energy to customers

Together with development partners FuturEnergy Ireland, we announced in May 2024 that we entered into a multi-year Corporate Power Purchase Agreement (CPPA) with Microsoft. Under the terms of the CPPA, the renewable electricity produced by Lenalea Wind Farm will contribute towards Microsoft's goal of powering its data centre operations with 100% renewable energy by 2025. This is the first long-term CPPA which we have entered into for one of our assets. The renewable energy CPPA secures a sustainable route to market for one of Ireland's newest onshore wind farms.

SSE Renewables flagship projects milestones 2023/24

Seagreen
1.1GW
(SSE Renewables share: 49%)
The world's deepest fixed bottom offshore wind farm
Fully operational (Oct 2023)

Dogger Bank
3.6GW
(SSE Renewables share: 40%)
The world's largest wind farm when complete
First power generated (Oct 2023)

Viking
0.4GW
Europe's most productive onshore wind farm when operational
Final turbine installed (Aug 2023)

Hydro

Following the 80th anniversary of the Hydro-Electric Development (Scotland) Act in 2023, 2024 saw Scotland's iconic Tummel Bridge hydro station generating power once again following the successful installation and energisation of the first of two new bespoke hydro power turbines. The project involves the replacement of the station's two original 'Francis' hydro turbines, which were installed in 1933, with new modern technology that will extend the power station's working life by at least 40 years. We are also progressing exploratory works at the first large-scale pumped storage scheme to be developed in the UK in over 40 years with Coire Glas, developing proposals to convert Sloy Power Station into a pumped storage facility and partnering with Gilkes Energy to progress a new pumped storage scheme at Loch Fearna in Scotland's Great Glen.

Solar and Battery Storage

Solar and battery technologies support net zero, and we have a secured pipeline of projects of around 2GW. In April 2024, our first 50MW battery energy storage system (BESS) at Salisbury in Wiltshire became fully operational. In November 2023, we also took a Final Investment Decision (FID) to proceed with the construction of one of the UK's largest BESS projects in Monk Fryston, Yorkshire, with construction of the 320MW project now underway. In Northern Europe, we are progressing a 959MW portfolio of solar photovoltaics ('solar PV') projects in Poland. This early-stage pipeline will be progressed under Developer Services Agreements with local development partners.

SSE Renewables sustainability highlights 2023/24

Just Transition (pages 24 to 39)

Socio-economic contribution to the UK and Ireland

Contribution to GDP: **£2bn** (2022/23: £1.6bn)

Jobs supported: **16,000** (2022/23: 10,280)

Community investment

£10.3m invested in communities in 2023/24

957 community projects supported in 2023/24

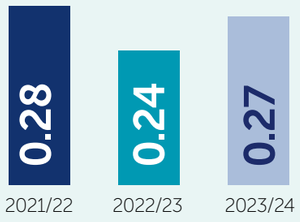
We are a Living Wage Employer

10 years as a Living Wage employer

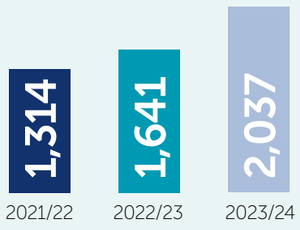
Accredited with the Fair Tax Mark since 2024

Fair Tax

Total Recordable Injury Rate per 100,000 hours worked (employees and contractors)



SSE Renewables headcount



Introducing a targeted Human Rights Action Plan

In 2023/24, we continued to develop and implement our SSE Renewables Human Rights Action Plan aligned to the five pillars of the SSE plc human rights strategy. We undertook our first Human Rights Risk Assessment with third-party experts Slave Free Alliance and TwentyFifty, and also continued to strengthen our human rights due diligence approach in high-risk areas, including solar supply chains. We continued to demonstrate commitment as a proud Living Wage employer, with our offshore wind farm, Seagreen - a Joint Venture with TotalEnergies and PTTEP - accredited as a Living Wage employer, joining Beatrice and Gabbard. Read more on page 38.

Nature Positive (pages 40 to 49)

Deliver biodiversity No Net Loss on major onshore projects consented from 2023, and Biodiversity Net Gain from 2025

6 new projects consented in 2023/24

Two will deliver No Net Loss and four will deliver Biodiversity Net Gain

Progress against our Biodiversity Net Gain 10-point plan

Over 2023/24 we have made progress on our 10-Point Biodiversity Net Gain Plan. In 2023, we gained consent on six new projects in 2023 Cloiche (125MW), Achany Extension (80MW), Sheskin South (126MW), Ferrybridge (150MW), Fiddlers Ferry (150MW) and Berwick Bank onshore cable route which have all been designed to achieve No Net Loss. These sites join several other consented sites on which we previously achieved NNL on in 2021 and 2022, therefore overdelivering on our target.[1] We are also progressing towards a minimum of 10% BNG on all bar three, where challenges remain but the commitment persists. We also upgraded our Toolkit to be used in Ireland and are undergoing trials to ensure it can be implemented in continental Europe. Over 2023/24, we also commenced the development of our SSE Renewables Marine Biodiversity Roadmap, and further strengthened our research agenda through partnering with PrePARED and PELAgIO. Read more on page 41.

Net Zero (pages 50 to 55)

Scope 1 and 2 GHG intensity

gCO_2e per kWh

Suppliers by spend with existing or committed science-based carbon target

2023/24: 9.2% committed to SBTs; 35.5% have set SBTs
2022/23= 9.4% committed to SBTs; 30% have set SBTs

>2 million tCO_2e estimated avoided carbon emissions based on renewable generation output from FY 2023/24

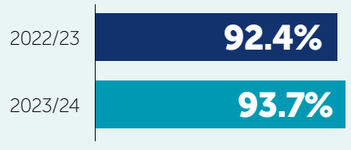
Launch of our Net Zero Transition Plan at COP28

We published our Net Zero Transition Plan in December 2023 at COP28, marking the disclosure of SSE Renewables' business carbon footprint for the first time. The Plan sets out shorter (to 2030), medium (to 2035) and long-term (to 2050) science-based carbon reduction targets to reduce scope 1 and 2 greenhouse gas (GHG) emissions within our direct operational control, as well as scope 3 GHG emissions in our value chain, over which we have influence but no direct control. To achieve these targets, ten actions based on the most material areas of impact were identified within the Plan, with early progress against each of these actions detailed on page 52 to 55.

Circularity (pages 56 to 60)

Target 95%

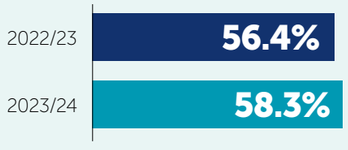
Waste diverted from landfill*



*For wholly-owned operational sites

Target 50%

Waste recycled*



4 ⟶ >50

Growth in CWIC members over 2023/24

Coalition for Wind Industry Circularity (CWIC) grows stronger

In March 2023, we at SSE Renewables, alongside the University of Strathclyde, the National Manufacturing Institute Scotland (NMIS) and Renewable Parts Ltd, launched CWIC, the Coalition for Wind Industry Circularity. The coalition was established to help drive the creation of a circular supply chain for renewables in the UK. As of March 2024, the Coalition now counts over fifty members, including Orsted, EDF Renewables, Scottish Renewables, Zero Waste Scotland, ARUP, Statkraft, and the Crown Estate. Read more on pages 52 to 55.

1 In 2022, the following sites were NNL: Bhlaridh Ext (84 MW), Littleton (30MW), Salisbury (50MW / 100MWh), Monk Fryston (320MW). In 2021, the following were NNL: Strathy South (208MW), Bypass.

Driving sustainability across SSE plc

A sustainable business strategy

Sustainability is central to SSE plc's business model, guiding its transition to net zero while creating value for both shareholders and society. SSE's strategy aligns with the UN's Sustainable Development Goals (SDGs), specifically focusing on four SDGs that are highly relevant to its operations. Additionally, three more SDGs emphasise environmental priorities, shaping SSE's Environment Strategy to balance economic, social, and environmental impacts for optimal stakeholder outcomes. SSE reinforces its sustainability ambitions through four 2030 Goals, shown below, with sustainability-linked metrics and targets into executive compensation. Progress towards the 2030 Goals is tied to the long-term Performance Share Plan, while the Annual Incentive Plan depends on average performance across three independent ESG ratings. Detailed progress against these measures is available in SSE's 2024 Annual Report.

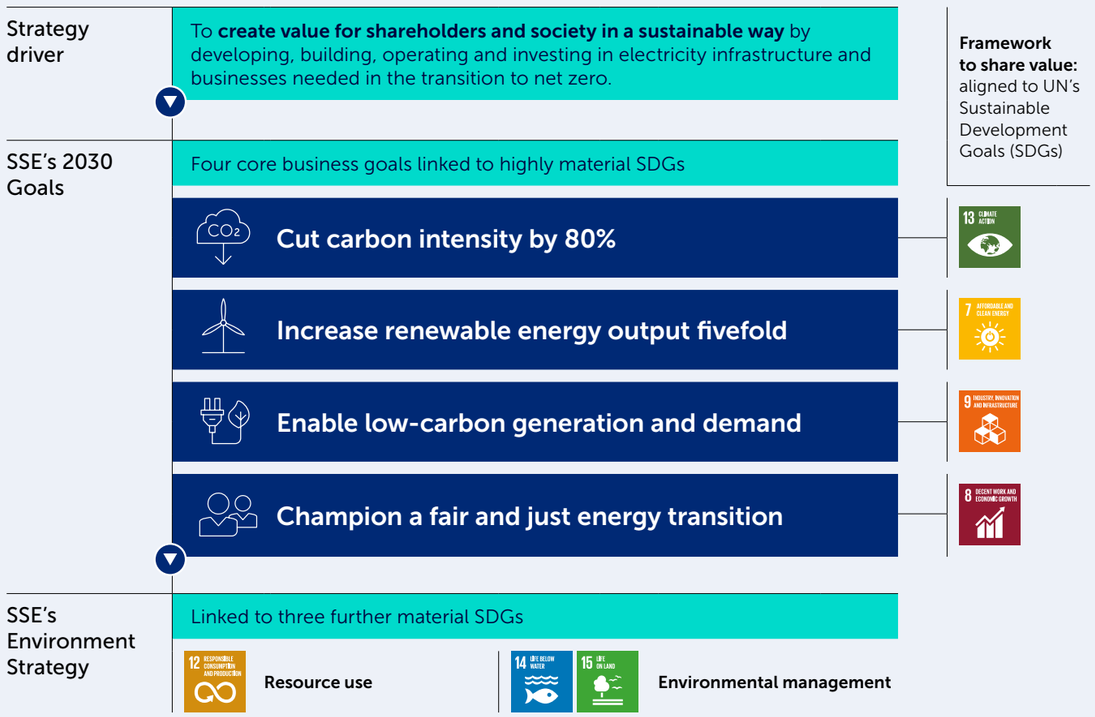
SSE's approach to double materiality

SSE employs a 'double materiality' approach to focus on significant sustainability issues, assessing both the material impact on its business and its impact on the environment and society. In 2022/23, SSE conducted a materiality exercise with independent third-party support, plotting ESG topics on a matrix based on their impact on and by SSE. High-impact issues are identified and performance related to each issue is detailed in SSE's Sustainability Reports. In December 2023, SSE applied the latest European Financial Reporting Advisory Group guidance to validate its 2022/23 assessment, ensuring relevance for the current year. The review confirmed the materiality matrix's accuracy, highlighting topics like supply chain management and safety as top priorities. Future assessments will consider emerging issues.

Responding to future sustainability reporting

While SSE is not yet subject to recent mandated sustainability-related disclosure standards in Europe, it is seeking to adopt the most relevant aspects of the International Sustainability Standards Board (ISSB) Standards and the EU Corporate Sustainability Reporting Directive (CSRD). SSE is mindful that these standards require evidence of a company's most material ESG issues – from both the company and stakeholder perspective. Being able to provide evidence of the status of those issues will support stakeholder confidence in SSE's non-financial disclosures.

SSE's sustainability hierarchy



SSE Renewables sustainability strategy

Our mission in SSE Renewables is to fight climate change and accelerate progress to net zero through the generation of renewable electricity. At the same time, we are committed to doing this in a sustainable way by generating positive impacts for people, nature and climate. This means supporting good jobs and thriving communities in the places where we live and work; protecting, restoring and, when possible, enhancing ecosystems; reducing our own reliance on fossil fuels through our operations and supply chains; and minimising the creation and disposal of waste.

The SSE Renewables Sustainability Strategy is therefore focused on driving action against four pillars: Just Transition; Nature Positive; Net Zero; and Circularity. It is designed to make the most meaningful contribution to the SSE plc sustainability approach and our most material UN Sustainable Development Goals (SDGs). In this context, we play a critical role in delivering SSE plc's targets to increase renewable energy output fivefold, which also contributes to cutting our carbon intensity by 80%, and championing a fair and just transition.

Our strategy: To drive the net zero transition through the world-class development, financing, construction and operation of renewables

Just Transition

Support good green jobs locally and through our value chain, and invest in thriving communities

Our goals:
- Relentless focus on the fundamentals: safety, human rights, paying the real Living Wage and Fair Tax Mark accreditation
- Grant £200m of direct community investment by 2035
- Achieve our employee diversity 2030 targets: gender (33%), ethnicity (15%), disability (8%), and LGBTQIA+ (8%)

Nature Positive

Protect, restore and enhance the natural world

Our goals:
- Deliver biodiversity No Net Loss on newly consented onshore major projects from 2023 and Biodiversity Net Gain from 2025
- Ensure No Net Loss of native woodlands from 2024
- Develop an evidence and research-based approach for biodiversity enhancement in marine environments

People Nature Climate

Increase renewable energy output fivefold by 2030

Net Zero

Decouple growth from increased carbon emissions

Our goals:
- Achieve Net Zero scope 1 and 2 emissions by 2035
- Reduce scope 3 emissions by two thirds by 2035
- Achieve Net Zero scope 3 emissions by 2050 at the latest

Circularity

Minimise waste and move to circularity-by-default

Our goals:
- Lead circular by default supply chain growth through robust and transparent understanding and reporting of our baseline
- Avoid landfill for at least 95% of operational site waste
- Publish a Circularity Strategy and implementation plan

Our enablers for sustainable outcomes

To deliver our Sustainability Strategy, we rely on several enablers to ensure that sustainable outcomes are embedded into project and business delivery.

- **Our commitment to ensuring everyone gets home safe** – our commitment to safety and robust safety culture is essential to helping us unlock sustainability goals, including on ensuring fair and decent work and a healthy environment. Please see pages 39.
- **Ensuring clear governance and accountability** – ensures that strategic business objectives are fully aligned with social and environmental targets. More about our approach to governance is available on page 8.
- **Appropriate focus on risk management** – a credible approach to sustainability is one that is focused on the most significant issues and salient risks. More information on our material risks and how our strategy seeks to mitigate them is available on pages 8 to 9.
- **Embedding sustainability into our projects and the supply chain** – ensuring the implementation of sustainability goals on the ground through tools such as the Sustainability Assessment Action Plan (SAAP), and within our wider value chain. How we do this is further outlined on pages 16.
- **Investing in innovation, data and digitalisation** - are at the centre of transformational progress for the energy transition to happen in an accelerated, sustainable way. Our commitment to innovation is showcased throughout this report highlighted in our 'innovation in action' case studies.

Governance and risk management

Sustainability governance

Sustainability governance Our sustainability governance is designed to deliver clear lines of accountability and ensure the alignment of strategic objectives with social and environmental targets. Our Head of Sustainability was appointed in 2022, sits on our SSE Renewables Executive Committee, and reports directly into our Managing Director, Stephen Wheeler. The role is responsible for advising the Committee and individual parts of the business on sustainability issues and strategy. In addition, the Head of Sustainability is responsible for approving all Sustainability Assessment and Action Plans (SAAPs) as part of embedding sustainability into the governance of Large Capital Projects.

Within SSE Renewables, the Safety, Health and Environment Committee (SHEC) is responsible for environmental governance including reviewing environmental incidents and permit breaches, discussing, agreeing and monitoring environmental targets and for ensuring that SSE Renewables is operating in a compliant manner. SSE Renewables also has representation on the SSE Environment Sub-Group which brings together environmental leaders from across SSE to discuss material environmental challenges and opportunities and set SSE Group environmental targets. The sub-group reports to the SSE Safety, Sustainability, Heal and Environment Advisory Committee (SSHEAC) which is responsible to the SSE Board. SSE Renewables also sits on the cross business SSE plc Human Rights Working Group, which in turn reports into the SSE plc Human Rights Steering Group which is chaired by SSE plc's Chief Sustainability Officer. The Human Rights Steering Group, responsible for the annual Human Rights and Modern Slavery Statement, and the action plans that fall underneath, reports to the Group Risk Committee. . More information on SSE plc governance is available in the **SSE plc Sustainability Report 2024.**

"Aligning our strategic objectives with sustainability targets is key for long-term business success and helps us to address our most material issues. Having the right governance in place helps us to ensure that financial and non-financial goals are properly embedded into decision-making."

Rosalind Futter
SSE Renewables Finance Director

Our new ESG-Sub Committee at SSE Renewables

In 2023/24, it was agreed by the Renewables Executive Committee to establish an ESG Sub-Committee to provide further clear governance, review and advise on the sustainability and environmental strategic direction of SSE Renewables, including considerations for practical implementation, and performance monitoring. The Sub-Committee's role is to review and guide plans that will ensure future compliance across all relevant sustainability, environmental and climate legislation, as well as mitigating material sustainable risks for the business and maximising opportunities to secure ESG performance acceptable to our shareholders and other stakeholders.

Managing our material risks

In SSE Renewables, we undertake a holistic view of risk management through an enterprise-wide approach to the management of risks, tailored to our purpose, strategy, business model and governance. This approach includes managing risk to our wholly owned assets as well as our extended asset portfolio of joint ventures. Integrating enterprise risk management practices throughout the organisation is aimed at ensuring optimal decision-making in governance, strategy, objective-setting, and day-to-day operations.

Our key risks have been identified and are captured and managed at three different levels within SSE Renewables to ensure appropriate governance. Namely at Renewables Executive Committee Level, Directorate Level and Operational Level. This approach is taken for all types of risks and provides an effective escalation route for key risks that may impact our business

12 Key Risks for SSE Renewables

Highly Material to Sustainability
- Political and Regulatory Change
- Legal and Regulatory Compliance Risk
- People Risk
- SHE Risk

Material to Sustainability
- Enabling Growth Risk
- International Growth
- Major Project Delivery Risk
- Near Term Earnings Risk
- Cyber Security Risk

Less Material to Sustainability
- Wholesale Market Structure Risk
- Major Project Development Financing and Economics

Which key risks are most material to sustainability?

Our sustainability approach seeks to implement processes and procedures which both help to mitigate and reduce our exposure to our most material risks, while delivering wider value for the business. While all key risks facing SSE Renewables are relevant to sustainability, several are particularly material.

Political and regulatory change; and Legal, regulatory and compliance risk

The risk associated with operating in a fast-paced, highly regulated environment which is subject to changing political, regulatory, and legislative expectations and interventions.
We aim to work constructively with policymakers to help deliver net zero and other sustainability goals, whilst ensuring the energy system works in the interest of energy customers. Our activities are influenced by international and national agreements on climate change, as well as enhanced sustainability disclosure and due diligence requirements.

People risk (see page 30)

The risk that we are unable to attract, develop and retain an appropriately skilled, diverse, and responsible workforce and leadership team.
Ensuring an ethical business culture alongside the talent and skills of SSE's employees enables us to deliver on our purpose and strategy. We have a well-established framework which prioritises a healthy workplace culture, seeks to provide attractive employment opportunities with meaningful, long-term careers, and supports training and development.

Safety, Health and Environmental (SHE) risk (see page 39)

The risk of harm to people, property or the environment from our operations.
We have an uncompromising commitment to keep people safe and healthy, and to respect the environment in which we operate and construct. Our working environment includes challenging geographic locations and adverse weather conditions, which can impact our activities. We have clear safety and environmental processes and training in place to address these risks.

Our external environment

Adapting and responding to key social, environmental, and economic trends is imperative for long-term sustainable growth.

An interview with Alexandra Malone, SSE Renewables Director of Corporate Affairs, Regulation and Strategy

How has the renewables landscape changed over the last year?

It's encouraging to have seen another record year of renewable capacity additions globally. At EU level there has been a concerted effort to speed up renewables deployment through reforms to permitting, grid, and auction design. However, at national level renewables targets have not been always matched by policy delivery at pace. Some governments have also been slow to respond to the inflationary environment, for example in ensuring auction prices are cost reflective. 2024 is a huge year in terms of elections globally, including some of our key markets, which can generate increased ambition and drive to deliver, though in the short term, it may bring some political uncertainty and potential policy delay.

How is the transition to renewables impacting on people and the environment?

We are rightly now moving more firmly into a world where it's not enough to say: "we are providing renewable energy, solving climate change". The way we develop, build and operate our projects has an impact in terms of people and environment, whether it be the communities in which we build infrastructure, the people manufacturing the components needed or the ecosystems that interact with our infrastructure.

What does this mean for the renewable sector?

The way we manage this moving forward will require more transparency on our part regarding the strategies we develop and how we execute them. This in turn requires transparency from our supply chain, all the way down to the critical raw minerals needed in the technologies we deploy. This can be delivered only with strong collaboration with industry, as well as governments, regulators and civil society.

How do you see the current policy discussions on Non-Price Criteria within renewable power auctions evolving?

There is now clear recognition that we need to switch to maximising the value renewable energy projects deliver by rewarding developers who prioritise people and nature. Discussions are now moving into how specific types of criteria are implemented in auctions, which is not straightforward. It's already clear that how these criteria are used will have a significant impact for the renewables sector. It no doubt makes bidding into auctions more complex than just making a financial bid.

How should companies get ready for Non-Price Criteria?

It will involve building upon and improving our competences in all types of non-price criteria, whether it be ecology and nature inclusive designs; system integration; or investing into deprived areas. As non-price criteria become more embedded into auction processes with learnings on what delivers the greatest impact, we may expect greater convergence of criteria as well as common methodologies to assess those criteria across different markets.

Collaboration to drive sustainability

Working with our partners
Partnerships and working with our stakeholders are essential to meeting our sustainability goals. At SSE Renewables we engage in various partnerships and collaborations across our four pillars which underpin our sustainability strategy.

Supplier engagement
Strong, collaborative relationships with supply chain partners are core to enabling SSE Renewables to deliver on the principles of sustainable procurement, allowing us to manage risks and maximise environmental and social opportunities.

Enduring partnerships
Enduring partnerships, like those with the Living Wage Foundation and the Fair Tax Foundation embody the heart of SSE's approach to partnering for sustainability – addressing key societal issues which represent ways in which SSE can share value with society.

Cross-industry collaboration
Working alongside other players in our industry is critical for collective action – SSE Renewables aims to use its leverage appropriately to achieve common goals. This can be seen in the Offshore Wind Sustainability Joint Industry Programme (SusJIP), spearheaded by the Carbon Trust, which is developing a standardised methodology for offshore wind carbon footprinting.

Research partnerships
Driving forward scientific understanding of how the renewables industry interacts with the natural environment and can work in more efficient ways is in the best interest of SSE Renewables, our wider industry, society, and the planet. For further information, please see the nature positive section on pages 40 to 49 which contain a number case studies which illustrate the research projects.

Employee representatives
Everyone in SSE has the fundamental right to freedom of association and to join a trade union. SSE has four recognised trade union partners (Unite, Prospect, Unison and GMB) with whom we engage in the United Kingdom via platforms such as our SSE Renewables Joint Business Committee. See page 36 to learn more.

