ESB NETWORKS

Environmental Performance Report 2024

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1 Executive Summary

Executive Summary

Welcome to ESB Networks' Annual Environmental Performance Report, 2024. This report provides insights into the environmental and sustainability aspects of our business.

Renewable Energy Connections

In 2024, ESB Networks connected 534 MW of wind and solar power to the grid. By the end of the year, we had enabled 6,324 MW of utility-scale renewable energy, including 5,080 MW of wind energy, 849 MW of utility-scale solar, and additional capacity from other renewable sources. This includes 2,645 MW connected at the Distribution (DSO) level and 3,679 MW at the Transmission (TSO) level. Additionally, ESB Networks connected approximately 263 MW of rooftop, mini, micro, and small-scale solar during 2024. By the end of 2024, there was a total of just over 1,500 MW of solar power connected to the network.

175 MW of Energy Storage was energised in 2024, with a cumulative total of 1,000 MW of Energy Storage currently connected to the network.

The 504 MW Greenlink Interconnector from Ireland to Wales was energised in December 2024.

Climate Action Plan Implementation

ESB Networks continues to lead and support various actions from the Climate Action Plan (CAP). Additionally, we've supported the progress and delivery of many other actions through significant engagement with various stakeholders including DECC, CRU, and EirGrid. In the CAP 2024, ESB Networks was assigned as the Lead for two actions and a key stakeholder for the delivery of six other actions in the CAP Annex of Actions. These actions ranged from incentivising flexible electricity demand to transport-related initiatives. All lead actions due in 2024 were completed on time.

By the end of 2024, there was a total of just over

1,500 MW

of solar power connected to the network

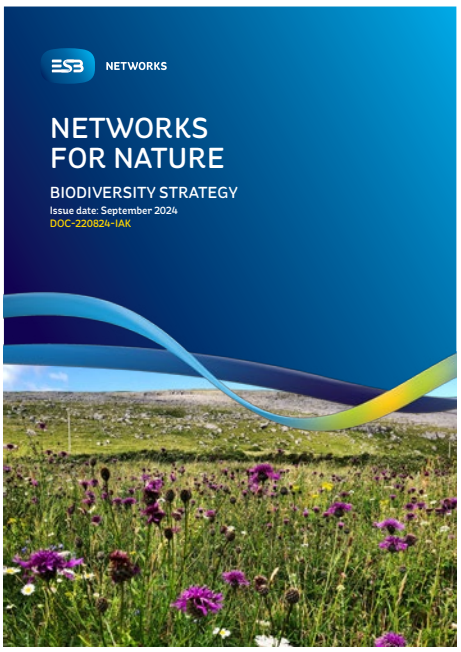
Beat the Peak

In 2024 Beat the Peak Domestic ended the year with 25,688 participants. We ran 25 energy events, recording 84,357 actions along the way. Over the year we sought to further optimise participation in energy events by creating a comprehensive research plan that incorporates regular testing (such as adjusting notification times for Energy Event messaging) into the weekly operations. We distributed over 300k educational emails as part of the behaviour change campaign and launched the "Beat the Peak" game to select participants to assess how gamification can help further the public's understanding of how renewable electricity impacts the network, how completing certain activities inside or outside of peak hours (5-7pm) can benefit the electricity network, and gain insights into which household appliances consume the most electricity.

Smart Metering Project

In 2024, we continued replacing over 2.5 million electricity meters with next-generation smart meters, supporting the transition to a low-carbon electricity network. We installed 326,000 smart meters across the country, bringing the total to over 1.9 million installed by the end of the year.

Biodiversity



In September 2024, ESB Networks published its first Biodiversity Strategy, entitled 'Networks for Nature', available via the ESB Networks website. This strategy has been developed through leveraging our own internal experience, informed by specialist input and draws from international best practice and innovation implemented across the energy sector. It is cognisant of the objectives of the Fourth National Biodiversity Action Plan and of the 'Whole of Government, Whole of Society' approach which is advocated therein. 'Networks for Nature' is informed by the following overarching objectives; Integrate Biodiversity, Enhance Nature where We Operate, Build Capacity, Explore Synergies for Biodiversity, Innovate & Improve and Act Responsibly. The objectives are underpinned by a suite of actions and targets which will facilitate our progress for biodiversity at a strategic, project and site level. Networks for Nature will be reviewed and updated on a five-yearly cycle to ensure it best reflects science-based decision making and any further developments in policy at all levels.

Electrification

Throughout 2024, we have continued to deliver on the electrification commitments set out in our Networks for Net Zero Strategy, ensuring our commitments are progressing and advancing for all our customers. To ensure relevancy and a prioritised focus we use insights from research, customer interaction and international developments to inform our approach.

We have focused on the development and advancement of solutions that support the acceleration of e-transport and our e-transport customer. The following are some examples:

- To meet significant new demand for electrical infrastructure arising from accelerated housing, industrial growth and climate targets, we have scaled up our internal and contractor resources to deliver a much larger programme of investment starting in PR6. We are also working to identify and bring forward interim solutions in areas where capacity is limited, in order to meet the immediate needs of customers where it is possible to do so.
- We have updated the capacity heat map and published capacity workbooks to provide insights to customers relating to current and future network capacity.
- Connection Screening service provided for EV charging infrastructure developers, providing information relating to the indicative availability of capacity at locations of interest to these customers.
- In response to a request from Zero Emissions Vehicles Ireland (ZEVI), in 2024 we have been advancing a pilot that will explore the option to allow LV connections up to 300 kVA from a unit substation, which is currently limited to 200 kVA.
- Working with Original Equipment Manufacturer (OEM) on designing and advancing the development of combined EV/PL (public lighting) charging solution, moving it towards to pilot stage for early 2025.
- In 2024, we piloted a solution for EV charging in off-curtilage parking scenarios. This pilot was trialled at a location in Churchfields housing development near Blanchardstown, working in collaboration with pilot partners GEM Construction and Fingal County Council. Following the successful completion of the pilot, the solution was adopted. Dissemination activities included engagements and presentation with Construction Infrastructure Federation (CIF) and various ZEVI stakeholder workshops.
- ESB Networks' National Code of Practice for the Customer Interface review process commenced mid-year and completed by the end of 2024, with the new Code of Practice being published in January 2025. This publication included our Guide for Public EV Charging providing additional options for neighbourhood charging with off curtilage parking.
- At the end of 2024, we started to investigate the option for connecting up to 69 kVA customers using whole current metering. This work will continue into 2025.

Throughout 2024, ESB Networks continued to effectively manage the environmental and sustainability aspects of our business. I hope that you enjoy reading about the progress that we made in the following pages.

John Tuohy
Sustainability and Environmental Manager, ESB Networks

2 Introduction

ESB Networks DAC is the distribution system operator and has a number of licence obligations relating to the environment contained in the Distribution System Operator (DSO) licence issued by the Commission for Regulation of Utilities (CRU). ESB is the licenced Transmission Asset Owner (TAO). Condition 30 of the DSO licence and condition 22 of the TAO licence require the respective licence holders to:

- Comply with all current and future European Union and Irish Environmental Laws, as well as directions by the CRU in respect of its duties relating to the Environment.
- Maintain an Environmental Policy setting out how it will comply with its duties and obligations under these laws and directions.
- Report annually to the CRU on its environmental performance.

ESB Networks, a business unit of ESB, manages environmental issues for the DSO and the TAO. This report has been prepared by ESB Networks on behalf of the DSO and TAO for the year ending December 2024.

3

ESB Networks – Who we are

ESB Networks - Who we are

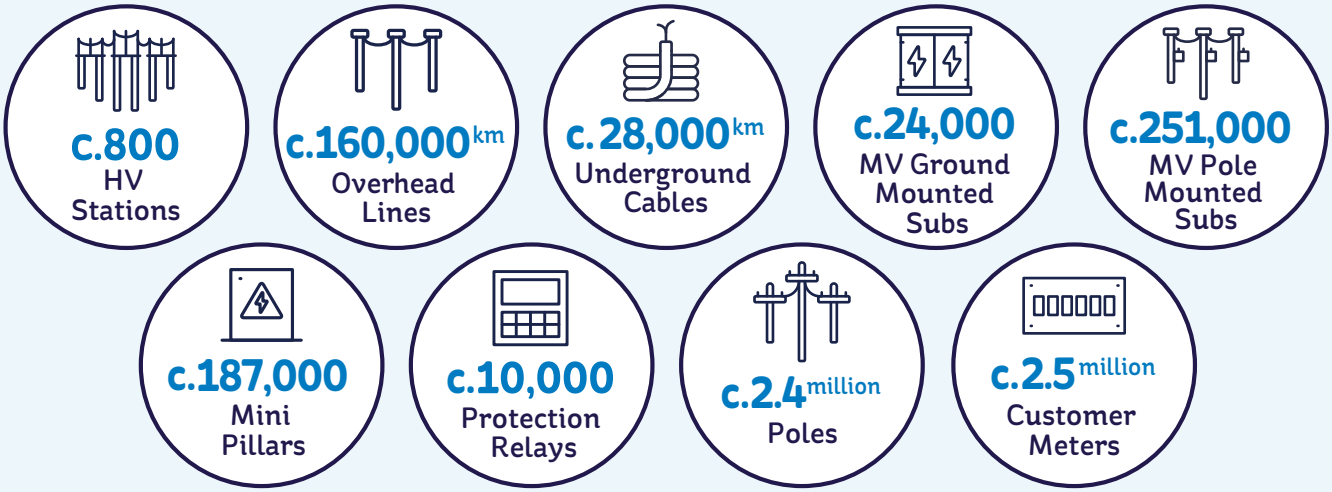
ESB Networks provides the infrastructure that transports electricity to all customers in Ireland through both the distribution and the transmission Systems. We have served Irish customers for over 90 years and have provided the electrical infrastructure on which our society has developed.

ESB Networks works to meet the needs of all Irish electricity customers, providing universal affordable access to the electricity system and delivering and managing the performance of a system of almost 160,000 km of overhead networks, 28,000 km of underground cables, over 800 high voltage substations, significant amounts of connected generation (including renewable generation connected to the distribution and transmission systems) and 2.5 million demand customers.

We carry out all the functions relating to the electricity distribution system. This includes asset management, planning, construction, maintenance, and operation of the high, medium, and low voltage distribution networks. We also deliver a range of services to the Republic of Ireland (RoI) Retail Electricity Market servicing over 2.5 million customers. We manage relationships with market participants and provide data in a timely and accurate fashion on a daily basis. ESB Networks supports the wider Irish market through the ring-fenced Meter Registration System Operator (MRSO) and Retail Market Design Service (RMDS) and supports the wholesale Single Electricity Market through the provision of aggregated meter data.

ESB Networks builds and maintains the high voltage transmission system. By the end of 2024, ESB Networks had facilitated the connection of over 6.324 GW of renewable energy generation to the distribution and transmission systems.

Our Network

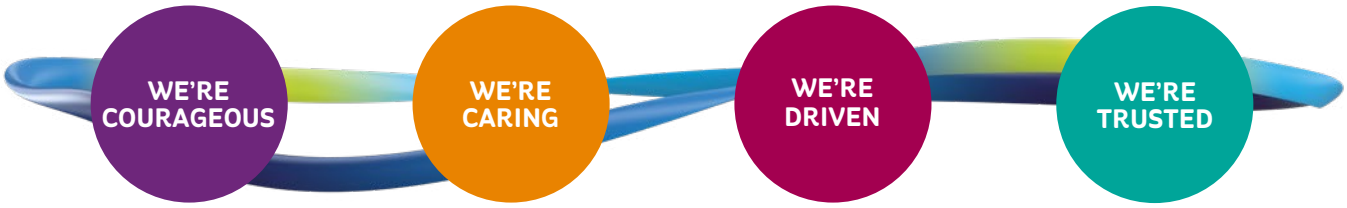


ESB Networks places customer service at the centre of our operations, providing services to all electricity customers regardless of their supplier. Our staff throughout the country strive for excellence in all interactions with customers, while also supporting them in participating in the energy market and transitioning towards low carbon technologies.

As part of our commitment to a low carbon future, ESB Networks will lead the way in electrifying heat and transportation. We will work to develop and innovate our networks to support this goal, which is crucial to our future success in the changing and uncertain environment of the energy sector. By identifying innovative opportunities, we aim to support significant changes in electricity generation and consumption by 2030.

To ensure that our day-to-day activities are managed sustainably, the ESB Networks' Sustainability and Environmental team, and senior leadership provide support to various groups and teams across the business with environmental responsibilities. We draw on specialist knowledge from key areas such as electricity, procurement, environment and construction to achieve this enduring role.

