



Rialtas na hÉireann
Government of Ireland

Draft Updated National Energy & Climate Plan

2021 - 2023

Prepared by the Department of the Environment,
Climate and Communications
[gov.ie/DECC](https://www.gov.ie/DECC)

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Glossary

AA	Appropriate Assessment
ACA	Accelerated Capital Allowance
ACER	Agency for the Cooperation of Energy Regulators
AD	Anaerobic Digestion
AER	Alternative Energy Requirement
AFLOWT	Accelerating market uptake of Floating Wind Technology
AMETS	Atlantic Marine Test Site
BEC	Better Energy Communities
BER	Building Energy Rating
BIC	British-Irish Council
bn	Billion
c/kWh	cents per kWh
CAP	Common Agricultural Policy
Capex	Capital expenditure
CARO	Climate Action Regional Office
CCAC	Climate Change Advisory Council
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Utilization
CEER	Council of European Energy Regulators
CEF	Connecting Europe Facility

CEP	Clean Energy Package
CH₄	Methane
CHP	Combined Heat & Power
CNG	Compressed Natural Gas
CO₂	Carbon Dioxide
CO₂eq	Carbon Dioxide Equivalent
OREPER	Committee of Permanent Representatives in the European Union
CORSIA	Carbon Offsetting and Reduction Schemes for International Aviation
CRM	Capacity Renumeration Mechanism
CRU	Commission for Regulation of Utilities
CSO	Central Statistics Office
CCT	Customer Care Team
DART	Dublin Area Rapid Transit
DECC	Department of the Environment, Climate and Communications
DETE	Department of Enterprise, Trade and Employment
DS3	Delivering a Secure Sustainable Electricity System
DSU	Demand-Side unit
EE	Energy Efficiency
EEA	European Economic Area
EED	Energy Efficiency Directive
EEOS	Energy Efficiency Obligations Scheme

EIB	European Investment Bank
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-G	European Network of Transmission System Operators for Gas
EPA	Environmental Protection Agency
ERA-Net	European Research Area Networks
ESB	Electricity Supply Board
ESR	Effort Sharing Regulation
ETS	Emissions Trading System
EU	European Union
EU ETS	EU Emissions Trading System
EV	Electric Vehicle
EWIC	East West Interconnector
EXEED	Excellence in Energy Efficient Design
FEC	Final Energy Consumption
F-Gases	Fluorinated GHG
GB	Great Britain
GDA	Greater Dublin Area
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GJ	Gigajoule
GNI	Gas Networks Ireland
GNI	Gross National Income

GNP	Gross National Product
GVA	Gross Value Added
GW	Gigawatt
GWh	Gigawatt hours
H2020	Horizon 2020
ha	hectare
HDD	Heating Degree Days
HSE	Health Service Executive
HVDC	High Voltage Direct Current
I3E	Economy, Energy and Environment
ICAO	International Civil Aviation Organisation
ICAP	International Carbon Action Partnership
IDA Ireland	Industrial Development Authority of Ireland
IEA	International Energy Agency
IEM	Internal energy market
IFS	International Financial Services
InnovFin	EIB innovation financing programme
INTERREG	EU territorial cooperation initiative
IPCC	Intergovernmental Panel on Climate Change
I-SEM	Integrated Single Electricity Market
ISIF	Ireland Strategic Investment Fund
ISLES	Irish-Scottish Links on Energy Study

IWEA	Irish Wind Energy Association
Km	Kilometre
Ktoe	Kilotonne of oil equivalent
kV	kilovolt
kWh	Kilo Watt hour
kWp	kilowatt peak
LEV	Low Emission Vehicle
LIEN	Large Industry Energy Network
LIFE	Programme for the Environment and Climate Action
LNG	Liquid Natural Gas
LPT	Local Property Tax
LTRS	Long Term Renovation Strategy
LUAS	Dublin tram / light rail system
LULUCF	Land Use, Land-Use Change and Forestry
M	Million
MAC	Maritime Area Consent
MPDM	Marine Planning and Development Management
MSP	Maritime Spatial Planning
Mt	Million tonnes
MtCo₂eq	Metric tons of carbon dioxide equivalent
Mtoe	Millions of tonnes of oil equivalent
MW	Megawatt

MWh	Megawatt hour
N	Nitrogen
NAF	National Adaptation Framework
NAPCP	National Air Pollution Control Programme
NCC	National Competitiveness Council
NCSC	National Cyber Security Centre
NDP	National Development Plan
NEC	National Emissions Ceilings
NECP	National Energy and Climate Plan
NESC	National Economic and Social Council
NewERA	New Economy and Recovery Authority
NGO	Non-governmental organization
NH₃	Ammonia
NMP	National Mitigation Plan
NMPF	National Marine Planning Framework
NORA	National Oil Reserves Agency
NO_x	Nitrogen oxide
NSEC	North Seas Energy Cooperation
NTA	National Transport Authority
NZEB	Nearly Zero Energy Buildings
OECD	Organisation for Economic Co-operation and Development

Opex	Operating expenditure
OPW	Office of Public Works
OREDPA	Offshore Renewable Energy Development Plan
PCI	Project of Common Interest
PEE	Primary Energy Equivalent
PLACARD	Platform for Climate Adaptation and Risk Reduction
PPA	Power Purchase Agreement
PSO	Public Service Obligation
PV	Photovoltaic
RE	Renewable Energy
REFIT	Renewable Energy Feed in Tariff
REPDF	Renewable Electricity Policy and Development Framework
RES	Renewable energy share
RES-E	Renewable energy-electricity
RES-H	Renewable energy-heat
RESS	Renewable Electricity Support Scheme
RES-T	Renewable energy-transport
RIDP	Renewable Integration Development Project
S.I.	Statutory Instrument
SDGs	Sustainable Development Goals
SDZs	Strategic Development Zones
SEA	Strategic Environmental Assessment

SEAI	Sustainable Energy Authority of Ireland
SEM	Single Electricity Market
SEMC	Single Electricity Market Committee
SET Plan	Strategic Energy Technology Plan
SME	Small and medium enterprises
SNSP	System Non-Synchronous Penetration
SO₂	Sulphur dioxide
SONI	Transmission System Operator (NI)
SRSS	Structural Reform Support Service
SSRH	Support Scheme for Renewable Heat
TAMS II	Targeted Agricultural Modernisation Schemes
TCP	Technology Collaboration Programme
TPER	Total primary energy requirement
TSO	Transmission System Operator
TWh	Terawatt hour
TYNDP	Ten Year Network Development Plan
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UR	Utility Regulator (NI)
VAT	Value Added Tax
VRT	Vehicle Registration Tax

WAM	With Additional Measures
WEDG	Wind Energy Development Guidelines
WEM	With Existing Measures

Foreword

Climate Action is the most pressing long-term global challenge of our time and is a significant priority for this Government. Through our strengthened climate legislation, Our Shared Future, and our annually updated Climate Action Plan, we have set ourselves the ambition of halving Ireland's greenhouse gas emissions by the end of the decade, and of putting Ireland on course to becoming carbon neutral by 2050. We are determined that Ireland will play its full part in EU and global efforts to stop climate change and, in so doing, harness the opportunities and rewards that will come from moving quickly to a low-carbon society.

The IPCC (Intergovernmental Panel on Climate Change) issued a 'final warning' in March 2023 that, with global warming having already reached 1.1°C above pre-industrial levels, climate change is causing widespread and increasingly irreversible losses and damages. This warning was amplified this week with the latest World Meteorological Organisation report. We have a rapidly closing window of opportunity to maintain a liveable and sustainable future for all.

Making the changes we must will not be easy. However, I believe that Ireland can and will be good at taking climate action that protects us firstly from the impact of climate change already here, like flooding or extreme heat, and that ensures that we can continue to thrive as an economy and as a society – making homes warmer and more efficient with new green energy sources, creating new jobs and ensuring that our agricultural sector is viable and sustainable for example.