Further key examples of our most active partnerships are highlighted in the table below:

Pillar	Just Transition	Nature Positive	Net Zero	Circular Economy
Pillar partnership	Slave Free Alliance Solar Stewardship Initiative International RBC Agreement for the Renewable Energy Sector Development Trust Association Scotland	SSE Renewables is involved in more than 30 partnerships and collaborations for nature and biodiversity, including: OCEaN – Offshore Coalition for Energy and Nature Eurelectric PowerPlant project Scottish Government Peatland Expert Advisory Group	Offshore Wind Sustainability Joint Industry Partnership (SusJIP) Emissions Reduction (EMRED) Joint Industry Partnership for Offshore Wind Vessels Scottish Marine Energy Research Programme (ScotMER)	Coalition for Wind Industry Circularity (CWIC) SusWIND
Cross-cutting collaborations	**United Nations Global Compact** **Powering Net Zero Pact**			

> "It is gratifying to see SSE Renewables taking such a holistic approach to sustainability, particularly their approach to Just Transition. At the Supply Chain Sustainability School, we love a challenge, and we look forward to collaborating together to drive supplier engagement in the School from 28% to achieve the 90% target by 2030."
>
> **Shaun McCarthy OBE**
> Chair, Supply Chain Sustainability School

Ensuring robust stakeholder consultation
As we develop, construct and operate the projects which will help us transition to a net zero future, we will continue to prioritise and consult the communities and stakeholders surrounding our assets, enabling us to deliver value for broader society. We promote an open and transparent approach to stakeholder engagement supported by governance and accountability. Through our daily interactions with a broad range of stakeholders, we seek to ensure that community and stakeholder voices are built into our business plans and objectives.

Across our renewable assets and projects in both the United Kingdom and Ireland, at SSE Renewables we have in excess of 20 members of staff who are dedicated to supporting stakeholder engagement in various forms by supporting over 50 projects which range from developmental proposals, projects in construction and assets which are fully operational. We ensure that regardless of what stage a project is at our stakeholders, in particular local communities, have a dedicated colleague they can engage with and discuss our proposals.

In 2023/24, we launched our shared Stakeholder and Community Engagement Principles with SSE Thermal. The principles outline eight commitments, centred on openness, going above and beyond statutory requirements, and working in partnership.

Communication **Collaboration** **Implementation**

Our stakeholder engagement principles

We work collaboratively with our Stakeholders and Communities across the project lifecycle to ensure positive benefits are felt within the communities in which we operate.

Communication: We are open and transparent, delivering effective, timely and regular communication.

Collaboration: We seek the views and opinions of a wide range of Stakeholders and work closely with all and interested parties, developing our proposals in partnership.

Implementation: We work alongside our project delivery teams to, where possible implement changes to our proposals through design and delivery.

Engagement in action

Long-standing constructive consultation

The Friends of Loch Lomond and the Trossachs, an independent conservation and heritage charity, announced a policy to support energy storage facilities such as pumped storage schemes, large wind turbines and battery installations in carefully selected areas within Loch Lomond and the Trossachs National Park. This is described as a 'radical' shift for the group, which was set up in 1978 to oppose the Craigroyston pumped hydro storage scheme on the banks of Loch Lomond. This campaign was successful, with some 200,000 people supporting a petition. It was clear from our early engagement on the Sloy Pumped Storage project that the Friends of Loch Lomond and the Trossachs were a key stakeholder group, with close links to the local community in the surrounding area. We invited key stakeholders to Sloy Power Station to present the project, understand their views and show them around the site. This enhanced relationships from the outset, enabling us to have direct conversations with the charity ahead of hosting two public exhibitions in the local community hall. Engagement has continued since these events, with community investment as a clear focus area. We are delighted that the Friends of Loch Lomond and the Trossachs have changed their stance on renewables and look forward to continued, positive engagement in the coming years. In the Friends' official statement, they describe a new policy which has been agreed with Trustees, to adopt "a leadership role in recognising the critical importance of renewable energy and storage systems and should therefore be actively encouraging and facilitating their development on appropriate sites within and around the Park."

Sustainable supply chains

Our supply chain partners are vital to achieving our sustainability goals. Since 2020, we have been developing and embedding our robust sustainable procurement strategy aligned to the ISO 20400 Sustainable Procurement Guidance standard. This year we have focused on three core areas in SSE Renewables: enhancing our contractual requirements to align with new legislation and support international expansion; promoting effective and targeted supplier engagement to support improved risk mitigation through enhanced due diligence and realisation of opportunities through collaboration; and introducing structured and robust reporting with the roll out of three new data platforms to support our internal, regulatory and legislative reporting requirements.

"Meeting our global renewable energy targets relies on a healthy, sustainable, and highly capable global supply chain. The relationships we have, and we continue to develop with our supply chain are founded on the principles of integrity, honesty and mutual trust which helps to manage our biggest shared risks, and seize opportunities to create and share value. It's our job to together build a renewables industry which is uncompromising on our commitment to fairness, good governance and transparency, with shared values and standards that protect both people and planet."

Rob Gray
SSE Renewables Director of Procurement

Embedding sustainability into the supply chain

Our approach to sustainable procurement practice is to support our business activities by driving the use of more sustainable solutions that can deliver a commercial and technical benefit, while also increasing our supply chain resilience through the use of domestic and local suppliers. This approach goes hand in hand with our approach to risk management as we understand that by utilising more sustainable solutions we can reduce our reliance on critical raw materials, energy and carbon intensive processes and products, thus decreasing our risk of engaging with or contributing to human rights abuses.

Enhancing contractual requirements

In 2023/24, we developed an enhanced Environmental, Social and Governance (ESG) and Sustainability Clause. This contractual clause outlines supplier requirements to comply with SSE's Sustainable Procurement Code and align with its sustainability policies, enhanced reporting, increased due diligence, and auditing rights. It is also supported by our new Sustainability Works Information (SWI) which clearly outlines the reporting requirements expected from our Tier 1 suppliers on our construction sites. These new requirements have been trialed in contracts across various works packages and technologies in the UK and Ireland with positive outcomes following supplier engagement and negotiation. This year these will be aligned to a new SSE PLC Group approach and be embedded into all contracts as standard going forward. This year we have also improved governance regarding contractor environmental performance with enhanced reporting and engagement regarding environmental incidents.

Engaging with the supply chain

In 2023/24, we launched a programme with our strategic suppliers to engage them on key sustainability ambitions for existing and future renewable projects. The output from these sessions supports the strategic conversations that are facilitated as part of our overall Supplier Relationship Management programme which currently encompasses around 30 suppliers. Over 2023/24 we hosted and facilitated 11 sustainability sessions with strategic suppliers and held our first ever Sustainability Contractor Day in April 2024 (see page 13).

Capturing robust supplier data

In addition to 85% of SSE Renewables suppliers by spend in 2023/24 disclosing their emissions data through CDP, to support our strategic engagement and responsible reporting, this year we have introduced three robust platforms for capturing supplier data. EcoVadis provides a clear view of ESG performance across our strategic suppliers, with 51% of SSE Renewables suppliers by spend in 2023/24 validated by EcoVadis. For our construction projects, we are using Supplier Data Capture Tool (SDCT) and Local Multiplier 3 (LM3) to capture the socio-economic benefit delivered across our new developments. Understanding that sustainability is an ever-changing, expanding and challenging landscape for businesses to navigate and the increased requirements relating to reporting, SSE plc has partnered with the Supply Chain Sustainability School and is using its partnership with the School to support its supply chain partners to mature their sustainability approach providing free access to the School's wide range of guidance, resources and CPD accredited training materials. So far, over 10,000 free sustainability training resources have been utilised by SSE Renewables suppliers.

Rolling out supplier standards across new jurisdictions

To support our international growth strategy, we have embedded appropriate processes, governance, and standards to aid effective supply-chain engagement. Across Southern Europe we are implementing our international operating model which includes tender documentation, evaluation criteria and contractual clauses to cover new, emerging and potential risks that could arise from new suppliers in new jurisdictions. This has involved ensuring alternative policies,regulations and legislation is understood and captured in our requirements, all while building new relationships to set us up for success. We have had a particular focus on how we can ensure that at least a real Living Wage is paid to those regularly working for us outside of the UK and Ireland. To do this, we created and issued a supplier questionnaire as part of our overall tender-process, enabling us to understand where suppliers are on their Living Wage journey and evaluate their commitment to providing fair wages for all.

EcoVadis
SSE plc is a partner of EcoVadis, a global sustainability rating company based on international standards, to conduct individual sustainability performance assessments of our supply chain partners. We are actively engaging with our strategic supply chain partners, using their EcoVadis performance data to increase our knowledge of key risks and appropriate mitigations being undertaken.

Supplier Data Capture Tool
This tool, run through Action Sustainability, is a cloud-based system which enables us to collect, report, and analyse sustainability performance. We are embedding this reporting requirement into new contracts for construction projects, which will provide a view of our sustainability impact and provide us the opportunity to work and monitor our Tier 1 suppliers and contractors.

Local Multiplier 3 (LM3)
The LM3 Online tool measures economic impact by analysing expenditure based on geographic area. We are implementing this tool from 2024 and the reporting requirement is being included in current and live tenders, where applicable.

Sustainability training resources utilised by our supply chain

>10,000

Suppliers disclosing emissions via CDP

85%

Suppliers validated by EcoVadis

51%

Supplier sustainability sessions over 2023/24

12

Engagement in action

Hosting our first-ever sustainability contractor day

In early 2024, we hosted our first-ever Sustainability Contractor Day with one of our key contractors, RJ McLeod, a civil engineering company established over 70 years ago, operating exclusively in Scotland and the Islands with a strong ethos on local and diverse employment. The all-day session which took place in Glasgow was led by SSE Renewables' Supply Chain Sustainability Lead and attended by project, environment and sustainability colleagues from both SSE Renewables and RJ McLeod. The session was designed as a showcase of the work undertaken during the construction of Viking Wind Farm in Shetland (see pages 18 to 19), to focus positive outcomes, lessons learned and practical steps for future successes. The day also provided the opportunity to showcase respective sustainability strategies, review existing sustainability collaboration and identify shared objectives and opportunities for future collaboration. This was the first of many sessions that SSE Renewables have planned as part of their strategic supplier's engagement programme, which will see a number of sessions from virtual knowledge sharing to all day practical workshops related to specific project activity.

Engagement in action

Industry collaboration: the growing Powering Net Zero Pact

Launched in 2022, the Powering Net Zero Pact ("the Pact") is an initiative created by SSE plc with 10 of its strategic suppliers as a legacy of COP26. The Pact brings together companies across all tiers of the power sector globally – including civils, shipping, renewables, electrical engineering, and others – to achieve a fair and just energy transition to net zero.

The Pact welcomed nine new member organisations over its first year of operation, with a further seven organisations joining over 2023/24. Together, the 27 signatories of the Pact operate across more than 100 countries, had a combined annual turnover in 2023 of more than £185bn, are responsible for the livelihoods of over 850,000 employees, and work with more than 250,000 suppliers globally.

The continued growth of the Pact demonstrates the appetite for industry collaboration on our most salient sustainability challenges. Over the last year, the Pact Working Groups have progressed their focus areas and delivered outputs, from a net zero supply chain training pathway to address carbon literacy in procurement teams, to creating a school engagement tool in the community values working group. SSE Renewables is actively involved across all five working groups and continues to chair the Biodiversity Net Gain working group. The Powering Net Zero Pact Annual Report 2024 can be found on **sse.com/pnzp.**

Together Pact Companies:

Employ	Work with	Have operations in	Had a combined annual turnover last year of
>850,000 people globally	**>250,000** suppliers	**>100** countries	**>£185bn**

Introducing The 90% Club

To support the delivery of our Sustainable Procurement Strategy, the SSE Group has created a goal-setting plan called 'The 90% Club'. The overall ambition of The 90% Club is "to empower 90% of SSE's Supply Chain by spend to be the most Sustainable, Ethical and Responsible suppliers by 2030." Our approach is to undertake effective and targeted engagement with our suppliers relating to the relevant sustainability topics at a contract and company level, include sustainability requirements within our tender evaluation criteria to support decision making and collaborate across industry forums to collectively raise awareness, share best practice and where possible create common standards. This data is intended to not only demonstrate our overall progress to employ a sustainable supply chain but is also designed to demonstrate the value in effective engagement and collaboration with our supply chain. The goals of The 90% Club, alongside the data collated from our other systems, is being used with individual suppliers to understand their progress on sustainability and support plans to increase effectiveness and opportunities to improve to deliver positive outcomes.

SSE plc target	SSE Renewables progress against target 2023/24	SSE Renewables actions 2023/24
90% of suppliers by spend by 2030 to have:	% of SSE Renewables suppliers by spend	
Overall Sustainability		
Submitted their information to our Sustainable Performance Management Tool (currently EcoVadis).	51% submitted valid data on EcoVadis.	Targeted campaign, reaching out to our top 500 suppliers to promote the use of EcoVadis, followed by active engagement with those not already using the platform.
Submitted embodied sustainability data of the products they offer (e.g., EPDs, LCAs etc).	This data is not being captured currently.	Embodied carbon documentation, such as EPD's is required in tenders for the procurement of assets and SSE Renewables are providing simple tools for data input for assets procured, in the absence of this supplier documentation.
Offered sustainability training across their workforce.	28% are utilising the Supply Chain Sustainability School, of which SSE plc is a partner.	Our suppliers attended over 1200 free events and made use of over 10,000 training resources and tailored learning pathways to support upskilling of the companies and their employees across 2023/24.
Taking Climate Action		
Disclosed their carbon emissions.	85% submitted Carbon Disclosure Project (CDP) spend data.	Targeted campaign, reaching out to our top 200 suppliers to request submission through CDP, followed with active engagement and a support webinar, hosted in collaboration with CDP, for all suppliers.
Set their own science-based targets.	36% have set science-based targets, with a further 9% are committed to setting a science-based target.	Working collaboratively in the Powering Net Zero Pact to develop a 'Net Zero Supply Chain' training route using external partners to address carbon literacy in Procurement teams so that they can support SMEs. In addition, engaging with our hard to abate sector supply chain (e.g. maritime and steel) and sharing SBTi guidance, using leverage where appropriate.
Protecting and Enhancing the Natural Environment		
Submitted high quality environmental data across all SSE projects including energy, water, waste & emissions.	24% have measures to reduce water consumption. 48% report on waste. 79% have waste management measures.	Utilising our new Supplier Data Capture Tool to capture accurate data for projects across our technology portfolio to request data on tonnage of and disposal method of waste and water usage at a project level.
Incorporated and captured biodiversity actions.	This data is not being captured currently.	Leading the Biodiversity Working Group in the Powering Net Zero Pact to collaborate with and collectively explore, with the 12 member organisations, how best to embed BNG into tendering and bid activities and sharing best practice across the industry.
Affordable and Clean Energy		
Adopted clean energy solutions across their organisation and value chain.	73% use renewable energy.	Direct question included in our supplier on-boarding form as standard across all procurement activities. Data is used to support supplier engagement and explore options for CPPA opportunities with SSE Renewables to support transition to renewable energy.
Investing in Innovation, Industry & Infrastructure		
Embedded environmental and social action throughout their procurement processes.	75% have policy on sustainable procurement. 78% have an audit assessment programme on Environmental and Social issues.	Direct question included in our supplier on-boarding form as standard across all procurement activities. Requirement is explicitly called out in our Sustainable Procurement Code.
Incorporated circular economy ambitions.	This data is not being captured currently.	Collaborating with 15 industry organisations as part of the Powering Net Zero Pact Circularity working group to develop an agreed set of standards for best practice at all stages of lifecycle. Supporting the development of domestic supply chains as active member of CWIC.
Committed to Decent Work & Economic Growth		
Embedded social value in their SSE contracts.	42% are signatories to the United Nations Global Compact (UNGC).	Direct question included in our supplier on-boarding form as standard across all procurement activities. Data is used to support direct engagement with suppliers.
Conducted a modern slavery and human rights risk assessment around their products.	39% have policy on child labour, forced labour and human trafficking. 98% have policy on diversity, discrimination, and harassment.	Focusing on higher-risk areas of the supply chain, for example, sharing due diligence with solar supply chain partners to support to allow them to conduct their own risk assessments. See "Enhancing human rights due diligence in solar supply chains' case study.

Sustainable Infrastructure

Truly sustainable infrastructure considers environmental, social and economic impacts, while finding innovative ways to maximise value commercially and for society too. Developing, operating and decommissioning sustainable infrastructure requires the consideration of multiple sustainability topics which span multiple business functions beyond just a sustainability team, including design, consenting, engineering, construction, asset management, finance, community engagement and environmental compliance.

"As we venture into new places, sustainability remains a foundation of our approach. Our joint venture in Japan, SSE Pacifico, is a prime example of how we have put this commitment into practice. By identifying material sustainability risks and opportunities early on, our team is confident that the Tokushima floating offshore wind development will lead to sustainable operations."

Daniel Pearson
SSE Renewables Director of Business Development

Embedding sustainability into large capital projects

At SSE Renewables, we embed sustainability early into Large Capital Project (LCP) development, and through the project lifecycle, through the creation of a Sustainability Assessment and Action Plan (SAAP). The SAAP process was introduced as a mandatory part of our LCP Governance Framework across the SSE Group in 2022, with SSE's Chief Sustainability Officer also becoming a member of the Group-level LCP Committee.

The SAAP is undertaken at opportunity assessment stage and continually updated throughout project development and construction. The objectives of the SAAP are to ensure SSE Renewables is: 1) building net zero infrastructure sustainably to unlock wider value, 2) increasing awareness of sustainability risks and opportunities that could impact the project, wider society and the environment and 3) upskilling our teams through development of sustainability skills for the future.

Integrating our SAAP into new projects

Over 2023/24, 21 SSE Renewables projects went through the SAAP process, with support from sustainability subject-matter experts. The projects span offshore wind (fixed and floating), onshore wind, solar and battery and hydro technologies, and include a variety of geographical locations. For example, to ensure our growing international footprint embeds sustainability from the outset, SSE Pacifico, a joint venture between SSE Renewables and Pacifico Energy, underwent a SAAP process in early 2024. The business is exploring early-stage development opportunities in multiple locations including a floating offshore wind project located in Tokushima Prefecture to the East side of Shikoku Island, Japan. As part of the SAAP process, SSE Pacifico has been identifying the most material sustainability risks and opportunities early in the Tokushima floating offshore wind project development.

This included an initial set of three workshops between the SSE Pacifico project team and sustainability subject matter experts, covering the following topics: whole-life carbon, climate adaption, circular economy, nature positivity, human rights, fair work, community engagement and local supply chains. The workshops identified a requirement for further understanding of the key areas of carbon emissions resulting from the project itself and the development of a strategy for reduction, in addition to further consideration of the project's ability to adapt to future changes in climate. A lifecycle carbon analysis of the project and an asset climate adaption risk assessment is now being undertaken.

Ensuring sustainable operations

For assets which have been operational for a longer period, our approach is to embed sustainability into existing performance plans. For example, in a drive to embed more sustainability considerations in its approach to asset management, this year the Greater Gabbard Offshore Wind Farm (50:50 joint venture between SSE Renewables and RWE Renewables) Board agreed 'sustainability' and 'advanced end of life planning' as two out of four core objectives within its FY24/25 Performance Plan. This spans a commitment to undertaking activities from proactive end of life planning, refurbishment of major and minor components and established consistent emissions reporting, to delivering local supplier events and undertake a multi-year benthic ecology programme to further investigate nature positive opportunities.

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SSE Renewables development projects assessed their sustainability risks and opportunities, and created sustainability action plans in 2023/24

Case study

Embedding sustainability into our new battery operations

Earlier this year SSE Renewables opened its first battery storage project at Salisbury – consisting of 26 battery units capable of providing 50MW to the UK Grid during times of high demand. The location of the site by a disused quarry in Quidhampton next to a substation, just outside the city of Salisbury, was chosen to minimise potential visual impact. Battery storage is a proven technology and a key enabler of Net Zero. It helps the UK integrate more renewable generation onto its network by storing and then releasing energy when the wind doesn't blow, or the sun doesn't shine.

Community engagement

As we constructed the site, we engaged with the local community and other stakeholders, ensuring on-the-ground implementation of our stakeholder engagement principles (see page 11).

An important part of this process involved educating people about the importance of battery storage as a key part of solving the Net Zero jigsaw. Working with the local councils and through public engagement, we have been sharing information about the project and answering important questions.

Feedback on the project has been predominantly positive, and we were delighted to have been able to present a £1,000 donation to the local hospice and £500 to a local youth outreach project. We welcomed the local MP and local media to the site and later this year we'll also be volunteering materials and time planting trees in public areas owned by the Council.

Biodiversity Net Gain

The landscape design for the site will achieve 13% Biodiversity Net Gain (BNG) and uses a mixture of native wildflowers, shrubs and trees to deliver this. The Ecological Mitigation and Enhancement Plan along with the Landscape Plan will ensure that BNG is maintained throughout the site's operational lifetime. Additionally, bird and bat boxes have been placed on site and are monitored annually. Project landscaping allowed the opportunity for tree screening of the site which was a large contribution to the site's BNG and also resolved stakeholder concerns around site visibility.

Battery Safety

Although batteries are a proven technology deployed around the world, SSE Renewables mitigates any safety risk through careful planning and comprehensive safety protocols. SSE Renewables' BESS fire safety philosophy can be summarised by four principles: prevention, detection, containment, and control. Each of these principles is an effective line of defence and will dramatically reduce the likelihood and severity of a fire on any of our sites.

We have also been working closely with the local fire services to plan for all eventualities as part of our safety planning and we are ensuring we answer any questions from local stakeholders or residents. We are continuing to lead the way in the industry, supporting the development of UK specific best practice guidelines and standards and working closely with industry bodies and stakeholder groups as we develop our projects.

Our operational BESS assets are managed in line with robust and regularly reviewed Emergency Response Plans (ERP), informed by specialist industry specific guidance and Fire Service engagement. Operational assets are operated and maintained in line with industry best practice and original equipment manufacturers recommended maintenance procedures to further mitigate risk.

"Our first-ever battery storage project at Salisbury represents a huge milestone for SSE Renewables. With new challenges from a safety and sustainability perspective, it represents a first-of-its-kind project for the company, our team has worked hard to ensure that safety and sustainability have been front and centre of how the site has been constructed and how it now operates."

Richard Cave Bigley
SSE Renewables Director of Solar & Batteries

Operational generation capacity
50MW

Biodiversity Net Gain
13%

Homes powered for two hours during peak demand
80,000

Case study

Onshore wind construction: An award-winning approach at Viking

Once fully operational in 2024, Viking Wind Farm will be the UK's largest onshore wind farm in terms of annual electricity output, playing a crucial role in contributing towards the UK and Scotland's net zero targets by powering over 500,000 homes. But beyond its contribution to the decarbonisation of our electricity system, Viking is a flagship project for demonstrating the wider environmental, social and economic benefits that can be generated by renewable energy projects.

Operational generation capacity

443MW

Spend with local suppliers

£70m

Community investment over 25 years

£72m

Jobs during peak construction activity

400

Restoring natural peatland

As well as minimising environmental impacts in line with our usual environment management framework, we committed to making positive contributions to habitat restoration. Much of the Viking Wind Farm is located on heavily eroding peat so the Habitat Management Plan for Viking Wind Farm sought to restore approximately 260 hectares of severely degraded peatland. The aim was to re-establish vegetation cover on areas of bare peat and to raise water levels. This enables restoration of the habitat and provides conditions for the peatland to sustain itself – ultimately achieving bog creation condition in the long term. Using existing turves and peatland features, the area has been successfully rewetted, leading to the formation of pools that did not exist previously. Peatland restoration will continue during the operational phase and be monitored and managed across the lifetime of the wind farm ensuring the longevity of measures implemented.

Supporting local suppliers, skills and jobs

Viking has been a key supporter of local jobs and content. During peak construction activity over 400 jobs were supported with multiple supply and sub-contract opportunities for local businesses and direct local recruitment from principal contractor, RJ McLeod. By the middle of 2023, over £70m had been spent with more than 70 local contractors, this number is expected to rise to at least £80m by the end of the project. The project also invested time in supporting local skills development, training and worked as a supplier consortium to foster apprentices. This will last into the operation of Viking and beyond the project itself. For example, RJ McLeod provided free of charge training for local workers who required additional training on aspects such as safety and plant operations. The project is now working with NatureScot to provide upskilling opportunities for contractors in peatland restoration, highlighting renewable energy's role in supporting both net zero and nature-based jobs.