Our Values



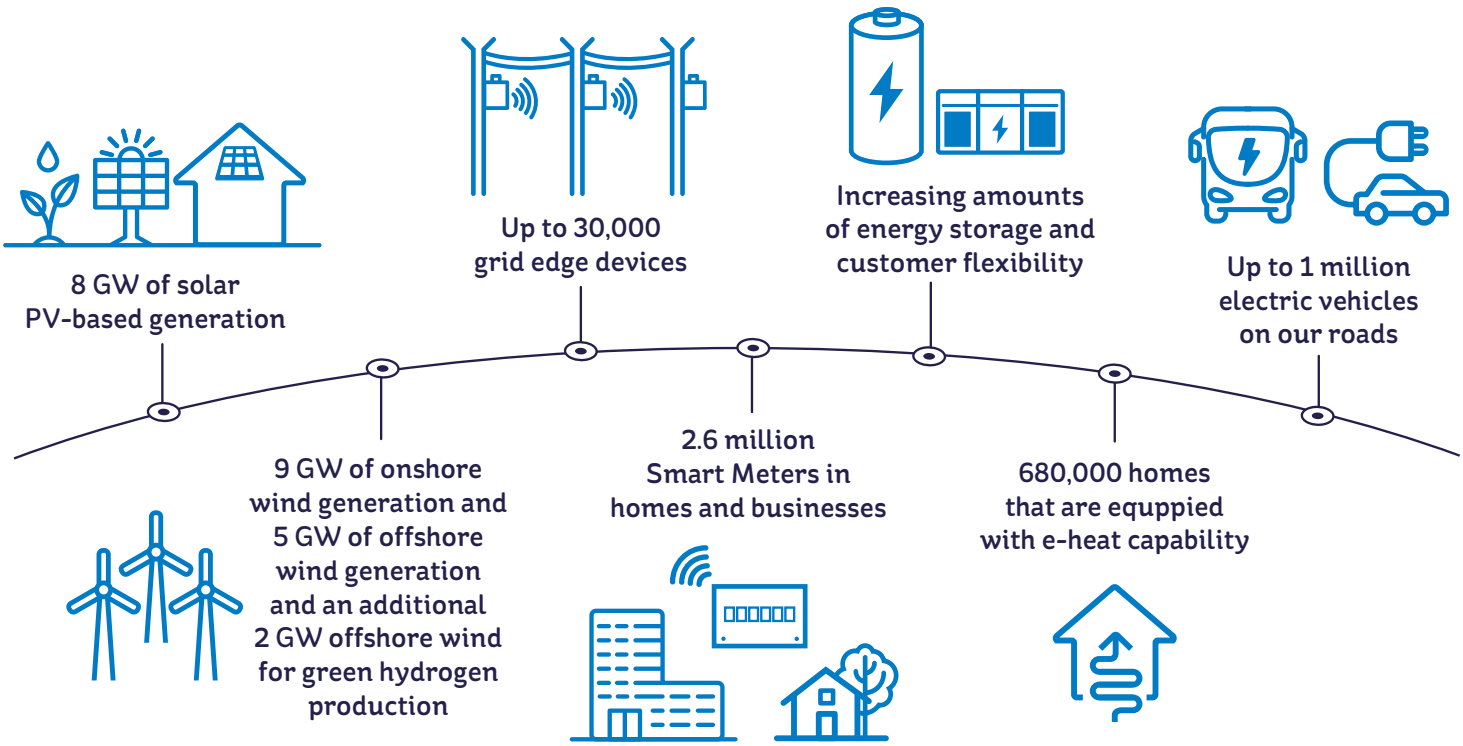
Each of us is prepared to challenge the way we've always done things, stand up for what we feel is right and try better ways of working.

We're putting customers' current and future needs at the heart of what we do and we keep ourselves and others safe and healthy.

We bring passion and persistence to what we do every day, innovating and collaborating to meet the challenges and opportunities ahead.

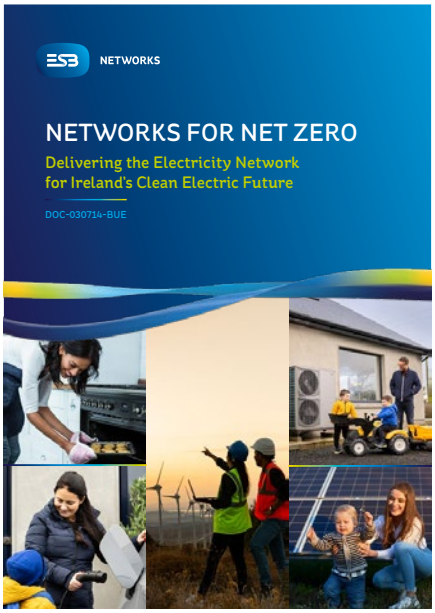
We each play our part, taking ownership of our responsibilities, seeing the job through and protecting our own health and safety, as well as others'.

ESB Networks' vision for our network by 2030 is seen below:



Our Networks for Net Zero Strategy

Our Networks for Net Zero Strategy sets out ESB Networks' role in enabling the delivery of the Government's Climate Action Plan and supports the decarbonisation of electricity by 2040, which will enable the achievement of Ireland's net zero ambition no later than 2050. It is based on our role in transforming the electricity distribution network to empower customers to decarbonise their energy consumption; and in our role as onshore Transmission Asset Owner in delivering the electricity transmission programme. As we implement this Strategy, we will ensure that we have a safe, reliable and efficient network with the required capacity, flexibility and resilience for the electricity system for 2040.



We have identified three strategic objectives, which are core to delivery of our Strategy:

1. Decarbonised Electricity

This objective reflects our commitment to support Ireland in achieving net zero through enabling the connection of renewable generation to decarbonise electricity. At ESB Networks, distribution system operation at all voltage levels is core to what we do today. The energy transition and the roll out of new technologies means that the way we manage the network will change materially in the future. Thus, as the electricity system transitions towards a smarter, sustainable model, the operation and management of these new resources will require a digital network that is flexible and smart.

We have introduced a 'Build Once for 2040' concept that will ensure that the distribution network, and supporting services such as demand management, are designed and developed to meet the anticipated needs of customers in 2040 and to deliver a clean electric future. This will eliminate the need for repeated, costly and resource intensive interventions on the network. Essentially, where possible, we will deploy solutions today which are scalable to meet the needs of customers and stakeholders in 2040.

2. Resilient Infrastructure

This objective recognises that the transition to a low-carbon future powered by clean electricity requires a network that is resilient to the impacts of climate change and disruptive events such as storms and cyber threats. It also recognises we need to build capacity to connect the renewable generation that will generate the clean electricity to our network. In addition, we need to provide network capacity for the demand associated with significant population growth, new housing developments, economic growth, as well as a significant increase in demand due to electrification of heat, transport and industry.

3. Empowered Customers

This objective reflects our commitment to working alongside customers and communities, supporting them to achieve net zero. We will use data and digital technologies to deliver convenient and personalised customer experiences. We will also develop insight-driven services to meet diverse and evolving customer needs. ESB Networks will put in place solutions for our networks customers to enable the electrification of heat and transport. We will make it easy for customers and communities to participate in markets for flexibility and make active choices in their use of energy.

We know that change is happening at pace, and we are evolving our business processes, systems, and ways of working in anticipation of future network requirements. In anticipation of the changes ahead, and informed by the inputs above, we have structured our Strategy around three key strategic objectives on which we will focus our efforts.

Our Strategy is further underpinned by a suite of four foundational capabilities which will be critical to ensuring we are positioned to execute and deliver on our ambition. These foundational capabilities are:

- **Our People**
- **Digital and Data Driven**
- **Financially Strong**
- **Sustainable and Socially Responsible.**

These objectives and capabilities are illustrated in the following graphic:

ESB Networks' targets for 2030 are:

9GW onshore wind, 8GW solar, and at least 5GW of offshore wind by 2030 (and an additional 2GW offshore wind for green hydrogen production)

Manage up to 30% of all electricity demand flexibly

Deliver smart distribution system through National Networks, Local Connections programme

Connect renewable generation to enable up to 80% of decarbonised electricity.

Deliver network capacity for 680,000 heat pumps and one million electric vehicles, including public charging infrastructure

Deliver >90% customer satisfaction

Customers in control of their energy journey

Deliver the network capacity based on demand growth and decarbonisation of electricity

Deliver Transmission Development Plan

Reduce unplanned Customer Minutes Lost to less than 60 per annum

Our People
Recruit 1000 people by 2027

Digital and Data Driven
Deliver a fully digitally enabled business and workforce

Financially Strong
Invest estimated €10bn in the distribution and transmission networks

Sustainable & Socially Responsible
Deliver internal net zero by 2040

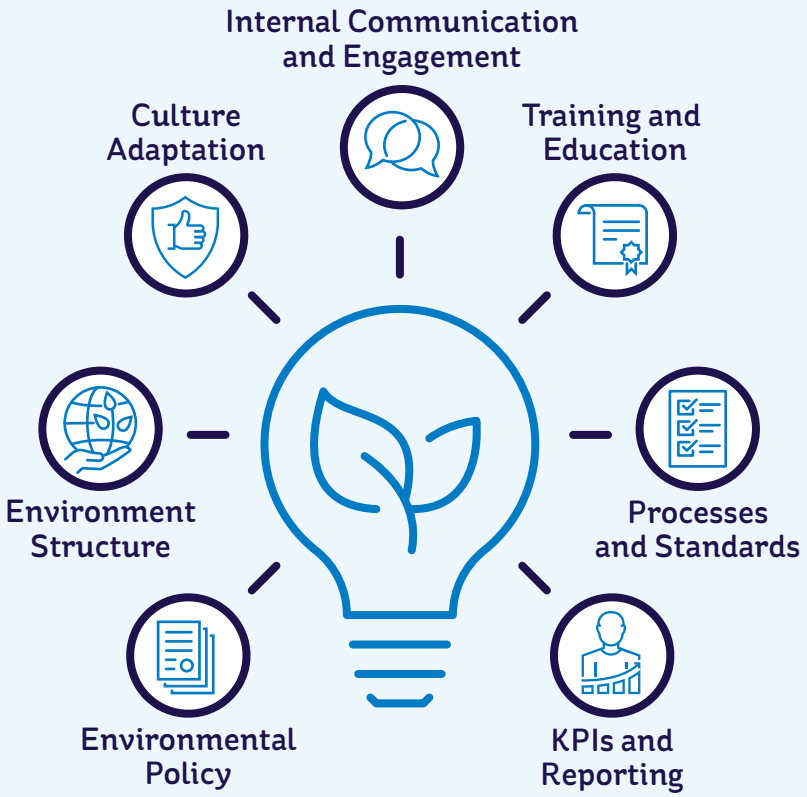
ESB Networks' Internal Environmental Strategy - 2021 to 2025

We continued to roll out ESB Networks' internal Environmental Strategy – 2021 to 2025 across ESB Networks during 2024. This strategy is based on 5 commitments as they relate to the environment.

It ensures that individuals who are environmentally accountable are employed in an environmentally sound workplace (which includes asset integrity). Employees operate tools, equipment, vehicles, and machinery that are compliant with environmental standards, follow documented systems of work that prioritise the environment, and exhibit environmentally responsible conduct as the standard.

In 2024, ESB Networks continued to focus on achieving the objectives of this Strategy, which were developed by a cross section of ESB Networks' staff. Some key achievements include environmental and sustainability awareness training and monthly core briefs that have been rolled out to all staff in ESB Networks. Over the course of 2024, 135 individuals completed the ESB Networks' Environmental Awareness course while 1290 completed the Sustainability training courses. Targeted internal systems of work and documentation were updated to ensure environmental and sustainability consideration is included at key stages of work by our staff and our contractors.

Environmental Strategy
Seven Strategic Enabling Priorities



The strategy is based on the following 5 commitments as these relate to Environment

- People
- Workplace
- Tools, Equipment, Vehicles & Machinery
- Systems of Work
- Behaviours

Stakeholder Engagement

Engagement with our external stakeholders is integral to our day-to-day operations and is at the heart of everything we do at ESB Networks.

Engaging with our customers and stakeholders is crucial to how we shape the future of our business and the electricity network. It helps us develop new initiatives which benefit the communities and industries we serve, as well as improving and enhancing existing ones. It shapes our business planning and strategic priorities and informs the decision-making process. Engagement with wider industry accelerates innovation within the business and the energy sector through shared learnings and ideas.

Our Stakeholders are defined as the individuals, groups of individuals, communities or organisations that affect (or could be affected by) our activities, products or services, and associated performance. Given our central role in the electricity industry in connecting over 2.5 million homes, farms, communities, and businesses around the country, we have a very broad range of stakeholders. Since considerable changes are taking place within the energy sector at an unprecedented scale, who we engage with and how, is constantly changing.

We have developed this stakeholder wheel to help us better define and categorise our vast stakeholder base.

Why We Engage

For ESB Networks, engaging with our customers and stakeholders is crucial to how we shape the future of our business and the electricity network. It helps us develop new initiatives which benefit the communities and industries we serve, as well as improving and enhancing existing ones. It shapes our business planning and strategic priorities and informs the decision-making process. Engagement with wider industry accelerates innovation within the business and the energy sector through shared learnings and ideas.

Good engagement benefits our customers, stakeholders, the wider community, and our business. When we engage with each other in a genuine two-way conversation, we can learn from each other, enabling us to make better decisions and work towards mutually beneficial outcomes. Ultimately, better engagement builds stronger relationships and gives us greater opportunities to achieve our business objectives. The earlier we engage with each other, the more likely these benefits will be realised. For our customers and stakeholders, engagement provides opportunities to contribute to projects and programmes, have their issues heard and inform the decision-making process. It gives groups, our customers and stakeholders a better understanding of our priorities, increased ownership of outcomes and greater capacity to engage in how energy will be used in the future. For ESB Networks, engagement provides insights by understanding changing priorities, tapping into specialist or local knowledge and gives us the opportunity to 'road-test' or pilot proposals or initiatives with customers and stakeholders.

Our engagement performance 2024

The Networks for Net Zero Strategy will underpin an energy transition that will enable electricity customers to adopt new technologies, products, and services in the decades ahead, changing how they generate, store, and consume electricity.

We recognise that the transition to a net zero future will have a significant impact on our customers' day-to-day lives and success will not be achieved without ongoing active customer and stakeholder participation, engagement, and support.

Our annual stakeholder publications, such as ESB Networks' Stakeholder Engagement Strategy & Plan for 2024 set out our approach to stakeholder engagement, our engagement priorities and activities and provides stakeholders with pathways to engage with us. We invite all our stakeholders to continue to engage with us through these pathways. Our most recent publication ESB Networks' Stakeholder Engagement Report 2024 describes how ESB Networks collaborated and engaged with our stakeholders over the course of 2024. Stakeholder engagement is critical in supporting the delivery of our Networks for Net Zero Strategy targets and ambitions. We demonstrate how we are committed to continually improving our engagement performance, how engagement is integral to our day-to-day operations and is at the heart of everything we do at ESB Networks.

For instance, in relation to our environmental priorities for 2024, we recognise that our activities have environmental impacts and that we have a responsibility to manage these impacts in a manner that provides a high level of protection for the natural environment, while also contributing to the sustainable development of our economy.

In 2024 we engaged with relevant stakeholder groups including the Local Authorities, Environmental Protection Agency (EPA), Waterways Ireland, Inland Fisheries, National Parks & Wildlife Services, Irish Water, Transport Infrastructure Ireland and EirGrid. We continued to enhance the 'Climate Action, Sustainability and the Environment' section of our website to ensure that ESB Networks is open and transparent in communicating its environmental performance. The environmental webpages received approximately 2,135 views in 2024.