While we have yet to see the large emissions reductions that will be required to achieve our goals, we will continue to put in place the policies and measures that will allow these reductions to be achieved over the remainder of the decade and beyond. We will also continue to deal with the climate change that is already upon us and strengthen our resilience to the adverse impacts of extreme weather events that are becoming increasingly frequent.

This draft outlines the framework which within we will deliver the emissions reductions required to meet our current prescribed targets. Due to the late adoption of EU directives such as the Renewable Energy Directive there is further analysis being undertaken. My Department is engaged in modelling and analysis in relation to existing and soon to be adopted targets with a view to bridging the gap to our new targets and incorporating these into the final version in June 2024.

Citizen engagement must be at the central to the green transition and the NECP, building on the National dialogue on Climate and the range of technical consultations we will shortly go to consultation. The next steps are for us to consult across Government, NGOs, industry and the broader society about closing the gap with a view that our NECP will provide a road map to meet our European targets and deliver a just transition.



Eamon Ryan TD

Minister for the Environment, Climate and Communications

Section A: National Plan

1. Overview and Process for Establishing the Plan

1.1 Executive Summary

1.1.1 Political, economic, environmental, and social context of the plan

The UN Framework Convention on Climate Change (UNFCCC, 1992) was adopted with the objective of preventing ‘dangerous anthropogenic interference with the climate system’ and the Paris Agreement (2015) established the long-term goals of ‘holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels’ and of achieving ‘a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century’. Remaining within the ‘safe’ temperature limits outlined in the Paris Agreement 2015 will require radical changes in energy and land-use across the globe. The transition to a climate-neutral society in Ireland is both an urgent challenge and an opportunity to build a resilient future for generations to come. Climate neutrality, which takes into account all greenhouse gasses (as opposed to net zero CO₂, which looks at CO₂ only), is a state in which human activities contribute no additional net effect on our climate system.

Widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure have resulted from observed increases in the frequency and intensity of climate and weather extremes, including heat extremes on land and in the ocean, heavy precipitation events, drought, and fire weather. These extremes are occurring simultaneously, causing cascading impacts that are increasingly difficult to manage, (IPCC, AR6, WGII, 2022)¹. Human activities, principally through emissions of greenhouse gases have caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 levels in 2011–2020.

In Ireland, annual average temperatures are now ~ 0.9°C higher than in the 1900s and the last 30 years show ~ 7% increase in annual rainfall. Global sea level has increased by ~

¹ IPCC, 2022: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844.

0.20 m between 1901 and 2018, and recent studies have highlighted a sea level rise higher than the global mean in Ireland.

Climate change is a multigenerational issue. Many aspects of the climate system are fast responding: when we stop emitting, they will stabilise. Other aspects, however, are irreversible in our lifetimes: such as the rise in sea levels. It is essential, therefore, that we act now to protect future generations from the worst effects of climate change. Climate change risks to cities, settlements and key infrastructure will rise rapidly in the medium- and long-term with further global warming, especially in places already exposed to high temperatures, along coastlines, or with high vulnerabilities (high confidence), (IPCC AR6, WGII, 2022).[1] To avoid loss of life, biodiversity, and infrastructure, accelerated action is required to adapt to climate change. Here in Ireland, we need to increase the rate of decarbonisation activities across all sectors of the economy. It will involve a significant change in lifestyles over the period to 2030. The necessary rate of change is unprecedented in terms of scale and speed. Irish national policy for 2050 is to work toward a climate neutral society and this is reflected in policies across Government.

In 2015 the Government enacted the Climate Action and Low Carbon Development Act 2015, which provides for the approval of plans by the Government in relation to climate change. The Climate Action and Low Carbon Development (Amendment) Act 2021 strengthens the governance framework on climate action. The key aim is that the 'State shall ... pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy'. Ireland has committed to meeting ambitious targets for reducing GHG emissions in the short (2020), medium (2030) and longer term (2050) through a suite of policy documents including CAP, National Energy and Climate Plan (NECP) 2021-2030 and the National Adaptation Framework (2018). Ireland's first statutory National Adaptation Framework (NAF) sets out a pathway to achieving a more resilient economy and society which is capable of dealing with the enormous challenges climate change is likely to present. This Framework, and its constituent Sectoral Adaptation Plans, will inform the significant capital investment in flood adaptation measures to be made over the lifetime of the Ten-Year Capital Plan. Climate change affects everyone but not equally. We need to engage, enable, and empower organisations, and individuals. Under the National Dialogue on Climate Action (NDCA) the annual Climate Conversations is the mechanism through which the Government can engage with a range of people across society. In 2023, the NDCA expanded its outreach to proactively engage with populations not yet engaged with, and those particularly vulnerable to the transition to carbon neutrality through focus groups, workshops and interviews as well

as focusing in on issues of significant concern; namely the gap emerging between people's intention to take climate action and their capacity to do so.

1.1.2 Strategy relating to the five dimensions of the Energy Union

Historical emissions in Ireland differ to most other developed countries, with the most rapid growth in activity taking place from 1960. Following a peak in 2005, the economic downturn led to a fall in energy-related CO₂ emissions until a recovery in 2012. The Irish economy has recovered well from the economic crisis. However, the improved economic outlook in recent years has seen emissions grow once more, highlighting that Ireland has not completely broken the link between emissions and economic growth. Ensuring the complete decoupling of energy consumption from economic and population growth will be vital in successfully decarbonising our economy. In the context of COVID-19, emissions in Ireland decreased by 3.6% in 2020 and rose again by 4.7% in 2021 as some sectors recovered.

Prior to Russia's invasion of Ukraine, analysis was already being undertaken in relation to the security of Ireland's electricity supply. Potential supply challenges have been highlighted by energy experts and Eirgrid's annually released planning statements have highlighted vulnerabilities in the grid due to tight supply-demand margins, and a need to upgrade key elements of our electricity generation and transmission infrastructure. Ireland is committed to achieving an energy resilient union with a forward-looking climate policy.

This Plan builds on previous national strategies and sets out in detail our objectives regarding the five energy dimensions together with our planned policies and measures to ensure that we achieve those objectives. In June 2019, the Government agreed to support the adoption of a net zero target by 2050 at EU level, and to pursue a trajectory of emissions reduction nationally which is in line with reaching climate neutrality in Ireland by 2050.

Decarbonisation – GHG Emissions and Removals

Building on the policy framework of the National Mitigation Plan (NMP) and Project Ireland 2040, the Government published its first Climate Action Plan (CAP) in June 2019. Following the introduction of the Climate Action and Low Carbon Development (Amendment) Act 2021, updates to CAP are required annually with Plans published in 2021 and 2022. The CAPs set out how Ireland will achieve its 2030 emission reduction targets compared to 2018 levels, in a manner consistent with a trajectory to achieve climate neutrality by 2050.

The CAPs must also include a roadmap of actions to achieve Ireland's carbon budgets and sectoral emission ceilings and address any failure or projected failure to meet these requirements.

The Non-ETS (Emissions Trading System) sector accounts for 75% of total EU emissions in Ireland. The “Effort Sharing Regulation” (ESR) enshrines a GHG emissions reduction target for Ireland of 30% by 2030 relative to 2005 levels. CAP sets out a number of high-impact actions that need to be taken and which embraces every relevant sector: electricity, industry, enterprise, housing, heating, transport, agriculture, waste, and the public sector.

Reflecting the central priority of climate change in our political and administrative systems into the future, Ireland is establishing new governance arrangements including carbon-proofing our policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council (CCAC) and greater accountability to the Parliament. We have introduced measures to ensure that citizens become engaged and mobilised to take climate action, while ensuring that the necessary societal and economic transition that we must make is fair, both in Ireland and globally.

The CCAC is an independent advisory body tasked with advising on how Ireland can achieve the transition to a climate-resilient, biodiversity-rich, environmentally sustainable, and climate-neutral economy. The Council was established in January 2016, under section 8 of the Climate Action and Low-Carbon Development Act 2015. The CCAC provides annual and periodic reports on Ireland's progress in achieving its national policy goals and GHG emissions targets agreed by the European Union. The Council also has a wide-ranging work programme to provide continuous input to and assessment of national climate change initiatives. In addition to this, the Council are involved in preparing and proposing carbon budgets to ensure they align with the national climate objective.