Working with schools to inspire STEM futures

To inspire the next generation, the Viking project team collaborated with its key suppliers, including turbine manufacturer Vestas to support STEM engagement in local schools. This included over 40 school visits across a four-year period, multiple site visits, and the creation of interactive educational online resources for children aged 3-8 years-old at nursery and primary schools across Shetland. This initiative was recognised as the 'Best Community Engagement Strategy' award at the 2023 Scottish Green Energy Awards.

Supporting local communities and infrastructure

Responding to the things that are important to the people of Shetland, we have also sponsored key events on Shetland – including Shetland Pride and the Tall Ships Races event in Lerwick in 2023. Ongoing communication was fundamental to our engagement strategy, and we issued quarterly newsletters to the community. This helped the community stay informed on progress, as well as sharing project team contact details to allow them to get in touch with questions and concerns. This enabled two-way dialogue between Viking and the Shetland community.

We constructed a new public road at Sandwater which will improve east-west linkage of the public road network. The first phase of this project was implemented in an environmentally responsible way by using innovative lightweight expanded clay aggregate to install the road over the existing peat to avoid disturbing it. This sustainable investment will significantly upgrade local infrastructure while improving public access to the wind farm. The new road will be a quicker - and most importantly a safer - route to drive past Sandwater Loch once open to the public.

Our Viking project will leave a lasting legacy. Beyond the construction phase, we have committed to a community benefit fund of around £72m (when indexed) over the lifetime of the wind farm. The fund has six priority themes, including young people and improved housing supply, identified by local residents in an extensive community consultation.

"Our engagement with the communities of Shetland didn't just start at construction, it is something that has been at the centre of the Viking Wind Farm project from the very beginning. Over the last three years we have opened our doors and welcomed hundreds of students and visitors to the site, and for those that couldn't make it to site we have taken the Viking Wind Farm to them. We are delighted to have the project recognised, it has truly been a team effort, something that would not have been possible without the support of our delivery partners RJ McLeod. They have been instrumental in helping us work collaboratively with the communities of Shetland and ensure we deliver real, long-term benefit locally."

Heather Donald, SSE Renewables Onshore Renewables Development and Construction Director

Case study

Offshore wind development: A new scale of opportunity at Berwick Bank

Located in the North Sea, in the outer Firth of Forth, Berwick Bank can deliver over 4GW of installed capacity, making it one of the largest offshore opportunities in the world. In late 2022, a planning application was submitted to the Scottish Government seeking consent to develop and enter construction. If approved for delivery, Berwick Bank could increase Scotland's overall renewable energy capacity by nearly 30%. The project will be capable of generating enough clean, renewable energy to power over six million homes, the equivalent to all of Scotland's households twice over.

An innovative approach to inter-developer communications

The coastal community which hosts Berwick Bank's East Lothian connection point is a growing green energy hub with a number of different developers active in the region. This has required an innovative approach to inter-developer communications to encourage more joined-up engagement, collaborative working, and better outcomes for the host community. In 2023 we took a leading role in establishing a regular Developers' Forum to share information and learnings, and worked closely with East Lammermuir Community Council to understand the primary barriers for effective multi-developer engagement.

Over
4GW
installed capacity

Up to
£8.3bn
contribution to UK GDP

Up to
9,300
UK jobs (with up to 4,650 in Scotland)

Following two stakeholder workshops in October and December, we worked in partnership with Fred Olsen Renewables to create an initial stakeholder 'toolkit' which would address some of the key issues raised. In the first instance, we developed a set of 'Principles of Community Engagement' for developers working in the area. This document provides a framework for responsible communication and collective action with the community and between developers. Earlier this year, we also created an interactive web platform, which details all current and proposed energy developments in the region. This platform contains an interactive map to allow stakeholders to see what projects are proposed, in planning, in construction and operational. The platform also contains live up-to-date information on the latest news, status and milestones of each proposed development in the area, alongside a signed charter of commitments which details the expectations of how developers will operate and engage in the area.

Onshore environment and Biodiversity Net Gain

In planning for the project's East Lothian onshore cable connection point, the SSE Renewables Biodiversity Net Gain Toolkit was utilised in order to provide for a 'demonstrable uplift in biodiversity' as required in the Scottish Government's National Planning Framework 4 (NPF4). The project identified the opportunity for 3.2ha of woodland creation, 0.2ha of scrub creation, hedgerow enhancement and the planting of high-quality grassland meadows as suitable measures for delivery of a 10% uplift in biodiversity for area-based habitats and a 78% uplift in biodiversity for linear features.

Additionally, in delivering these Biodiversity Net Gain commitments, we will be working with a newly established local Biodiversity Group which has been formed to understand how energy developments like Berwick Bank can contribute to local biodiversity enhancement. In addition, we have provided funding for the East Lammermuir Local Place Plan to input to and support delivery of sustainable benefits for Berwick Bank's host community.

Offshore environment

Berwick Bank will be situated approx 38km off the coast of East Lothian. Seabirds breeding along this coastline can travel the same distance offshore to feed, so it is vital we ensure the project has minimal impact on these birds when they are at sea. Research has shown us that increasing the gap between the sea and the blades at their lowest height can reduce potential collisions. In 2021, Berwick Bank took the decision to raise the height of the wind turbine blades from 22 metres to 37 metres, significantly reducing predicted impacts. In 2022, the overall area of the project was reduced by around 20%, in addition to a previous reduction of 10% in 2021, in order to minimise the footprint of the project.

We are seeking to work alongside the UK and Scottish Governments, and other stakeholders, to restore the health of the North Sea's marine ecosystem. This includes the delivery of a suite of measures designed to enhance seabird populations. If consent is granted, Berwick Bank plans to adopt cutting-edge research and technology to monitor how seabirds respond to both the project and to enhancement measures. This builds on our existing collaborations with other offshore wind developers across the Forth and Tay region. This work will contribute evidence to help establish Berwick Bank as a model for future offshore wind farms.

Embedding circularity at Berwick Bank

Q&A with...Eve Andrews, Research Engineer, Berwick Bank Offshore Wind Farm, and awardee of industry Fellowship Royal Commission for the Exhibition of 1851

Can you tell us about your research?
As an EngD student part of the Industrial Doctorate for Offshore Renewable Energy (IDCORE) program, a centre for doctoral training, I am sponsored by Berwick Bank and collaborating with SSE Renewables. IDCORE provides a multidisciplinary curriculum, exposing students to various aspects of offshore renewable energy beyond hydrodynamics. Topics span from marine biology to economics and sociology, offering a comprehensive understanding of both technical and non-technical considerations within the offshore energy sector.

Can you tell us about what you did at Berwick Bank?
My research focuses on circular economy principles, particularly in developing the Wind-CAT (Circularity Assessment Tool) over the past year. This tool aims to evaluate the circularity performance of wind developments by evaluating indicators, metrics, and design principles. It encompasses a wide range of qualitative and quantitative assessments, allowing for a holistic evaluation of circularity performance across all project phases. By facilitating the comparison of design options and guiding decision-making, the Wind-CAT promotes the integration of circularity principles throughout a project's lifecycle. I am currently designing and building the tool and will run a case study on Berwick Bank to facilitate development. Though designed using Berwick Bank, the tool could be used on all onshore and offshore wind developments, at any stage of the project to assess their circularity performance.

"Our ability to meet decarbonisation targets and net zero is dependent on a step-change in the pace of consenting and constructing renewable assets. We are ready to press 'go' on projects of scale and real impact like Berwick Bank, a world-leading project which will enable the UK to be less reliant on fossil fuels and instead secure its own energy future now and for generations to come, while generating significant economic benefits at the same time."

Maria Ryan
Director of Offshore Development at SSE Renewables

Case study

Hydro replanting: A new lease of life for 90-year-old Tummel Bridge Power Station

Originally commissioned in 1933, Tummel Bridge has recently passed its 90th year in operation as one of the first large scale hydro sites in Scotland. Over its operational life, Tummel Bridge has displaced over 8.5 million tCO_2e. As the UK transitions to a renewables-led net zero energy system, we're actively seeking investment opportunities for hydro generation, including repowering of existing hydro power plants. We're currently investing around £50m in the replanting of our existing Tummel Bridge Hydro-Electric Power Station with modern and efficient turbine technology. The replanting is expected to extend the station's operational life for generations to come. The replanting programme, which is now almost through commission ready for return to full operational service, will increase generation capacity of the hydroelectric power station from 34MW to 40MW whilst using the same volume of water delivered by the aqueduct. This is realised through modern turbine and generator design providing a high efficiency (low loss) water to wire conversion from the natural fuel in our reservoirs.

"SSE's hydro heritage, spanning back to the Hydro Electricity Act of 1943 and, in the case of Tummel, even earlier, is a core part of our DNA. Hydro electricity has shown over the decades the huge contribution renewable energy makes to people, place and planet, and the investment in replanting hydro assets like Tummel Bridge means these iconic sites will continue to play a crucial role in Scotland's energy mix for many more decades to come."

Neil Lannen
Director of Hydro Asset Management

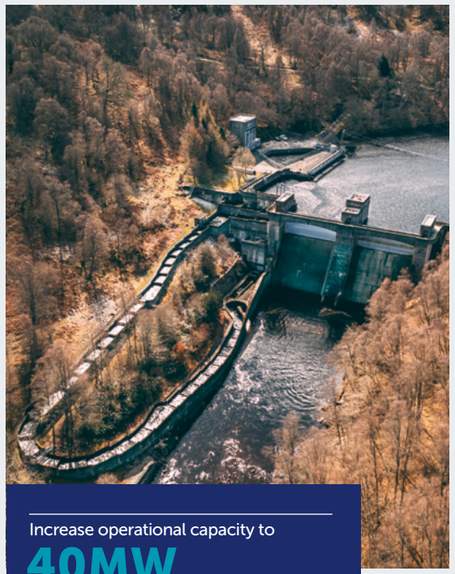
Replanting, refurbishing and recycling for sustainability gains

To prevent unnecessary materials from being used we only replaced the essential parts of the mechanical and electrical plant. Materials which could not be reused were recycled. Approximately 4,000 tonnes of concrete that was removed from the site was crushed down, and thereafter re-used to restore the access tracks and hard standing areas on the neighbouring aqueduct. This restoration replaced the need for wagons to transport the material away from the site which saved significant amounts of fuel and vehicle movements, minimising the impact on the local rural road network and residents.

The original mechanical plant was largely low background steel stemming back to the 1930s. This material pre-dates the atomic age and is highly valuable due to its applications in scientific instrumentation, spacecraft and medical equipment. Around 1200 tonnes of recyclable metals were removed from site by specialist recycling contractors to be reused.

Supporting freshwater ecosystems

Before the work began, control measures had to be agreed, planned and implemented to mitigate any potential environmental impacts, particularly regarding the River Tay Special Area of Conservation and Atlantic salmon. Under normal operations the assets are designed to allow the upstream and downstream migration of adult and juvenile Atlantic Salmon. With long duration changes to normal operations, control measures had to be agreed with fisheries stakeholders and regulators to ensure any impacts were minimised, salmon were still able to migrate through the river, and environmental compliance was maintained.



Increase operational capacity to
40MW

Years of operation
90

Emissions displaced over operational life
8.5m tCO_2e

The controls and mitigation were monitored and, if required, adjusted to ensure they remained effective. A water management plan was also agreed and implemented to ensure water could be managed safely throughout the Tummel cascade (a series of dams and power stations in the river catchment area which generates green renewable energy through up to 9 stations using the same water).

Supporting communities and sharing socio-economic value

Ongoing stakeholder engagement has been central to Tummel over the last 90 years. We shared extensive information with neighbouring communities and stakeholders on what the refurbishment would entail, and worked hard to maintain open communication and transparent dialogue with the local community, in line with our community engagement principles. Engaging with young people and local schools on STEM formed a key part of our approach where we hosted seasonal events including an Easter Egg hunt and recently a "name the turbine" competition which involved the project engineering team visiting local schools to discuss in easy-to-understand principles the huge benefits of hydro electric generation. Government stakeholders have been supportive from the outset, and John Swinney visited the site on several occasions when he was Deputy First Minister and then latterly as local MSP.

The refurbishment also significantly contributed to the local economy. Over a quarter of a million person hours have been spent on site to date, with the majority of the workers residing in the Tummel and Breadalbane region. The vast majority of our contractors – including our principal contractor - are based in the Highlands, and we used other suppliers local to the region, in turn supporting jobs and livelihoods in the North of Scotland.

A day in the life

Ross Glover, Fish Biologist

As the Fisheries Biologist for SSE Renewables, my main objective is to provide advice on fish and fisheries to the operational hydropower business. This ensures we are compliant with legal and statutory requirements whilst also minimising our impact on the environment. My primary focus is on Atlantic salmon, as their life-cycle means they come into contact with our assets far more than any other fish species in Scotland.

My daily role involves supporting colleagues at SSE Renewables in the Civil Programmes, Hydro Operations, and Control and Instrumentation Engineering teams on ongoing and future work or maintenance plans for our assets to ensure impacts on fish are avoided or mitigated. I liaise with a range of external stakeholders, including local salmon fishery boards and SEPA, to facilitate this work. Daily tasks can be quite varied due to the often-reactive nature of the role, where challenges require attention as they arise.

An important part of the role involves delivering world-leading mitigation across our assets to improve the status of salmon. This can take the form of trapping juvenile salmon on their way to sea (called smolts) and transporting them around dams where downstream passage can be challenging, or overseeing trapping of adult salmon and egg stocking to preserve populations. I have direct hands-on involvement in some of this work, while other work is carried out by fishery boards on our behalf. Our operational area covers eight fishery districts where a wide range of mitigation projects are ongoing requiring regular meetings and discussions.

As the only fisheries expert in the business, it is important that I keep up to date with best practice. This includes reviewing recent scientific literature but also disseminating our inventions, methods, and knowledge to the wider fisheries community. I am in close contact with a range of external fisheries experts and regularly represent SSE Renewables at national and international conferences. With salmon recently reclassified as endangered in the UK, my role of ensuring we minimise our impact on the species is now more important than ever.

Just Transition

A planned and orderly transition to net zero presents many opportunities for workers, communities, and consumers - from creating good green jobs, to investment in rural communities, the development of new supply chains and local businesses, greater energy security, and less volatile bills. At the same time, a disorderly transition to net zero could impact public support for decarbonisation, risk causing lasting social and economic harm.

Our role in a just transition

We recognise that as a company, we have a responsibility to help manage the social consequences of the transition to net zero, and that we have a responsibility to ensure that our assets and new investments can create value to wider society while mitigating risks to livelihoods. Championing a fair and just transition is a key pillar of SSE Renewables' wider business strategy. Over 2023/24, SSE Renewables contributed £2bn to the UK and Irish economies, supported over 16,000 jobs, the majority being in the supply chain, and invested over £10m into our communities. We also marked 10 years of Living Wage accreditation and took targeted action towards achieving our inclusion and diversity targets..

Revisiting our approach to a just transition

In 2020 SSE plc became one of the first companies in the world to publish a Just Transition Strategy, recognised as such by the World Benchmarking Alliance. The strategy outlines 20 principles to guide us and inform decision-making to ensure that we can maximise socio-economic opportunities and mitigate social impacts - especially on the most vulnerable - as we transition into net zero, and out of a high-carbon world. The 20 principles sit under five key pillars: good green jobs; consumer fairness; building and operating new assets; looking after people in high-carbon jobs; and, supporting communities.

In 2024, SSE plc revisited the principles of its Just Transition Strategy to ensure they remained appropriate and relevant. The review found that the 20 existing principles remain relevant, with only minor amendments needed to the wording of the principles and further clarity added in the definitions which sit below them. The renewed strategy has also identified a basket of 10 key performance indicators identified to monitor progress. These indicators are also mirrored in our SSE Renewables goals.

Importance of 'place'

One key strategic consideration identified as part of the review was the importance of place (rather than company) in the transition to net zero. This is due to the dialogue on just transition at both the sector and national levels having progressed rapidly in recent years, with an increased focus on a 'place-based' approach to ensure that the just transition is grounded in the communities in which it will happen, informed by the local insight of the people who will be most affected, taking into account the skills and jobs in that area. The revised principles and full details of the review process can be found at **sse.com/sustainability/just-transition.**

SSE's 20 Principles for a Just Transition

Transitioning into net zero places			Transitioning out of high-carbon places	
SSE's principles for good, green jobs	**SSE's principles for consumer fairness**	**SSE's principles for building and operating assets**	**SSE's principles for people in high-carbon jobs**	**SSE's principles for supporting communities**
1. Guarantee fair and decent work	5. Consult and co-create with stakeholders	9. Set and monitor social safeguards	13. Re-purpose thermal generators for a net zero world	17. Deliver robust stakeholder consultation
2. Attract and grow talent	6. Factor-in whole-system costs and benefits	10. Support competitive national and local supply chains	14. Establish and maintain trust	18. Form partnerships across sectors
3. Value employee voice	7. Make transparent, evidence-based decisions	11. Share value with communities	15. Provide forward notice of change	19. Promote further industrial development
4. Deliver transformation through inclusion and diversity	8. Advocate for fairness	12. Implement responsible developer standards	16. Prioritise retraining and redeployment	20. Respect and record cultural heritage

Our approach at SSE Renewables

At SSE Renewables, we have an important role to play in operationalising these principles. While all twenty principles remain highly relevant, for us as a renewables business as we transition into a net zero world, we have a responsibility in particular for ensuring that the green jobs we generate are good jobs, underpinned by decent and fair work, which is safe and inclusive. We also need to make sure we continue to be a responsible developer of renewable technologies. This includes engaging and sharing value with our communities and suppliers, while ensuring the supply chains underpinning our assets do not exacerbate human rights or environmental risks.

Key highlights and progress update against our material Just Transition principles

Pillar	Just Transition Principles	SSE Renewables Action 2023/24
Principles for good, green jobs	Guarantee fair and decent work	• Living Wage accreditation achieved at Seagreen, joining Beatrice and Gabbard. • Continued roll-out of Living Wage in supply chain, including embedded into Southern European procurement. • Continued work with our four recognised unions in the UK through the SSE Renewables JBC.
	Attract and grow talent	• Our overall headcount increased by 24% to 2037 in 2023/24, compared to 1,641 in 2022/23. • Continued investment in pipeline activities with steadily increasing number of apprentices, trainees and graduates (see page 30).
	Value employee voice	• Initiated key employee-led initiatives, including Project RISE and our Great Place to Work Champions (see page 35). • Our employee participation score rose to 95% in our Great Place to Work survey, up from 78% in 2023/24 (see page 35).
	Deliver innovation through inclusion and diversity	• Continued measurable efforts to boost gender equity, including an increase of 2.8% of women in our leadership team, and increasing our diversity data disclosure to 79.2% in 2023/24, up from 35%. • Our staff-led Inclusion and Diversity principles were launched by our I&D Challenger Group.
Principles for building and operating assets	Set and monitor enhanced social safeguards	• Implementation of year one of our SSE Renewables Three Year Human Rights Action Plan. • Human rights risk assessment undertaken with our human rights third-party partners Slave Free Alliance and twentyfifty.
	Support competitive national and local supply chains	• Hosted several meet the buyers events at Dogger Bank, Berwick Bank, and Viking (see page 26). • More about our approach to supply chain is detailed (see Pages 12 to 15).
	Share value with communities	• Invested £10.3 million in communities, supported 957 projects, and marked 10 years of the Sustainable Development Fund. • Held numerous STEM activities across the UK, including supporting local schools in Shetland (pages 18 to 19) and in the Highlands (see page 31).
	Implement responsible developer standards	• See 'sustainable infrastructure section' (see pages 16 to 17) and our renewed focus on the Sustainability Assessment Action Plan.

Sharing economic benefits of renewables

Contributing to GDP and jobs

Renewables can provide significant socio-economic benefits – from the regions we operate in, to national economies. Through our investment in low-carbon infrastructure SSE Renewables makes a considerable contribution to the UK and Irish economies. To understand our socio-economic impact, SSE plc commissions professional services firm PwC UK to estimate the value it contributes to GDP and the jobs it supports across its home markets annually.

Over 2023/24, SSE Renewables contributed an estimated £1.8bn to UK and £185m to Irish GDP, compared to £1.5bn and £88m respectively in 2022/23 (not adjusted for current prices). This marks a 25% increase in the UK and a 50% increase in Ireland. In 2023/24, jobs supported by SSE Renewables in the UK and Ireland increased by over 50%, to 16,000 from 10,280 the previous year. The increase in jobs supported across the two countries was largely a result of increased supply chain activity, which was also the driving factor in the increased contribution to GDP in Ireland. The successful completion of Lenalea Wind Farm in Donegal in late 2023 and progress on the development of Yellow River Wind Farm in the Midlands of Ireland contributed to the upturn in activity in Ireland this year. The full 2023/24 SSE economic contribution report, including all the assumptions can be found at **sse.com/sustainability** along with all past reports.

Fair tax principles

Being a responsible taxpayer is a longstanding feature of SSE's social contract with the societies in which it operates, and 2024 will represent the 10th consecutive year of Fair Tax Mark accreditation. SSE was the first FTSE100 company to be Fair Tax accredited in 2014 and in 2023 it realised another milestone, becoming the first company to transition from the Fair Tax Foundation's UK HQ Multinational accreditation to its new Global Multinational Business Standard. We remain a firm supporter of the Fair Tax Foundation and we have welcomed its international focus and expansion believing that multinational corporations must pay regard and respect to the jurisdictions where economic activity is undertaken, and profits arise. SSE's Talking Tax reports can be found on: **sse.com/sustainability.**

SSE Renewables economic contribution in the UK and Ireland 2023/24

UK

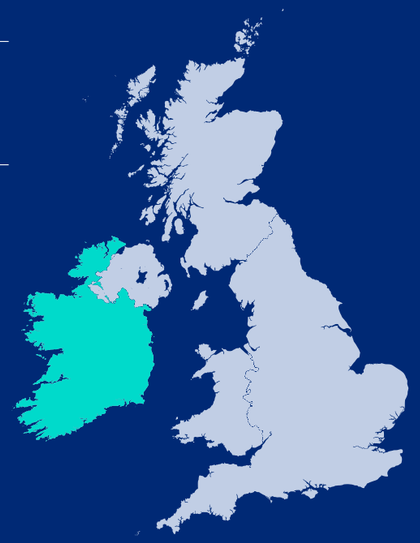
Contribution to GDP
£1.840bn
(2022/23: £1.5bn)

Jobs supported
15,170
(2022/23: 9,850)

Ireland

Contribution to GDP
€185m
(2022/23: €88m)

Jobs supported
830
(2022/23: 430)



Supporting national and local supply chains

At SSE Renewables, we have a long history of working with local suppliers to support thriving local economies. This is particularly the case across the north of Scotland, supporting our existing portfolio from Hydro to Onshore wind. A critical part our approach is to work closely with our tier 1 suppliers to unlock opportunities for local content. A key activity supporting this approach is hosting meet the buyer events across the country, inviting local organisations to engage with our Tier 1 suppliers, increasing visibility of opportunities throughout the project lifecycle. This approach goes above typical industry standards by ensuring that events are targeted to key project locations, supplier portals are regularly monitored, and potential suppliers are quickly put in touch with the relevant contract manager. Over 2023/24 this includes:

- **Berwick Bank:** In November 2023, Berwick Bank Wind Farm exhibited at the Offshore Wind North-East, attended by 1000 delegates and 130 exhibitors. The aim of the event was to engage with new and existing supply chain members and increase the level of potential new suppliers registered on the project's web portal.
- **Dogger Bank:** In October 2023, Dogger Bank - a joint venture with Equinor and Vårgrønn- convened a supply chain event for operations and maintenance, focusing on Innovation and in November 2023 it convened a 'meet the buyer' event. In January 2024, Dogger Bank – hosted almost 5,000 delegates across 22 different supply chain events. The wind farm is a member of the EnergiCoast Offshore Wind Cluster in the North East of England, which aims to strengthen the supply chain capabilities in the region, as well as promoting the area as a key hub for servicing UK and International offshore wind markets.
- **Hydro:** As proud custodians of hydro infrastructure constructed with the help of local companies over 80 years ago, we have a longstanding commitment to working with local contractors and suppliers across our hydro fleet which continues to this date. More information is in our 'Tummel case study' pages 22 to 23.
- **Viking:** By the middle of 2023, over £70m had been spent with more than 70 local contractors. To support this, the project invested time in supporting local skills development, working as a supplier consortium to support local workers to participate in the project. More information is on our Viking case study on pages 18 to 19.