We reported to CRU on our Environmental Performance and published our 2023 Annual Environmental Performance report on our website, demonstrating our commitment to transparency.

In 2024 we maintained certification of our ISO 14001 Environmental Management System following a series of surveillance audits by independent external specialist auditors. We also continue to attend and support working groups with external stakeholders in relation to environmental topics, such as biodiversity.

4

Delivering a Low Carbon Future

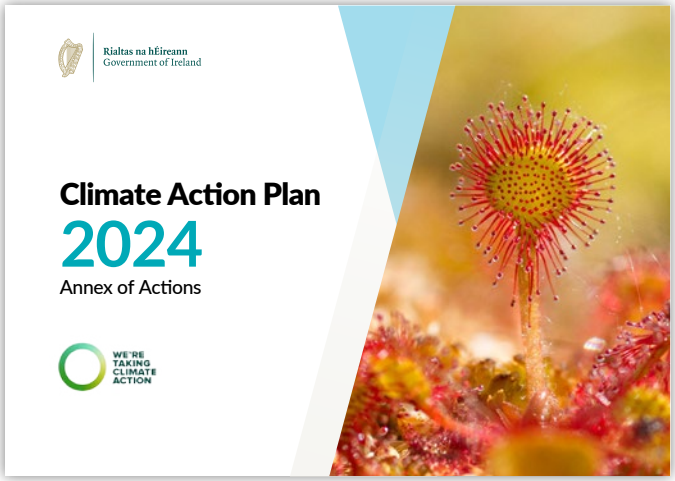
ESB Networks and the Climate Action Plan

Climate Action remains central to Government policy, and this is reflected each year through an updated Climate Action Plan (CAP), which sets out the key actions to be delivered to achieve Ireland's carbon reduction ambitions by 2030 and to reach net zero emissions no later than 2050. It must also deliver the legally binding economy-wide Carbon Budgets and Sectoral Emissions Ceilings which were approved by the Government in 2022. The ceiling for the electricity sector is one of the most stretching with a 75% reduction required by 2030.

This national ambition is further supported and enhanced by comprehensive legislation at the European level aimed at reducing emissions from transport and heating, ensuring adequate EV charging infrastructure, accelerating the deployment of renewable energy, and facilitating customer participation in the energy system. This is primarily achieved through the provisions outlined in the Clean Energy and Fit for 55 legislative packages as well as the Electricity Market Design reforms which were agreed in 2024.

These policy changes and targets will see the continued ramp up of renewable generation connected at low, medium, and high voltage as well as more electric heating and transport demand. To enable this, the role of the DSO is changing and ESB Networks is designing the products and systems to allow citizen and community participation in the future energy system while ensuring the network is flexible and resilient.

ESB Networks continues to implement its Lead actions from the CAP. Additionally, we've supported the progress and delivery of many other actions through significant engagement with various stakeholders including DECC, the CRU, and EirGrid. In the CAP 2024, ESB Networks was assigned as the Lead for two actions and a key stakeholder for the delivery of six other actions in the CAP Annex of Actions. These actions ranged from incentivising flexible electricity demand to transport-related initiatives. All lead actions due in 2024 were completed on time. For more information see Climate Action Plan 2024 - Annex of Actions.



Connecting Renewable Energy

ESB Networks' mission is to play a leading role in Ireland's transition to a low carbon economy and to provide secure, sustainable, reliable electricity in an affordable manner for all customers. With the Government's Climate Action Plan having ambitious targets for increased penetration of renewable energy by 2030, ESB Networks has continued its key role of connecting renewable generation to our network to help decarbonise electricity.

ESB Networks performed strongly in 2024, connecting approximately 532 MW of utility scale wind and solar to the network plus 263 MW of of rooftop, mini, micro, and small-scale solar. This provided the network with a total of 795 MW of additional renewable energy during 2024.

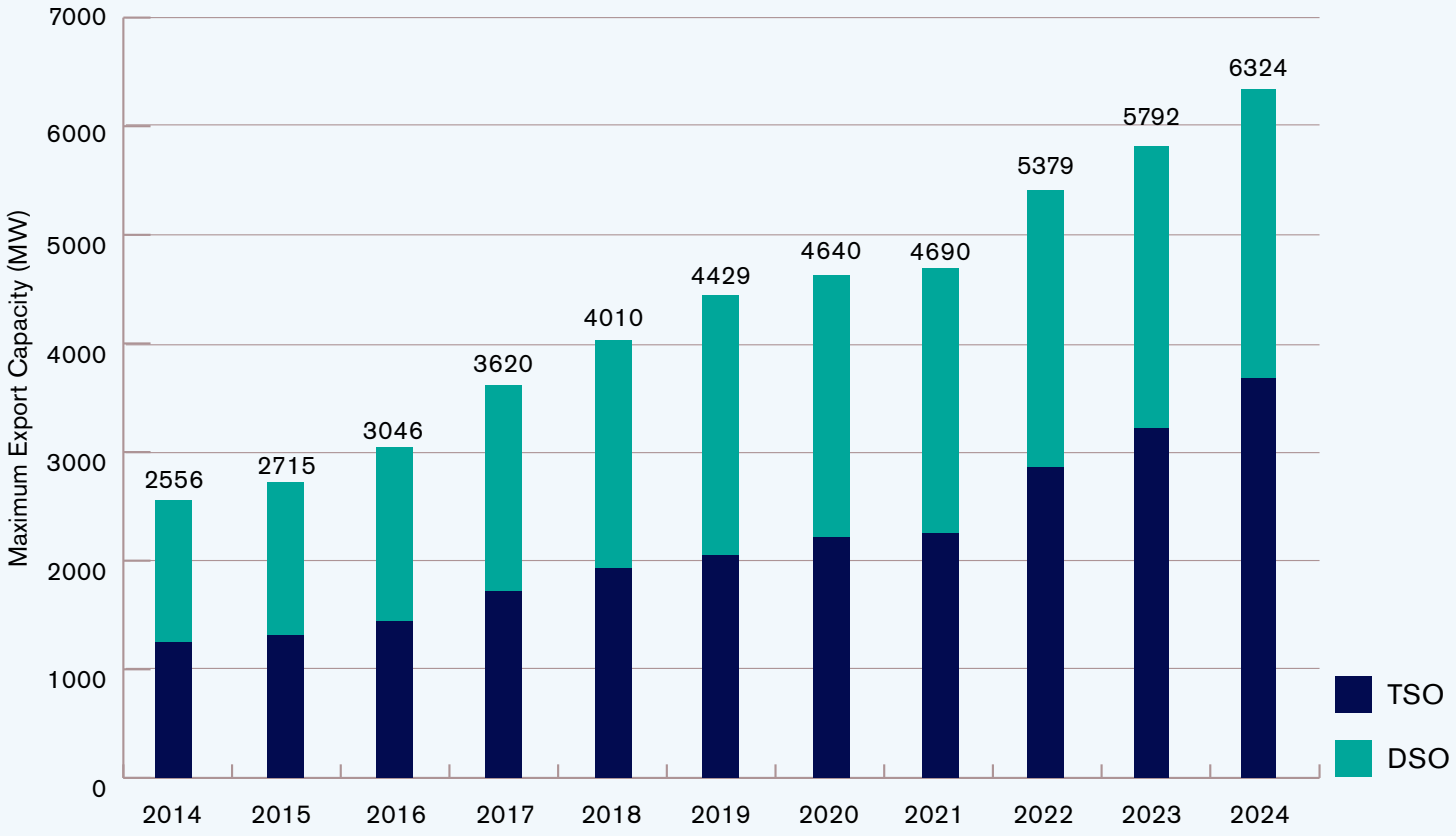
In total, ESB Networks had enabled 6,324 MW of Utility Scale Renewable Energy. This comprises 5,080 MW of wind energy generation, 849 MW of utility scale solar, with the remaining capacity coming from other renewable sources e.g. hydro, biomass. 2,645 MW are connected at Distribution (DSO) level and 3,679 MW connected at Transmission (TSO) level (see Figure 1).

Additionally, 663 MW of roof top, mini, micro, and small-scale solar is now connected to the network. In total, there is over 1,500 MW of solar connected to the network.

The 504 MW Greenlink Interconnector from Ireland to Wales was energised in December 2024.

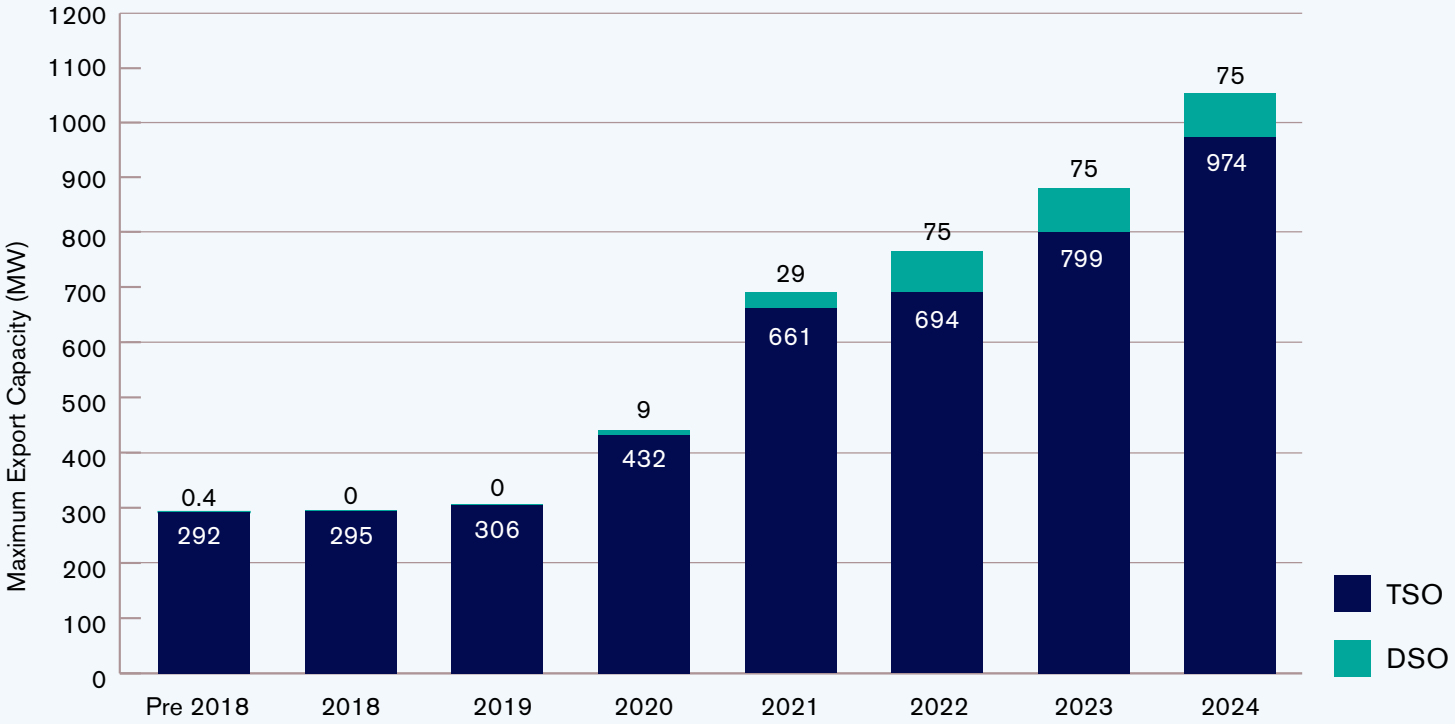
ESB Networks conducted scoping, design and construction works associated with the pipeline of customer projects for connections throughout 2024. Many of these customer projects are participants in RESS-2, RESS-3 & RESS-4, the Government Renewable Energy Support Scheme.

Figure 1 –Renewable grid scale energy (MEC) connected to the electricity system (2014- 2024)



ESB Networks connected 2 large transmission system energy storage projects for 2024 totalling 175 MW, resulting in a total energy (battery and pumped hydro) storage capacity of 1,049 MW on the network by the end of 2024 (see Figure 2). Energy storage provides system support services to the electricity system operators to enable increased penetration of renewable energy on the grid and to store renewable energy when the supply of energy exceeds demand.

Figure 2 – Energy Storage (MEC) connected to the electricity system



Key Achievements of 2024:

- A cumulative total of 1,000 MW of solar connections were connected to the network by February 2024. Figure includes roof top solar and utility solar. Total utility and non-utility scale solar at year end 2024 was 1,500 MW.
- 175 MW Energy Storage energised in 2024.
- A cumulative total of 1,000 MW of Energy Storage was connected to the network by April 2024. Figure includes Turlough Hill pumped storage and battery energy storage.
- The 6,000 MW of cumulative utility scale renewables on the system threshold was also broken in 2024 and reached 6,324 MW of utility scale at year end 2024.
- 534 MW renewables energised in 2024 (utility scale renewables).
- 504 MW Greenlink Interconnector from Ireland to Wales energised December 2024.
- **Total Connected to date – 6,987 MW (6,324 MW utility scale + 663MW of non-utility Scale).**

Microgeneration

ESB Networks is committed to facilitating the rapidly increasing level of Microgeneration connections to the distribution network. Customers who wish to install microgeneration and export excess electricity onto the electricity network are referred to as prosumers. As Distribution System Operator (DSO), ESB Networks has an important role to play in facilitating this transformation. We aim to support our customers through each stage of the process as they adopt small-scale low carbon technologies and make the transition towards being active participants in the energy system. To date, ESB Networks has facilitated 121,800 microgeneration connection applications to the electricity network providing 498MW of green energy. With 43,000 of these connections registering in 2024 alone ESB Networks has been successfully processing and registering an average of 850 applications per week (See: Micro-generation on esbnetworks.ie for more details)

(See: Micro-generation on esbnetworks.ie for more details)

Mini-Generation

In December 2021, ESB Networks announced the launch of its new simplified mini-generation application process for larger customers generating up to 50 kW (e.g. farms; business properties; community buildings; etc). This equates to, for example, between 18 and 150 typical solar panels. (See: Mini-Generation on esbnetworks.ie for more details). The new mini-generation process was initially launched on a pilot basis in line with Ireland's 2030 Climate Action Plan. Feedback and learnings from the pilot are now being used to enable the transition to the enduring process. The new streamlined process ensures that it is even simpler for our customers who generate their own renewable electricity to export their excess electricity to the local network and therefore play a more active part in connecting Ireland to a clean electric future. Shortly after the launch by ESB Networks of the mini-generation pilot, the Irish Government also introduced the Microgeneration Support Scheme (MSS) and Clean Export Guarantee (CEG) which enables these customers to be remunerated for exporting their excess electricity.