Decarbonisation – Renewable Electricity

Ireland has excellent renewable energy (RE) resources. These are a critical and growing component of Irish energy supply and a keystone in enabling widespread decarbonisation. Indigenous RE already plays a vital role in our domestic fuel mix. The share of RE sources used in the generation of electricity in Ireland has increased from 5% in 1990 to 36.4% in 2021 and renewable fuels accounted for 4% of Ireland's total final energy consumption (FEC) in 2021. Ireland has the potential to dramatically increase the supply of wind, solar, marine and bioenergy alongside developing new technologies that support the integration of renewables. RE also increases sustainability through the use of clean power sources, improves air quality and enhances energy security by reducing Ireland's dependence on imported fuels.

Ireland has established an ambitious and challenging target of increasing the percentage of electricity generated from renewable sources from around 40% to 80% (annual average) by

2030. There are also plans to increase the electricity network's capacity to accommodate variable renewable energy at a given moment in time from 75% currently to 95% by 2030 to support national decarbonisation objectives. Ireland is committed to delivering a complete phase-out of coal and peat-fired electricity generation. In order to facilitate the unprecedented level of development required, alignment between different elements of the planning and permitting system to support the accelerated rollout of renewable energy generation infrastructure is urgently required. This will require a supportive policy framework is in place across national, regional, and local levels. The upcoming review of the National Planning Framework will support this alignment.

Ireland has adopted a phased approach to the transposition of Directive 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources ('RED II'). Phase 1 was completed in September 2020 by way of SI 365/2020. Phase 2 was completed in February 2022 by way of SI 76/2022, which legally transposed Articles 21 and 22.

Phase 3 was completed by way of SI 350/2022 in May 2022 and represents significant progress on Ireland's transposition of RED II. This included, among other things, the legal transposition of Article 19 in relation to the supervisory framework required for guarantees of origin for gas, Article 25 in relation to mainstreaming RE in the transport sector, and the verification of biomass fuels and bioliquids with the sustainability and GHG emissions criteria under Articles 29 and 30.

In addition, the guidance function for the Single Point of Contact under Article 16 was assigned to the Sustainable Energy Authority of Ireland ('SEAI') under SI 350/22. The SEAI launched their website in October 2023, providing guidance to applications for RE projects. In relation to the timeframes for the permit-granting process under Article 16, a comprehensive review of the Planning and Development Act 2000 (as amended) was initiated in May 2021, led by the Office of the Attorney General. This process included extensive stakeholder engagement, particularly with the Planning Advisory Forum established in December 2021. The review culminated in the publication of the draft Planning and Development Bill 2022 in January 2023. The draft Bill subsequently underwent a very extensive pre-legislative scrutiny process over a three-month period, undertaken by the Joint Oireachtas Committee on Housing, Local Government and Heritage. Taking consideration of this and further stakeholder engagement, the Bill was further updated and on 3 October the Cabinet agreed the publication of the Planning and Development Bill 2023. The Bill was published on 22 November and will now commence in the Oireachtas, subject

to its timetable. The Department of Housing, Local Government and Heritage published a guide to the Bill on 3 October 2023, and the text of the bill was published on 21 November 2023. In relation to the timeframes required for grid connection for RE projects, the Commission for the Regulation of Utilities ('CRU'), the Regulator, published a Decision Paper on 6 November 2023 on a pilot for Renewable Hubs. This pilot will enable the creation of additional anticipatory capacity on the grid to facilitate future connections and provide greater certainty to projects about their costs by calculating shared costs using a per-MVA methodology.

The Government is of the view that Renewable Hubs have the potential to be one of the key enablers for connecting renewable projects at the pace and scale required for Ireland to meet its decarbonisation targets to 2030 and beyond.

Energy Efficiency

CAP defines a roadmap for reaching climate neutrality by 2050. In terms of energy efficiency, numerous actions across various sectors will contribute to the achievement of Ireland's national energy efficiency contribution. Ireland achieved its 2020 energy efficiency targets under the Energy Efficiency Directive (EED) and has made considerable progress since then. Further improvement in energy efficiency is central to our transition to a low carbon economy. The Recast EED, which came into force in October 2023, requires all Member States to reduce their FEC demand to a specified figure by 2030. This increased energy saving requirement goes beyond what would be delivered by existing policies. Further modelling to inform the development of a target management strategy is currently underway.

With a growing population and a growing economy, Government policy aims to achieve the 'twin transitions' of economic growth and decarbonisation of our economy and society. These transitions can – and must be – complementary. It is also important to note that not all energy demand is the same. Reducing our demand for fossil fuels is the priority. Using less energy in a more flexible way is the most cost-effective and accessible way we can tackle climate disruption. Ireland is committed to applying the energy efficiency first principle to all proposals, decisions and investments flowing from this Plan. This Plan commits to a wide range of ambitious and far-reaching policies and measures aimed at improving our energy efficiency.

Energy Security

Ireland's objectives are to maintain and, where necessary, facilitate the enhancement of resilience of our electricity and gas networks. Ireland is committed to maintaining the security of our energy system in the most cost-effective manner and Ireland is aware of the risks posed by the impacts of climate change to our energy security. The policies and measures set out under this plan, both in terms of mitigation and adaptation, serve to offset those risks. The impact of the wide range of policies and measures aimed at increasing energy efficiency will contribute considerably to ensuring security of our energy system. The Department published the Energy Security in Ireland Report to 2030 in November 2023. This report outlines a new strategy to ensure energy security in Ireland for this decade, while ensuring a sustainable transition to climate neutrality by 2050. Given the increasing dependence of electricity production on natural gas and the increasing dependence on imports from the UK, it is important that close co-operation on security of supply continues with EU Member States and the UK. The comprehensive report, which has 28 actions in total, is a roadmap to ensuring a sustainable, affordable, and secure energy landscape that balances energy risk and resilience against our binding European and domestic energy and climate commitments.

Informed by the Government's energy security policy objectives - to ensure energy is affordable, sustainable, and secure - the review considered the risks to oil, natural gas, and electricity. This Energy Security review sets out a strategic approach to ensure a secure transition for Ireland's energy systems in line with its climate objectives. It considers lessons, including the disruption to European energy supplies following the invasion of Ukraine and the domestic capacity shortfall experienced in the electricity sector.

The Energy Security in Ireland Report to 2030 states that we must ensure energy security is prioritised, monitored, and reviewed regularly. It includes a range of measures to implement this approach in the short and medium term by prioritising:

1. Reduced and Responsive Demand.
2. More Resilient Systems.
3. Robust Risk Governance.
4. Renewables Focus.

Under each of these four areas, the report sets out a range of mitigation measures, including the need for additional capacity of indigenous RE but also energy imports, energy storage, fuel diversification, demand side response and renewable gases. The governance structures supporting the energy system, including oversight and accountability reforms were also

examined. The need for increased cooperation with EU Member States and the UK is set out in Action 23 of the Energy Security in Ireland to 2030 strategy where the Government has committed to extend international Energy Agreements to support energy security.

Internal Energy Market

Ireland's wholesale electricity market, together with other related initiatives, form an interlinked policy-aligned system of measures which underpin and facilitate greater renewable electricity penetration in Ireland and progressive decarbonisation of its wholesale electricity sector, and ensure efficiency and security of electricity supply. Ireland's national objective relating to the EU internal energy market (IEM) is, and has been over the long term, to continue to deepen the integration of Ireland's wholesale electricity market, and its regulation, with the EU IEM, building on well-known ongoing plans, programmes, and actions.