Socio-economic opportunities of the offshore wind supply chain

Q&A with...Paul Cooley, Offshore Wind (Europe) Director

Can you give us a sense of the socio-economic impact the offshore wind supply chain could have?
There is huge potential for socio-economic benefits during the construction and operational life of an offshore wind farm – in the UK and beyond. At SSE Renewables, we have been long-standing advocates for being able to quantify socio-economic impacts. Studies commissioned by SSE Renewables and carried out by Biggar Economics, for Beatrice Offshore Wind Farm, and BVG Associates, for Seagreen Offshore Wind Farm, confirm that out of the expected total lifetime spends of c.£5.75bn and c.£6.15bn, respectively, they generated a significant number of good quality direct and indirect jobs and significant levels of economic activity both in Scotland and the UK during construction, and will continue to do so throughout their operating lives (see table below).

Do we see a similar trend for potentially upcoming projects?
We do. At SSE Renewables we also undertake socio-economic assessments to assess potential impacts. Studies commissioned by us and undertaken by third-party experts to assess potential socio-economic impacts from future projects highlight the significant socio-economic potential. For example, our recent study with Biggar economics revealed Arklow could unlock up to in socio-economic beneifts Ireland during the project's lifetime, of which over half a billion euro could directly benefit counties Wicklow and Wexford, supporting 2,300 jobs.

How easy is it going to be to unlock this given current market conditions?
There is currently high demand and predicted greater future demand globally for offshore wind farm facilities. This, coupled with supply chain challenges means that there is insufficient capacity in every area of supply to meet these increased demands. In addition, other sectors of the global economy which share elements of the offshore wind supply chain, such as electrical distribution networks are also going through a significant phase of updating and expansion. The supply chain clearly faces significant scaling challenges ranging from critical mineral supply constraints to securing planning for new/expansion of facilities. However, these are not insurmountable and provide opportunity not only for the existing supply chain, but also new entrants transitioning from other sectors such as oil and gas into offshore wind.

What kinds of policy and investment signals could help this challenging market?
Some of the challenges that suppliers and developers face require policy support and government intervention to unlock local supply chain opportunities. Most critically, this includes providing long term offshore market confidence and the correct signals to encourage and facilitate investment in the supply chain –policy certainty is key For example, in terms of the UK market the UK Government could provide a significant level of confidence for supply chain investments by confirming a minimum 10GW annual auction capacity for the next 3 auctions, this would provide a clear signal, confidence and commitment to a pipeline of projects facilitating UK investment.

In Ireland, where offshore development is plan-led, this means giving developers visibility and certainty on what areas will be open to development. For example, the Government intends to publish a roadmap of "Designated Marine Areas". The publication can't come soon enough if developers are to have confidence on future opportunities in Ireland. This will be critical to securing investment, delivering infrastructure and creating jobs for the future.

Is it really that simple?
In short: yes and no! Having Having market certainty certainty is utterly essential for us and our suppliers to make investment decisions. Once we have that, we can often do the rest. For example, the long-term transmission investment programme in GB provided the confidence for SSE Transmission to enter into long term contracts with Sumitomo for high voltage cables which facilitated Sumitomo's c.£350m high voltage cable factory investment decision at Nigg, near Inverness. Having said this, while a stable and supportive policy and regulatory framework is key to providing investor certainty, other incentives and signals play a role in facilitating and accelerating deployment of renewables. For example, in a UK context, we still need a contract price which supports UK investment and government investment in enabling infrastructure, e.g. ports.

How is SSE Renewables navigating this currently more uncertain terrain?
We pride ourselves on our robust and valued long-standing relationships with suppliers, and by seeking to provide as much long-term certainty as possible in the current highly competitive global supply chain market. For example, we are exploring long-term framework agreements with our key suppliers to secure the supply chain for our expected project pipeline. However, this is a risk which would be significantly reduced through the right policy signals.

Pillar	Beatrice Construction	Beatrice Operations	Seagreen Construction	Seagreen Operations
Total Gross Value Add for Scotland and UK (£)	£1.3bn	£1.8bn	£660m	£ 2.2bn
Total FTE Job Years in Scotland and UK	19,100	N/A	8,750	21,920
Total FTE Jobs created in Scotland and the UK (direct, indirect and induced)	N/A	800	3,200	720

Investing in our communities

Community investment over 2023/24

We understand that local people are the experts of their own area and at SSE Renewables we strive to work with communities to provide flexible interventions which deliver lasting change - from enhancing community care provision, to building community owned housing and introducing rural skills provision.

Our community investment funding focuses on what communities need now and, in the future, and is underpinned through robust community consultation, action planning and empowering community organisations. We provide the foundations to enhance the socio-economic impact in local regions. Over the last 15 years, SSE Renewables has provided over £88 million to communities. Our current operational pipeline will deliver £200M directly invested in communities by 2035.

During 2023/24, SSE Renewables community investment across the UK and Ireland totalled £10.3m. In 2023/24, we provided our first French community commitments in Chaintrix- Bierges, and have now also invested in excess of €550,000 in sponsorship on a voluntary basis across County Wicklow and north Wexford, communities close to the proposed Arklow Bank Wind Park 2. This investment has been made through two separate Sponsorship and Fisheries Funds.

>£320m
investment into local communities over the lifetime of our current assets

£10.3m
invested in communities in 2023/24

957
community projects supported in 2023/24

In 2023, we signed a Minute of Agreement with the Shetland Community Benefit Fund (SCBF) for the operation of the Viking Community Fund, contributing £72 million to local communities focusing on six priorities identified by Shetland residents. Detailed disclosure on SSE Renewables' community funding can be found on **SSERenewables.com/communities.**

Shared ownership of renewable energy

In 2023/24, we continued to progress our commitment to shared ownership by advancing discussions with the communities near the Strathy South Wind Farm. We also commissioned one of our key partners - Development Trust Association Scotland - to complete research on community shared ownership of offshore wind. The research will investigate whether democratic finance models and the Community Benefit Society legal structure could play a key role in the development of community shared ownership of offshore wind. The research findings will be published in 2024.

Responsible advocacy and sharing best practice

Across SSE Renewables, over 2023/24 we have continued to share our knowledge and the voices of communities. This has included working with peers and government stakeholders such as the Department for Energy Security and Net Zero (DESNZ) to share recommendations for the development of good community practice guidelines across different renewable technologies. It has also involved sharing our experience and best practice with international organisations such as The World Bank and The Nature Conservancy, and the United Nations Global Compact.

Looking ahead

We will continue to champion a community-first approach to our investment funding, and strive to ensure the voices of communities are meaningfully considered.

This will include working with stakeholders in continental Europe as our renewables pipeline expands across the EU, as well as contributing to the development of community investment principles in Northern Ireland.

Case study

STEM Fund at Dogger Bank

Dogger Bank Community Fund committed £1m during the construction of the wind farm. The ambitious aim of the fund was to provide inspiring STEM (science, technology, engineering, and maths) activities to schools across three local authority areas. An independent evaluation by Ekosgen confirmed the programme performed very strongly across several strands and commended that the project had developed a tailored approach to STEM learning based on local need. The evaluation highlighted that support has broadened young people's horizons and raised awareness of female role-models. The programme provides a legacy of increased STEM capacity in local schools.

Over its lifetime, the wind farm will provide £25m to support coastal communities. The £25m investment will be built on the £1m community fund already invested in the North and North-East of England during the construction phase of the world's largest offshore wind farm. Find out more in the independent Ekosgen **report here**.

£25m
Total coastal community fund over lifetime

£1m
Dedicated STEM fund

Case study

10 years of the regional Sustainable Development Fund

SSE Renewables established the Sustainable Development Fund to help share the benefits of our onshore wind farms with regional communities beyond those closest to its renewable assets. The fund operates in Highland, South Lanarkshire, Perth and Kinross, Scottish Borders, North Lincolnshire and Dumfries and Galloway. An independent panel of experts chaired by Lord Jack McConnell leads the review of funding and helps to allocate funding to where it is most needed. 2023 marked 10 years since the fund opened and the impact of the fund over the first decade has been captured. Regional investment helps enhance the local economy and provides lasting impacts on the key themes facing rural regions including enhancing skills provision, reducing de-population, and reducing fuel poverty. To ensure we could measure our impact, we commissioned New Economics Foundation Consulting to develop a Social Return on Investment[2] methodology which analysed the impact of seven projects funded by the fund. The study found that for every £1 of community funds spent, the community projects are expected to generate £10.95 in wider value for society. The projects were selected to represent the key themes of the funding and included a community hydro project, an apprenticeship programme, a skills programme, and a museum development.

238
community projects supported

£13.5m
total value over 10 years

55
rural homes built

2,024kW
of community-owned renewable energy capacity built

95
community assets enhanced

96%
of funded projects are still operating and creating a positive difference for their communities

119
local jobs supported

£10.95
in wider value created from every £1 of community benefit investment

Lord Jack McConnell, Former First Minister of Scotland and Chair, Sustainable Development Fund

"For a decade, the Sustainable Development Fund has acted to ensure that investment in low-carbon infrastructure has a positive impact on host regions. The Fund has helped communities overcome challenges, reducing extreme poverty, reversing depopulation, and delivering social support. The Fund has also enabled these rural areas to capitalise on their strengths, from enhancing biodiversity to increasing skills and celebrating local cultural heritage."

2 Social Return on Investment (SROI) is a method of accounting for value creation, primarily social or environmental value

Attract and grow talent

Growing our workforce to meet net zero

At SSE Renewables, we play a key role in creating green jobs for net zero. As of 31 March 2024, our headcount was at 2037, up from 1641 in March 2023. To ensure we continue to have the right skills at the right time, workforce planning - already a key feature across SSE - has seen increasing focus. Workforce planning requires a long-term, strategic approach in order to mitigate the risk of potential skills shortages. In 2023/24, SSE made positive progress towards its objective of having a Strategic Workforce Plan that informs budgets, resource planning, training, identification of critical skills and talent and succession.

At SSE Renewables, we have been focusing on developing our strategic workforce plan, which has involved identifying our three most critical skills shortages which require particular focus and investment. For example, ensuring we develop the skills required to maintain and operate our hydro facilities, particularly within plant control centres. We have also created a Renewables Operation Centre Learning Hub which provides a suite of learning resources in this field and is investigating options to create a simulation tool to train control engineers.

While we continue to make direct impact through creating direct green jobs over the next years to come, the scale of several key development projects are already making wider impacts on local economies. For example, Beatrice and Seagreen Offshore Wind Farms have already supported thousands of jobs in Scotland and the UK, both directly and within the wider supply chain (see page 27).

Nurturing our existing workforce

Ensuring our current employees have opportunities to develop their careers with us is a core focus. within SSE Renewables we have a dedicated SSE learning hub, leadership development programmes, and technical training to ensure continuous learning and development. In 2023/24 we invested approximately £1,100,000 in training and development across SSE Renewables which is an increase from £900,000 in 2022/23.[3] Over the period of 2022-2024, we supported over 22,000 hours of training, with 90% of SSE Renewables employees having received some form of development over the year. The average FTE employee at SSE Renewables had 40 hours of training.

In response to feedback from employees and managers on our performance management process, SSE created Performance Edge - an evolved approach to guiding and managing performance. Performance Edge is designed to equip employees to focus on the delivery of SSE and SSE Renewables strategic priorities through agile conversations and continuous learning, feedback, and coaching.

Following the successful roll out of Performance Edge from late 2023 to early 2024 across SSE Renewables, we will now focus on embedding behaviours and measuring the effectiveness of the new approach and the impact it has made on our business performance and culture. In addition, over 2023/24 we increased our focus on ensuring development meetings with managers, as well as encouraged personality and insights assessments to support with wider team-building.

Building an inclusive pipeline

Building our future workforce requires consistent investment in our pipeline programmes. These pipeline programmes include apprenticeships, technical skills trainee programmes and graduate programmes. Recognising the important role our suppliers play in delivering pipeline programmes, we endeavour to work closely with key partners to help support the delivery and uptake of programmes such as apprenticeships. For example, at Viking Wind Farm the project team worked with Vestas to support four young people local to Shetland into apprenticeships, working towards becoming a fully qualified wind turbine technician for Vestas. We also offer summer placements which cover disciplines including civil, mechanical engineering and environmental sciences.

To further drive these initiatives forward, SSE Renewables hired a new Early Careers Manager in 2023/24, situated in our HR Operations team. More information can be found in our SSE Renewables Early Career Brochure, **available here**.

Shaping the future workforce

Attracting more young people into STEM (Science, Technology, Engineering, Maths) careers is essential for net zero. To support applicants into our range of pipeline programmes, our active STEM volunteer community of over 150 employees across SSE Renewables are going into local schools to deliver a variety of content, from hosting career fairs to delivering lessons developing unique content for renewables, including lessons on wind turbines and supply chain sustainability. At SSE Renewables we are also playing a key role in supporting SSE plc's employability programmes, such as the Career Ready Initiative. More information can be found in the SSE plc Sustainability report at **www.sse.com/sustainability**.

In addition to investing in our direct workforce and employability programmes, we also recognise we have a role to play in contributing to the wider skills development of our sector. To this end, we contribute to sectoral-wide initiatives which help to shape future curricula and training on a national level. See our 'partnership in action' case study for further information on how our colleagues are engaging with sector skills councils.

Building our pipeline programmes at SSE Renewables

40 **Graduates:** Our two-year scheme involves areas including Engineering, Commercial, IT, Finance, and Land & Consents. In 2023/24, we had 40 engineering graduates across Renewables, increasing from 36 the previous year.

22 **Apprenticeships:** Our apprenticeships support our skills pipeline and include areas such as Electrical and Mechanical Engineering, Data Science, and Procurement. Across SSE Renewables, we had 22 apprentices in 2023/24.

13 **Trainee engineers:** An opportunity to support work-based learning whilst studying towards HNC or HND level qualifications. We supported 13 trainees in 2023/24.

15 **Summer placements:** We offer placements across all disciplines including civil, mechanical engineering and environmental sciences. We also offer Power Academy placements for Electrical Engineering students which are supported by the Institute of Engineering Technology.

Partnering in action

Working with trade associations to support national skills strategies

Ensuring a pipeline of net zero skills requires industry sharing labour market requirements with the training standard developers and academia. Skills bodies and trade associations play an important role to facilitate industry-government-academia dialogue. At SSE Renewables, our employees across all our technologies are actively contributing to this goal:

Graeme Vigrow, Offshore Business Partner, HR, sits on the Offshore Wind Industry Council's People and Skills Workstream:
"The People and Skills Workstream is made up of numerous developers and members of the supply chain. It presents an opportunity to come together as industry, in a form recognised by government, to influence the people and skills landscape and provide labour market relevant skills. It also presents an opportunity to learn from each other. We were actively engaged in shaping the 'People and Skills Plan 2024' which is the framework that will help deliver the workforce required to reach net zero targets."

Carolyn Wilson, Head of Onshore Consents, sits on the Onshore Wind Sector Deal skills working group:
"The Onshore Wind Sector Deal, as part of its wider remit to ensure collaboration between the Industry and Scottish Government to achieve the onshore wind targets for 2030, have commissioned a consultant to undertake a Skills Gap Analysis for onshore wind across the development, construction and operational phases and to produce a report to identify if any skills gaps exist, or if any skills capacity issues exist to 2030. Having been part of the Steering Group for the Skills Gap Analysis I have been able to feed into this analysis from the Industry's perspective to ensure this is an accurate baseline to help identify where and when such skills training needs to be focused."

Mike Trussler, Technical Training Standards & Future Skills Manager:
"The Solar Taskforce was set up by Solar UK in conjunction with the Department for Energy Security and Net Zero with the aim of creating a Solar Roadmap of actions required to meet the target of 70GW contribution from Solar by 2035, and this included a subgroup for skills. It has been important for SSE to have a voice in this forum particularly to highlight that there are different needs for large scale ground mount installations from those of roof top installers."

Engagement in action

Supporting students with green skills in the Highlands

SSE Renewables was proud to sponsor our first Green Careers Expo, which was held in the Scottish Highlands. With a declining population, retaining young talent in the Highlands is vital to its regional development, as well as our business and supply chain. Organised by Developing the Young Workforce Inverness and Central Highlands (DYWICH), in partnership with Skills Development Scotland, the Green Careers Expo at Alness Academy saw over 600 pupils from 14 secondary schools across the region attend to gain an insight into the green jobs available. Our community liaison team interacted with pupils and teachers, as well as other developers and supply chain partners at the event. We showcased our hydro, offshore and onshore wind assets with pupils who were able to view a tabletop hydro station and explore an onshore wind farm via virtual reality headsets.

3 Please note this data is based on 41% of headcount

Supporting the high-carbon worker transition

Achieving our net zero targets and the shift away from high-carbon industries will involve harnessing the transferability of existing skills sets and competences in the energy sector. Our SSE Just Transition principles put listening and learning from workers who have made the transition to a low-carbon role at the forefront, to help us understand how to leverage that transferability and importantly make transitions as easy as possible. In 2023/24, 40% of our workforce had made the transition into the business from a high-carbon role, with 16% of those workers having transitioned in the last two years. Across SSE as part of our renewed Just Transition Strategy, we will continue to monitor trends in the number of new recruits who have transitioned from high to low carbon roles as part of our new basket of key performance indicators.

Understanding high-carbon worker experiences

SSE's Great Place to Work survey captures how many employees from high carbon roles made the transition within the last two years and how many made the transition more than two years ago. Taking the 2023/24 findings, along with insights from six-month check-in and exit interviews, SSE Renewables undertook some analysis to understand which factors attract and support workers.

- **Desire to contribute towards net zero:** A resounding finding was that environmental purpose and sustainability is a clear attraction driver and strong rationale for joining SSE Renewables. Those who have made the transition from a high carbon role - particularly those who made the transition within the last two years - are some of the most committed and engaged in SSE's Net Zero Acceleration Programme (NZAP) and wider strategy, and understand how their role helps to implement our net zero targets. See graphic 'Commitment to the Net Zero Strategy'. This holds true across genders and is particularly the case for former high carbon workers in the 20-40 age bracket. This trend is widely observed outside of SSE Renewables, where in general this age bracket is more attracted to business purpose when selecting employment.

In 2023/24

40%
of SSE Renewabls direct workforce had come from a high carbon role

96%
Of workers who recently joined from a high-carbon role understand how they contribute to SSE's net zero strategy

- **Transferrable skill sets:** A further finding was that many former high-carbon workers found they are able to use their existing skill sets in their new career at SSE Renewables. For example, those who also made the transition within the last two years and over two years ago demonstrated significant levels of commitment and understanding of our safety culture. This corresponds to analysis undertaken two years ago by SSE which underpinned that safety skills and competences are highly transferable and valuable skillsets which high-carbon workers bring into the renewables sector.

- **Role of Flexible First:** Other attraction drivers into SSE Renewables for former high-carbon workers included our 'Flexible First' working policy. This was further underpinned in the onboarding and six-month interviews, where employees highlighted the important role Flexible First played in joining SSE Renewables. This trend is also mirrored for former high-carbon workers in the 50 plus age bracket, where Flexible First is the strongest attraction driver.

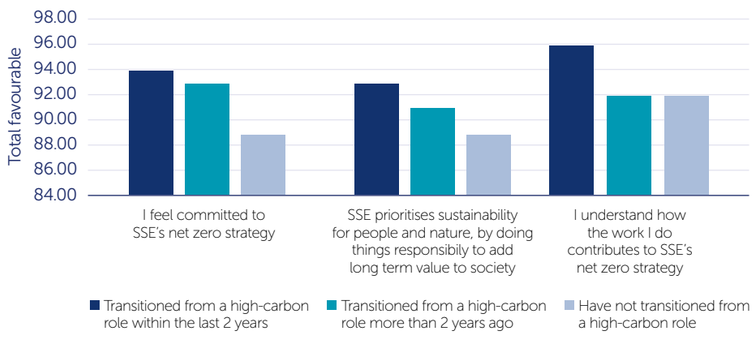
Sharing learnings to inform decision-making

We recognise this data is useful to inform wider Just Transition decision-making across geographies and are committed to sharing this with relevant bodies. Over 2023/24, the outcomes of our Great Place to Work deep-dive at SSE Renewables were shared in a learning session with Renewables UK and the UN Global Compact Local Network, UK.

In 2024, SSE Renewables collaborated with the University of Edinburgh and the United Nations Global Compact on a series of Workshops examining a Just Transition in offshore wind with stakeholders from renewables, unions, NGOs, and policy. SSE Renewables led two out of the four workshops focusing on the worker transition, specifically skills and workforce development, including transferability between oil & gas, as well as decent work.

The sessions featured SSE Renewables' Director of Offshore Wind Asset Management and our Offshore Wind HR Business Partner, alongside speakers from the United Nations, human rights institutes and global maritime and manufacturing unions. An outcome brief is expected in late 2024. Lastly, SSE Renewables has been contributing its experiences in the OECD Just Transition Advisory Group, a multi-stakeholder working group set up to support the OECD in developing a Just Transition framework to complement the implementation of its guidelines for Responsible Business Conduct.

Commitment to the Net Zero Strategy



Engagement in action

Just Transition in Action in the North Sea at Seagreen Offshore Wind Farm

The North-East of Scotland has been a significant home to the oil and gas industry over the last decades, playing a critical role in supporting the economy and providing meaningful employment. Renewables can play a role in supporting the transition away from high-carbon activities activities through providing jobs and economic contribution.

720
jobs during operations across the UK*

170
local jobs during operations*

80
full-time direct operational jobs

50%
of SSE Renewables operational full-time staff at Seagreen come from a former high-carbon role

Seagreen Offshore Wind farm is operated at Montrose port in North-Eastern Scotland It has been of strategic importance to Scotland as a major global hub for offshore moorings, supporting the North Sea energy sector for decades. Seagreen Offshore Wind is playing an important role in supporting the port transition away from oil and gas towards establishing itself as a vital future hub for offshore renewables. The 1,075 MW project has the capacity to generate enough renewable electricity to power 1.6 million homes annually.

The delivery of the project supported a 1bn plus economic boost to the Scottish economy during construction and supported around 3,200 Scottish jobs. Seagreen came into operations in October 2023, now supporting 720 jobs across the UK.* Approximately 80 direct employees work for Seagreen full-time, with seventeen of those employees being SSE Renewables staff. The majority of these employees come from Montrose.

"Prior to SSE, I worked for an integrated oil and gas company for 11 years. Joining SSE Renewables felt like an obvious choice – I wanted to transition and support the development of renewable energy projects and I wanted to work for a company that had tangible and exciting opportunities to do that. 18 months later I have responsibility for the safe and efficient operations of the largest offshore wind farm in Scotland - it doesn't get much more exciting than that!"

Natasha Leask, General Manager, Seagreen Offshore Wind Farm

Q&A with Grant Garden, Control Room Manager for Seagreen

What did you do in your former role, and why did you transition to renewables?
Prior to working at Seagreen I worked in the oil and gas industry for around 11 years, working on offshore rigs within the production room. This involved the safe and efficient running of the platform, maximising production whilst always operating the site as safety as possible; like what we do at Seagreen. I was looking for something new, and had been keeping up to speed with how the wind and renewables industries were booming. When I saw the job at Seagreen advertised, I jumped at the chance. It seemed like the role had a lot of similarities to what I had been doing offshore but with the excitement of a new industry with a real buzz around it.

What skills from your former role did you find most transferable?
Although the two industries are very different, the way that big sites and plants operate and are maintained share lots of similarities and processes, so the move to renewables wasn't totally alien. The roles I did previously meant that I was used to doing a safety role, safe system of work processes, controlling/prioritising works, coordinating teams and control room operations, which are similar here. There are still a lot of the finer details that are different in this industry, but that's been the good thing with moving over, the general way of operating follows the same premise but there's also loads of interesting new things to learn and get involved with.