Mini-Generation Connections

- Streamlined process for customers with renewable generators of up to 50 kW,
- By the end of 2024 over 3,400 applications have been received which will enable over 89 MW of renewable generation, and
- So far 1,545 Mini-Generation customers have fully completed their installations connecting over 43MW of generation to the system.

Small Scale Generation

On 30th September 2022 ESB Networks launched its new simplified Small Scale Generation (SSG) application process for larger sites generating up to 200 kW (See Small Scale Generation (esbnetworks.ie) for more details). The new process was initially launched on a pilot basis in line with Ireland's 2030 Climate Action Plan. It has now successfully transitioned through to an enduring process ensuring it is even simpler for our customers who generate their own renewable electricity to export their excess electricity to the local network. As a result, it plays a more active part in connecting Ireland to a clean electric future. The Irish Government introduced an SRESS Support Scheme in 2023 enabling customers of this size to be remunerated for exporting their excess electricity.

Small Scale Generation Connections

By the end of 2024 ESB Networks has;

- Streamlined processes for customers exporting up to 200 kW.
- Received a total of 480 applications which will enable over 55MW of renewable generation.
- 246 Small Scale Generation customers have fully completed their installations connecting over 30MW of generation to the system.
- 92 MW non exporting renewable generation connections.

Enduring Connection Policy (ECP)

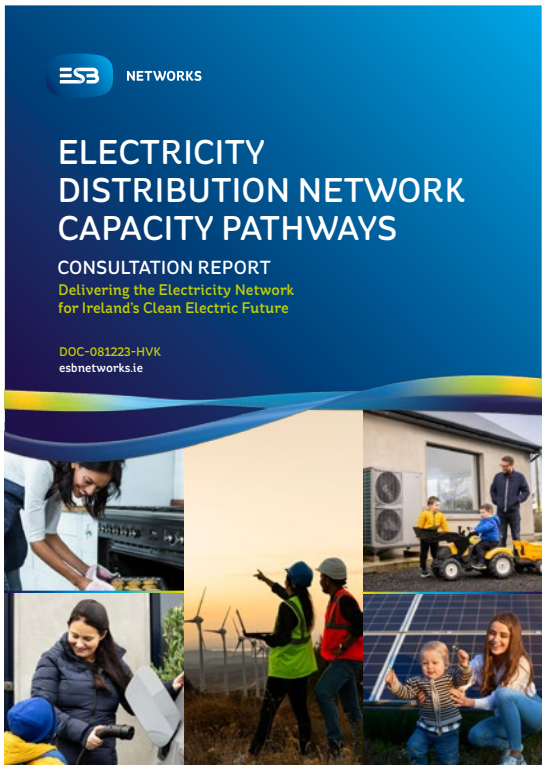
ESB Networks successfully completed the processing of over 70% of the Enduring Connection Policy 2.4 (ECP2.4) generator applications in 2024, with the remaining applications scheduled to be completed by January 2025. The application window first opened for the ECP2.4 batch in October 2023, where 42 projects were successful across each of the categories including a mix of wind, solar, battery and auto-producer customers.

The ECP2.5 application window closed in November 2024. The applicants are currently being reviewed and will be batched for processing in 2025.

Future Grid Connections for Small Scale Renewables

Generation capacity and network reinforcement costs remains a major challenge for community and small-scale renewable projects, which do not have the economy of scale advantages of larger renewable projects.

ESB Networks is developing renewable hubs which will have the potential to create additional network capacity for small scale renewable projects. The Renewable Hubs pilot aims to build network capacity in areas where there is a pipeline of renewable energy projects and where customers are charged on a per kVA basis for capacity utilised. These Renewable Hubs are now in the detailed design stage with ordering of long lead items, such as HV transformers, has been completed. Further information is available in the Renewable Hubs Pilot.



In addition to traditional network development, ESB Networks has progressed several technical solutions to address significant network generation capacity needs across the country. ESB Networks has developed and implemented changes to the Distribution System Security and Planning Standards to increase the firm capacity in two transformer stations where both demand and generation are connected and the introduction of a Solar Diversity Factor. These initiatives have the potential to release up to 1.7 GW of generation capacity on the existing network assets. ESB Networks is also piloting the extension of the existing non-firm/flexible access offering which could potentially release up to a further 1.4 GW of capacity. Further information on these proposals is available in the Electricity Distribution Network Capacity Pathways Report.

Innovation

Innovation is at the core of ESB Networks approach to environmental sustainability. Through our innovation programme, we identify, evaluate and trial new approaches and solutions to build environmental capability and enable key strategic outcomes aligned with our Networks for Net Zero strategy. Over the course of the past year, we have evaluated 74 innovation ideas, initiated 2 new projects, completed 12 projects, and progressed 16 ongoing projects.

Innovation in ESB Networks is not just about identifying new technologies; it is about building a culture that embraces change; creating structures to facilitate the adoption of new ideas and working in collaboration with others to share insights and co-create solutions. In 2024, we demonstrated our commitment to collaboration and shared learning through an extensive programme of external engagement which included webinars, conferences, publications, papers and knowledge exchange with industry leaders. We also worked in partnership with industry colleagues, research institutions and start-ups on a wide range of innovation projects. Our "Innovation for Net Zero" forum in November 2024 profiled these partnerships and highlighted the importance of collaboration to our innovation process.

In February we published an innovation consultation seeking feedback from stakeholders on our proposed innovation approach and plans for the year. The insights we received were subsequently incorporated into our multi-year innovation plan, and into our innovation proposals for Price Review 6 (PR6). Our plans for PR6 identify core areas of focus for innovation, including environmental responsibility, electrification of heat and transport, decarbonised electricity, network flexibility and empowering customers. Through this programme, we will build on progress to date in developing solutions to address environmental challenges and enable a net zero ready electricity system by 2040.

Innovation Projects

Theme 1: Biodiversity & Environmental Protection

Creosoted Wood Poles

Scope:

ESB Networks is exploring alternatives to creosote-treated wood poles, which have historically been used for overhead line infrastructure. The project involves trialling composite poles and alternative wood treatments that are safer and more durable under Irish climatic conditions.

Environmental Impacts:

The use of creosote in the environment is being phased out in line with EU and Irish legislation. By transitioning to composite poles and alternative wood treatments, this project helps eliminate potential environmental risks, supporting safer and more environmentally responsible infrastructure.

Composite poles offer enhanced durability and resistance to decay, reducing the frequency of pole replacements. This results in lower resource consumption and waste generation, contributing to more sustainable material use over the long term. The extended lifespan of composite poles reduces the need for ongoing deforestation and timber processing, supporting forest conservation efforts.

Furthermore, this initiative ensures compliance with EU regulations and associated derogations that currently phase out creosote-treated wood by 31st October 2029, fostering the adoption of environmentally friendly materials in electricity infrastructure. By leading this transition, ESB Networks is aligning with best environmental practices, promoting innovation, and supporting the wider electricity sector's commitment to sustainability and circular economy principles.

Gridguard AI - Woodpecker Mitigation

Scope:

Woodpeckers, a protected species in Ireland, pose a growing challenge to overhead wood poles by causing damage that leads to decay and structural failure. This project explores innovations to mitigate woodpecker damage, including deploying AI-powered tools to assess pole conditions and trial preventative solutions.

During 2024, ESB Networks' overhead line (OHL) Asset Management team has been completing trials to determine the vulnerability of various wood pole types to attack and damage from woodpeckers. Various innovations are being explored to mitigate against damage from woodpeckers and methods to repair damaged poles are being explored. This work has also incorporated testing to assess the condition and remaining strength of wood poles which has value beyond woodpecker challenges.

Environmental Impacts:

Addressing woodpecker-related pole damage through AI-driven predictive analytics reduces the frequency of pole replacements, minimising resource consumption and waste production. The conventional approach of replacing damaged poles results in increased resource usage, manufacturing emissions, and logistical carbon footprints. By prolonging the lifespan of existing poles, this project helps reduce these environmental impacts.

The use of AI-powered monitoring and early intervention strategies allows for non-invasive and targeted solutions, reducing the need for widespread infrastructure disruption. This not only preserves the integrity of electricity infrastructure but also supports biodiversity conservation, ensuring that mitigation measures are implemented in a way that respects woodpecker populations and their natural behaviours.

Additionally, the project aligns with circular economy principles by decreasing demand for raw materials while enhancing infrastructure resilience. By optimising maintenance strategies, the initiative lowers carbon emissions associated with pole production, transportation, and disposal, contributing to a more sustainable and environmentally responsible grid management approach.

Theme 2: Fleet and Transport Electrification

E-Fleet – Decarbonisation of the Fleet

Scope:

This project aims to decarbonise and electrify ESB Networks' transport fleet, transitioning from fossil fuels to electric vehicles (EVs) and other low-carbon solutions. This initiative was ongoing throughout 2024 . It is developing modular fitouts for existing vans and trialling efficient charging solutions for fleet vehicles.

Environmental Impacts:

Transitioning ESB Networks' fleet to electric and low-emission vehicles directly reduces greenhouse gas emissions, cutting reliance on diesel and petrol-powered transport. The transport sector remains one of the largest contributors to carbon emissions, and by shifting towards electrification, this project plays a pivotal role in working towards our Net Zero target of having 50% of our fleet electrified by 2030.

The project also embraces circular economy principles by developing modular fitouts for existing fleet vehicles, allowing components to be repurposed and reused, reducing waste generation and raw material consumption. This not only extends the lifespan of fleet vehicles but also lowers the overall carbon footprint associated with manufacturing new vehicle components.

Additionally, trialling home and depot charging solutions for network technicians enhances energy efficiency and convenience, accelerating the widespread adoption of EVs across ESB Networks. By optimising charging infrastructure, the project supports sustainable fleet operations while ensuring minimal disruption to energy demand.

Through large-scale fleet electrification, this initiative aligns with national and EU climate policies, positioning ESB Networks as a leader in sustainable transportation. It also sets a precedent for other organisations to transition towards low-emission vehicle solutions, contributing to Ireland's broader decarbonisation efforts and Net Zero by 2050 ambition.

Electrification

How ESB Networks is driving & supporting measures to accelerate electrification

We recognise the pivotal role that the electrification of heat and transport can make to lowering Ireland's greenhouse gas emissions and achieving our national targets for decarbonisation of the Irish economy for 2030 and beyond towards net zero. The distribution system will be the critical link between customers' electric vehicles and heat pumps and the zero carbon, renewables-based generation that will power them into the future. Therefore, the distribution system will be a key enabler of empowering a whole range of expanded customer needs and demands relating to the uptake of Low Carbon technologies (LCT), including the electrification of heat, transport and industry.

The introduction and progressive acceleration of housing and climate action targets, combined with rapid population growth, is driving significant additional demand for network capacity. While this can be accommodated in some areas of the network, other areas have limited capacity to support further growth without substantial investment in new infrastructure. Major investment will be required across our next three investment cycles (starting with PR6) to support the National Development Plan, Housing for All targets and the Climate Action Plan. We are scaling up our internal resources and contractor partnerships to deliver this much larger programme of work and adopting new construction methods to overcome supply chain constraints. We are also working to identify and bring forward interim solutions to meet immediate customer needs in areas of limited capacity, where it is possible to do so. ESB Networks has published a capacity heat map and capacity workbooks on our website to provide insights to customers on current and planned network capacity.

Throughout 2024, we have continued to deliver on the electrification commitments set out in our Networks for Net Zero Strategy, ensuring our commitments are progressing and advancing for all our customers. To ensure relevancy and a prioritised focus we use insights from research, customer interaction and international developments to inform our approach.

The ways we are actively delivering include:

- **Development and/or advancement of solutions that support the acceleration of e-transport and support our e-transport customers, for example:**
  - Connection Screening service provided for EV charging infrastructure developers, providing information relating to the indicative availability of capacity at locations of interest to these customers.
  - In response to a request from ZEVI, in 2024 we have been advancing a pilot that will explore the option to allow LV connections up to 300 kVA from a unit substation, which is currently limited to 200 kVA.
  - We have been working with OEMs on designing and advancing the development of combined EV/PL (public lighting) charging solution, moving it towards to pilot stage for early 2025.

- In 2024, we piloted a solution for EV charging in off-curtilage parking scenarios. This pilot was trialled at a location in Churchfields housing development near Blanchardstown, working in collaboration with pilot partners GEM Construction and Fingal County Council. Following the successful completion of the pilot, the solution was then transitioned into our business. Throughout 2024 ESB Networks undertook activities to disseminate information around EV charging in the wider industry e.g. engagements and presentation with the CIF and attending various ZEVI stakeholder workshops.
- ESB Networks' National Code of Practice for the Customer Interface review process commenced mid-year and completed by the end of 2024, with the revised and updated Code of Practice being published in January 2025. This publication included our Guide for Public EV Charging providing additional options for neighbourhood charging with off curtilage parking.
- At the end of 2024, we started to investigate the option for connecting up to 69 kVA customers using whole current metering. This work will continue into 2025.

Developing our support of e-heat:

- To support and help drive our Net Zero strategic direction, we have been developing an ESB Networks' e-heat framework, which includes an assessment of research, pilots, policy positions, market insights, as well as development of our understanding on impacts on distribution networks and peer-organisation response to such growth in heat demand.
- Across both our Electrification and Innovation Teams, we have been actively engaged in various stakeholder events, including with governmental departments who are seeking to advance national policy related to decarbonised heat. In addition to this stakeholder engagement, we have been undertaking various initial desktop analyses that can support in the scoping of a pilot project that may seek to assess the impact on the network of more widespread deployment of heat pumps in older housing stock/estates. This pilot study commenced in 2024 and will continue into 2025.