As of 1 January 2021, the Day Ahead Market (DAM) in the SEM is no longer coupled, with cross border trading taking place only in the intraday timeframe (IDA) with GB. Scheduling of flows on each of the interconnectors is determined by the price spread between the SEM and GB in the IDA 1 and IDA 2 auctions. The Trade & Cooperation Agreement (TCA) provides a mechanism to ensure that the current system is made more efficient and should be based on the concept of multi-regional loose volume coupling (MRLVC). Ireland is committed to supporting customers' participation in the energy system and enabling them to sell excess electricity they have produced back to the grid. Ireland's peripheral location at the north-western edge of mainland Europe presents obvious challenges to interconnection, not least in costs, yet may also highlight the desirability of interconnection, particularly in the context of security and diversification of electricity supply. The national and regulatory policies combined have now created a model environment for the proposal of additional interconnection, as appropriate, to assist in meeting our national targets.

Research, Innovation and Competitiveness

Given the level of Ireland's ambition regarding reduction of GHG emissions new technologies must be developed in the coming years. There is a need to ensure that the best scientific evidence is available to underpin policy and support the measures set out under this Plan. The update to the national research priorities for 2018 to 2023 reflects the increased urgency to address climate change, with a new research priority theme focusing on Energy, Climate Action, and Sustainability. There are also two priority areas concentrating on decarbonising and sustainable living and also smart and sustainable food production and processing. To enhance the resilience of Ireland's economy, the Government

will continue its efforts to reduce the debt and deficit levels and avoid any narrowing of the tax base. The creation of a new Research and Innovation Agency, provided for in the Research and Innovation Bill 2023, will increase the opportunities to fund the multi-, and trans-disciplinary research that is needed. Ireland has built a strong research and innovation (R&I) system in recent years. In 2023 Science Foundation Ireland (SFI) launched the final funding calls under the National Challenge Fund. DECC has supported participation by Dublin and Cork cities in the Horizon Europe Climate-Neutral and Smart Cities Mission and seven Local Authorities have signed the Climate Adaptation Mission Charter. The EPA is coordinating Irish participation in the Integrated Carbon Observation System Research Infrastructure Consortium (ICOS-RI). Research Classification Ireland was published and will help to classify public investment in R&I, facilitating improved insights, evidence, and transparency in relation to publicly funded climate research. Collaboration with our international partners is essential, Ireland participates in a range of climate-relevant EU and international networks, EU Partnerships, Horizon Europe collaborative R&I initiatives and in cooperative initiatives under JPI Climate and JPI Oceans. Ireland is active in international organisations including IPCC, WMO (World Meteorological Organisation) and GCOS (Global Carbon observing system), and actively engages with the UNFCCC.

1.1.3 Overview table with key objectives, policies and measures of plan

Table 1: Key objectives, policies, and measures of the plans

Dimension	Objectives	Key Policies and Measures
Decarbonisation - GHG emissions and removals	Reduce emissions from sectors outside the EU's Emissions Trading System by 30% (relative to 2005 levels) by 2030.	<ul style="list-style-type: none"> • A range of policies and measures promoting RE and EE (set out further below). • Launch targeted calls under Climate Action Fund • Trajectory of carbon pricing to create behavioural change and avoid locking in carbon intensive technologies. • Establish a system of 5-year carbon budgets and sectoral targets. • Carbon proofing all Government decisions and major investments. • Establish a Just Transition Commission • A new Climate Action Act which will include a 2050 target. • Eliminate non-recyclable plastic and impose higher fees on the production of materials which are difficult to recycle. • Implement measures to ban single-use plastic plates, cutlery, straws, balloon sticks and cotton buds. • Promote the sustainable development of Ireland's geothermal resources in support of Ireland's climate action commitments (a Policy Statement on Geothermal Energy was published in July 2023) • Ensure a stable, robust, and transparent regulatory framework that maximises the contribution that sustainable mineral exploration and mining can make to our society, economic development, and the transition to net-zero GHG emissions through the supply of the raw materials necessary for our sustainable development. (a Policy Statement on Mineral Exploration and Mining was published in December 2022) • Expanding the network of cycling paths and "Park and Ride" facilities. • Making growth less transport intensive through better planning, remote working, and modal shift • Specified range of improvements in farming practice in line with recommendations from Teagasc. • Promoting the increased use of domestic harvested wood in longer lived products, which will enhance the storage of carbon in these products and act as a substitute for materials with a higher carbon intensity. • Deliver expansion of forestry planting and soil management to ensure that carbon abatement from land-use is delivered in 2021-30 and in the years beyond. • Support diversification within Agriculture and land use to develop sustainable and circular value chains and business models for lower carbon intensity farming. • Reduce the vulnerability of the State to the negative effects of climate change and to avail of any positive impacts that may occur • Mainstream biodiversity across the decision-making process in the State.
Decarbonisation - Renewable energy	Ireland has established an objective of achieving a 34% share of RE in energy consumption by 2030.	<ul style="list-style-type: none"> • Accelerate the delivery of onshore wind, offshore wind, and solar through a competitive framework to reach 80% of electricity demand from RE by 2030; • Target 6 GW of onshore wind and up to 5 GW of solar by 2025;

	<p>Increase electricity generated from renewable sources to 80%.</p> <p>At least 5 GW of offshore RE.</p> <p>8 GW of grid scale solar energy. Onshore wind capacity of 9 GW.</p>	<ul style="list-style-type: none"> • Target 9 GW onshore wind, 8 GW solar, and at least 5 GW of offshore wind by 2030 • Support at least 500 MW of local community based RE projects and increased levels of new micro-generation and small-scale generation. • The National Smart Metering Programme will make smart meters available for every home by the end of 2024. • Support the ocean energy research, development and demonstration pathway for emerging marine technologies and associated test infrastructure. • Accelerate the penetration of EVs (EVs) so that 936,000 will be on the road by 2030, underpinned by policy tools such as vehicle and fuel taxation measures, and a strong carbon tax trajectory. • Increase the proportion of renewable transport fuel in road transport through the renewable transport fuel obligation (RTFO). • Introduce legislation to ban the sale of new fossil fuel cars from 2030. • No diesel-only purchases for urban public buses from July 2019 onwards. • Develop the Compressed Natural Gas (CNG) fuelling network to support the uptake of CNG vehicles.
<p>Energy efficiency</p>	<p>Contribute towards the EU wide target of achieving at least 32.5% improvement in energy efficiency by 2030.</p> <p>Saving obligations in accordance with Article 8 of the EED under Directive 2023/1791</p> <p>Saving obligations in accordance with the requirements of Article 5 of the EED.</p>	<ul style="list-style-type: none"> • A range of policies and measures listed under the other dimensions will go towards achievement of our energy efficiency objective. • All new dwellings will be built to Nearly Zero Energy Buildings (NZEB) standard from 1 November 2019. • Setting stricter requirements for new buildings and substantial refurbishments. • Building a supply chain and a model for aggregation where home retrofits are grouped together. • 500,000 homes retrofitted to a B2 Building Energy Rating or cost optimal equivalent by 2030. • Public sector buildings to have a B Building Energy Rating (BER) by 2030. • One third of commercial (including mixed use) buildings to have a B BER (or carbon equivalent gains) by 2030. • 600,000 heat pumps installed over the period 2021- 2030. • Effectively ban the installation of oil boilers from 2022 and the installation of gas boilers from 2025 in all new dwellings through the introduction of new regulatory standards for home heating systems. Progressively phase out oil and gas boilers in existing dwellings through a combination of incentives, information, and regulatory measures. • Ensure a suitable policy framework is in place to support district heating. • A 50% energy efficiency target for the Public Sector by 2030. • The Targeted Agricultural Modernisation Scheme (TAMS) II Scheme provides grant aid for a number of investments specifically aimed at improving energy efficiency in the farming sector. • Scale-up and improve the Sustainable Energy Communities and Better Energy Communities (BEC) programme and enlist a wider range of organisations to anchor its collective approach. • Develop the necessary supply chain, including working with Regional Skills Fora to train skilled workers.