What advice would you give?
I think the main thing is to not be scared to make a change and be out of your comfort zone. Having moved over to renewables I was surprised how many transferable skills there have been, and how people from other industries can share their experience and pass on knowledge from other ways of working, which has hopefully added some value. The main advice would be to go for it!

*direct, indirect and induced

Good green jobs

Guaranteeing fair and decent work

Fair remuneration is a cornerstone of responsible employment and must underpin the green jobs in renewables if we are to ensure a Just Transition. SSE Renewables strives to ensure local market aligned, competitive pay and benefits for employees across all countries. In addition to this, SSE is actively involved in the living wage movement. Having been a real Living Wage accredited employer in the UK since 2013, it has also paid the Living Wage in Ireland since 2016 and continues to chair the Living Wage Scotland's Leadership Group. In recognition that the amount of pay employees take home can be affected by irregular and unpredictable hours, SSE plc became one of the first companies in the UK to become a Living Hours accredited employer in 2021. Living Hours employers must provide guarantees around working hours, including a minimum 16-hour a week contract and greater notice of shift patterns. Over 2023/24, SSE plc along with the Living Wage Foundation began to engage with key suppliers to support the roll out of Living Hours throughout its supply chain. These specific interventions are set to continue over the coming months. In 2023/24, SSE plc also became Living Pensions accredited, marking the first company to receive all three accreditations.

At SSE Renewables, we are fully committed to implementing a Real Living Wage across our renewables business in the UK and Ireland. Ensuring our principle as a Living Wage employer remains as we venture into new markets such as continental Europe is also a priority for SSE Renewables, and in 2023/24 we took targeted action to integrate a Real Living Wage into our procurement process for Southern Europe. We recognise this will be challenging but are committed to the process.

Dilemma

Championing a Living Wage at sea

Offshore wind relies on a global supply chain and an international workforce. Offshore wind projects also often occur in between terrestrial waters/national Economic Exclusive Zones and the High Seas. This poses a challenge to implementing a Real Living Wage – as the Real Living Wage is calculated based on the country the work is conducted in. This is coupled with the fact that workers are often moving in and out of national and international waters without stepping foot in countries such as the United Kingdom.

Despite these complexities, we agreed that our principle of being a Real Living Wage employer should also apply at sea. In 2023/24, we concluded that all workers active in our UK operations and within UK terrestrial waters should be paid a UK Real Living Wage as defined on an annual basis basis by the Living Wage Foundation if they worked for at least 16 days within 8 consecutive weeks. Our Living Wage clause was updated to be included in offshore contracts. In 2024, our offshore wind farm Seagreen - a joint venture with TotalEnergies and PTTEP - was accredited as a Living Wage employer, joining Beatrice and Gabbard.

This involves working with suppliers to understand where they are on their Living Wage journey, and having the Living Wage conversation early with suppliers, to understand any additional costs that may be incurred from including this requirement. It also involved receiving approval from our Joint Venture boards, such as the case of Seagreen.

A decade of commitment to Living Wage

2013 — **Sept 2013:** SSE becomes the largest Living Wage accredited employer in the UK.

2014 — **Apr 2014:** SSE implements a Living Wage Clause into all new service and works contracts in the UK.

2015 — **Dec 2015:** SSE is the first large corporate business in Ireland to become a Living Wage employer.

Dec 2015: SSE becomes a Living Wage Friendly Funder in the UK.

2017 — **Apr 2017:** SSE extends its Living Wage Clause to cover more non-direct employees beyond the requirements.

2019 — **Mar 2019:** SSE links a living wage to its core 2030 business goals.

2021 — **Apr 2021:** SSE is one of first UK companies to become a Living Hours employer.

2023 — **Jul 2023:** SSE joins the Global Living Wage Steering Group in light of increasing international operations

Nov 2023: SSE is one of first 25 UK companies to become a Living Pensions employer

Nov 2023: SSE becomes one of the first companies in the UK to achieve accreditation in all three of the Living Wage Foundation schemes

Valuing employee voice

Actively listening to our employees supports an evidence-based approach to improving the employee experience. Every year, employees have the opportunity to share their views in an all-employee survey. This employee engagement is taken very seriously at SSE Renewables, with all relevant feedback and analysis shared and discussed regularly with the Renewables Executive Committee.

An in-depth survey takes place every two years and a shorter 'pulse' survey on alternate years. Through these surveys, SSE measures a number of key engagement indicators which combine to produce its Sustainable Engagement Score – a widely used metric - giving SSE a comparable and meaningful data point to track closely over time.

Engagement at SSE Renewables

In 2023, 95% of SSE Renewables colleagues provided feedback in the 2023 survey, which resulted in a Sustainable Engagement Score of 87% - up from 83%. Two questions in the survey focus on our net zero strategy. 90% of employees at SSE Renewables said they are committed to SSE's vision to be a leading energy company in a net zero world and 92% said they know how they can contribute to SSE's transition to net zero.

Key areas of focus are identified through the feedback received, and some of our key initiatives have been a direct result of the survey. For example, in 2023/24, both our Renewables Personal Development Academy and our Spotlight initiative – a platform on which colleagues can nominate colleagues for good work or simply to say thank you - stemmed from feedback received from our employees. Senior management are also encouraged to closely analyse the survey feedback, and then to work with our Human Resources team to create tailor-made action programmes.

Engagement in action

Listening to 800 colleagues to inform our organisational structure

The Review, Improve, Sustain & Evolve (RISE) Programme began in September 2023 and focused on engaging with as many of our SSE Renewables colleagues as possible to find out the answers to several questions, including how we can promote efficiency and innovation, and how can we ensure we focus on the right things. The RISE Discovery phase dedicated two months to listening to our employees at all levels in all technologies across Europe, taking time to understand their views on what works well, and where we still need to improve. This was achieved through engaging with over 800 colleagues via workshops, 1-2-1 interviews and a live digital feedback session. From this diverse and inclusive listening exercise the RISE programme has uncovered the key challenges that our teams face, and grouped them into meaningful focus areas for improvement. In this next phase, we are prioritising key improvement initiatives that will add the most value to our organisation - and more importantly to our employees.

2023/24 engagement score

87%

2022/23: 83%

2023/24 participation score

95%

2022/23: 78%

Engagement in action

Our SSE Renewables Great Place to Work Champions

In 2023, we selected the Great Place to Work Champion Group, consisting of 22 individuals who were interested in representing their peers and selected based on demographics. The group have had full access to our SSE Renewables employee survey results, and identified key areas for improvement. They have, in sub teams, explored a variety of proposals on how we have made SSE Renewables an even better place to work focusing on communication and wellbeing. Their recommendations were presented to the Renewables Executive Committee, and all have been signed off. We are currently working on a plan to implement these. The success of the first GPTW Champions in 2022 resulted in an increase in participation from 78% to 95%, as well as seeing improvements in 11 out of 12 categories.

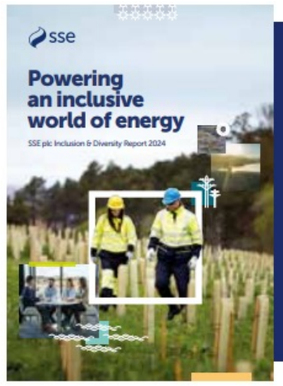
"At SSE Renewables we have empowered a diverse talented team of over 2000 people committed to help deliver our vision of becoming a Renewables major in a net zero world. Whether it's selecting growth opportunities, developing & constructing world class assets, safely operating those assets to optimise value or delivering a critical support service our people are proud, engaged, included and all play their part."

Gayle Hill,
HR Business Partner at SSE Renewables

Working with employee representatives

Everyone in SSE has the fundamental right to freedom of association and to join a trade union. SSE has four recognised trade union partners (Unite, Prospect, Unison and GMB) in the UK.. SSE plc has mature industrial relations underpinned by an effective network of employee representation forums, with the principal forum being the Joint Negotiation and Consultation Committee (JNCC), and various sub forums with delegated responsibility, including the Joint Business Committees in each business area, the Joint Health, Safety and Environment Committee, the Policy Review Group and the Pay Sub Group.

At SSE Renewables we work closely with our employee representatives from our four recognised Trade Unions on consultation and information matters. One such platform is the Joint Business Committee (JBC), which meets on a quarterly basis and is an opportunity for senior management, full time officers and employee representatives from across the business to discuss key business & safety updates, current or forthcoming projects, initiatives and other employer/employee engagement matters relevant to Renewables employees. In addition, at SSE Renewables we have a local business committee. The committee sits beneath the JBC and considers matters which arise across our technologies which are not discussed at the JBC.. More information on how we work with employee representatives is available in the **SSE plc sustainability report**.



SSE's 2024 Inclusion and Diversity Report 2024

SSE has published its third dedicated Inclusion and Diversity Report. The report provides comprehensive information on SSE's Inclusion and Diversity Strategy, progress made, key performance indicators (KPIs), and additional detail on all activity mentioned within this section. This report represents SSE's performance over the period 1 April 2023 to 31 March 2024 and can be found on **sse.com/sustainability**.

Boosting inclusion and diversity

The transition to net zero provides an opportunity to actively deliver a diverse mix of people from every kind of background working in the energy sector and support an inclusive working environment where they can thrive. SSE's Inclusion and Diversity Strategy, launched in 2021, which builds on a foundation of initiatives, addresses inclusion and diversity at all levels of the business, and aims to drive change at senior levels, including listening to diverse employee voices. At SSE Renewables, we have undertaken a number of activities over 2023/24 to drive inclusion across all levels of the business.

Measuring progress

As of April 2024, the median UK gender pay gap increased marginally at SSE Renewables UK[4] Ltd to 10.7%, up from 10.4% in 2022/23. The mean gender pay gap decreased to 12.6% from 13.2% in 2022/23. With respect to new hires, the median gender pay gap has reduced significantly from 10.3% to 5.6%. The median bonus gap increased to 5.8% in 2023/24 up from 2.25% in 2022/23, whereas the mean bonus gap reduced to 36.2% in 2023/24 compared to 42.9% in 2022/23. The variance in bonus is due to a small number of males with significantly higher bonus amounts impacting the mean but not the median. At SSE plc, the ethnicity median pay gap was reported for the first time in 2023/24 at 4.2%. For further information and breakdowns of data, please see the **SSE plc Inclusion and Diversity report.**

Increasing parity in leadership

Over the period of 2023/24, the percentage of women in leadership positions at SSE Renewables saw a 2.8% increase to 23.2% over 2023/24. While this upwards trajectory is encouraging, we still remain 16.8% under our target to have 40% of women in leadership positions by 2030. We recognise we still have a long way to go to ensure a gender-balanced workforce and remain committed to taking concerted action, and building on some of the measures we began implementing across 2023/24, further detailed in this section.

- **Increasing our Hiring for Difference targets:** We introduced our Hiring for Difference scheme to help drive a more inclusive recruitment process and establish five standard hiring behaviours (KPIs). For example, this includes ensuring a gender balanced interview panel for all middle management and upwards roles. Since its introduction, the proportion of women in the SSE Renewables' leadership group has increased from 9% in 2019/20 to 23.2% in 2023/24. This denotes an average increase in female representation of around 4% each year. In 2023/24, we set new hiring for difference targets for middle management pay grades, and have managed to increase gender diversity in senior management offers to 39% for 2023/24 (from 28% for 2022/23). We have also stretched our Hiring for Difference targets for senior management and expanded them to middle management.
- **Enhancing our diversity data:** We recognise that meaningfully addressing inclusion and diversity requires data, so that we can measure our progress, and identify areas for improvement. In 2023/24, we made concerted efforts to strengthen our oversight on diversity - focusing on LGBTQIA+, ethnicity and disability-related data. Through employee engagement, focused leadership messaging, and taking the time to explain the importance and value of enhancing diversity-related data collection, we have been able to increase the completion of our ethnicity data up from 43 percent to 78 percent, and our disability data up to 79 percent. We also were able to report on our LGBTQIA+ data for the first time due to the significant progress made on diversity data disclosure. This has been also largely driven by the unwavering commitment and work from our I&D Challenger group.
- **Continued employee-led leadership:** In 2023/24, our I&D Challenger group, a group made up of over 30 employees from across SSE Renewables, continued to champion inclusion across Renewables. In 2023, the group created a set of 'Inclusion Principles', joined team meetings across SSE Renewables to support discussions on inclusion, and harnessed the Personal Development Academy to further support education on inclusion.
- **Our Belonging Communities:** SSE actively listens to its employees on important inclusion and diversity-related issues through its eight 'Belonging in SSE' communities, ensuring that the inclusivity requirements of each group are understood, considered and integrated into its culture, policies, and process. Over 2023/24, all of the Belonging in SSE communities increased membership, with total membership increasing by 58% compared to the previous year. Across this period the groups have been working towards delivering action plans which are outlined in detail in SSE's Inclusion and Diversity Report 2024.

Q&A with Yang Chu, SSE Renewables Risk Manager, Member of I&D Challenger Group

Why is the I&D Challenger group important to you?

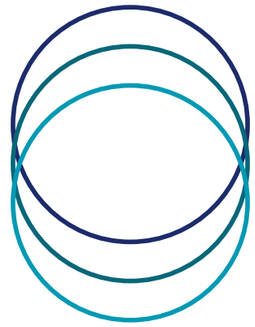
Our I&D Challenger Group in SSE Renewables represents a commitment to creating a more equitable and inclusive environment. By actively engaging with issues of diversity and inclusion, we can work towards dismantling systemic barriers and fostering a culture where everyone feels valued and empowered to contribute their unique perspectives and talents. It's about recognising the richness that diversity brings to our community and ensuring that everyone has equal opportunities to thrive.

What have been its key successes?

The Group's impact on I&D awareness is significant: We've notably raised awareness about inclusion and diversity within the business. Firstly, the Inclusion Principles have been developed and implemented, seamlessly integrating I&D into daily activities. Secondly, our Belonging Communities provide crucial support to underrepresented employees, offering a secure space for sharing common identities and fostering allyship. These spaces facilitate cross-cultural learning opportunities, fostering a sense of belonging and inclusivity within SSE Renewables.

What are your priorities moving forward?

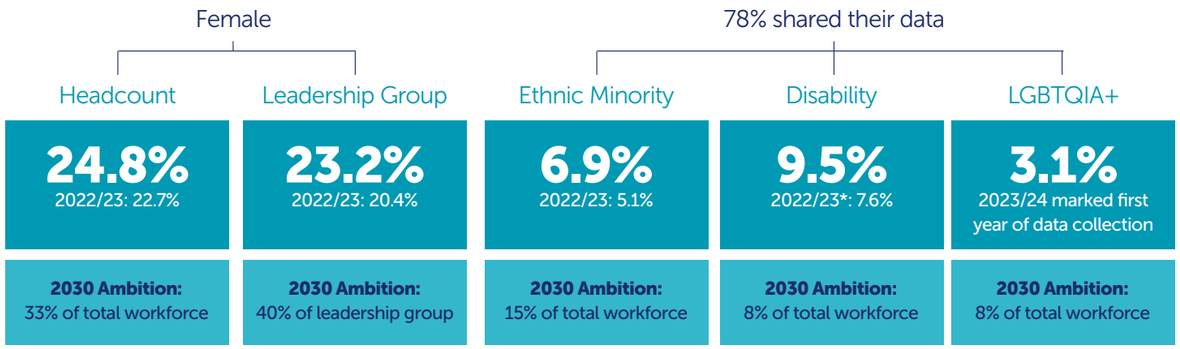
Continued education and awareness are crucial for driving our I&D agenda within SSE Renewables. Moving forward, the priorities center around advancing the cause of inclusion and diversity, fostering a more I&D environment, and ensuring that all members of the SSE Renewables community feel valued, respected, and empowered to succeed.



Willingness to Learn and Having an Open Mind

Consciously Including Others and Encouraging Diverse Thinking

Being Your Authentic Self at Work and Being Open to Challenges



4 SSE plc reports against its 10 individual legal entities in the UK. This applies to SSE Renewables UK Ltd, which has 1347 employees. This represents 66 percent of SSE Renewables total workforce of 2037.

* 2022/23 data is based on a 39% disclosure rate.

Respecting human rights

Embedding human rights

A fundamental respect for all human rights, including labour rights, must underpin a Just Transition to net zero. The renewables industry is associated with increasingly salient human rights risks - from labour exploitation during the construction of renewable assets on land and vessels, to the violation of communities and indigenous peoples' rights in upstream mineral supply chains. At SSE Renewables we recognise our responsibility to both understand and reduce human rights risks within our operations and supply chains.
In 2023, SSE plc issued its human rights strategy. Five pillars have been set to deliver against the vision, with key objectives outlined for each. For more information please see SSE plc's Human Rights and Modern Slavery Statement on **sse.com.**

Targeted action over 2023/24

Over 2023/24, we developed and began implementing our SSE Renewables Human Rights Action Plan (2024-2027). The plan lays out our objectives to operationalise the SSE plc Human Rights Strategy and is guided by internationally recognised human and labour rights standards, namely the UN Guiding Principles on Business and Human Rights (UNGPs), the OECD Guidelines for Responsible Business Conduct, and the ILO Fundamental Principles at Work. To ensure this, in 2023/24, SSE Renewables undertook a gap analysis with the OECD guidelines and the UNGPs.

Our human rights risk assessment

In 2023/24, we conducted our first deep dive strategic human rights risk assessment, working with independent human rights specialists, Slave Free Alliance and twentyfifty. This complemented several existing project-level risk assessments previously undertaken with Stronger Together.
The assessment was conducted in line with the UNGPs and considered a range of human rights and environmental risks across all the jurisdictions SSE Renewables is active in for its five renewable technologies.

Potential adverse impacts were considered across all stages of the supply chain, from the extraction of minerals and processing of metals to the construction and operation of assets. Impacts were scored based on saliency to the rights holder, considering severity and likelihood. SSE Renewables' relationship to the risk was also considered, notably its causation, contribution or direct linkage. The outcomes of the assessment, will be further outlined in the **SSE plc Human Rights Report and Modern Slavery Statement**.

Collaborating for human rights

Engaging in multi-stakeholder initiatives helps us to share best practice and identify areas for collective action and leverage to mitigate adverse human and environmental impacts. At SSE Renewables, we are members of several initiatives in which we work with peers on mutual human rights challenges. In 2023, we continued contributing towards the Solar Stewardship Initiative, and joined the International RBC Agreement for the Renewable Energy Sector - a Dutch initiative convening the energy industry, unions, NGOs and human rights organisations. Since joining we have been actively participating in the 'Working Group on Collective Actions and Increasing Leverage' and the 'Working Group on Due Diligence', in which we are exploring collaboration opportunities on traceability in renewable supply chains, as well as mine-level collective action. In 2023, we also joined forces with the Extractive Industry for Transparency initiative to launch a joint statement at COP28 on the importance of transparency in the renewables sector.

Engagement in action

Enhancing human rights due diligence in solar supply chains

Solar supply chains have increased potential human rights risks and are a key priority area for increased monitoring, due diligence, and mitigation measures. As SSE Renewables expands its large-scale solar portfolio it is increasing its focus on human rights along all stages of the supply chain.

Due diligence in this area focuses on: (1) embedding robust human rights due diligence throughout the procurement lifecycle, (2) transparency and traceability, and (3) engaging in multi-stakeholder initiatives. Measures over 2023/24 have included developing a set of iterative human rights 'no-go' criteria with third-party experts and strengthening the tender process through embedding enhanced ESG questions. Over 2023/24, we have worked with potential solar PV suppliers to increase visibility of possible silicon supply chains. Visibility was increased to tier seven of the supply chain, up to quartz mine level.

Specialist supply chain due diligence was conducted using a risk-based approach, focusing on polysilicon, metallurgical grade silicon and quartz. SSE Renewables aims to develop approved suppliers, based on due diligence outcomes, for use by supply chain partners on future projects SSE Renewables is also seeking to develop further our right to audit within contracts. More information is available in the SSE plc Human Rights report and Modern Slavery Statement.

> "Slave-Free Alliance is proud to partner with SSE Renewables, to support the business with progressing its human rights initiatives. This year, we undertook an extensive value chain risk assessment, collaborated on conducting due diligence on suppliers, mapping SSE activities and policies against identified risks, and reviewing and further developing SSE's escalation process. Slave-Free Alliance commends SSE for its industry-leading, innovative approach to human rights risk management."
>
> **Rachel Hartley,**
> Director, Slave-Free Alliance

A safe and secure workplace

Our safety culture

At SSE Renewables, our ultimate goal is to ensure that everyone gets home safe and that we take care of our environment in the process. Everyone at SSE operates to the license of 'if it's not safe, we don't do it'.
SSE Renewables measures its overall safety performance using the Recordable Injury Rate (TRIR) for employees and contractors. In 2023/24, the rate for employees and contractors was 0.27 per 100,000 hours worked, which is slightly higher than in 2022/2023. This performance is largely attributable to our contract partners. As we recognise we have a shared responsibility for safety, we have since placed special focus on engaging with our contract partners and ensuring we can support safety practices together. One of our key engagement areas with suppliers and contractors has been around mitigating the risk of hand injuries. After focusing on this with our contract partners, we saw a decrease to 2 injuries from 16 for the second half of the year.

Partnering for safety

At SSE Renewables we are founding members of both G+ and SafetyOn which look after Health & Safety across Offshore and Onshore wind respectively. SSE Renewables directly supports activities at both a board level and within the respective workstreams. There are clear outputs in terms of annual data reports, good practice guidelines, safe by design workshops and safety alerts in addition to direct engagement with the industry regulators all of which focus on ensuring the safe delivery of our development, construction and operational activities.

Immersive safety training

Building on an already strong safety culture, this year and as part of a refresh and re-energise programme for SHE, SSE has rolled-out a new Immersive Training programme. This will convene all SSE Renewables employees and contract partners for a day of immersive training.
The training is highly interactive and thought provoking, and equips attendees with the right mindset and skill set to ensure that everyone gets home safe.
The programme has been designed and will be delivered by the award-winning Active Training Team (ATT). The programme is based on psychological and neuroscientific learning principles, which ensures that learning is remembered better, for longer, and positively influences behaviour in the real world.

	2022/23	2023/24
Lost-time injury frequency rate - employees and contractors combined per 100,000 hours worked	0.056	0.055
Total recordable injury rate - employees and contractors combined per 100,000 hours worked	0.24	0.27
Total recordable injury rate - employees/contractors per 100,000 hours worked	0.11/0.29	0.06/0.38

Enhanced focus on wellbeing

At SSE Renewables, our focus on wellbeing looks at four key areas, mental, physical, financial and social wellbeing. In 2023/24, we also further strengthened our focus on wellbeing and built on a strong foundation of existing wellbeing benefits. This has been done in a range of ways over 2023/24, some of which include establishing Mental Heath First Aiders and Wellbeing Cafes, delivering financial education and promoting volunteering days. SSE's online Health Hub also provides employees with information around wellbeing resources available to them at SSE, and SSE has established a community of wellbeing champions to promote resources and communicate SSE's Group-led wellbeing initiatives.

Creating an ethical 'speak-up' culture

Our employees are guided by our Doing the Right Thing guide to good business ethics. The guide applies to direct employees and those employed by other organisations to work on SSE's behalf. Those who work for or on behalf of SSE are encouraged to speak up and are protected from any adverse impact of doing so. In addition to internal reporting channels, SSE has an independent whistleblowing channel, hosted by Safecall. For more information on our approach to Doing the Right Thing and on our Speak-Up and Whistleblowing procedures, please see **sse.com**.

> "Ensuring everyone gets home safe is a shared responsibility. Our collaborative, community-focused approach to safety with our peers, suppliers and contractors, is based on mutual learning, best practice exchange and continuous improvement."
>
> **David Griffiths**
> Head of Safety, Health and Wellbeing, SSE Renewables

Partnering in action

Working with offshore suppliers

In 2023/24, our Offshore Development and Construction team established a Tier 1 Contractor Forum to further support the safe delivering of our projects. This involves the senior management team of both contract parties gathering collaboratively twice a year in person. As part of this knowledge-sharing forum, best practice is shared across the supply chain driving each of the contract parties to engage as one on Safety, Health and Wellbeing. The sessions give the Offshore business unit an opportunity to engage the contractor senior management teams on new initiatives, provide updates on existing programmes and share lessons learned. On the back of the face-to-face sessions, the contractors are actively encouraged to engage their workforces on the ground by developing and implementing initiatives to improve safety and wellbeing.