As is set out in ESB Networks' Net Zero Strategy, the direction and delivery to 2030 (and achieving net zero) of priority actions is shaped and influenced by the whole business. Some other noteworthy objectives that have been progressed throughout 2024 include:

- We have been advancing the Lower Carbon Technology (LCT) Register strategic objective. The LCT Register is a list of Low Carbon Technology devices that have been validated as conforming with the standards and the industry requirements to permit their connection to the LV electricity distribution network. In 2024 we initiated this project and appointed the Compliance Agency for the initial phase of the project of establishing a baseline for LCT devices. The LCT Register has the purpose of streamlining our compliance assurance to support a more efficient connection application assessment process, whereby details of all LCT device models are centrally registered and validated, thus avoiding duplicate compliance assessment of the same device models for multiple connection applications.
- We published an expression of interest in a flexible demand connections pilot and significant subsequent engagement with respondents took place, to assess suitability and requirements for a timed connection solution. Over 30 responses were received from more than 20 different companies, and it is hoped that the first timed connection offer will issue as part of the pilot in Q1 2025.

Significantly in 2024 we achieved a step-change in the momentum and extensivity of our electrification stakeholder engagement, underscored by examples that included:

- Facilitation of electrification customer one-to-one meetings.
- Direct support of national transport agencies gaining detailed understanding and insights into their development plans and associated electricity needs to 2030. These plans include significant step change in electrification, new and enhanced transport (bus, rail etc) routes, as well as greater regional balance.
- Ongoing proactive engagement with ZEVI on all relevant matters. ESB Networks supports and participates as a member of the Assurance Board, attendance and participation in ZEVI Progress Groups where we are active in numerous groups providing ongoing support, with presentations at a range of ZEVI-organised external stakeholder workshops, held nationally throughout the year.
- Direct support & presentation slots across fora relating to ZEVI and Transport Infrastructure Ireland (TII), that target multiple stakeholders operating across the full value chain that includes Charge Point Operators (CPOs), Regional & Local Authorities, Government agencies, SEAI, and wider industry.
- Ongoing senior engagements with TII, with monthly bilateral engagements that address a number of delivery objectives ongoing for TII and the newly established AFPO (Alternative Fuel Programme Office).
- EU Mission Cities (Cork & Dublin) programme, engaging and supporting these City Authorities as members of their respective leadership groups, as they work to progress their city strategies that will underpin their approach of the Mission City goals.
- We have helped to shape, influence and support in defining the needs of electrification-related policy and national consultations that have taken place throughout 2024 including, ESB Networks' consultation response to AFIR drafted Policy Framework which will be implemented by Irish Government from 2025 onwards; we have worked with ZEVI to shape, contribute to and inform their draft strategies from distribution network standpoint and DSO-related considerations including in 2024 the Residential & Local Authority (LA) charging strategy (now finalised), and Data Strategy (December 2024).
- Informing our strategic direction, in 2024 we participated in various international DSO emergent technologies and innovation events; we commissioned peer utility comparative analysis, on the uptake and impact of LCT in other jurisdictions so we could gain learnings from other countries and best practice.
- Additionally, we commissioned specific expertise on the relevance and basis for anticipatory investment in grid infrastructure, the findings and insights of which were used in our PR6 submission to the CRU in October 2024.

Smart Metering Project

The National Smart Metering Programme was established by the CRU and is the delivery plan for the roll out of smart meters across Ireland. ESB Networks has been tasked with the delivery of the roll out programme, which involves upgrading all of Ireland's electricity meters to smart meters. Ireland's smart meter upgrade programme is part of the national Climate Action Plan. Smart meters will support Ireland's transition to a low carbon future by enabling the development of smart grids, and supporting the electrification of heat and transport, local renewable generation, and microgeneration.

Since 2021, electricity supply companies have been offering new smart products and services, which enables the customer to shift some of their consumption to times of the day when electricity is cheaper.

During 2024, ESB Networks continued the replacement of over 2.5 million electricity meters in homes, farms, and businesses with next generation smart meters to support the transition to a low carbon electricity network. In 2024, 326,000 smart meters were installed by almost 300 installers across the country.

The upgrade to smart meters is bringing many benefits to customers, the environment, and the economy. The following has been delivered as part of the programme in support of our journey to a low carbon future:

- The programme continued to safely install smart meters, across every county in Ireland during 2024. 1.9 million smart meters were successfully installed by the end of December 2024. This means that over 1.9 million customers now have access to smart tariffs and services.
- ESB Networks delivered the IT upgrades required to support the delivery of smart services and tariffs by electricity supply companies. Since 2021, these products have been providing customers with more information on their energy usage, allowing them to move some of their consumption to times of the day when electricity is cheaper.

- Smart meters are being remotely read and as of the end of 2024, our Smart Metering Operations Centre had issued more than 9 million billing reads to suppliers. This has resulted in a significant reduction in estimated bills and improved billing information for customers with smart meters.
- ESB Networks began installing smart Day/Night meters in September 2023. By the end of 2024, over 160,000 existing Day/Night meters were replaced with a Smart Day/Night meter. This means that customers on an existing Day/Night tariff with their supplier were able to remain on their existing tariff but benefit from other smart services, such as accurate billing. Many Day/Night customers have moved to half hourly data to avail of new EV charging tariffs.
- The Smart Metering Programme continued to make improvements to the 'My Energy Consumption' application throughout 2024. The ESB Networks' Online Account enables customers to access their smart meter data. By the end of 2024, there were over 670,000 views of consumption data. The ESB Networks' Online Account, including 'My Energy Consumption' is a key delivery in the strategy of empowering customers and providing consumption insights toward the goal of net zero. Improvements include a graphical representation of Day, Night and Peak usage and three additional downloadable files. A number of new websites utilise the kWh downloadable file to provide customers with detailed supplier tariff information enabling customers to select the supplier with the offering for their needs.
- Throughout 2024, ESB Networks' Smart Metering Programme ran a range of localised and national media awareness campaigns across radio, print and social media. As the rollout progressed in 2024, customer communications evolved to focus on informing customers as to the advantages of smart metering, such as improved energy efficiency, cost savings, no more estimated bills, and enhanced control over their energy usage.
- The Programme has also led industry forums and working groups ensuring alignment with supplier systems and process development and provided on-going support for supplier queries during 2024.

National Networks, Local Connection Programme

The decarbonisation of Irish society relies on fundamental changes to how energy is generated and consumed. To enable these changes at the right pace and the right price, we need to make the connection between how renewable energy is generated, and how we use or store it. Every Irish home, farm, community, and business is being called on to play a part. The National Network, Local Connections Programme (NN,LC) was established within ESB Networks to work with, and for, customers to make this possible.

Over the course of 2023, the NN, LC Programme was combined with other business areas as part of the Distribution Markets and System Operation (DMSO). The DMSO is a new organisational structure in ESB Networks that brings together the teams from the National Network, Local Connections Programme, Smart Metering, Network Operations and Retail Market Services. DMSO continues the work of enabling flexible services markets and facilitating customer participation in the energy transition, with the NN, LC work programme largely delivered by DMSO Design.

The recent CRU Decision paper on National Energy Demand Strategy (NEDS) identified work done by the DMSO as a key element of the strategy, especially within Area 2 i.e. Demand flexibility and Response. As part of the NEDS, ESB Networks, along with other key stakeholders, has an important role in working towards the Climate Action Plan 2024 targets for flexible demand.

ESB Networks published its Net Zero Strategy in January 2023 with a clear commitment to Ireland's climate action policies and ambitions. Significant investment in flexibility will be key to delivering on this commitment.

Flexible demand will be central to our ability to support the rapid increases in demand and distributed renewable generation across the Irish electricity system quickly, efficiently and securely. In line with the shift in emphasis in CAP23, we believe that flexible demand will be central to Ireland's ability to reduce carbon emissions, by enabling low carbon demand growth by matching new or changing energy demand with renewable energy generation. Flexible demand provides new opportunities for all customers and businesses to benefit from taking an active role in climate action.

The NN, LCP in 2024

Some of the flexible demand initiatives delivered in 2024 by the NN,LC Programme are as follows:

- Beat the Peak initiatives, which aims to empower customers and commercial assets to take control of their energy usage made great progress this year with both Domestic & Business campaigns.
  - In 2024 Beat the Peak Domestic ended the year with 25,688 participants. We ran 25 energy events, recording 84,357 actions along the way. Over the year we sought to further optimise participation in energy events by creating a comprehensive research plan that incorporates regular testing (such as adjusting notification times for Energy Event messaging) into the weekly operations. We distributed over 300k educational emails as part of the behaviour change campaign and launched the "Beat the Peak" game to select participants to assess how gamification can help further the public's understanding of how renewable electricity impacts the network, how completing certain activities inside or outside of peak hours (5-7pm) can benefit the electricity network, and gain insights into which household appliances consume the most electricity.
  - The Beat the Peak Business initiative went live on e-tenders and there have been significant expressions of interest to date. The scheme is open for applications until September 2025.
- The Distribution Markets and System Operation (DMSO) Community Toolkit, which is a climate action target, was published in December 2023. The overall purpose of the DMSO function is to drive the transition to a high-renewable, low-carbon energy system with customers at the center, while delivering operational excellence and ensuring security of supply. It will play a key role in helping to deliver targets set out in the Networks for Net Zero Strategy. A big part of this is adapting ESB Networks to deliver the 2023 Climate Action Plan target of 15-20% demand flexibility by 2025.
  The DMSO Community Toolkit contains resources created to support customers and communities in engaging with Flexible Demand. It provides 26 counties with tools to compare and contrast their renewable energy journey with other communities. In Q2 2025 customers will be able to sign up for customised Renewable Energy Forecast Alerts for their specific area, receive notifications via mobile devices about the forecast of renewable energy availability, and participate in an interactive Flexibility Quiz to gain insights into their energy use habits. Additionally, the toolkit will include an Appliance Comparison Calculator to analyse the energy consumption and associated costs of household appliances.
- Pilot 4, which focused on connecting generation to the distribution system on a flexible basis, thereby facilitating earlier and cheaper connections continued in 2024. A major milestone was reached in terms of the connection of the first flexible generator in October 2024. To facilitate this an operating protocol was agreed with EirGrid for control of the generation and to augment the DSO operational processes previously agreed.

- In 2024, DMSO Design also progressed another initiative aimed at facilitating early customer demand connections. This initiative has the potential to be complex but will provide additional choices for customers who are targeting electrification of their own facilities, thereby reducing their carbon footprint.
- At the beginning of 2024, agreement was reached between the two system operators - ESB Networks and EirGrid - on a high-level design for the future Operating Model. This high-level design sets out the vision and principles of the operating model, ensuring that the system operators have a coherent approach to optimising the electricity system as a whole and delivering efficient solutions for the electricity consumer.
- An improved process was developed to update EirGrid on the uptake of micro- and mini-generation at a Bulk Supply Point (BSP) level on a quarterly basis. These updates will assist EirGrid in forecasting of overall generation and net demand on the transmission system and are part of the work in train to improve data exchange and information sharing.
- Other work delivered and ongoing with EirGrid includes;
  - Recommendations relating to the control and visibility of micro, mini, and small generation (<200Kw per installation) with a view to ensuring that any potential problems that could be caused by this generation is mitigated at an early stage.
  - Working to facilitate DSO connected generation provide reactive power services to EirGrid to support the reduction in conventional generation on the system (among other benefits)
- The CRU published a consultation document from ESB Networks titled “Demand Flexibility Product Proposal” in early 2024. This consultation sought views from industry on ESB Networks’ proposed plan to procure up to 500MW of medium-term flexibility products. A second public consultation was published in October 2024 which aimed to further involve industry stakeholders on updated aspects of the proposed product before procurement began. The procurement process was initiated in October also, with the publishing of the Qualification System Questionnaire (QSQ) and will continue into spring 2025 with the launch of a Call for Tender for a shortlist of potential customers. This procurement process is intended to form a component of the overarching National Energy Demand Strategy (NEDS) and will play an important role in achieving Ireland’s CAP targets.
- Pilot 1 was set-up as part of the wider NNLC programme to enable the procurement of flexibility services from customers in locations where new solutions are needed to support growth in demand and new customer connections. Three pilot locations signed up to flexibility contracts: Corduff, Tullow/Shillelagh/Baltinglass and Finglas/McDermott. Contracts were secured with 2 Flexibility Services Providers (FSP). Pilot 1 went live at the beginning of October 2022 for a period of 2 years which ended October 2024. Overall, the Pilot delivered 24.83MWh of flexibility across 67 delivered events.

- An initiative to display an accurate picture of the electricity network (LV Network Schematic) at any given point in time has successfully mapped 37.5% of the LV Network as of December 2024. Progress has also been made with regards to completion of the procurement for LV Monitoring Devices, with Phase 2 installations underway. Various pilot programs were also rolled out in 2024, including the use of AI imagery and LIDR technology. Each of these initiatives marked major milestones for the Programme and helped us to meet CRU requirements.
- An initiative called “Pilot 2”, which issues dynamic instruction sets to Demand Side Units to enable participation in TSO markets, continued operating in 2024, with 679 MWh of capacity unlocked by Pilot 2 operations. As a result of this initiative, participants will be updated daily by ESB Networks and will only be prevented from participating on a given day if network conditions require it, rather than for the entirety of the summer as done previously. This Pilot will be enhanced and continue operating in 2025.
- An initiative called Conservation Voltage Reduction (CVR) which aims to reduce peak electricity demand by supplying the same amount of energy to customers in a longer timeframe, went live last year. There was an initial roll-out to 25 transformers in Dublin North, South and Central, achieving an estimated 26 MWh energy savings. Further updates are planned this year.
- Flex Charging is a proof-of-concept initiative arising out of the Free Electrons competitive programme. Flex Charging manages EV charging using in build vehicle telematics. There are approximately 174 EVs participating in the proof of concept with a total battery capacity of 11.9MWh. The proof of concept will be completed in June 2025 and ESB Networks will produce a detailed report outlining analysis and learnings gathered.

Engagement

The NN, LC Programmes engagement with our stakeholders continued over the course of 2024. The NN, LCP Advisory Council met in June and September 2024 to allow ESB Networks update our Advisory Council members on the progress of our suite of flexibility initiatives and also to provide Advisory Council members opportunity to shape the direction of the programme.