<p>Energy security</p>	<p>Ireland is committed to maintaining the security of supply in an affordable and sustainable manner.</p>	<ul style="list-style-type: none"> • The Energy Security in Ireland Report to 2030 outlines the strategy to ensure energy security in Ireland 2030, but in the context of ensuring a sustainable transition to a net zero energy system up to 2050. The review considered the risks to oil, natural gas, and electricity and has actions across these sectors out to 2030 to support a secure energy transition. • Support efforts to increase indigenous renewable sources in the energy mix, including wind, solar, geothermal and bioenergy. • Government Policy on Geothermal Energy includes promoting potential in the long run for electricity generation. Ground Source Heat Pumps (GSHPs) impose a lower grid load than ASHPs in winter. The optimal balance of GSHPs and ASHPs with respect to winter grid load will be considered in developing a Geothermal Strategy. • Facilitate infrastructure projects, including private sector commercial projects, which enhance Ireland's security of supply and are in keeping with Ireland's overall climate and energy objectives. • Work closely with our EU partners to maintain existing good regional co-operation between Ireland and the United Kingdom (UK) in relation to Emergency Preparedness and Response. • The National Cyber Security Council (NCSC) having due regard to the Commission recommendation is working with providers of critical national infrastructure to improve the overall level of cybersecurity in the energy sector.
<p>Internal energy market</p>	<p>Continue to deepen the integration of Ireland's wholesale electricity market with the EU IEM, building on well-known ongoing plans, programmes, and actions in this regard.</p> <p>Develop further interconnection to facilitate Ireland's 2030 target of 80% renewable electricity.</p> <p>Continue to align further IRL's retail electricity market, with the EU internal energy market.</p> <p>Continue to develop Ireland's natural gas market in line with European energy policy.</p>	<ul style="list-style-type: none"> • Maintain and develop the successful all island wholesale Single Electricity Market, or SEM, to include ensuring that all aspects of the market, the capacity mechanism and other planned/signalled reforms are fully implemented. • Implement the requirements of EU rules and legislation such as Network Codes, CEP along with upcoming legislative proposals such as EMD and REMIT, in the Irish electricity market. • Ensure continued compliance of Ireland's SEM capacity mechanism with the obligations in the CEP and in the European Commission's November 2017 State Aid approval. Ireland is currently in process of updating our Reliability Standard in this regard. • Design and implement the next phase of the DS3 System Services programme (Future Arrangements for System Services) to provide enhanced system flexibility to accommodate increased renewables on the electricity system. • Ireland is committed to supporting customers' participation in the energy system and enabling them to sell excess electricity they have produced back to the grid. • Ireland is developing the regulatory and market regime necessary to allow renewable gas to be injected into the natural gas grid and used in the heat and transport sectors. • Ireland's independent energy regulator is charged with closely monitoring electricity and gas retail markets to ensure that competition continues to develop and that the interests of electricity and gas customers are protected. • Alleviate the burden of energy poverty on the most vulnerable in society through actions focused on improving the efficiency of homes.

<p>Research, innovation, and competitiveness</p>	<p>Ensure that the best scientific evidence and advice is available to underpin Government policy and support the objectives, policies, and measures in Ireland's NECP.</p> <p>Given the level of Ireland's ambition regarding reduction of GHG emissions new technologies must be developed and deployed in the coming years.</p>	<ul style="list-style-type: none"> • Broaden the enterprise and export base by strengthening support for indigenous business to scale and to internationalise. • Increase investment in knowledge-based capital (e.g. intellectual property, software, organisational changes, training, and design) is also vital. • The update to national research priorities for 2018 to 2023 reflects the increased urgency of the need to address climate change, with a new research priority theme focusing on Energy, Climate Action and Sustainability, and two priority areas concentrating on decarbonising and sustainable living, and also smart and sustainable food production and processing. • Strengthen delivery of public funding for basic and applied research to meet Ireland's decarbonisation objectives and open up new economic opportunities • Increase in a stepwise fashion public funding for the SEAI National Energy Research Development & Demonstration Funding Programme • Undertake research and gather and make available geological data to promote the sustainable development of Ireland's geothermal resources to decarbonise the heating and cooling of buildings and for industrial uses and power generation. • The Government's Policy Statement on Geothermal Energy, published July 2023, sets out the scope for a strategy to promote geothermal energy, which includes research and data gathering. • Consideration of the role of hydrogen in the decarbonisation of Ireland's energy system including the potential production of renewable hydrogen from excess renewable electricity. • Examine the feasibility of the utilisation of Carbon Capture and Storage (CCS) in Ireland and to develop policy in the area.
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1.2 Overview of Current Policy Situation

1.2.1 National and Union energy system and policy context of the national plan

The Paris Agreement is a legally binding international treaty on climate change adopted by 196 Parties in 2015. It has the long-term goal to keep the increase in the global average temperature to well below “2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels.” The EU and all its Member States have ratified the Paris Agreement and are strongly committed to its implementation. EU countries have agreed to set the EU on course to becoming the first climate-neutral economy and society by 2050. In line with the agreement, the EU pledged to reduce emissions by at least 55% by 2030. These efforts are now represented by 188 Nationally Determined Contributions (NDCs) which will increase in ambition over time.

The Paris Agreement will measure the effectiveness of NDCs in achieving the goals of the Agreement via a series of global stocktakes, to be held in five-year cycles beginning in 2023.

Ireland is firmly committed to the concept of the Energy Union and its ultimate goal of achieving an energy-resilient union with a forward-looking climate policy. As a peripheral, less-well-connected country, the Energy Union has the potential to greatly enable Ireland's transition to a low carbon future, just as the Single Market led to an economic transition for many Member States. As part of the European Green Deal, with the European Climate Law, the EU has set itself a binding target of achieving climate neutrality by 2050. As an intermediate step towards climate neutrality, the EU has raised its 2030 climate ambition, committing to cutting emissions by at least 55% by 2030. The EU is working on the revision of its climate, energy, and transport-related legislation under the 'Fit for 55 package' to align current laws with the 2030 and 2050 ambitions. European goals and targets to tackle climate and energy have been set in the form of the EU Climate and Energy Packages. The EU 2030 Climate and Energy Framework continues from the base set out from the preceding 20-20-20 Agreement and sets new targets and measures to make the EU's economy and energy system more competitive, secure, and sustainable. A review clause by 2023 allows for a potential upward revision of the EU level target. The agreement on the 2030 framework, specifically the EU domestic GHG reduction target of at least 55% compared to 1990 levels, forms the basis of the EU's contribution to global climate change.

The Climate Action and Low Carbon Development (Amendment) Act 2021 has been signed into law committing Ireland to 2030 and 2050 targets for reducing GHG emissions and providing the governance framework to achieve this. Ireland is now on a legally binding path to climate neutrality no later than 2050, and to a 51% reduction in emissions by 2030. The Climate Action and Low Carbon Development (Amendment) Act 2021 strengthens the governance framework on climate action. The key aim is that the 'State shall ... pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy'. Ireland has committed to meeting ambitious targets for reducing GHG emissions through a suite of policy documents including the CAP and the National Adaptation Plan (2018).

1.2.2 Current energy and climate policies and measures relating to the five dimensions of the Energy Union

See section 1.1 for a summary of the key policies and measures relating to the five dimensions of the Energy Union. A more detailed description can be found at section 3. A

voluntary spreadsheet setting out a detailed list of policies and measures under the five dimensions will also be submitted to the European Commission.

1.2.3 Key issues of cross-border relevance.

The UK's decision to leave the European Union meant that Ireland was left with no electricity interconnection with another Member State. The result is that aspects of the plan that have cross-border impacts are limited to proposed or planned projects with other Member States. The Celtic Interconnector with France, once operational, will directly connect Ireland to the EU's IEM post-Brexit. Given the increasing dependence of electricity production on natural gas and the increasing dependence on imports from the UK, it is important that close co-operation on security of supply continues with EU Member States and the UK. This includes continued regional co-operation with the UK on emergency preparedness and response for electricity and gas security of supply. Additionally, it will be important that Ireland retains access to EU funding for energy infrastructure projects to improve Ireland's energy security of supply.