Nature Positive

At SSE Renewables, we aim to tackle the climate and biodiversity crises simultaneously. While accelerating towards net zero by developing and operating renewable energy assets, we are aware of the responsibility on us as a responsible and sustainable developer to build and maintain our sites in harmony with nature.

Environmental Management

Environmental Management	FY 2022/23	FY 2023/24
Number of major incidents	0	0
Number of serious incidents	10	10
Number of minor incidents	19	41
Environmental prosecutions and civil penalties	0	0
Permit/Licence breach	3	7

The importance of environment for our performance

At the core of our approach to protecting the natural environment is ensuring that SSE Renewables continues to meet our legal and regulatory requirements, protecting the environment at all phases from development through to asset management (operations) and decommissioning. In 2023/24, we maintained the same number of 'Serious' environmental incidents as in FY23 (10), narrowly missing our target which is to have no more than nine serious incidents. While there was a significant increase in 'Minor' incidents (FY24: 41; FY23: 19), the majority of these relate to recurring minor coolant losses from offshore assets which we are working closely with the OEM to resolve.

Over 2023/24, we saw an increase in new contractors, as well as an increase of 45% in contractor hours across our onshore envrionmental portfolio compared to 2022/23. In addition, we had a strong focus on our new sites, new geographies - including wind farms going into construction in both Spain and France - as well as new technologies, including Solar and Batteries, with sites going into construction this year.

With increasing growth over 2023/24 we continued to focus on raising awarenes and training both to our internal stakeholders and contractors, to achieve industry best environmental practices, at all levels.

Ross Fenton
Director of Onshore Asset Management, SSE Renewables

"By thinking differently about how we do things, we can tackle both the climate crisis and the biodiversity crisis at the same time. Reversing biodiversity loss, and enhancing the natural environment where possible, is a core commitment across our business – both for new sites, and those already in operation – so that present and future generations can enjoy the amazing flora and fauna in the places we operate."

Our wholly owned onshore operational assets maintained their ISO14001 accreditation during 2023/24, ensuring that assurance and rigor is applied through our internal environmental management systems, driving consistency of standards across our fleet.

We finalised a spill response framework across all operational wind assets for all types of environmental spill responses across land, water and air, along with provision to carry out practical spill response training to our internal colleagues. This is an approach that will be built upon for our Hydro assets.

We recognise that scaling up our renewables pipeline comes with the additional responsibility of ensuring that our projects contribute towards halting the decline in biodiversity as well as restoring and enhancing ecosystems.

We understand, however, that in order to maximise the potential of our expertise and ensure our projects deliver the optimum value for nature, collaboration with external stakeholders will continue to be vital in order to continue to address evidence gaps, identify innovative research opportunities and to share learnings.

Biodiversity Net Gain

In 2022, we published our 10-point plan for Biodiversity Net Gain (BNG) within our 'Positive for the Planet' report. Alongside this report and plan, we published two BNG Toolkits. SSE Renewables remains committed to the SSE's Group-wide targets on biodiversity No Net Loss (NNL) from 2023 and Biodiversity Net Gain (BNG) from 2025 on newly consented onshore projects. Strategic value from our leadership in renewables on BNG is also continuing, from policy influence on the development of a Scottish BNG metric utilising our sector-leading BNG toolkits, to supporting consenting in jurisdictions where BNG has already become mandatory.

Our 10-point plan for Biodiversity Net Gain	Progress against our plan in 2023/24
1. Deliver Biodiversity No Net Loss on major onshore projects consented from 2023	• SSE Renewables gained consent on six new projects in 2023 Cloiche (125MW), Achany Extension (80MW), Sheskin South (126MW), Ferrybridge (150MW), Fiddlers Ferry (150MW) and the East Lothian onshore cable connection for Berwick Bank which have all been designed to achieve NNL. • We are also overdelivering on our targets for our previously consented sites since 2021. The following sites achieved No Net Loss in 2022: Bhlaraidh Ext (84 MW), Littleton (30MW), Salisbury (50MW / 100MWh), Monk Fryston (320MW), and in 2021: Strathy South (208MW), Bypass (solar). • All of these projects have been assessed using our publicly available BNG toolkit and will also meet our ambition of delivering Biodiversity Net Gain.**
2. Deliver Biodiversity Net Gain on major onshore projects consented from 2025*	• Since 2021, 12 sites will deliver NNL, 9 of these can achieve a minimum of 10% BNG. The exceptions are Bhlaraidh Extension, Sheskin, and Achany Extension where challenges remain but the commitment persist. • A cross-technology BNG Working Group for SSE Renewables was established this year, comprising of representatives from the Consents, Land, Legal and Sustainability teams. This Working Group provides a forum to prepare for some practical challenges of delivering BNG, share lessons learned and good practice, and ensure readiness for meeting our BNG targets and broader BNG ambitions.
3. Embed BNG ambitions in decision-making at each stage of all new project developments from 2023	• This action is one of the key deliverables of SSE Renewables' BNG Working Group (see above). • In addition, BNG has now been embedded within the Sustainability Assessment and Action Plan (SAAP) process which is a mandatory part of SSE's approach to developing large capital projects and governing them through project delivery (see pages 16-17).
4. Use our BNG Toolkit and collaborate with partners to identify biodiversity improvements on operational sites	• BNG Toolkit used to identify nature positive opportunities in hydro operational assets including the uplift from a 'no mow' policy in and around hydro power stations which will significantly improve the condition of grassland habitats for pollinating species. • Ongoing collaboration with industry partners and the wider business community to develop BNG in Ireland and trial the adapted SSE Renewables BNG toolkit for Irish habitat classification.
5. Evolve our BNG Toolkit and approach to enable use in all geographies	• Our BNG toolkit has been upgraded to ensure it can be used in Ireland as well as the UK. With SSE Renewables beginning construction on our first projects beyond our core markets of the UK and Ireland, we will now explore the adaptability of our toolkits in other jurisdictions. We are currently scoping European data classifications that may be used by the tool, in support of our projects in Southern Europe.

* This includes repowering and decommissioning projects.

** No net loss and biodiversity net gain are projections obtained from using the SSE Renewables BNG toolkit at the development stage of a project. Delivery of no-net loss and biodiversity net gain is subject to implementation of habitat management prescriptions. As a result, SSE Renewables can only validate the success or otherwise of any biodiversity mitigation or enhancement measures following a sufficient period of time applicable to the habitat type being restored or enhanced. Periodic reviews will be undertaken during the operational phase in order to ensure the implemented measures are sufficient.

6. Actively participate in industry forums to support the development of BNG across all renewable technologies	• We are continuing to engage in several key forums to advance BNG. These forums enable us both to engage in responsible policy advocacy around the credible and transparent uptake of BNG in legislative frameworks. We also use these forums to exchange on best practice with our peers, and use these forums to also showcase the work we have done as SSE Renewables in a UK and Ireland context.
7. Contribute to research projects and the creation of knowledge around BNG in the renewables sector	• We represent Scottish Renewables on the Scottish Government Peatland Expert Advisory Group to bring shared learnings and evidence forward to assist emerging guidance. • Contributing to research and knowledge remains a key focus of our BNG strategy and considerable effort has been made across 2023/24 to map out and further enhance our research projects and partners. A full overview of some of our key research partnerships is presented on the 'Addressing evidence gaps in marine science', pages 46 to 47.
8. Trial new approaches for Restoration and Enhancement on offshore projects, including digital innovation	• Our BNG toolkit was developed further over 2023/24 to include intertidal habitats, ensuring that we can achieve upcoming requirements for BNG associated with cable landfall works for our offshore projects. • Over 2023/24, we commenced the development our SSE Renewables Marine Biodiversity Roadmap for the restoration and enhancement of biodiversity in the marine environment. • Innovation and leveraging technology remain an important part of our approach to nature on our offshore wind farms. Working with digital innovation leaders Avanade, new results in 2024 for species monitoring using Artificial Intelligence (AI) at our Beatrice Offshore Wind Farm showed 95% accuracy for counting puffins. We have also developed our capability to monitor marine species through salmon counting at our Hydro assets, and are continuing to explore how AI can be further utilised across our sites. Please see our ' innovation in action' case studies on pages 48 to 49
9. Develop the concept of 'Habitat Banks' with a transparent methodology for applying BNG credits	• Habitat bank markets are largely immature and not developed in industry. Policy and guidance is evolving and these need to reflect a transparent process for habitat banks to develop. We will continue to monitor and contribute towards policy developments in this area with a view to identifying potential opportunities for SSE Renewables to utilise these banked biodiversity units in the future.
10. Lead the BNG working group of the Powering Net Zero Pact, a collaboration of global power sector companies	• SSE Renewables continues to chair the Pact's Biodiversity Working Group, consisting of 18 members and 12 companies. This year the focus has been on identifying common challenges and opportunities amongst the organisations involved. This has included sharing sessions with organisations detailing case studies and lessons learned as well as identifying ownership of the four agreed priorities as outlined previously. The group has commenced work on gathering case studies and best practice examples which are being collated on the PNZP extranet site. More information is available in the **PNZP report.**

Dilemma

Developing and implementing our approach to BNG: A Q&A with Mark Mulqueeney, Onshore Ecology Manager

What are the different legislation approaches to BNG in the different geographies?

Mandatory Biodiversity Net Gain (BNG) is now live in England (as of 12th February 2024). In Scotland, NatureScot have been commissioned to develop a Scottish BNG Metric, which is due for publication early 2025. In Wales there is currently no quantifiable approach to BNG, but rather Net Biodiversity Benefits that take a holistic approach to ensure an overall improvement in project biodiversity. In Northern Ireland, Ireland and other European countries, the debate regarding quantitative or qualitative assessment of biodiversity is live. Broadly, there is agreement that metrics are useful and have a role to play in the terrestrial environment.

What are the motivations behind developing a BNG toolkit and moving to a quantified approach to BNG assessment?

By ensuring that our renewable energy sites are sensitively designed and quantifying the impacts and mitigation prescriptions, we can confidently ascertain how much land we require for wind farm mitigation in the HMP. Ultimately the aim is to leave our sites in a better state for nature than we found them. Additionally, confirming the area (hectares) required for wind farm offsetting allows for easy delineation between what is required for the wind farm and remaining land that may be eligible for Agri-environment or green finance schemes such as carbon and biodiversity credits. Ultimately allowing for more flexibility in the existing/future land use and a mix of finance options on the land to provide multiple nature conservation benefits.

Where do we want to go with our BNG Approach?

Biodiversity is one ecosystem service, and our aim is to expand the assessment to a Natural Capital approach, to include a range of ecosystem services. We are actively working on approaches to natural capital in our solar, battery and hydro operations, with the aim of rolling it out fleet wide after rigorous testing. We are in the final validation stages of a carbon 'plug in' to the BNG Project Toolkit which assesses the change in biogenic carbon associated with our developments. By incorporating land carbon (sequestration and storage) we can make balanced decisions in designing our habitat management plans with biodiversity and carbon in mind, which allows us to incorporate climate resilient habitat prescriptions into our projects. The ultimate ambition is to be Nature Positive across our Renewables Fleet.

What do we need to see from policymakers?

The approach to quantitative assessment and bundling or stacking benefits on the same land is something that we would like to see explored further by policy makers, to allow multiple nature conservation benefits on the same piece of land regardless of a planning consent. At present, there is a missed opportunity for multiple benefits given the legal tests that apply in certain green finance markets, which means land leased for habitat improvements (secured via a planning consent) could sterilise that land for further funding (not provided by the developer). This lack of multiple funding opportunities ultimately dissuades landowners' and developers' intrinsic motivations to voluntarily go above and beyond what is required for consent. Ultimately reducing the potential for significant nature conservation and natural capital benefits.

Systems-thinking case study

Integrating land carbon considerations into biodiversity net gain

We are in the process of updating our toolkits and user guide to account for the GHG emissions arising from land use change associated with new developments. These updates will allow us to quantify the 'before and after' impacts of our developments on the carbon storage and sequestration potential of natural carbon sinks – like forestry and peatland – and adapt our habitat management plans (HMP's) accordingly. We have developed our approach to habitat-based carbon assessments with support from WSP, and the work has required a close collaborative approach between the ecology and carbon experts within our business.

We are currently trialling the updated toolkit across our portfolio to understand how best to utilise biogenic carbon information in site design and in the development of our habitat management plans. One example is the Bhlaraidh windfarm extension development project. This site is understood to be a current emission source due to the poor condition of the peatland. Some biogenic carbon losses are expected due to the proposed construction works, however the HMP (optimised to consider land carbon in addition to biodiversity) is anticipated to compensate for these losses within 50-60 years primarily through the restoration of blanket bog, creation of native pine woodland, and enhancement of montane scrub.

Furthermore, we have commenced peatland restoration work at our Strathy South Wind Farm in the Scottish Highlands. The Strathy South HMP is our most ambitious to date with targets for 1600ha of peatland restoration – a combination of forest to bog and open moorland restoration. We are carefully planning long-term monitoring strategies at each of the peatland restoration areas so that we can validate the literature and land carbon tool outputs with field data, to strengthen our approach to measuring BNG and Land Carbon stocks and sequestration at our development sites.

Working together for nature restoration

At SSE Renewables we believe that collaboration is essential if we are to address the biodiversity crisis and secure positive impacts from our projects. By partnering with research organisations, academia and nature conservation agencies, we can maximise the value for nature by ensuring our proposals are credible, robust and backed by experts. Partnership working also provides a valuable opportunity to share learnings, identify common goals and challenges and ultimately foster improved working relationships between industry and the scientific community.

> SSE is clearly at the forefront internationally when it comes to integrating nature protection measures in renewable projects and developing methods to measure biodiversity."
>
> "At Eurelectric we are committed to protect nature while decarbonising the economy. This year, we released PowerPlant 2 a guidebook to help developers electrify in harmony with nature. SSE provided a valuable contribution to this work based on their experiences in this field."
>
> **Kristian Ruby,**
> Secretary General,
> Eurelectric

SSE Renewables peatland restoration to date

Grand total open hill restoration:

1,114ha

Forestry restoration total:

1,486ha

Pipeline of peatland restoration in near-future (3-5 years):

1,000ha

Partnering in action

Restoring natural carbon sinks with EU partners

Across SSE Renewables we have been working for many years to restore peatlands, preventing carbon emissions from being released into the atmosphere and restoring them back to natural carbon sinks. To date, we have undertaken 1,114ha of open hill restoration. At Galway Wind Park a major Habitat Management Plan (HMP) is underway, part-funded by EU LIFE Multi Peat and run in collaboration with the University of Galway, Forum Chonamara and other European partners. The five-year work plan includes felling of conifers (predominantly Sitka spruce) and drain blocking to enable the restoration of native peatland habitat. Peatland is an extremely important habitat for a variety of wildlife as well as being a natural carbon sink.

A site was chosen to enable the creation of an ecological corridor between the Connemara Bog Complex Special Area of Conservation with Oughterard District Bog Natural Heritage Area (NHA) and Moycullen Bogs NHA. In addition, the HMP borders large areas of intact blanket bog, which are important for overwintering Greenland White Fronted Geese. This work is therefore helping to increase the overall area of peatland and buffer the existing designated sites, increase suitable habitat available to Greenland White Fronted Geese and increase hydrological and ecosystem connectivity at the landscape-scale.

The blanket bog/wet heath habitat restoration process will be undertaken by felling the trees, removing them, blocking any significant drains to restore the peatland hydrology and removing any naturally regenerated conifers in subsequent years. The baseline ecology and emissions which was established over the year 2023/24 will be resurveyed in two years and five years to quantify impact. Key data to enable accurate measurement of GHG emissions has been collected - for example, temperature, water table level, and carbon/methane emissions under light and dark conditions.

A flagship study of eagle monitoring enabled through onshore wind

Dunmaglass Onshore Wind Farm (50.1/49.9 joint venture between SSE Renewables and Greencoat UK Wind plc) and Stronelairg Onshore Wind Farm (50.1/49.9 joint venture between SSE Renewables and Greencoat UK Wind plc) sit within a Natural Heritage Zone (NHZ 10) in the Central Highlands, which is recognised as a critical area in the UK for Golden eagles. The Regional Eagle Conservation Management Plan (RECMP) was implemented to monitor the Golden eagles territory occupancy and productivity in NHZ 10 area on an annual basis. This also formed a crucial part of the project's consent. 2023 proved to be an exceptional season for Golden eagles in NHZ 10, with the highest numbers of successful pairs and the highest figures of chicks/occupied territory recorded (see table for yearly results).

The RECMP is part of the planning consent and Section 75 Agreement relating to Dunmaglass. The RECMP's unique funding and project management set up is being increasingly recognised by regulators, as a benchmark initiative which sets a high standard for what can be achieved through far-sighted conservation initiatives at wind farm developments.

Year	Occupied territories	Potential territories	% occupancy	Productivity
2015	19	27	70	0.78
2016	18	27	67	0.88
2017	22	29	76	0.89
2018	24	30	80	0.58
2019	25	31	81	0.68
2020	24	31	77	0.75
2021	26	31	84	0.96
2022	26	31	84	0.46
2023	25	31	81	1.12

Partnering with the Dutch Naturalis Biodiversity Centre to drive nature-inclusive offshore wind

In June 2024, the Dutch Government awarded a partnership (named 'Noordzeker') between SSE Renewables and Dutch pension fund ABP/APG (known for it focus on impact investments that result not only in healthy financial returns but most importantly have societal impact in areas like climate and biodiversity solutions) the rights to IJmuiden Ver Alpha, a predeveloped and fully consented 2 GW offshore wind site in the Dutch North Sea. The Dutch Government's competitive IJmuiden Ver Wind Farm Zone tender was largely based on a 'points-based' qualitative assessment. Bid submissions for the 2GW Alpha site were invited to put forward proposals focused on making a positive contribution to nature. The Noordzeker consortium proposed an innovative and diverse set of measures that will reduce and mitigate ecological impacts while increasing biodiversity. These measures will help raise the ecological bar for the development, construction and operation of offshore wind farms in the North Sea. This ecologically sensitive approach to positively contributing to the Dutch North Sea's environment is to help ensure offshore wind is developed in harmony with the surrounding ecosystem, while positively contributing to the Netherlands' decarbonization and security of supply.

Much is still unknown about how wind farms affect the North Sea ecosystem. To help tackle this challenge, in 2023/24, SSE Renewables and ABP partnered with Naturalis, which is the Netherlands' National Biodiversity Center. Naturalis' purpose is to research nature in order to preserve biodiversity. Naturalis will research and monitor how wind farms can contribute to biodiversity restoration and enhancement in the North Sea using newly developed techniques for species identification and detection, thereby focusing on total ecosystem process effects.

Addressing evidence gaps in marine science

Given the breadth of our portfolio, it is important that we recognise the complexity of the ecosystems that we interact with and their unique differences. For example, understanding of the marine environment and the interaction of species and habitats with offshore infrastructure is still in its infancy when compared to the terrestrial environment. Offshore Wind developers therefore have a key role to play in contributing towards identifying and addressing evidence gaps and leveraging technology to ensure that decision making is based on credible and transparent datasets. These make vital contributions to the international research and scientific community, and forums such as the United Nations Decade of Ocean Science.

Contributing to scientific knowledge of benthic ecosystems

In 2023/24, Greater Gabbard Offshore Wind Farm concluded a comprehensive multi-year benthic environmental monitoring programme. Spanning from pre-construction baselines in 2009 to post-construction surveys in 2013, 2017 and 2022, the programme utilised a variety of techniques including grab sampling and drop-down camera surveys to evaluate changes in benthic faunal communities and sediment conditions over time. In addition, ROV inspections were used to monitor colonisation of the turbine monopiles and associated seabed scour protection and rock armour.

This survey programme successfully assessed and validated predictions made in the 2005 Environmental Statement regarding potential impacts on benthic environmental receptors, finding no indications of adverse effects from the presence of the wind farm. There was also evidence of positive ecological changes, such as increased aggregations of Ross worm (Sabellaria spinulosa) at some of the seabed monitoring locations. Reports and data from the monitoring programme are being published on the Marine Data Exchange, to support the scientific knowledge base for benthic ecosystems at offshore wind farms and further enable accurate and data-driven assessments for future projects.

Using offshore wind sites for effective research

As offshore development partners for the Predators + Prey Around Renewable Energy Developments (PrePARED) and Physics-to-Ecosystem Level Assessment of Impacts of Offshore Wind Farms (PELAgIO) research projects, our role is critical in facilitating access to sites and ensuring seamless data sharing processes. PrePARED focuses on studying the distribution and behaviour of predators and prey around offshore wind farms in Scotland's Moray Firth and Firth of Forth/Tay regions. Our involvement includes providing access to offshore sites for data collection activities such as fish surveys, seabird GPS tracking, and passive acoustic monitoring for harbour porpoises.

The latest publication from the PrePARED project focussed on harbour porpoise and their interactions with offshore wind farms. Monitoring results showed no displacement from the sites assessed, which included Beatrice. There was also no evidence of reef effects, and positive predator-prey relationships were observed, reflecting the seasonal presence of sandeels in the water column. Similarly, in the PELAgIO project, we play a pivotal role in facilitating access to offshore wind farm sites for research purposes. This project aims to assess the impacts of offshore wind farm development on marine ecosystems, employing various tools such as autonomous platforms, ocean robots, research vessels, and satellite observations. By enabling access to offshore sites, we facilitate data collection and contribute to understanding the effects of wind energy infrastructure on ocean currents, nutrient density, and marine wildlife. Our partnership supports PELAgIO's goal of informing evidence-based marine policy and management, aiming to maintain Good Environmental Status and deliver net gain for the UK's marine environments.

A day in the life

Emily Nelson, Ornithology Policy and Strategy Manager

The key purpose of my job at SSE Renewables is to support our offshore wind development portfolio in relation to ornithology, through collaboration with colleagues across the business including the consent, development and sustainability teams. Potential impacts on ornithology represent a key challenge for consenting our offshore wind farms and my role is focused on tackling this through provision of strategic input and technical expertise, helping to achieve effective delivery of both renewable energy and our biodiversity objectives.

My role requires me to engage with both internal and external stakeholders to develop our strategy around ornithology, advocate for and influence policy development, represent SSE Renewables on fora to identify and develop research to fill critical evidence gaps, and engage internally to identify emerging development issues. As well as this I also provide technical support to deliver our projects through advice and review, ensuring that project deliverables are of high-quality and meet external standards.

A typical day might involve feeding into a SSE Renewables consultation response, joining a call with other industry fora representatives to get an update on strategic research projects underway, feeding this information back internally to relevant staff or through one of our working groups, and then reviewing a project report for a consent application produced by our external consultants.

Although specialised, it's a multi-faceted role, and I gain a lot of satisfaction working on aspects of strategic significance for SSE Renewables and wider renewables industry.

Research in action

Seabird responses to operational offshore wind farms

Fundamental to furthering our offshore wind growth ambitions and delivering on our NZAP plus commitments is speeding up the consenting process for offshore renewables projects. There are currently a number of uncertainties and knowledge gaps regarding the potential impacts (both positive and negative) of offshore wind, which lead to delays, uncertainty and additional costs when developing projects. We aim to leverage our existing, world-class, operational offshore asset base to identify where evidence gaps can be addressed in a scientifically credible and transparent manner.

As an example, bird data collected by aerial surveys at Beatrice Offshore Wind Farm Ltd (BOWL; a joint venture partnership between SSE Renewables (40% share), Red Rock Power Limited (25% share), TRIG (17.5% share) and equitix (17.5% share)) between 2019 and 2021 were used to investigate if seabird distributions had changed following construction of the wind farm.