Our call for input consultation published in July 2024, outlined the roadmap for delivering flexibility services and featured the following strategic proposals:

- Flexibility Market Design
- Power Systems Requirements
- Commercial and Domestic Customer
- Behind the Meter Infrastructure

The responses received to our call informed development of our updated Flexibility Multi-Year Plan 2025-2029 which was submitted to the CRU in September 2024.

In tandem with engagement with our stakeholders via formal consultations, the NN,LC also hosted a number of online webinars to allow our stakeholders to input on our initiatives. For example, both ESB Networks and EirGrid via our Joint System Operator Programme hosted two online webinars regarding the joint TSO/DSO operating model high-level design in Q2 and Q3 2024.

ESB Networks also hosted an online webinar in November 2024 pertaining to the second consultation on our Demand Flexibility Product.

We participated in many industry conferences and events and provided representation at the Eirgrid Citizens Energy Forum which are ongoing roadshows throughout the year at community townhalls across Ireland.

5 Climate Action and Sustainability

Overall Carbon Emissions

ESB Networks carbon emissions can be categorised into three different scopes:

Scope 1 – These are direct emissions from ESB Networks owned or controlled sources. This includes our vehicle fleet, SF6 emissions from switchgear, diesel generators, and from buildings heated by gas.

Scope 2 – These are typically indirect emissions from the generation of purchased energy, such as electricity used in ESB Networks buildings. However, as ESB Networks is an electrical utility, this also includes transmission and distribution losses from the network.

Scope 3 – These emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions. This includes waste, capital goods, business travel, employee commuting, working from home and the upstream emissions of purchased fuels.

ESB Networks annual carbon footprint for 2024 is detailed in the table below:

Table 1 ESB Networks annual carbon footprint for 2024

Scope	Category	Tonnes of CO_2 Equivalent (2023)	Tonnes of CO_2 Equivalent (2024)
Scope 1	Vehicle Fleet - Direct Emissions	11,797	13,275
	SF6 Gas	2,122	3059
	PFC*	2.6	2.37
	Generator Emissions*	568	981
	Building Emissions - Heating Gas*	160	208
Scope 2	Building Emissions - Electricity	3,998	3,343
	Transmission and Distribution Losses	662,008**	553,974
Scope 3	Waste*	207	148
	Capital Goods	151,668	161,764
	Business Travel	2,885	3,132
	Upstream Emissions for Purchased Fuels	2,914	3,248
	Upstream Emissions of Gas Consumption in Buildings *	26	34
	Employee Commuting	1,653	1,855
	Working From Home *	588	647

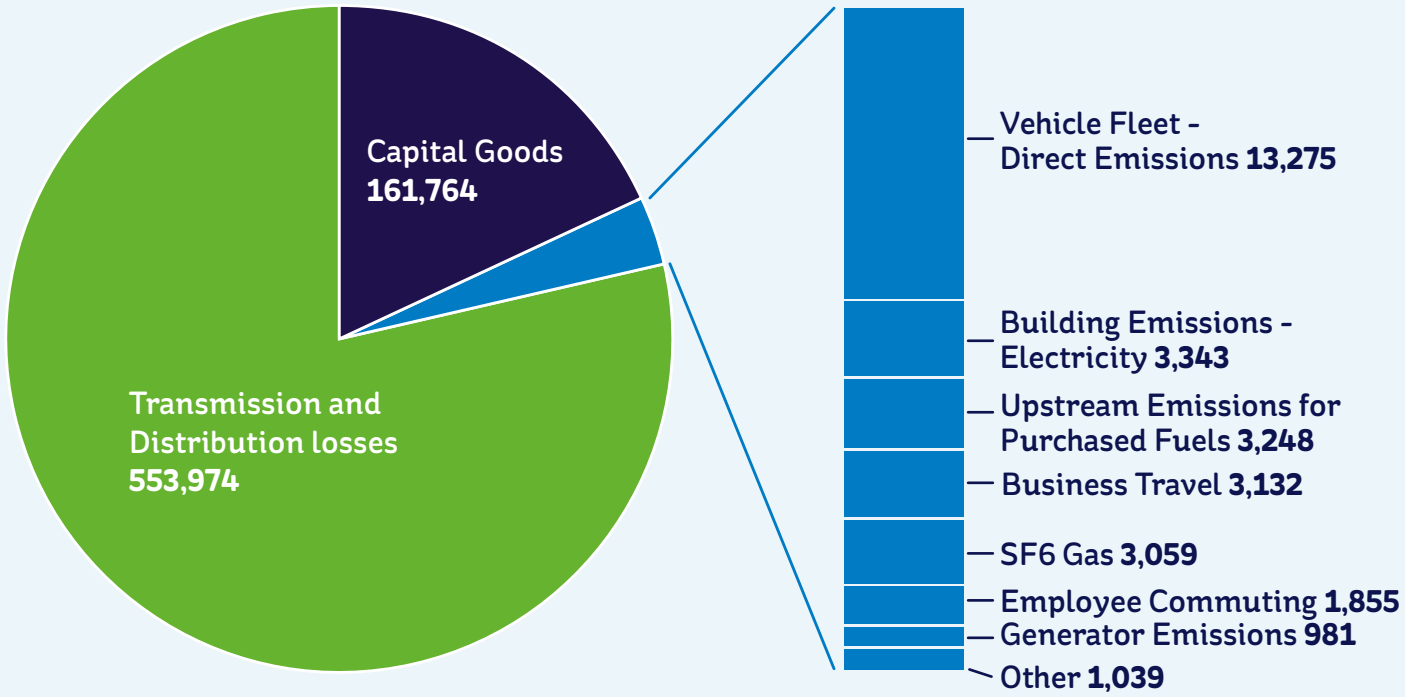
*All of these categories will be represented by the 'Other' Category in Figure 3.

**2023 figure has been amended due to a revision following the publication of the 2023 Environmental Performance Report

Carbon emissions are very dependent on the intensity of electricity generation. As we connect more renewable sources to the grid, this will result in reductions in carbon emissions in future years, and thus a continuous downward trend.

Breakdown of ESB Networks' 2024 Carbon Footprint

Figure 3 – ESB Networks' CO_2 Emissions 2024 (Tonnes of CO_2 Equivalent (2024))



Sustainability Reporting

Sustainability is often defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. In ESB Networks, we have a long track record of meeting the needs of our customers and society. In line with our Networks for Net Zero Strategy, we are placing sustainability at the heart of everything we do.

The UN Sustainable Development Goals (SDGs) provide a global blueprint to achieve a better and more sustainable future for all by 2030. They act as a call to action for countries, organisations and individuals to align their actions around common goals that matter to people and the planet. ESB Networks has adopted and integrated three of the SDGs where we can make a real tangible difference, namely:

ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

The Corporate Sustainability Reporting Directive (CSRD), in line with the European Green Deal is a crucial part of the EU's broader goal to promote sustainable business practices and reduce environmental impact. It aims to enhance and standardise sustainability reporting across the EU.

The CSRD mandates annual reporting on environmental, social and governance (E, S, G) practices having undertaken a Double Materiality Assessment (DMA). Double materiality requires companies to consider both impact materiality and financial materiality in both its own operations and its value chain. An impact, risk or opportunity (IRO) is deemed to be material if it meets the DMA criteria from either an impact perspective, or the financial perspective, or both. Independent limited assurance is required on the disclosures made in the annual CSRD report.

ESB Networks will contribute relevant information as part of ESB CSRD reporting requirements.

Distribution Losses/20kV Conversion Project

In the 1990s, ESB Networks began a program to convert its 10 kV network to 20 kV based on studies at the time which indicated that this was the most cost-effective and efficient way to address voltage and capacity issues on the rural MV network.

One of the primary benefits of converting the electricity network to 20kV is that the thermal capacity is increased by a factor of two and voltage drop performance is increased by a factor of four. Voltage drop is the limiting criteria that determines circuit capacity of ESB Networks' typical rural networks. Consequently, circuit capacity is effectively increased by a factor of four. In effect, 20 kV is a vital enabler of demand growth that is anticipated as a result of low carbon government initiatives in relation to e-Heat and e-Transport. In addition, as conversion to 20 kV reduces losses by a factor of 4, the reduction in Carbon Footprint that can be achieved by extending this programme is highly significant. The conversion programme continued in 2024, with 378 kilometres of the network converted to 20kV. To date, ESB Networks has converted 45.6% of the 10kV Network to 20kV.

6

Minimising our Impact on the Environment

ESB Networks is dedicated to conducting its operations in a way that enables us to take pride in our environmental performance. We acknowledge that our activities can have an impact on the environment and understand our duty to manage these impacts in a manner that prevents pollution and ensures a high level of protection for the natural environment.

ESB Networks' Policy Statement on the Environment

ESB Networks' Policy Statement on the Environment approved by the Managing Director, ESB Networks, commits us to:

- Conduct our activities and those undertaken on our behalf in an environmentally responsible manner and in compliance with all legal and other requirements, company policies and standards related to our environmental aspects.
- Develop and maintain an effective environmental management system.
- Implement the environmental aspects of the Networks for Net Zero Strategy.
- Protect the environment and prevent pollution by identifying, managing and regularly reviewing the environmental aspects and impacts associated with our business activities, services and processes.
- Review our environmental programme regularly to ensure continual improvement in environmental performance and to provide a framework for setting and reviewing environmental objectives and targets.
- Act responsibly in our use of natural resources.
- Consider environmental matters in all planning and decision making.
- Make continuous efforts to maximise the energy efficiency of our networks, buildings and fleet.
- Minimise the production of all wastes as far as practicable, promptly recover all litter found at ESB Networks locations and dispose of all residual wastes in a safe and responsible manner.
- Record and respond swiftly to all environmental incidents and complaints.
- Promote environmental and sustainability awareness among our staff, contractors and suppliers and embed these values in our investment and expenditure decisions.
- Provide the necessary training and support to staff on environmental matters relating to our business activities.
- Make this Policy Statement available to all our staff, contractors and interested stakeholders.

Environmental Management System

Since 2010, ESB Networks has been using an Environmental Management System (EMS), which has received external certification for compliance with the ISO 14001 Standard. The EMS presents a structure that enables ESB Networks to methodically recognise, evaluate, prioritise, and handle environmental hazards connected with its business activities. The EMS encompasses all of ESB Networks' operations, services, and processes linked with managing the electricity network on behalf of the Electricity Supply Board.

During 2024, ESB Networks' EMS underwent a surveillance audit by an external Certification Body, against the requirements of the ISO 14001:2015 standard. This Recertification Audit sampled a large range of activities within the scope of ESB Networks' certification, including:

- Environmental Management Systems
- Underground Fluid-Filled Cables
- SF6 Gas Management
- Smart Metering
- Depots
- Garages
- Construction Crews
- Management of Woodpoles
- HV Stations
- Working in Environmentally Sensitive Areas
- Managing Environmental Incidents
- Waste Management
- Managing Contractors

No non-conformances were identified by the External Auditors during any EMS Audits in 2024. ESB Networks continue to be certified to the ISO 14001 standard.

Environmental Monitoring and associated Improvement Works

In line with our EMS, ESB Networks continues to identify and respond to environmental matters across the business, undertaking environmental monitoring and associated improvement works where appropriate.

During 2024 regular ground water and surface water monitoring continued at ESB Networks' national wood pole storage facility in Kilteel, Co Kildare. Following completion of a site specific environmental Detailed Quantitative Risk Assessment (DQRA) in 2024 initial remediation of a section of the site was completed in late 2024. Further remediation works on the remainder of the site will progress in 2025.

During 2024, there was engagement with the Environment Protection Agency (EPA) in relation to ESB Network's Polychlorinated Biphenyls (PCB) Management Plan requirements.

In addition to bunding all new transformer installations in HV substations, during 2024, ESB Networks retrofitted bunding to 9 existing transformers and installed 47 separators to European Norm 858 and Class 1 performance.

ESB Networks' Oil Storage and Transportation Improvement Project continued in 2024. Oil and diesel storage infrastructure upgrades were completed at the National Training Centre in Portlaoise and at Fleet and Equipement garages in Dundalk and Rosbrien.

Covered bunded pallets and transformer oil containment bags were procured for storage of damaged oil-filled plant and equipment, chemicals and other identified hazardous materials. Mobile oil spill containment kits and consumables were provided at Depots, HV Stations, Fleet and Equipment Garages and in relevant ESB Networks' fleet.

ESB Networks was the subject of a complaint under Section 108 of the Environmental Protection Agency Act 1992 which issued in the District Court in Cork in July 2021. This complaint was struck out by the District Court on 27 October 2023. The complainants made an application to appeal this strike out in January 2024 but the application was refused by the District Court. ESB Networks and EirGrid intend to replace the existing transformers at Knockraha. The complainants have been allowed the right to re-enter their complaint if they believe noise is still an issue after the installation of these new transformers.

ESB Networks communicates with internal and external stakeholders on an ongoing basis.

Managing the Environment During Construction

In line with our commitment to deliver PR5 by 2025 and in keeping with ESB Networks' Net Zero Strategy, a sustainability approach is a key consideration in the design and construction stage of all our projects.

ESB Networks has remained committed to achieving timely and cost-effective project delivery, despite the demanding landscape of project planning and consenting. To this end, ESB Networks has made continuous improvements and adapted to the challenges of the environment to ensure successful project implementation.

At the planning and design stage for each Capex project, multi-disciplinary technical teams work to develop projects and site-appropriate construction methodologies in order to deliver connections to customers, while protecting sensitive receiving environments. Detailed design packs, capturing the requirements (e.g. planning consents) are provided to our external contractors who are increasingly important to project delivery. Project support through document review processes (e.g., inputs to Construction Environment Management Plans, Traffic Management Plans, Resource & Waste Management Plans, etc.) is key to ensuring delivery on planning permission condition requirements. Oversight of construction projects is achieved through the appointment of specialists such as Environmental Coordinators, Project Ecologists, Ecological Clerks of Works, Project Archaeologists where appropriate as well as through the implementation of our environmental audit program.