Ireland is currently reliant on the UK for approximately 60% of its petroleum product imports and for about 25% of its crude oil imports. The 2022 Policy Statement on Petroleum Exploration and Production in Ireland outlines the Government's policy and legislative position to end the issuing of new licenses for the exploration and extraction of gas on the same basis as the decision taken in 2019 relating to oil exploration and extraction.

Ireland receives the majority of its natural gas from the UK and this reliance will increase as the Corrib gas field declines. There is close cooperation with the UK at Departmental, Regulator and Transmission System Operator (TSO) level on gas emergency planning and testing. Ireland continues to work closely with the UK on energy matters, although this cooperation has evolved following the exit of the UK from the European Union.

The British and Irish Governments have agreed and will begin to implement a Memorandum of Understanding (MoU) to strengthen existing arrangements in the event of a gas supply shock. The MoU details how both States will cooperate on gas security of supply, and it supports the principle of natural gas supplies to Ireland and Northern Ireland being reduced equitably along with the four Distribution Network companies in Great Britain (GB).

DECC will also continue to work collaboratively with the European Commission on the implementation of arrangements for energy security under the Trade and Cooperation Agreement between the European Union and the UK.

The UK's continuing adherence to the established European standards mechanisms and the close proximity of UK refineries to Ireland should mean a continuation of this trade, in the aftermath of the UK withdrawal from the EU. 21% of Ireland's emergency oil stockholding is currently physically stored in the UK.

Ireland is committed to regional energy co-operation and is a member of the North Seas Energy Co-operation (NSEC), the British-Irish Council (BIC) and is a signatory to the EU Islands forum. These fora are discussed in more detail in section 1.4. Ireland's policy position on interconnection is outlined in the 2018 National Policy Statement on Electricity Interconnection. It emphasises the important role of interconnection in the transition to a low carbon energy future. It reflects the increasing importance of interconnection to national and EU policy. Further details are set out under section 3.

Trade in electricity across the interconnectors between GB and the SEM has continued with no tariffs since 1 January 2021. However, this trade is less efficient, as day ahead trading can no longer be used on these interconnectors. Scheduling of flows on each of the interconnectors is determined by the price spread between the SEM and GB in the IDA 1 and IDA 2 auctions. The Trade & Cooperation Agreement (TCA) provides a mechanism to ensure that the current system is made more efficient and should be based on the concept of multi-regional loose volume coupling (MRLVC).

1.2.4 Administrative structure of implementing national energy and climate policies

DECC is the lead Government department (ministry) with responsibility for setting Ireland's overall energy, climate, and environment policy. Delivering and implementing the wide range of policies and measures necessary to achieve our energy and climate goals will require a deep level of collaboration across Government, local authorities, and agencies.

CAP provides for a detailed governance structure to ensure full and proper implementation of the plan and achievement of our climate goals. Included under the governance structures set out in the CAP are the establishment of a Climate Action Delivery Board, the carbon proofing of Government policies, the establishment of a Climate Change Advisory Council, the adoption of a new carbon budget system with clear sectoral targets to be formally set out under new legislation. These governance structures are expanded on further below and will be employed to ensure implementation of the policies set out under this plan.

1.3 Consultations and Involvement of National and Union Entities and Their Outcome

1.3.1 Involvement of the national parliament

Ireland's Programme for a Partnership Government, published in May 2016, committed the Government to the establishment of a Citizens' Assembly to consider some of the most important issues facing Ireland's future. The purpose of the Citizens Assembly is to bring citizens together to discuss important legal policy and societal issues in Ireland. Citizen Assemblies and the National Dialogue on Climate have become an important part of the Irish democratic process.

In 2022, the Citizen's Assembly on Biodiversity Loss took place, with the final meeting held in January 2023. During this time members of the public deliberated on how the Government can improve its response to the issue of biodiversity loss. This was achieved through the consideration of other views, examining reports and studies, hearing from experts in the field and those impacted by the subject matter. The Assembly agreed on 159 recommendations, including 73 high-level recommendations and 86 sectoral-specific recommendations, through a mixture of consensus agreement and ballots. The Assembly presented its final report in April 2023. In October 2022, Ireland held its first Children and Young People's Assembly on Biodiversity Loss. Over two weekends, the Assembly brought together 35 members aged 7–17 from across Ireland to explore, discuss and create calls to action on how to protect and restore biodiversity in Ireland. The Children and Young People's Assembly members presented their experiences and the Assembly's vision statement, key messages, and calls to action to the Citizens' Assembly on Biodiversity Loss in November 2022.

On 11 July 2018 a new parliamentary Committee, the Joint Committee on Climate Action, met for the first time with a mandate to consider the Assembly's Report and Recommendations. The terms of reference establishing this Joint Committee instructed the Committee to consider how the Assembly recommendations might inform the development of Ireland's NECP. The committee's proposals heavily influenced the Government's CAP published in June 2019 which in turn significantly informed the final NECP. Ireland became the second country in the world to declare a climate and biodiversity emergency in May 2019. The Committee on Environment and Climate Action was established in July 2020. The select committee is made up of Dáil members, with the purpose of scrutinising proposed EU legislation within the areas of climate action. This is done through both private and public

sessions, along with regular engagement with key stakeholders. The Committee had some early success when the Climate Action and Low Carbon Development (Amendment) Bill 2020 was published, which considered the recommendations outlined in the committee's pre-legislative scrutiny of the draft report. The committee's proposals also heavily fed into the Government's CAP's, and significantly informed the 2019 NECP.

1.3.2 Involvement of local and regional authorities

Ireland's Local Authorities play a pivotal role in their local communities and can act to demonstrate public sector leadership on climate action in their localities as well as being key mobilisers of change. Local Government in Ireland comprises 31 Local Authorities and three Regional Assemblies. Local Authorities have a key role to play in implementing the measures needed to meet Ireland's national climate targets. This role will increase in importance with the development and implementation of Local Authority Climate Action Plans (LACAP) in each Local Authority area.

Ireland has three regional assemblies - the Northern and Western, the Eastern and Midland, and the Southern Regional Assemblies. The Assemblies provide the strategic link between the EU, national and local levels, and coordinate spatial, environmental, and economic planning through the statutory Regional Spatial and Economic Strategies (RSES). They administer European funding and provide a coordination function with a democratic mandate provided through elected members from Local Authorities. Local Authorities are multi-purpose bodies which are responsible for delivering a broad range of services which impact on climate. These include economic and community development, environment, recreation and amenity, roads and active travel, social housing, spatial planning, and waste management. Both Local Authorities and Regional Assemblies have major roles to play in supporting the alignment of local plans with Ireland's national renewable energy targets.

As well as playing a critical role in climate mitigation, the sector is at the front line of climate adaptation and emergency planning. In 2021, Local Authorities invested almost €9.5bn in services provided to the public. They provide around 135,000 social homes, construct, manage and maintain almost 100,000 km of regional and local roads, and employ close to 30,000 people. Local Authorities and Regional Assemblies are independent corporate entities. The Department of Housing, Local Government and Heritage oversees the operation of the local Government system in broad terms, providing the general policy and statutory framework within which Local Authorities and Regional Assemblies work and deliver services. The Irish Constitution recognises the role of local Government in providing

a forum for the democratic representation of communities and in exercising and performing powers conferred by law.

Ireland's Local Authority system has limited direct functions in many sectoral areas related to climate, with decision making responsibility frequently resting with Government departments and central agencies. Irish Government expenditure is relatively centralised, with 77% of expenditure undertaken by Central Government. This can limit a Local Authority in its ability to respond directly to climate issues and orientates much of its action towards taking on a partner or champion role rather than direct delivery.

Local Government collaborated with DECC to agree a Climate Action Charter (2019) which acknowledges that local Government is ideally placed to provide robust leadership in advancing the climate objective at the local and regional level. The Delivering Effective Climate Action 2030 Strategy (2020) sets out a roadmap to deliver on climate commitments by the local Government sector. It sets out objectives for Local Authorities to maximise their collective impact on Ireland's national climate targets.