The concern for species like guillemot, razorbill and puffin, which fly close to the sea and are therefore not at risk of collisions, is that they could be displaced from important foraging grounds. The study found no evidence that these species redistributed themselves away from the wind turbines, although there were indications that when the turbines were operating at their highest speeds (measured as rotations per minute) flying birds gave the turbines a slightly wider berth. This provides compelling evidence that the wind farm has had minimal effects on the behaviour and distributions of these species.

The study has also highlighted variations among species in their responses to wind farms. For example, while the numbers and distributions of guillemot, razorbill, puffin and kittiwake have been little affected by the presence of the wind farm, gannets have shown some reluctance to fly through it, and their numbers were lower within the wind farm once it became operational, compared with outside of the wind farm. Conducting studies such as this at operational wind farms offers an invaluable opportunity for improving the accuracy of assessment methodologies for future offshore wind projects. To further demonstrate our commitment to building the evidence base using sound scientific approaches and to disseminate the findings to a wide audience, the results of this study have been published in a peer-reviewed scientific publication **(Frontiers | A new method for quantifying redistribution of seabirds within operational offshore wind farms finds no evidence of within-wind farm displacement (frontiersin.org)).**

Whilst most other studies have been carried out in the southern North Sea, this pioneering study provides some of the first evidence on how seabirds respond to the presence of wind turbines at sea for eastern Scotland and helps to build a better understanding of how seabirds may respond to offshore wind development in this area.


frontiers | Frontiers in Marine Science

A new method for quantifying redistribution of seabirds within operational offshore wind farms finds no evidence of within-wind farm displacement

Addressing the climate and nature crises through effective management and technology

Ensuring we understand how our assets interact with the environment is crucial if we are to build out the renewable infrastructure we need to meet our ambitions and ultimately address the climate and nature crises, including mitigating and adapting to climate change, while helping to restore and enhance biodiversity. Technology gives us the opportunity to measure these interactions at greater scale and at a greater pace than traditional monitoring methods which often rely on humans. Leveraging this technology and implementing innovative solutions enables us to better understand how we design and operate our assets in order to protect nature.

Innovation in action

Spearheading innovation for endangered salmon

We were recognised at the Nature of Scotland awards for our industry-leading mitigation work on smolt trapping at the River Tirry using pioneering methods to improve survival rates. As part of our mitigations, we trap young salmon (called smolts) in spring during their seaward migration and transport them downstream, to allow safe passage past our hydro assets.

Our dedicated hydro environment team - which includes a full-time fisheries biologist - has implemented several innovative changes, including the use of a bespoke design of motorised smolt trap, a novel automatic night-time release cage which allows smolts time to safely recuperate following transportation and preserves the nocturnal migration of smolts, and rock-filled bags to direct river flow and smolts into the trap which greatly increase the trapping efficiency. The work was given recognition in 2023 at the Nature of Scotland awards, where we were shortlisted for the Innovation Award. Historically at this trapping site, the proportion of smolts captured leaving the river averaged less than 25%, however with these innovative and cutting-edge improvements that has increased to over 85% which has transformed the use of trapping from a sampling tool for monitoring smolt movements, to a highly efficient smolt trap which helps SSE Renewables deliver the required levels of mitigation in relation to the downstream smolt migration. Total capture increased to 4,000 smolts in 2022 and 4,200 in 2023, almost four-times higher than the 10-year average capture rate.
The 2022 and 2023 counts of returning adult salmon were 370 and 332 respectively, which are the two highest annual counts for several decades, and the increasing trend in returns is in the opposite direction to the wider national picture of declining abundance (Marine Directorate, 2024). A further increase in adult returns is expected in the next 2-3 years due to the increased smolt numbers being trapped and transported. Thousands of the smolts that are transported downstream also have Passive Integrated Transponder tags fitted. Receivers installed in the fish pass will record any fish returning as adults giving further data on survival and return rates, which provides more valuable data to help monitor the populations in this river catchment area. This data is shared with fisheries boards, conservation agencies, and other key stakeholders.

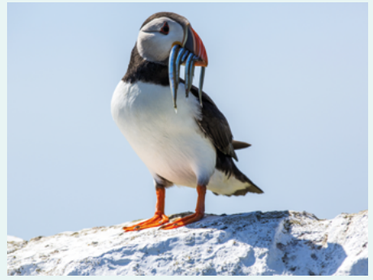
- Given the recent change in the IUCN classification of Atlantic salmon from a species of 'least concern' to 'endangered' in 2023, the Tirry smolt trapping work is vitally important to maintain a healthy and resilient population of salmon. A peer-reviewed paper: **"A novel automatic release cage increases survival of Atlantic salmon (Salmo salar) smolts released at night"** was submitted for publication by SSE Renewables' fisheries biologist to the Journal of Fish Biology, a leading international journal focused on the biology of aquatic ecosystems. The paper was accepted and published in August 2023.

95% accuracy of puffin monitoring using AI

There remain several uncertainties regarding how renewables developments adversely or positively impact the natural environment. In a few instances, this is owing to a lack of credible data to appropriately assess impacts and subsequently design the appropriate mitigation. To provide a data driven outcome, we partnered with Avanade to design and build a platform that can detect, identify, and count puffins and salmon in their natural environments. The project was designed in close collaboration with NatureScot from an early stage which was important to ensure credibility and appropriate scrutiny.

Throughout 2023 and 2024, the model has attained a remarkable 95% accuracy rate. Cameras have been strategically relocated to maximise data collection efficacy for the forthcoming breeding season in 2024. The project's outcomes have garnered commendable feedback from NatureScot, Marine Scotland, and research symposia. They have sparked constructive dialogues on the optimal utilisation of this long-term dataset to enhance conservation efforts and bridge evidence gaps concerning the impact of renewables projects on puffin colonies.

Complementing our longstanding commitment to fish population management, we have now deployed AI fish counting systems across 10 of our fish passes across our hydro fleet in Scotland, which are monitoring and recording the number of salmon migrating through rivers associated with our hydro generation assets and providing valuable data for fishery managers, regulators and other government bodies. This dual-focus approach reflects our holistic commitment to leveraging technology for environmental stewardship and biodiversity conservation.



Contributing to climate mitigation and adaptation through effective hydro management

In October 2023 we experienced some of the most extreme, widespread rainfall over our hydro catchments in the last thirty years. Yellow, Amber and Red weather warnings were issued ahead of Storm Babet, so we set up our Bronze Command procedures and took proactive measures to ensure we were prepared. This involved increasing our generation to take water out of our key storage reservoirs to allow us to hold water for later generation once the storm has passed, freeing space in our reservoirs to allow us to play a proactive part in attenuating floods and minimising the effects on properties and communities downstream and reviewing our critical Hydro Operations Centre and putting cover in place to ensure we have adequate people and resources to manage the event.

Through early, proactive action taken by moving and managing water ahead of an extreme weather event, we were able to continue to hold and store water at most of our main storage reservoirs. Our hydro schemes effectively reduced the impact of floods downstream and prevented nearby communities from experiencing inevitably worse flooding. As the effects of climate change continue to come into fruition, our hydro portfolio has a critical role to play in supporting the transition to net zero and we will continue to review our operations and adapt our response to the changing climate conditions.

Net Zero

As a renewables developer, owner and operator, the biggest contribution to the net zero transition that SSE Renewables makes is through the accelerated scale-up of renewable energy generation, providing the low carbon energy needed to power decarbonised economies and removing our reliance on fossil fuels. At the same time, we are taking action to decarbonise our own operations and supply chain.

Generating more renewable energy

Our operational portfolio comprises a diverse range of onshore wind, offshore wind, hydro, solar and battery assets. In 2023/24, our operational capacity increased to 4.5GW from 3.9GW in 2022/23, driven primarily by Seagreen Offshore Wind Farm, which is Scotland's largest wind farm at 1,075MW, moving into full operation in October 2023. This resulted in SSE Renewables generating 9,927GWh of renewable energy (including pumped storage and excluding constrained-off GB wind). This renewable output corresponds to over 2 million tonnes of carbon dioxide equivalent of avoided emissions, through the displacement of more carbon-intensive forms of generation in the grid mix. This is the equivalent of removing the annual travel emissions of nearly 1.5 million cars from the UK's roads.

As demand for electricity increases due to the electrification of sectors like transport and heating, we are also investing at scale to meet the needs of tomorrow. In addition to our increased capacity and output this year, major progress was made on many of our other projects over 2023/24, ensuring that we continue to progress towards our ambition of having around 9GW of renewable capacity by 2027:

- Construction of Dogger Bank Offshore Wind Farm (3.6GW) continued, with first power generated in October 2023;
- Viking Onshore Wind Farm (443MW), set to be the UK's most productive onshore wind farm, neared completion, with it moving to full operations in summer 2024;
- Lenalea Onshore Wind Farm (30MW) in Ireland became fully operational in December 2023;
- Yellow River Onshore Wind Farm (101MW) moved to the final stages of construction, with completion in summer 2024;
- Chaintrix Onshore Wind Farm (28MW) in France and Jubera Onshore Wind Farm (64MW) in Spain moved into construction, with commissioning targeted for the end of 2024 and 2025, respectively;
- In-principle planning permission was secured for the Berwick Bank Offshore Wind Farm (4.1GW) onshore grid connection;
- Salisbury (50MW), our first battery storage system, moved to full operation;
- Ferrybridge (150MW), Monk Fryston (320MW) and Fiddler's Ferry (150MW) battery storage systems moved into construction.

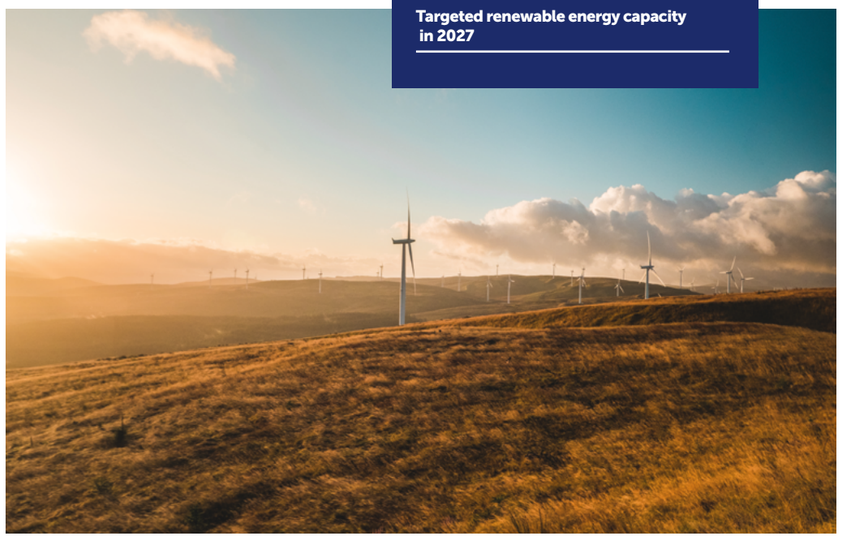
>2m tCO_2e
displaced by our operational output in 2023/24

~4 million
Estimated number of homes powered based on renewable generation output from 2023/24

+15%
increase in renewable energy capacity this year

+330GWh
increase in renewable energy generated this year

9GW
Targeted renewable energy capacity in 2027



Quantifying our carbon footprint

SSE Renewables Carbon Emissions	Unit	FY 2022/23	FY 2023/24
Scope 1 GHG emissions	tCO_2e	13,876	4,289
Scope 2 GHG emissions	tCO_2e	5,951	9,314
Scope 3 GHG emissions (Modelled)*	tCO_2e	1,766,384	1,304,512
Scope 1 and 2 GHG Intensity	gCO_2e per kWh	2.066	1.370
Scope 3 GHG Intensity*	tCO_2e per MW in construction	679	466

*These figures have been restated from publication of the SSE Renewables' Net Zero Transition Plan in 2023 due to improvements this year in our scope 3 emission modelling (see below).

We know the growth of renewable generation capacity will inevitably involve significant demand for resources such as steel, concrete, copper and aluminum, as well as large-scale transportation and reliance on marine vessels. Without new ways of doing things, the clean, green energy being produced by the renewables sector will be reliant on high-carbon activities and value chains. Concerted action is therefore needed to decouple the industry from carbon emissions, without slowing down the roll-out of renewables or increasing costs to unsustainable levels for consumers, especially those who can afford it least.

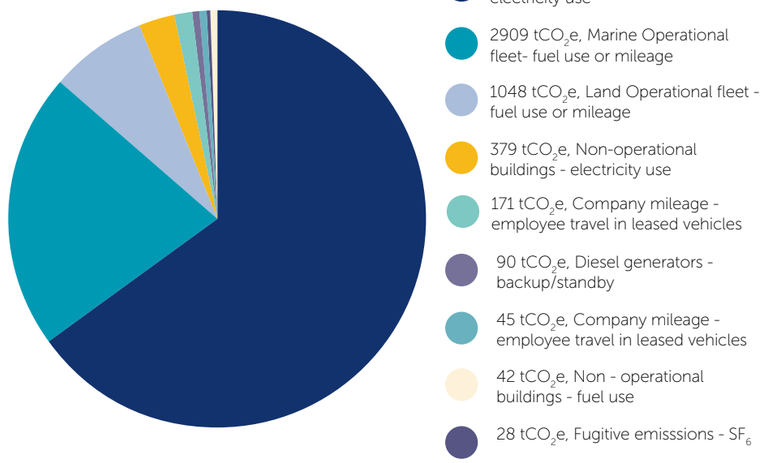
Measuring our scope 1 & 2 emissions

Our combined scope 1 and 2 greenhouse gas emissions for 2023/24 were 13,602 tonnes of CO_2 equivalent (tCO_2e), compared to 19,826 tCO_2e the previous year. The primary reason for this 31% reduction was due to changes in the contractual arrangement for the fueling of crew transfer vessels at one of our operational sites. With the vessels no longer being directly time chartered by SSE Renewables, the emissions associated with their use now fall under our scope 3 emissions in accordance with the accounting guidance in the GHG Protocol. We have also enhanced the energy consumption data coverage and quality across our operational sites which has resulted in scope 2 emissions becoming the largest portion (68%) of our direct emissions for 2023/24.

Modelling our scope 3 emissions

For scope 3 emissions, we have updated our spend-based methodology since publication of our Net Zero Transition Plan in December 2023. This includes more detailed allocation of spend, updated mappings to supply categories and updated Standard Industry Classification (SIC) emission factors. We have applied this methodology retrospectively to the previous financial year. Our total estimated scope 3 emissions for 2023/24 were 1,304,512 tCO_2e compared to 1,766,384 tCO_2e for 2022/23. In the short-term, scope 3 emissions are expected to rise and fall in line with varying levels of capital expenditure.

Scope 1 and 2 emissions



Scope 3 GHG Emissions Category	2022/23	2023/24
Company mileage - employee travel in leased vehicles	159	257
Purchased goods & services - operations & maintenance	1,117	13,940
Capital goods - projects	1,758,398	1,281,177
Business travel - rail, ferry, air, hotel	1,453	1,791
Well-to-tank emissions	4,764	6,588
Transmission & distribution losses	493	760
Total Scope 3	**1,766,384**	**1,304,512**

Decoupling growth from carbon emissions: our Net Zero Transition Plan

To be a real leader in the clean energy transition, we have to fully 'walk the walk' – developing and operating renewable energy infrastructure in a way that is truly sustainable for people and planet. In December 2023, we published our Net Zero Transition Plan at COP28. This plan outlines the key carbon reduction targets and headline actions that we will undertake to reduce our business carbon footprint in alignment with climate science. For more information and further case studies on how we're tackling our carbon footprint please see our Net Zero Transition Plan.

Targets

2030 – SHORTER-TERM TARGETS (TO 2030)

- Reduce the carbon intensity of scope 1 and 2 emissions by 66% by 2030 (tCO_2e/MWh) (S1, S2)
- 90% of suppliers by spend to set a science-based carbon reduction target by 2030 (S3)

2035 – MEDIUM-TERM TARGETS (2030 - 2035)

- Net zero for scope 1 and 2 emissions by 2035 (S1, S2)
- Reduce the carbon intensity of scope 3 emissions by 66% by 2035 (tCO_2e/MW in construction) (S3)

2050 – LONG-TERM TARGET (2035 - 2050)

- Net zero for remaining scope 3 emissions by 2050 (S3)

S1 Scope 1
S2 Scope 2
S3 Scope 3

Actions

SCOPES 1 AND 2

1. Transition crew transfer vessels to low-carbon fuels
2. Reduce leakage and reliance on sulphur hexafluoride (SF_6) in switchgear
3. Switch operations vehicle fleet to ultra-low-emissions vehicles and roll out EV charging infrastructure
4. Replace back-up site diesel generators with low-carbon alternatives
5. Reduce operational site electricity consumption and ensure remainder is backed by renewable tariffs

SCOPE 3

6. Implement sustainable design practices across all capital projects
7. Lead industry change through strategic collaboration
8. Source low-carbon construction materials and plant for capital projects
9. Adopt circular economy practices across the lifecycle of our assets
10. Contract high-efficiency vessels for offshore capital project delivery and support the transition to low-carbon marine fuels

BIOGENIC EMISSIONS AND GHG REMOVALS	Deliver restoration and enhancement of natural carbon sinks in accordance with best practice standards as part of commitments to Biodiversity Net Gain
CLIMATE ADAPTATION AND RESILIENCE	Implement digital tools to enhance climate resilience for existing and new sites
JUST TRANSITION	Deliver a Just Transition Plan outlining how SSE Renewables will embed SSE's 20 Principles throughout our net zero transition activities

Engagement in action

Launching our Net Zero Transition Plan at COP28

We recognise that we need to consult and engage with our key stakeholders on our net zero transition journey and actions. This is a fundamental part of our Just Transition approach, and also is critical to ensure a collaborative approach across the supply chain to achieve net zero targets.

Our Net Zero Transition Plan was launched at COP28 at a closed-door multi-stakeholder roundtable event, where we invited trade unions, nature and human rights NGOs, our key steel and maritime suppliers, policy-makers and the global finance community, and provided our stakeholders with an opportunity to ask questions on our actions, and provide feedback.

While inviting our suppliers who are critical to delivering our scope 3 reduction targets provided us with critical insight into how to achieve our transition plan through ecosystem collaboration, the interventions provided by nature and human rights organisations helped us to understand relevant considerations to ensure our net zero transition plan does not cause harm to people and nature.

Dilemma

How to reduce scope 3 emissions when the infrastructure for green steel and shipping fuels is "out of our control"?

Renewable energy is still the lowest carbon energy source from a whole-life perspective, but there remains a challenge - how to decarbonise the construction of renewable energy assets to further reduce emissions as part of our wider societal transition to net zero. Materials and fuels used in construction activities comprise the largest emissions sources for a renewable development and the majority of our scope 3 supply chain emissions as SSE Renewables. For offshore wind, steel and marine shipping fuels comprise the bulk of these emissions, and therefore tackling these 'hard-to-abate' sectors is a priority for how we engage with our supply chain on reducing emissions.

Decarbonising these sectors requires large-scale investment in new infrastructure which, in turn, requires the right policy environment for large-scale industrial change and the scaling up of supply chains to meet demand. This is not a challenge that we can address in isolation. It requires cross-sector collaboration across the industry, with governments and with the communities impacted by the scale of industrial transformation required to ensure an approach which does not disproportionately impact the cost of electricity for consumers.

We are playing a key role in addressing this dilemma through our engagement with supply chain partners and through strong policy advocacy. This has included collaboration through forums such as the Powering Net Zero Pact and the Sustainability Joint Industry Programme to set industry standards and build capability within supply chains to better assess the carbon impacts of different materials or design options. This has in turn informed our approach to advocating for the policy mechanisms required to incentivise the uptake of low carbon solutions – like green steel or marine e-fuels – in renewable energy developments. Throughout 2023/24 we have engaged with government bodies on the need for sustainability non-price criteria in renewable energy auctions – such as the UK's Sustainable Industry Rewards scheme in CfD auctions and the recent EU guidance on non-price criteria.

2023/24 progress against our Net Zero Transition Plan

	Actions	2023/24 Progress
Scope 1 and 2	1. Transition crew transfer vessels (CTVs) to low-carbon fuels	To address emissions from CTVs we set-up and delivered the GreenTransit project in 2023, in partnership with the European Marine Energy Centre, Wick Harbor Authority and Simpson Oils and supported by a grant from the Department for Transport's Clean Maritime Demonstration Competition. The GreenTransit project completed a feasibility study to identify the vessels and onshore infrastructure that would be needed to operate a low emissions CTV from Wick harbour to serve the Beatrice Offshore Wind Farm. Key market barriers were identified, including the limited supply of low carbon hydrogen and significant capital investment needed in new build vessels or conversion of conventional vessels. However, the project did yield useful insights that will support future demonstration trials to prove vessel capabilities and help to derisk commercial rollout. In addition, as a near-term measure, we have engaged with suppliers of conventional CTVs on opportunities to implement fuel-saving operational efficiencies and help to reduce idling. We are also investigating the potential for upgrades to our O&M base and quayside power supplies at Greater Gabbard to support future hybrid or all-electric CTV operations at this site.
	2. Reduce leakage and reliance on sulphur hexafluoride (SF_6) in switchgear	Where SF_6 alternatives are currently available, we have requested suppliers provide these in tenders for our projects. We have engaged with switchgear suppliers on the commercial and technical viability of alternatives to SF_6 and the timeline for their availability. There is currently limited availability of non-SF_6 switchgear models for the applications used by renewable generation projects but this is expected to change in coming years with manufacturers outlining roadmaps to help the industry meet the updated EU F-Gas Regulations.
	3. Switch operations vehicle fleet to ultralow-emissions vehicles and roll out EV charging infrastructure	As part of the wider SSE Group, SSE Renewables is committed to the EV100 pledge to move to an electric vehicle fleet by 2030. EV coverage across our vehicle fleet is currently 55.25% (76.09% of cars and 1.50% of larger vehicles committed under EV100) and we are continuing to take action to address barriers to uptake. During 2023/24, we have undertaken trials of an electric 4x4 vehicle at Clyde Onshore Wind Farm to better understand the operational capabilities and requirements for electrifying this portion of our fleet. In addition, the roll-out of EV charging infrastructure at our operational sites is underway, with the awarding of a delivery contract, the completion of 7 out of 10 site surveys and a pilot charger installation due to commence at the first two sites in summer 2024.
	4. Replace back-up site diesel generators with low-carbon alternatives	We are currently investigating the potential for hydrogen fuel cells and other low-carbon alternatives to replace site diesel generators with the aim of delivering a trial at one of our operational sites, subject to availability and operational considerations.
	5. Reduce operational site electricity consumption and ensure remainder is backed by renewable tariffs	We have improved the quality and coverage of electricity consumption data across our operational sites in the UK and Ireland. This has helped us to better understand the electricity consumption breakdown between operational assets, like turbines, and buildings, like operations and maintenance bases. This is helping to inform the development of requirements for energy saving measures on current and future operational sites.
Scope 3	6. Implement sustainable design practices across all capital projects	We have embedded sustainable design into our Large Capital Projects (LCP) framework through an enhanced Sustainability Assessment and Action Plan (SAAP) process. The SAAP process provides guidance and multi-disciplinary workshops to project teams on how to address the sustainability risks and opportunities for our projects. This includes guidance on how to reduce carbon across the whole life cycle of the project and forms a key element in our approach to aligning our project management processes with the PAS 2080 – Carbon Management in Buildings and Infrastructure – standard (see page 16 to 17 for more details on our approach to developing sustainable infrastructure).
	7. Lead industry change through strategic collaboration	The net zero transition cannot be achieved in isolation. Collaboration is key and we have joined or initiated a broad network of partnerships to find ways to accelerate the net zero transition. This includes the Powering Net Zero Pact (see page 14), the Carbon Trust's Sustainability Joint Industry Programme (see page 54), the Emissions Reduction (EMRED) Joint Industry Programme (see page 55) and SusWIND (see page 57).
	8. Source low-carbon construction materials and plant for capital projects	We are currently undertaking a feasibility study on low carbon concrete for our onshore wind turbine foundations. The study aims to explore various lower carbon concrete technologies and assess their feasibility for use in our projects. We have joined the Low Carbon Concrete Partnership to collaborate with other infrastructure providers on the development of 'next generation' low carbon concrete technologies which are not yet commercially available. We are also investigating a range of other low carbon material technologies including green steel, basalt fibre reinforcement and structural timber with the aim of identifying and addressing technical and commercial barriers to their adoption.
	9. Adopt circular economy practices across the lifecycle of our assets	Adopting a circular approach to the life cycle of our assets is a central element of how we reduce our business carbon footprint. To build the industry needed to support a truly circular economy we have taken a leading role in partnerships like the Coalition for Wind Industry Circularity (CWIC) and worked closely with our supply chain partners to reduce embodied carbon by refurbishing instead of replacing assets where commercially and technically viable (see pages 56 to 60 for more details on our approach to Circularity).
	10. Contract high-efficiency vessels for offshore capital project delivery and support the transition to low-carbon marine fuels	We joined the EMRED Joint Industry Partnership – led by DNV and with collaboration from offshore wind developers and vessel suppliers – to develop standardised carbon intensity metrics for construction vessels used in offshore wind developments. This will help us to identify near-term opportunities for fuel savings when chartering the large construction and installation vessels used on projects. To support the longer-term decarbonisation of the marine fuel supply chain we have also been engaging with key maritime suppliers and industry bodies on their decarbonisation plans. This will help inform our developing position on low carbon marine fuels that will be supported on future projects.
Cross-cutting actions	Biogenic Emissions & Carbon Removals	Our approach to reducing biogenic emissions from land use is integrated with our Nature Positive approach to habitat management (see pages 40 to 49 for more details on our approach to Nature Positive). The Viking Energy Wind Farm in Shetland is an example of this joined-up approach in action. Much of the wind farm is located on heavily eroding peat and the project has committed to restore approximately 260 hectares of peatland, bringing benefits for both biodiversity and climate by turning it from a carbon source back into its natural state as a carbon sink (see pages 44 to 45 for more information on the Viking Wind Farm's approach to peatland restoration). We are also implementing our new Land Carbon Calculator as part of our sector-leading Biodiversity Net Gain Toolkit (see pages 41 to 43 for more details), supporting our ability to assess and restore natural carbon sinks through our approach to habitat management on our sites.
	Climate Adaptation & Resilience	During 2023/24 our hydropower assets have continued to provide climate resilience to the Scottish river environment, mitigating high rainfall through storage and enabling rivers to run through periods of water scarcity. We are further enhancing our ability to adapt to the impacts of climate change by integrating data from climate models into our approaches to production planning and project risk management.
	Just Transition	Delivering the transition to net zero cannot come at the expense of workers, human rights, communities, consumers, and suppliers. We are therefore committed to a fair and just transition as embodied in SSE's 20 Principles (see pages 24 to 25 for more information).