The Waste Enforcement Regional Lead Authorities (WERLA) oversees enforcing waste regulations and ensuring the appropriate handling of construction and demolition waste at a national level. When requested, ESB Networks provided WERLA with data on their construction undertakings that could produce construction and demolition waste. This information is then passed on by WERLA to waste enforcement officers from local authorities throughout the country, who conduct inspections to verify that waste and materials are being properly managed at construction sites. This effort is part of a strategic approach to managing construction and demolition waste in the state.

Biodiversity

ESB Networks remains very focused on the importance of biodiversity in the Irish landscape, and to ensure its activities are managed in a sustainable manner in relation to wildlife and habitat protection. 2024 saw continued advances by ESB Networks with regards to biodiversity action.

In September 2024, ESB Networks published its first Biodiversity Strategy, entitled 'Networks for Nature', available via the ESB Networks website. This strategy has been developed through leveraging our own internal experience, informed by specialist input and draws from international best practice and innovation implemented across the energy sector. It is cognisant of the objectives of the Fourth National Biodiversity Action Plan and of the 'Whole of Government, Whole of Society' approach which is advocated therein. 'Networks for Nature' is informed by the following overarching objectives; Integrate Biodiversity, Enhance Nature where We Operate, Build Capacity, Explore Synergies for Biodiversity, Innovate & Improve and Act Responsibly. The objectives are underpinned by a suite of actions and targets which will facilitate our progress for biodiversity at a strategic, project and site level. Networks for Nature will be reviewed and updated on a five-yearly cycle to ensure it best reflects science-based decision making and any further developments in policy at all levels.

In parallel with the development of our strategy, during the first half of 2024 ESB Networks were a sponsor and key contributor to the development of new biodiversity guidance for the electricity sector. EurElectric commissioned this first-of-a-kind guidebook to support Distribution System Owners and renewable developers in scaling up nature-inclusive practices across the lifecycle of their projects. The guidebook (available here) focuses on grid, wind, solar and hydropower technologies and outlines guiding principles for integrating biodiversity when siting, designing, building, operating and decommissioning infrastructure. It is hoped that through applying the guidance to projects and operations, the electricity sector can assist in efforts to retain natural habitats, protect endangered species, and even create new possibilities for wildlife to flourish.

A number of ESB Networks' documents are in place to advise staff on biodiversity matters and communicate their requirements for legislative compliance. Training with regard to designing and undertaking work in proximity to sites designated for nature conservation was rolled out during 2024, while a new procedure relating to identification of invasive species and biosecurity response actions was finalised. Staff continue to regularly engage with the Networks Environment Team and ecology staff (based in Engineering and Major Projects) on various biodiversity related issues, including screening for Appropriate Assessment, ecological monitoring of construction projects and the implementation of mitigation measures where required.

ESB Networks continues to support the All-Ireland Pollinator Plan (AIPP), pursuing opportunities for more pollinator-friendly management of properties, where this fits with the needs of safety and business operations. ESB Networks has expanded its trials regarding pro-pollinator landscape management at its properties. Building on learning from previous years' actions at the National Training Centre in Portlaoise, long-flowering meadow management of the training field continues, and 'No Mow May' at 19 of its depots and offices during 2024 was applied in tandem with communications to staff regarding the rationale and importance of such actions. In addition, working collaboratively with ESB Enterprise Services and our Facilities Management Contractors, a herbicide-free weed control methodology was trialled at the Finglas depot.

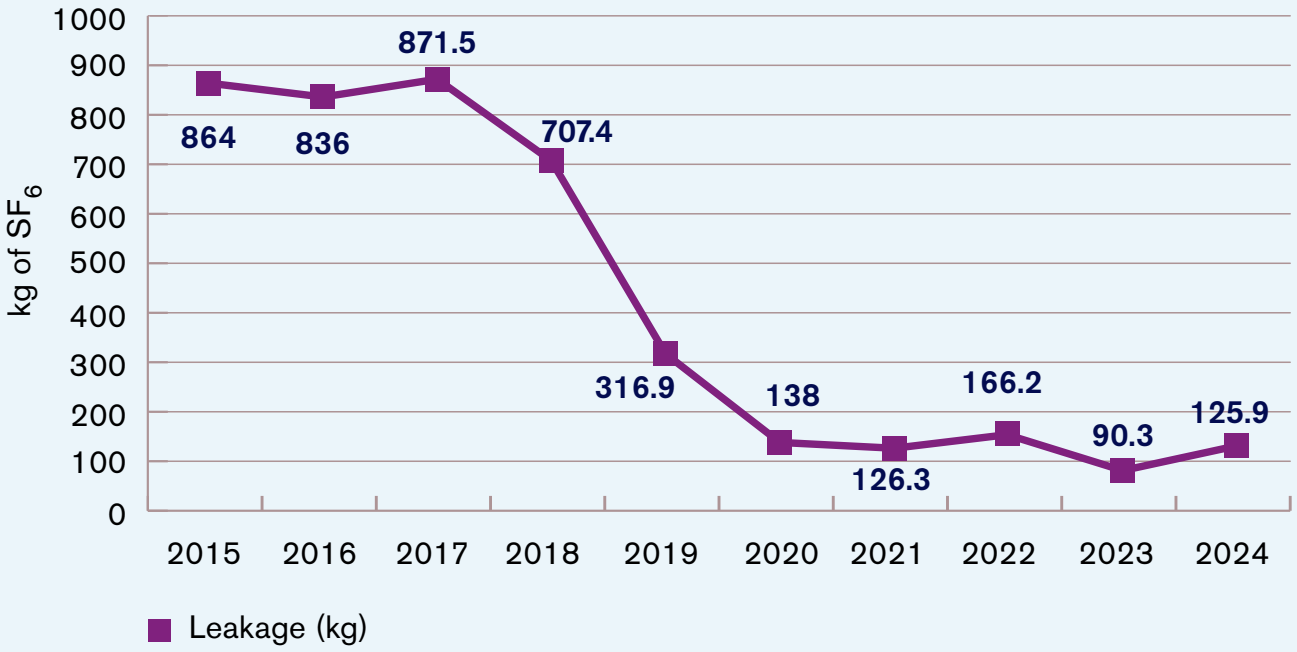
Staff from the ESB Networks' Environment Team have continued to represent the business on the Business for Biodiversity Ireland Platform following its formal launch in January 2024. This is a government-backed national platform helping Irish businesses transition towards a 'nature positive' way of working, where they can actively seek to support nature restoration. The initiative is a key objective delivery vector in the Fourth National Biodiversity Action Plan, with an aim to scale up to 900 businesses over the duration of the plan. Finally, ESB Networks has continued its preparations for reporting requirements relating to Biodiversity and Ecosystems under the Corporate Sustainability Reporting Directive (CSRD) requirements. Significant work has been undertaken with regard to consolidating spatial data and operational information for relevant Networks assets, for the purpose of reviewing their potential effects on Biodiversity Sensitive Areas across the country.

SF6 Gas Management

Sulphur hexafluoride (SF6) is used in a significant portion of ESB Network's high-voltage switchgear assets on the transmission and distribution networks. It is used because of its very high electrical insulating properties which facilitate efficient and safe operation of the switchgear. Emission rates for SF6 gas are reported to the Environmental Protection Agency (EPA) on an annual basis.

In 2024, 125.9 kg of SF6 was emitted due to equipment faults, representing 0.06% of the total installed inventory of SF6. The comparable 2023 leak quantity was 90.29 kg, representing 0.04% of inventory. The IPPC Global warming potential value of a kg of SF6 has also increased from 23,500 to 24,300. This overall leakage rate compares favorably to other European utilities. The overall downward trajectory of SF6 emissions over the last ten years can be seen in Figure 4.

Figure 4 – SF6 gas leakage trends



SF6 Gas Management continued

ESB Networks operated in compliance with Regulation 517/2014 in relation to SF6. This compliance is enabled by:

- Implementation of revised SF6 policy and procedures across the ESB Networks' business, addressing:
  - Labelling
  - Transport
  - Gas Handling
  - Recording & Reporting
  - Leak Response
- Continued training and certification for those involved in handling SF6.
- Technology Improvements related to mobile app-based recording of SF6 gas usage.
- Enhanced monitoring/closeout of SF6 Leaks on a systematic basis.
- Renewed nationwide communication of key requirements of EU Reg 517/2014 as part of rollout of revised procedures.
- Maintaining a critical understanding of market development, regulatory environment and available SF6-free technology

Engagement with statutory authorities & associated reporting protocols
ESB Networks engages with a number of key stakeholders, in relation to SF6 emissions reporting, namely Local Authorities and the Environmental Protection Agency (EPA).

Local Authorities
Where a leak has been identified on a piece of equipment, ESB Networks reports this leak to the relevant local authority. This reporting requirement is implemented in accordance with the Air Pollution Act (1987).

The reporting structure adopts the following approach:

- A Stage 1 notification is issued when a SF6 leak has been identified.
- A Stage 2 notification is issued when the SF6 leak has been stopped.

SF6 Gas Management continued

Environmental Protection Agency

ESB Networks reports on an annual basis to the EPA on its cumulative SF6 emissions for the previous year on/before 31st of March each year. This reporting is undertaken as part of ESB Networks' responsibilities in relation to the Pollutant Release and Transfer Register Regulations (2011).

ESB Networks reports all SF6 emissions to the associated license holder where there are emissions from ESB Networks' equipment on EPA licensed sites.

Processes

Technology Utilisation – where SF6 is moved to and from assets, these transactions are recorded via a mobile device based SF6 app. This simplifies site recording and enables prompt and accurate reporting of gas utilisation.

Policy & Procedures Enhancement – Regular reviews and updates of existing SF6 procedures are carried out to ensure consistent and up to date information and guidance is available for all staff, thus embedding the processes to drive ongoing awareness and compliance in the business with regard to SF6 regulations.

Rationalisation of existing SF6 gas quantities – Where SF6 was recovered from assets, it has been assigned for use in new projects, negating the need to buy additional SF6 for these projects.

SF6 Leak Monitoring & Repair Programme Review – enhanced procedures and IT tools are in place to ensure prompt reporting, capture and closeout of SF6 leaks through a robust process involving Network Assets, Environmental and frontline high voltage station staff.

Fluid-Filled Cables

During 2024, 8259 litres of cable insulating fluid leaked from the High Voltage Cable network (46 litres per km). This is a decrease of 815 litres on the 2023 fluid leakage figure of 9074 litres.

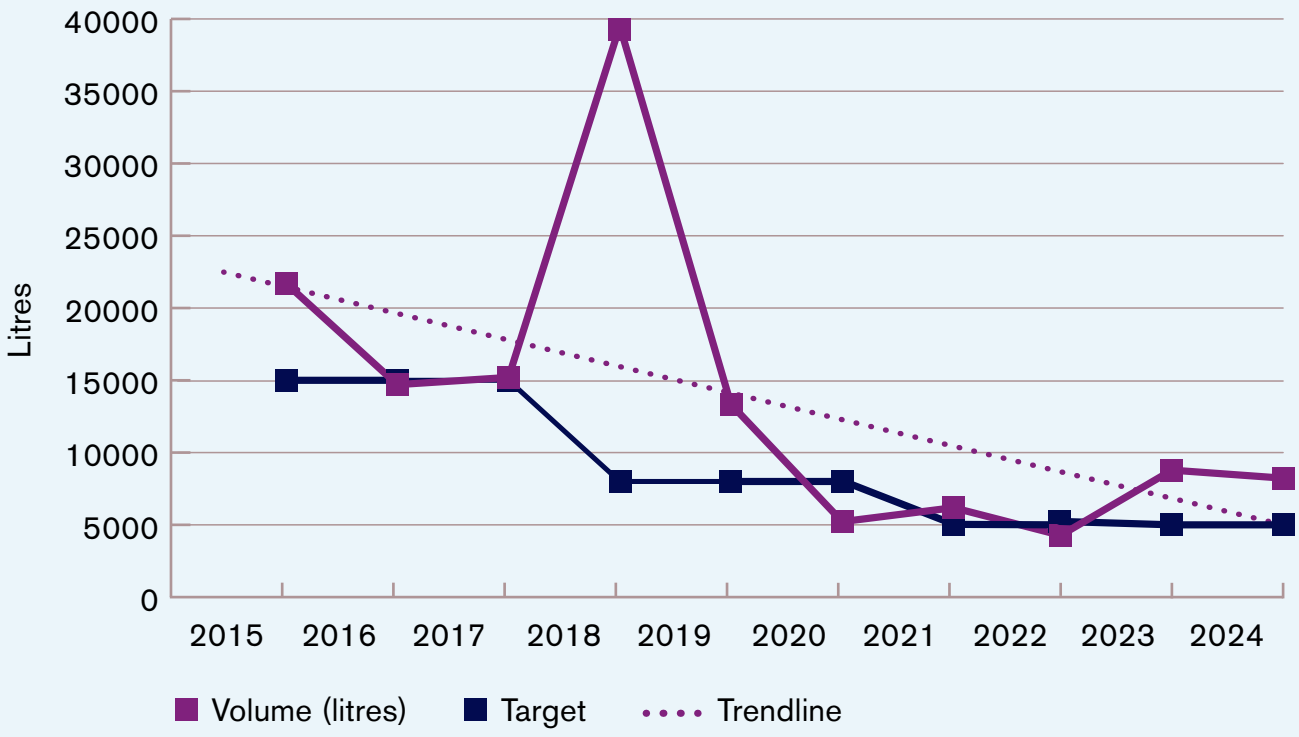
The breakdown of the fluid leaks was as follows:

- **220 kV Cable Network = 2436 litres**
- **110 kV Cable Network =1448 litres**
- **38 kV Cable Network = 4375 litres**

ESB Networks' Company Standard, "Management of Fluid Filled Cables" set a target maximum cable leakage volume of 5,000 litres for 2024. The aim of this value is to encourage efficient leak incident identification and repair. Due to a combination of factors, our leakage total in 2024 surpassed targets. These factors include the increasing age of the assets, 3rd party damage and the requirement to maintain a constrained critical network. Many of our main arteries in Cork and Dublin employ fluid-filled cables as the backbone of our network, which imposes challenges in managing these assets.

The overall trend for the past ten years continues to show an overall downward trend in leakage. (see Figure 5).