Several Irish Local Authorities are signatories to the Global Covenant of Mayors for Climate and Energy, an initiative supported by the European Commission bringing together thousands of local Governments that want to secure a better future for their citizens. Local Government impacts on the day-to-day life of citizens by performing vital services that support local communities and economic development. Local Authorities prioritise different needs and implement different climate actions based on prevailing climate change risks, demographics, and the characteristics of the area. The public regards their Local Authority as a key player in delivering solutions to address the climate and biodiversity challenge. In the Climate Conversations survey, 69% of respondents identified Local Authorities as having an extremely important role in delivering on climate action. They were placed fourth highest in importance after the Irish Government, the EU, and business and industry.

Local connectedness and attachment can be powerful motivating factors in climate decisions. The regional and local scale is a key area for participation to influence policy and gain public acceptance for policy proposals and local Government is best placed to harness this. Local Authorities can build momentum as the most direct connection that citizens and local communities have with Government.

Local Authorities are the primary vehicles for engagement with community groups and organisations. They should be conduits for information and consultation and assist these groups in delivering local projects and initiatives. In each Local Authority area, there are Local Community Development Committees which operate as independent committees of

the Local Authority and bring together elected members and officials, state agencies and those working in local and community development and economic, cultural, and environmental organisations. They work closely with communities and were established to develop and implement a coherent and integrated approach to local and community development through a Local Economic and Community Plan (LECP) which has a climate focus. In 2018 four [Climate Action Regional Offices](#) (CAROs) were established to assist the Local Authority sector in building capacity to engage effectively on climate change. These groups and structures were consulted in the development of the CAP and NECP. Under the NAF the 31 Local Authorities in Ireland are developing their own adaptation strategies in line with guidelines to be developed for the sector. Work on the development of strategies is undertaken by individual Local Authorities with support from the CARO in that region. Since 2019 the requirement to prepare LASs has effectively been superseded with a new statutory requirement for all Local Authorities to prepare Local Authority Climate Action Plans (LACAPs) every five years. These plans are currently under development.

1.3.3 Consultations of stakeholders, including the social partners, and engagement of civil society and the general public.

Since finalising the first NECP, in 2019, the Irish Government has built on the plan and continued to engage and consult widely with individual members of the public and key stakeholders on energy and climate change policy. The NECP brings together the policies, targets, tools and associated material from across Government bodies and departments in one document. These existing initiatives are and continue to be consulted on in depth. The NECP does not introduce new policies or measures unless the component parts have been previously consulted on. More broadly the Department continues to engage with stakeholders on climate and energy to see how we can meet our targets in a just way. The Department has met with stakeholders over the last number of months in relation to the development of the NECP. This pre-existing and recent work on engagement will be built upon for the final version with a consultation planned for early 2024.

Stakeholder Engagement

Stakeholder engagement has been enhanced since the last NECP by increasing the staffing of DECC, including providing resources dedicated to communicating Energy and Climate issues. The Irish Government is committed to an ongoing dialogue to inform and listen to citizens and stakeholders in an effort to ensure greater engagement and understanding of our energy and climate change plans and policies, and the public's role in the transition to

climate neutrality. The approach to ensuring a continuous flow of information and engagement is enhanced by research undertaken to establish the public's evolving awareness and opinions of energy and climate actions. The following section provides a summary of some of the consumer research undertaken as well as Governmental activities undertaken to engage with the public on Energy and Climate Action, all of which has informed the development of the new Draft NECP. An overview of future planned stakeholder engagement on the Draft NECP is also provided.

Research

The population's understanding of climate change and energy use is a key element in developing suitable future engagement methods, and communications materials. Research was therefore undertaken by the Environmental Protection Agency (EPA) and supported by the National Dialogue on Climate Action (NDCA). The research study, *Climate Change in the Irish Minds*, provided nationally representative data on the attitudes and behaviours of 4,000 members of the Irish public.

The full Research Report was published on the EPA website and includes the finding that most people in Ireland believe climate change is happening and that it is caused by human activities. The research also found that most people are willing to take actions to reduce climate change and to support Government climate policy. DECC also undertook independent research to track consumer sentiment and reported behaviour regarding energy usage in 2022/23. The Energy Tracker Research Report details the findings.

Engagement on Energy

DECC has undertaken considerable public consultation, engagement and information campaigns to raise awareness, generate understanding, and stimulate ownership of Energy issues amongst the public and stakeholders. Extensive stakeholder engagement and focused periods of public consultation have been undertaken over the past five years to inform Energy policy and plans. A sample of this engagement is provided below:

Energy Security

The Irish Government published its Energy Security in Ireland to 2030 strategy in November 2023. It is a roadmap to ensuring a sustainable, affordable, and secure energy landscape that balances energy risk and resilience against our binding European and domestic energy and climate commitments. This key strategy was informed by over 450 submissions received through formal public consultation. A high-profile communications and stakeholder engagement plan was implemented in 2023 to ensure the public was aware of the

commencement of construction work on the Celtic Interconnector project. Extensive media and social media coverage was generated for the high-profile event involving Irish and French Government ministers launching this high-voltage subsea power cable that will link the electricity grids of Ireland and France, generating enough capacity to power 450,000 homes and creating a direct electricity link from Ireland to the European Union. Since 2019, the Celtic Interconnector was the focus of a series of public consultations. Extensive stakeholder engagement was carried out in the South of Ireland, for a number of years, before it secured planning consent.

Renewable Energy

DECC has established strong sectoral engagement with all of the key organisations representing the RE, offshore renewables, fishing, and related sectors to inform its approach to RE policy. This includes establishing Advisory Forums for key policy initiatives and proactively reaching out to sectoral interests to speak at seminars and provide regular briefings. At the start of 2023, the Government announced a shift in policy from project-led to a State, plan-led approach for offshore RE development. DECC launched a public consultation on its first Designated Marine Area Plan (DMAP) for the South coast in August 2023, that has so far engaged with nearly 2,000 people and organisations. This public consultation included public meetings in partnership with EirGrid (State-owned Transmission System Operator – TSO); as well as a dedicated Fishers Liaison Officer to engage with the fishing and seafood production industries. Further statutory public consultation is planned for Q1 2024.

Earlier in 2023, DECC ran a series of community engagement and regional workshops as part of its public consultation on the National Spatial Strategy for Offshore Renewable Energy in 2023. That public consultation engaged with over 1,100 people and organisations throughout Ireland, including in coastal communities through both English and Irish. This included both the Minister for the Environment and the Tánaiste attending stakeholder workshops in coastal communities, along with Government officials who are developing the policy.

Earlier in 2023, the Irish Government generated extensive national and international awareness through traditional and social media, for the results of its first Offshore Wind auction – ORESS1. Over 3 Gigawatts (GW) of capacity has been procured from four offshore wind projects under ORESS1, which will deliver over 12 Terawatt hours (TWh) of renewable electricity per year.

DECC has also participated in large public events to meet with stakeholders. These include (but are not limited to) the Skipper trade show where thousands of people working in the marine and fishing industry congregate annually; the National Ploughing Championships which attracts over 200,000 attendees annually, and conferences and trade expos hosted by Wind Energy Ireland. At all these events, officials from the Department proactively engaged formally and informally with the public and sectoral stakeholders to generate awareness and understanding of Energy policy and plans and listen to people's feedback.

Other Initiatives

The Government engaged with stakeholders and delivered communications to ensure widespread awareness and uptake of other key energy initiatives including Retrofit Grants for homeowners and expanded supports for businesses to invest in energy efficiency and renewable heating.

The Irish Government promoted the establishment of education and training courses in near-zero energy building (NZEB) and a Retrofit Upskilling and Reskilling programmes in 2022. Following progress in developing a national network of centres of excellence in retrofit skills training, including NZEB skills, the number of workers availing of these opportunities has increased steadily since the first centre was opened in 2020: enrolments have gone up from just 363 in 2020, to 2,034 enrolments in 2022.

In 2021, the Government ran a public consultation on a draft Territorial Just Transition Plan, as Ireland moves away from fossil fuels. This was particularly relevant for communities facing the cessation of commercial peat extraction, located in the Midlands and the West of Ireland, where peat extraction was an important part of culture and livelihoods for many generations. Public consultation generated greater awareness and understanding of the transition.