Partnering in action

Collaborating on a scope 3 methodology for offshore wind

The decisions that we make during the design and development stages of our renewable energy projects will determine the intensity of GHG emissions associated with their construction, operations, and decommissioning.

To identify the most impactful actions for offshore wind, we became a founding partner of the Carbon Trust's Offshore Wind Sustainability Joint Industry Programme (SusJIP). The SusJIP kicked off in January 2023 and brings together global offshore wind developers to jointly establish a shared methodology and guidance on how to measure and address carbon emissions associated with offshore wind farms across their lifecycle. This project is developing the first standardised approach to calculate lifecycle emissions of an offshore wind farm. This will not only identify the key carbon emissions drivers and hotspots for offshore wind but will also improve data quality, availability, and transparency across, and for, the wider supply chain.

We have commenced trialing the SusJIP approach on our developments with the aim of understanding how best to implement this within our design processes, to drive more sustainable design choices, and to provide feedback which will support the ongoing development of the methodology.

Circularity

Circularity must be an underpinning principle of sustainability in the renewables industry, with material and resource management linked to whole-life carbon, nature positivity and social value. As such, moving to an approach of circularity-by-default over time is critical to the sustainability of our infrastructure and our supply chains.

Prioritisation through the R-Ladder

With a preference to operate higher on the 'R-Ladder', we are working to integrate circularity principles into the sustainable design of our assets. This ensures opportunities for efficiency in material and resource use and appropriate life extension are grasped, while collaboration with our upstream and downstream supply chains helps us explore and support the development of alternative material management pathways. In 2023/24, we committed to building an evidence base via the investigation of options higher in the R-Ladder and the collection of multidisciplinary data related to those options. This, and the fostering of cross-sector collaborations, demonstrates our commitment towards enabling further integration of a 'circular-by-default' model into our business over time through evidence-led decision-making and partnering.

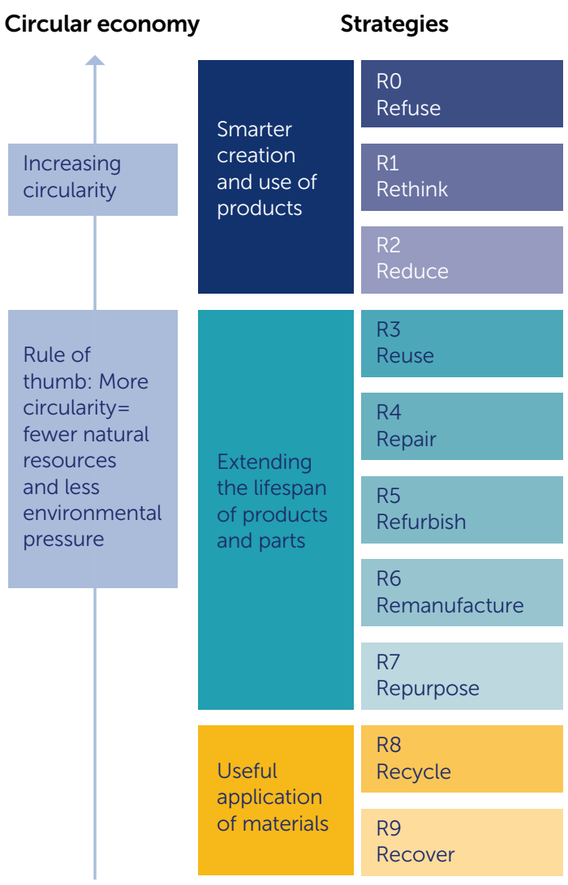
Building circularity into design

A first step towards embedding a circular approach is to reduce material use by rethinking the design of our assets. As such, we are at the early stages of placing an ongoing focus on 'circular-by-design' principles for our assets by: (1) when we don't have direct control over design, such as for wind turbines, solar panels and batteries, becoming better informed customers for specifications during procurement processes, and (2) rethinking the design of systems under our control, such as onshore foundations, to embed circularity.

This year, to obtain clarity on the material use and the resources needed to meet our NZAP Plus growth targets and to ensure proactive supply chain engagement, an offshore and onshore wind materials assessment was undertaken.
For Battery Energy Storage Systems (BESS), we are proactively investigating design choices to understand which elements of traditional BESS design will impact the market's ability to carry out sustainable end-of-life processes and identify any early design choices that would simplify and encourage sustainable end-of-life management activities. In addition, in 2023/24 we obtained further specific understanding on optimising the design of onshore wind foundations to reduce the embodied carbon of materials.

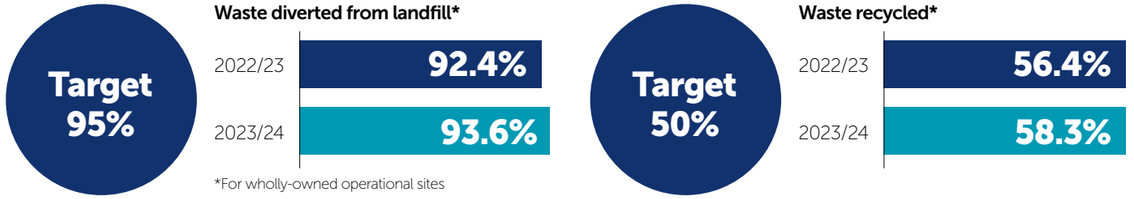
To date, there has been a lack of available data and information surrounding output material from our contractors during the development and construction of our large capital projects. To address this, in 2023/24 we began including contractual requirements for contractors to use our Supply Chain Data Capture Tool (see page 12) to retrieve improved data on consumption of resources for both major and minor works on all new large capital projects. This data will be used to improve material management and supply chain decisions in future early development of projects.

The R-Ladder



Targeting operational site waste

Each year, SSE plc sets waste targets which apply across the business. The target for 2023/24 for wholly-owned assets was to divert 95% of site waste by tonnage from landfill and to ensure at least 50% of site waste by tonnage was recycled.



Over 2023/24, a total of 319 tonnes of waste from SSE Renewables' wholly-owned operational sites was generated. Of this, 93.7% was diverted from landfill and 58.3% was recycled (2022/2023: 324 tonnes of waste generated, of which 92.4% was diverted from landfill and 56.4% was recycled). This means that, while we came in slightly below our target for the year on avoiding waste to landfill, we were significantly ahead of our recycling target for the year. Two years ago, our rates of waste diverted from landfill and waste recycled were 79% and 40% respectively, showing a significant progressive improvement.

Performance improvements have been achieved by ensuring that our key waste contractors have strong contractual requirements to deliver diversion strategies. Over 2023/24, we also began targeting performance improvements at our 10 operational onshore wind sites with the lowest performance on waste management, including conducting a number of controlled tips to understand the percentage of waste which could have been recycled. We will continue to drive down non-recyclable waste at source and build on waste separation facilities and behaviours, both at existing sites and into any new technologies and geographies we enter. Additionally, communication campaigns are planned for 2024/25, following colleague feedback on the use of single-use plastics and waste packaging.

Operational blade output material

SSE Renewables currently has full or part ownership of 55 operational offshore and onshore wind farms, with just under 1,500 turbines and therefore around 4,500 blades in operation. Our preference is towards preservation of asset value through life-extension or resale where viable, shifting to material value-preservation at a blades' end of useful life. While we have no 'at scale' wind turbine decommissioning planned for more than a decade, we are committed through our membership of Wind Europe not to landfill blades from 2025. Since SSE began operating wind farms, we have sent a total of 16 blades to landfill (9 from 0.9MW turbines, 3 from 1.5MW turbines, 4 from 2.3MW turbines), with no turbine blades sent to landfill since 2018.
In the absence of commercially viable blade material management pathways currently available in the wind industry to support 'at scale' decommissioning of turbine blades, we are proactively investigating alternative pathways to landfilling with partners who either face the same challenge, or who have expertise we can utilise from other sectors. In 2023/24, our approach included utilising the small amounts of blade material we have available to comprehensively assess different pathways and capture the multidisciplinary data set required to make evidence-led decisions that will inform and enable sustainable 'at scale' decommissioning strategies in the future.

Smart and proactive asset management

Our asset management strategy is to maximise the efficiency and reliability, and therefore the sustainability, of our assets throughout their operational

Partnering in action

The SusWind blade recycling initiative

As part of our efforts to collaborate with industry to establish commercially viable solutions for blade recycling, we were a founding partner and continue to be an active member of SusWIND. SusWIND is a UK industry-academia initiative led by the National Composite Centre which brings together stakeholders in the composites industry and energy sector, aiming to accelerate the development of technology, processes and materials that address the recyclability challenge for wind turbine blades already in use and to deliver the next generation of recyclable blades. SusWIND's research includes establishing a decommissioning profile of all UK blades to forecast composite material streams as well as undertake lifecycle analysis of various material management pathways. The SusWIND 2023 annual report which was published in 2023/24 highlights insights which help to signpost a route to industrial circularity:

- The identification of mechanical recycling as the most viable route for glass fibre turbine blades
- The provision of evidence towards the necessity of separate routes for carbon and glass fibre composites from blades to obtain the most economic and environmental value
- Identifying that the current low Technology Readiness Level (TRL) technologies available show limited promise in delivering viable routes to reclaiming value for glass fibre material but are promising for carbon fibre material from a technical, economic and environmental perspective.

SSE Renewables minor component parts prioritised for refurbishment solutions

(parts with refurbished solutions identified shown in green)

- (Elspec) Capacitor
- Brake Pad Biscuits
- Thyristor Module
- Yaw Motor
- Battery Charger
- **Yaw Gearbox Siemens 2.3CS**
- **Main LV Circuit Breaker GE1.5**
- APC Smart UPS 2200 230v
- **Circuit Board GE2.85**
- IGBT Line Side
- Ultrasonic Wind Sensor
- SIMATIC PC
- **Yaw Gearbox Siemens 2.3VC**
- Slipring Siemens 2.3VS
- **Converter (Delta) Module Type 27 Siemens 2.3CS**
- IGBT Rotor Side
- M-System Computer
- Inline Pump-Motor
- High Speed Shaft Dog Bones
- Thyristor Controller
- **Converter (Delta) Module Type 28 Siemens 2.3VS**
- Circuit Breaker GE1.5
- Hydraulic Blade Block
- Converter (Delta) Module Type 27 Siemens 2.3VS
- Slipring GE1.5
- Main LV Circuit Breaker Siemens 2.3VS
- Converter Module GE1.5

lifetime. We have significant asset management experience through our 1.5GW of operational hydro assets, 2GW of operational onshore wind and 2GW of operational offshore wind, with extensive historical operational site data that is utilised to continuously improve and optimise the way we maintain our assets to preserve their value – in terms of both increased production of energy and reduction of material and resource use.

Our 'smart maintenance' approach combines data-driven maintenance models and installed condition monitoring systems. The aim of this approach is for optimised coordination of planned and unplanned activities, prevention of component failure, and improved reliability of our assets. In turn, this results in a reduction in energy inputs and materials throughout the operational phase of our assets and strengthens the viability of life extension options.

Major components: utilising predictive refurbishment

Individual turbine components can require repair or replacement over the lifespan of a site. Across wind operations, refurbishment of major components, such as gearboxes, main bearings, transformers and generators, is the standard industry approach. Not only is it the optimum circular solution, but it often presents benefits in lead time efficiencies and cost savings. Around 80% of SSE Renewables' onshore and offshore wind turbine major components in need of exchange between 2021 and 2023 were refurbished. Similar practices are in place for our hydro sites, many of which are entering their first refurbishment phase after many decades of operation (see Tummel case study on page 22).

With our move into solar and battery technologies, work is underway to profile the life expectancy of all solar and battery components and develop refurbishment and repair maintenance regimes in coordination with the supply chain. Our use of predictive maintenance software for our onshore and offshore wind assets also harnesses advanced analytics, automation and machine learning to provide in-depth analysis of the performance of our assets. This allows modelling of potential failures and targeted pro-active maintenance, enabling a bespoke condition-based maintenance approach instead of a blanket schedule or time-based maintenance approach which means parts are iteratively replaced regardless of condition. Condition-based approaches allows modelling of potential failures and targeted pro-active maintenance, enabling a bespoke condition based maintenance approach instead of a blanket schedule or time based maintenance approach which means parts are iteratively replaced regardless of condition. Condition based approaches drive better energy yield, reduce waste and carbon emissions as well as allow us to track our major components throughout their refurbishment journey.

Building new supply chains: minor component parts

Some models of wind turbine can comprise up to 8,000 sub-component parts. This includes minor components such as yaw gears, thyristor modules, battery chargers and circuit breakers, the vast majority of which currently have no refurbished solutions available. Traditionally, when minor components fail, they are either repaired in-situ or replaced with brand new equivalents. In 2023/24, we analysed our most commonly procured wind turbine minor components to begin a targeted move towards "refurbishment by default" solutions. This priority parts list (shown on the left) is made up of electronic, control and instrumentation, rotating, hydraulic and mechanical components, with 70% being electronic components. By openly publishing our priority parts list, we are both sending a signal to the market that we are seeking suppliers for refurbished versions of these parts, and at the same time enabling coordination and collaboration on building the supply chain with our peers in the industry.

Using this prioritised list, in late 2023 we conducted a tendering activity to identify suppliers who could currently provide refurbished solutions for these parts and/or who would be interested in developing refurbishment solutions where these don't currently exist. So far, we have identified six components with readily available refurbishment solutions, with a further five components selected for focused embedment activities within the business.

Partnering in action

Co-founding the Coalition for Wind Industry Circularity

Successfully embedding circular principles in our business comes from being part of a wider circular economy. As such, we are focusing on strategic collaboration and partnerships with our wider industry.

In 2022, we signed a three-way Memorandum of Understanding with the University of Strathclyde and refurbishment parts supplier Renewable Parts Ltd, seeking to drive forward greater use of refurbished minor component parts within SSE Renewables as well as play a leading role in establishing a supply chain in the UK for circular parts. This led in 2023 to this partnership, alongside a fourth partner of the National Manufacturing Institute Scotland (NMIS), spearheading the creation of the Coalition for Wind Industry Circularity (CWIC). Now spanning over 50 members, CWIC focuses on demonstrating and delivering the value of a new circular supply chain for the offshore and onshore wind sector, including promoting the advantage and commercial opportunity of being an early adopter. CWIC now spans over 50 organisations that are committed to unlocking the skills, technology and infrastructure required to increase circularity. Trade body Scottish Renewables and other renewables developers Orsted and Scottish Power Renewables now sit alongside SSE Renewables, Renewable Parts Ltd, the University of Strathclyde and NMIS on the CWIC Steering Committee, with an explicit commitment to CWIC as the vehicle for delivering progress on circularity included in the Scottish Government's Onshore Wind Sector Deal which was established in 2023/24. In 2024/25, the Carbon Trust successfully won a competitive tender to take forward the project management of CWIC delivery.

Analysis by BVG Associates, commissioned by CWIC, shows the potential benefits of wind turbine minor component refurbishment and reengineering activities for the UK:

£8.9bn
contributed to UK GDP over 10 years

20,000
jobs created within the UK

> 800,000
tonnes of waste prevented from scrap

Innovation in action

Asset management in a digital world

Traditionally, asset management has implemented an 'inspect and repair' process. Advancements in our condition monitoring tools and processes to utilise technology is allowing us to shift towards more frequent and timely inspections to find damage early and resolve defects pro-actively, consequently reducing the frequency and extensiveness of required repairs. By intervening early, we are able to reduce down-time and the volume of parts which need replace, meaning we can generate more renewable energy, create less waste, and reduce our carbon emissions too.

Digital representation of our physical assets is used to ensure that the optimal equipment, materials and resources are used to implement a "right first time" asset management strategy. We have trialled 3D asset modelling of our assets alongside 360 degree virtual walk around

tours. Following successful pilots, we are now progressing towards a 'digital twin' approach to specifically map and understand life extension considerations for our wind assets, both onshore and offshore.

We have been undertaking external flight inspections of our wind assets using drones for the last decade. More recently, we have also been undertaking internal flight inspections to further our proactive condition monitoring strategy – enabling continual checking of the condition of our turbines, both inside and out. Drones allow an easily repeatable, high quality and fast inspection. This in turn allows early identification and resolution of wear defects, reducing the need for repairs and prolonging the life of our assets.

Over 2023/24, we also began use of Unmanned Survey Vessels (USVs) for monitoring our offshore wind turbines.

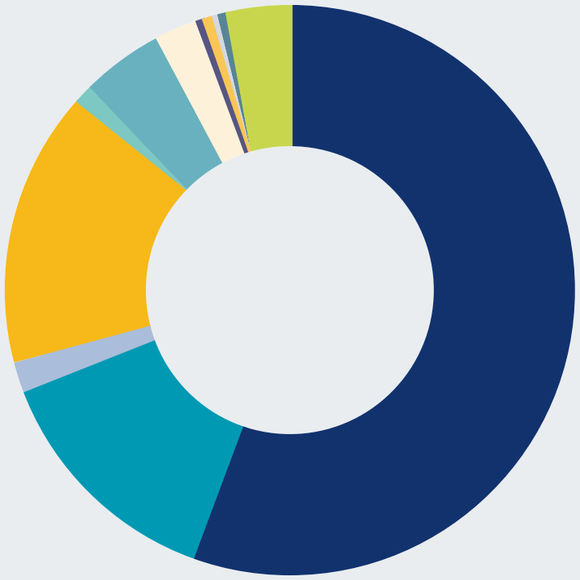
Sustainable decommissioning
We are proactively investigating sustainable end-of-life strategies across all of our technologies, with life extension in the first instance our preferred approach. Our established end-of-life assessment program was created to ensure life extension is safe, viable and responsible and, over 2023/24, we have additionally focused on integrating sustainability considerations and investigating supply chain readiness to ensure technical and commercial viability of options as high on the R-Ladder (see page 56) as possible. This has included market analysis of capability for sustainable decommissioning by issuing a 'Request for Information' from potential suppliers. We will use this information to further our understanding of viable and sustainable decommissioning pathways in our supply chains, as well as identify the gaps which need to be addressed as an industry so we can begin to take collective action. In addition, over 2023/24 we established a 'Guide to Sustainable Decommissioning' for our onshore wind assets, with our intention to embed sustainable decommissioning guidance for the full suite of our technologies.

Case study

ReWind: Understanding the materials embodied in our assets

In 2023/24, SSE Renewables became a pilot partner for the ReWind Tool developed by DNV. This is an innovative software package which allows owners and operators of Wind Turbines Generators (WTGs) to profile their assets and make informed decisions about the best solutions for end-of-life. The tool has the capability to model a full bill of materials for wind turbines, data which is not typically available from Original Equipment Manufacturers (OEMs) for legacy assets.

Over the year, we piloted the ReWind tool on a number of live operational assets to provide validation feedback to DNV and to gain independent and robust profiling of our assets and the materials embodied in them. The ReWind tool is now being used across our onshore and offshore wind fleet to robustly understand the potential full cost of decommissioning, enabling a more holistic view to inform end-of-life decision-making and opportunities for material preservation and sustainable end-of-life options for our wind assets. The ReWind software provides a material breakdown of our assets. Below shows a breakdown for a typical wind farm asset that SSER has in operation.



Steel	7667.4 tonnes
Cast Iron	1961.0 tonnes
Copper	187.4 tonnes
Concrete	2215.0 tonnes
Aluminium	129.3 tonnes
Rare Earths	0 tonnes
Glass Fibre	618.2 tonnes
Epoxy Resin	298.5 tonnes
PUR/PVC Foam	26.6 tonnes
Balsa Wood	37.3 tonnes
Epoxy Gelcoat	21.3 tonnes
Silicon	20.4 tonnes
Other	656.1 tonnes
Total	**13838.5 tonnes**

SSE Renewables joint ventures

Throughout the report, references are made to joint ventures. The list of these joint ventures with their ownership structure is provided below.

Project/Asset	Technology	SSE Renewables ownership	Partners
Galway Wind Park	Onshore Wind	Comhlacht Gaoithe Teoranta 100% Cloosh Valley Wind Farm DAC 25%	Cloosh Valley Farm DAC is partnered with Greencoat Renewables (75%)
Beatrice Offshore Wind Farm Limited	Offshore Wind	40%	Red Rock Power Limited (25%), TRIG (17.5%) and Equitix (17.5%)
Seagreen Wind Energy Limited	Offshore Wind	49%	TotalEnergies (25.5%) and PTTEP (25.5%).
Dunmaglass	Onshore Wind	50.1%	Greencoat UK Wind Plc (49.9%)
Stronelairg	Onshore Wind	50.1%	Greencoat UK Wind Plc (49.9%)
Greater Gabbard Offshore Wind Farm	Offshore Wind	50%	RWE Renewables (50%)
SSE Pacifico	Offshore Wind	80%	Pacifico Energy (20%)
Dogger Bank	Offshore Wind	40%	Equinor (40%) and Vårgrønn (20%)
Lenalea	Onshore Wind	50%	FuturEnergy Ireland (50%)
Clyde	Onshore Wind	50.1%	Greencoat UK Wind (28.2%) and GLIL Infrastructure (21.7%)
Lemanaghan Wind Farm, Littleton Wind Farm & Garryhinch Wind Farm	Onshore Wind	50%	Bord na Móna (50%)
Sheskin South	Onshore Wind	50%	FuturEnergy Ireland (50%)
Ijmuiden Ver Alpha	Offshore Wind	50%	APG (50%)

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