Figure 5 – Fluid-filled cables leakage trends 2015 to 2024



Fluid-Filled Cables continued

Leaks that were notified to the relevant Local Authority on the 38 kV Cable Network in 2024:

- **Dun Laoghaire – Sallynoggin**
- **Clontarf – Eastwall Road**

Leaks that were notified to the relevant Local Authority on the 220 kV Cable Network in 2024:

- **Inchicore – Poolbeg 1**
- **Carrickmines – Poolbeg**
- **Turlough hill – Maynooth**

Circuits with repaired leaks in 2024 were:

- **Deansgrange – Sallynoggin**
- **Dun Laoghaire - Sallynoggin**
- **Carrickmines - Poolbeg**
- **Turlough hill - Maynooth**

Fluid Filled Cables - Environmental Assessments

In 2024, further works were progressed on a number of sites as we continue to progress all to a conclusion with the relevant authorities. ESB Networks issued Generic Quantitative Risk Assessments (GQRAs), that had detailed site assessments completed, to the relevant Local Authority. All reports recommended no further site assessments or remediation. As further detailed site assessments are completed and further GQRAs developed, ESB Networks will continue to update Local Authorities on our progress in these assessments and the reports will be available upon request through our public website.

Fluid Filled Cables - Incident Management

Since 2019, ESB Networks has Fluid Filled Cables (FFC) incident protocols in place dealing with both historic and current FFC leaks with relevant Local Authorities. The protocols ensure all relevant authorities are notified of incidents as they arise and are kept up to date with incident response. Regular communication is maintained with relevant Local Authorities to ensure close collaboration regarding road opening licenses, drainage maps and other aspects relevant to our work in cable leak location, environmental assessment, and repair.

We continue to have experienced Network Technicians specially trained in FFC maintenance, leak identification and repair techniques to ensure that we manage these incidents promptly when they occur. ESB Networks' tracer detection equipment has significantly improved our ability to identify leak sites and implement repairs. We continue to implement this state-of-the-art leak detection methodology along with other leak detection methods employing third party cable fault detection specialists that have yielded very positive results of cable fault locations.

ESB Networks' leakage rate in 2024 was approximately 46 liters/km. The current leakage rate equates to 0.9% of the total installed cable fluid volume per annum. This is lower than the leakage rates reported by a number of peer network companies in other countries.

Fluid-Filled Cables continued

Fluid Filled Cables - Replacement Programme

Recognising the environmental challenges in operating and maintaining FFCs, ESB Networks started a fluid-filled cable replacement programme in 2005. So far, 20% of FFCs have been replaced, removing the source of 40% of the previous cable fluid leaks from the system. At present, there is approximately 176km of FFCs on the transmission and distribution electricity networks. We have a number of active FFC replacement projects at construction stage and additional projects at route selection stage.

Such major infrastructural projects involve:

- Scheduled outages, for which businesses and families adjacent to these works must be informed and given adequate notice.
- Securing temporary road opening licences.
- Traversing third party infrastructure, services and major road, rail, waterway crossings.
- Temporary extended road closures.
- Significant trench excavations for new plastic insulated cable and cable replacement.
- Jointing works.

The projects will be undertaken on a phased basis in populated urban areas with significant traffic volumes. Ongoing engagement with relevant stakeholders is vital to ensure efficient and successful delivery of these cable replacement projects.

ESB Networks has now committed to an accelerated investment programme with the CRU. An environmental assessment informs both the schedule and the timing of individual cable replacements.

As part of the Price Review Five (PR5) determination, the CRU approved distribution and transmission FFC Replacement projects. While there are a number of factors that determine how long it takes to replace a full FFC route, our current expectations are to replace approximately 39km of distribution FFC routes in PR5.

A significant number of transmission FFC route replacements will have achieved capital approval in late PR5 also. Due to the significant circuit lengths on most of the transmission FFC routes involved, full replacement is not expected to be completed until PR6 (2026-2030) with ESB Networks' TSO project work commencing from 2025. However, we are engaging with the TSO to take advantage of advanced ducting opportunities as they arise. For example, we are liaising with Dublin City Council's (DCC's) Royal Canal Greenway project team to install 220 kV ducting which may become part of a future 220 kV FFC replacement project in PR6. The TSO is proactively engaging with multiple stakeholders in their Powering up Dublin strategy. The replacement of five of the existing transmission FFC circuits in Dublin City will result in a significant uprate of the circuits involved. As such, there is both a system uprate and environmental benefit to these circuits being replaced. The remaining FFCs are planned to be replaced over subsequent Price Reviews subject to CRU approval. ESB Networks has installed 8km of advanced ducting, in 2024, in ongoing distribution FFC replacement projects.

Waste Management

Throughout 2024, ESB Networks maintained and improved its arrangements for effectively managing waste in compliance with waste regulations. ESB Networks continued to segregate waste, pending its appropriate disposal, treatment or recycling. The company continued to collaborate with all waste management contractors to ensure compliance with all permits and licenses required.

ESB Networks is committed to being at the forefront of sustainability and the circular economy, and the effective management of waste is a fundamental part of this environmental management goal. Notably, in 2024, significant advancements were made towards this objective, with some key achievements and initiatives:

- Contracts for the management of non-hazardous and hazardous waste, scrap metal, oil-filled equipment, and the disposal of empty cable drums and Creosote poles were effectively managed nationwide.
- ESB Network's contracted service providers were facilitated to collect waste, and records of waste disposal were maintained.
- Data management was continued to track tonnages and waste streams.
- Depot recycling rate of 84% achieved for municipal solid waste & Scrap Metal Recycling and 83% for all Non Hazardous & Scrap Metal Recycling combined in 2024.
  - 100% of Networks assets including Oil Filled Equipment, Scrap Metal, Transformer Oil & Network Poles are recycled.
  - New facility established for refurbishment of interface transformers to increase our recycling and reuse of legacy equipment, avoiding disposal.
- Waste including soil, stone / concrete and asphalt (spoil and rubble) are managed directly by our contractors in line with waste legislation. During 2024, 78,239 tonnes of spoil & rubble was removed from ESB Networks sites.
- Standardised office waste management systems maintained at all our facilities to promote the proper segregation of waste.
- Training continued to be rolled out addressing waste management, recycling targets, waste hierarchy, and proper waste segregation and disposal requirements.
- Memorandums of Understanding are in place and maintained with Dublin City Council, South Dublin City Council and Dun Laoghaire-Rathdown County Council on the management of illegal dumping of waste, litter, and graffiti at unoccupied ESB Networks' facilities.
- Throughout 2024, ESB Networks' appointed waste management contractors were engaged to clean up and dispose of waste illegally dumped at ESB Networks' facilities by 3rd parties in a prompt and timely manner to minimise the risk to the environment.
- A consultant has been employed to prepare applications for appropriate waste authorisations for designated ESB Networks' sites. The consultant is currently liaising with Local Authorities around the country.

Waste Statistics (classification and quantities)

In 2024, ESB Networks generated 89,239 tonnes of waste. The reason for the significant increase in waste generated relative to 2023 is ESB Networks experienced a notable increase in large construction projects during 2024, necessitating greater contractor utilisation to fulfill work plans. Consequently, this led to a significant amount of soil and stone being removed from various sites nationwide for disposal, which impacted overall recycling rates, though not within each specific waste stream. Figure 6 presents a breakdown of the various main operational waste streams. This excludes spoil and rubble which was recorded in 2024 at 78,239 tonnes.

Figure 6 – Breakdown of Waste Streams

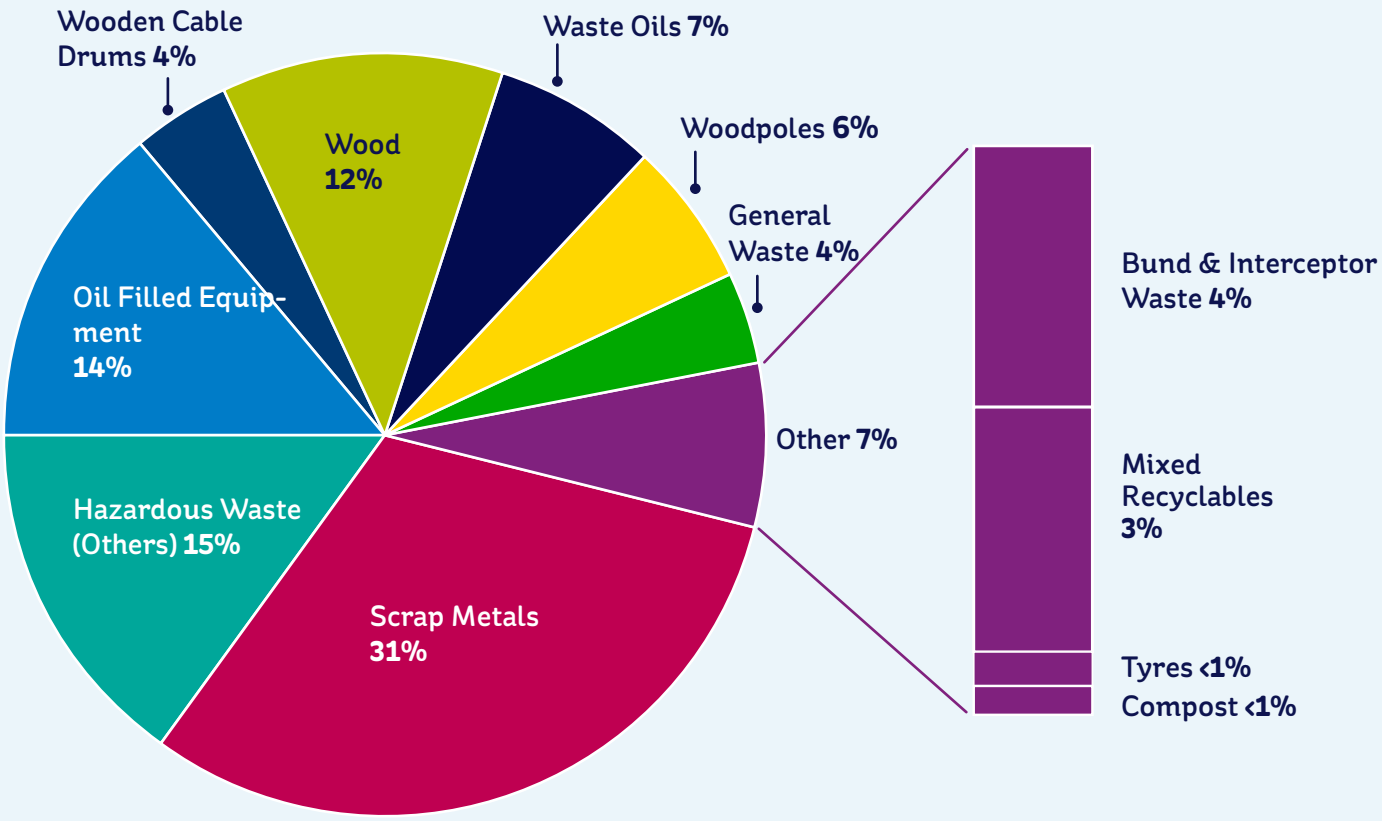


Table 2 compares tonnage quantities for the principal waste categories for 2022, 2023 and 2024

Table 2 - Waste Tonnage Quantities from 2022 to 2024

Waste Stream / Retired Material	Tonnes Per Year		
	2022	**2023**	**2024**
Scrap Metals	2957	2732	3371
Oil Filled Equipment	1967	2067	1512
Wooden Cable Drums	915	760	479
Wood	648	834	1285
General Waste	534	654	459
Mixed Recyclables	376	397	380
Bund & Interceptor Waste	359	229	405
Waste Oils	307	343	772
Woodpoles	303	1438	641
Hazardous Wastes (Others)	99	192	1601
Tyres	65	73	53
Compost	31	33	43
Spoil & Rubble	18	0	78,239
Totals	**8579**	**9752**	**89,240**

Note:

Hazardous Waste (Others) includes Creosote Contaminated Consumables, Contaminated Soil, Oil Filters, Solid Oily Waste, Batteries, WEEE, Chemicals, Paints, Empty Paint Containers, Mixed Fuels, Resins, Silica Gel.

The increase in the total tonnes/yr for 2024 is due to the inclusion of spoil and rubble.

Environmental Incidents

ESB Networks' environmental management systems are designed to minimise, prevent, and mitigate the occurrence of environmental incidents. However, some environmental incidents occur in the course of ESB Networks' business operations, and these are appropriately managed and dealt with. During 2024 there were 187 environmental incidents (as seen in Table 3).

Table 3 - Environmental Incidents

Reported Environmental Incidents	Incidents per year		
	2022	2023	2024
Air Emissions/breaches (excluding F - gases)	-	1	-
Dust nuisance	1	-	-
Ecology, Flora and Fauna (Including invasive species)	6	9	6
Environmental Complaint (External)	1	-	5
Environmental monitoring/abatement equipment malfunction or breakdown	-	4	10
Explosion	-	-	-
F - Gas leak/storage/handling (excluding SF6)	-	1	-
Fire	-	-	-
Flooding (Environmental impact)	-	1	2
Fluid filled cable leaks	3	4	6
Impact on Conservation area (SACs/SPAs/NHAs) and national monument/heritage sites.	-	-	-
Land - Contaminated land or soil	5	-	4
Land - General land damage	-	-	-
Leaks/uncontrolled discharges/spillages of chemicals, oils or fuels	37	60	37
Noise nuisance/emissions	2	1	5
Odour	-	-	1
SF6 gas leak/ handling/storage	116	108	99
Timber Cutting	-	-	-
Visual (Litter/Graffiti) (3rd party)	2	-	1
Waste - Unauthorised disposal (3rd party)	6	6	2
Waste management (Internal)	6	8	8
Water & Discharges - Emissions/breaches/leaks to water bodies	-	-	1
Totals	**182**	**202**	**187**

ESB Networks uses appropriately licenced and permitted environmental incident response contractors, and environmental consultant services, and liaises with relevant regulatory authorities in connection with environmental incident management as necessary. Spill response training is delivered to staff engaged in oil and oil-filled equipment handling and a range of related ESB Networks' Guidelines have been developed and are available.

Spill kits and associated consumables are also available in depots, stores, HV stations and in fleet and equipment vehicles as required.

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