National Dialogue on Climate Action (NDCA)

The Irish Government's National Dialogue on Climate Action has also helped to inform all stages of development of the NECP; and provides an opportunity to create awareness, engagement, and motivation amongst the public, to act on challenges presented by climate change. The NDCA is being delivered under three pillars:

- Improving climate literacy by creating awareness about, and promoting understanding of, climate change through communications and education;

- Funding, supporting, and enabling active engagement in climate action at a local and national level, conducting public consultations, and empowering the public to adopt more sustainable behaviours;
- Capturing insights from engagement activities and conducting social and behavioural research to inform the CAP and climate policies.

Climate Conversations

To date, the National Dialogue on Climate Action includes Climate Conversations, the National Climate Stakeholder Forum, and National Youth Assembly on Climate. Through these structured national conversations, the Irish Government has engaged directly with 12,000 individuals and organisations across urban, rural and coastal communities throughout Ireland, including youth and marginalised groups in discussions about climate change and climate action. Climate Conversations articulate a voice for the public and stakeholders that is clear and responsive, and that conveyed a sense of urgency and enthusiasm to work with the Government. It has allowed us to identify where people are making changes, and where they lacked information, knowledge, resources, or capacity to take climate action. These conversations showed that people need to learn by doing, and need to see that the transition to a carbon neutral future is fair and that everyone is contributing. The findings are analysed and directly inform the CAP and the NECP.

Key Deliverables in 2022

Climate Conversations 2022 captured the views of over 4,300 members of the public, including populations who may be vulnerable to this transition, those who had not previously engaged in the issue and people who are proactively taking climate action. Three National Climate Stakeholder Forum (NCSF) meetings were held in 2022, which engaged with over 300 stakeholders. The National Youth Assembly on Climate (NYAC) captured recommendations from young people on climate priorities for Government. The Climate Communications and Engagement Taskforce (CCET) was also established.

Climate Conversations 2023

In 2023, the NDCA expanded its outreach to proactively engage with populations not yet engaged with, and those particularly vulnerable to the transition to carbon neutrality through focus groups, workshops and interviews as well as focusing in on issues of significant concern; namely the gap emerging between people's intention to take climate action and their capacity to do so. Delegates at the 2023 National Youth Assembly on Climate called for a climate education programme for all ages to be introduced, and a cohesive media and

communications strategy around climate action to be developed. The Minister for the Environment, Climate and Communications also hosted the fourth National Climate Stakeholder Forum (NCSF) in 2023 that brought over 200 citizen delegates together to discuss engagement within their sector and examine what gaps need to be addressed to allow as many people as possible to engage in taking climate action.

Local Government

Ireland's Local Government sector also supports delivery of climate action communications and stakeholder engagement throughout the country. The Local Authorities manage four CAROs, while each Local Authority is developing CAP's and appointing Climate Action Awareness Officers to engage directly with local communities and stakeholders. Local Authorities are thus strengthening the alignment between national climate policy and the delivery of effective local climate action.

Other Activities

Even more communication and engagement for all ages was also a key target of the CCAC 2023 Annual Review. It stated that:

"There must be effective and consistent engagement with communities, ensuring there is a fair and equitable transition, building and maintaining public support and action."

"The momentum forged by the NDCA in 2022 must not be lost but must be built on to increase citizen engagement on climate issues ... Critical to the programme's success are sufficient resources to ensure its delivery of outputs in 2023 and executing and reporting on the feedback loop, as set out in the NCAP, to demonstrate its effectiveness."

The Advisory Group on Social and Behavioural Change met six times in 2023 to provide guidance on climate policy. The Climate Communications and Engagement Taskforce (CCET) was also established during 2023.

Future Engagement

Looking ahead, we will build on the momentum achieved to date by developing and providing more accessible information on climate change to educate the public; and we will continue to engage in an inclusive, fair, and accessible manner to ensure all interests are heard. Further research will be undertaken by the Government to continue to measure changing levels of awareness, understanding, and actions on climate issues among the population. The NDCA and Climate Conversations will continue; as will the work of the Climate Advisory Council, CCET and other key fora. The Government will continue to

undertake public consultation and stakeholder engagement to inform its Energy and Climate policies and plans, including on Designated Maritime Area Plans for offshore renewable energy in the coming months and years.

Public Consultation on Draft NECP in 2024

DECC is committed to ensuring that the voices of the public and organisations throughout Ireland continue to play a meaningful role in co-creating policies that support the transition towards an environmentally sustainable, carbon neutral and climate resilient society. Key to this will be providing meaningful, accessible, and accountable public consultation on the Draft NECP. Therefore, a focused period of public consultation on the Draft NECP will be undertaken in Q1 2024, for a period of at least six weeks. The Draft NECP will be available for comment and feedback will be captured to inform the finalisation of the Plan. The public consultation will be promoted appropriately to ensure awareness and participation. This will include direct emails to key stakeholder organisations and prescribed bodies notifying them of the public consultation and inviting participation. Notices will be placed online and in printed media; and social media channels will also be utilised to generate nationwide awareness amongst the public and all stakeholders. Following public consultation on the Draft NECP, independent consultants will prepare a Consultation Findings Report that outlines the consultation process undertaken and presents the feedback received. In addition, all feedback received will be analysed by DECC and its consultants, in conjunction with other studies and stakeholder engagement, to inform the finalisation of the NECP.

Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a process for evaluating, at the earliest appropriate stage, the environmental consequences of implementing plan or programme initiatives. The purpose is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to adoption. The SEA process also gives interested parties an opportunity to comment on the environmental impacts of the proposed plan or programme and to be kept informed during the decision-making process. The European Directive (2001/42/EC) on the Assessment of the Effects of Certain Plans and Programmes on the Environment (the SEA Directive), was transposed into national legislation in Ireland by the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435/2004) and the Planning and Development (SEA) Regulations 2004 (S.I. No. 436/2004). Both pieces of legislation were amended in 2011 under S.I. No. 200/2011 and S.I. No. 201/2011.

Appropriate Assessment

The EU Habitats Directive places strict legal obligations on member states to ensure the protection, conservation and management of the habitats and species of conservation interest in all European Sites. The Habitats Directive has been transposed into Irish law by the Planning and Development Act 2000, as amended, and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Article 6 of the Directive obliges member states to undertake an ‘appropriate assessment’ (AA) for any plan or project which may have a likely significant effect on any European Site. The outcomes of such AA’s fundamentally affect the decisions that may lawfully be made by competent national authorities in relation to the approval of plans or projects. As part of the development of the NECP the need for an SEA will be assessed.

1.3.4 Consultations of other member states

Ireland consulted on its NECP in relation to planned offshore wind deployment until 2030 and related grid planning aspects with the other North Seas countries within the framework of the North Seas Energy Co-operation (NSEC). Regional cooperation with other Member States is critical to facilitating and accelerating the green transition. While Ireland is not currently connected to other Member States regional cooperation on aspects of green transition has strengthened ties with other countries and been mutually beneficial. In addition to larger and more established initiatives, such as the NSEC, Ireland has engaged bilaterally with neighbours through ad hoc groups. More formal bilateral meetings with Member States to discuss the draft NECP as well as specific areas of cooperation will be considered. The challenges Member States have faced in finalising the NECPs meant that further initiative have been delayed until after the submission of this document to the European Commission.

1.3.5 Iterative process with the Commission

Pursuant to the requirements of the Governance Regulation, Ireland is submitting its draft NECP in 2023. The submission of the draft plan represented the first official milestone of the iterative process between the Commission and Ireland for the purpose of the finalisation of the plan and its subsequent implementation. This submission was preceded by numerous meetings and workshops with the Commission and their representatives. Ireland also engaged in bilateral discussions with the Commission to further the plan.

1.4 Regional Co-operation in Preparing the Plan

1.4.1 Elements subject to joint or coordinated planning with other Member States

North Seas Energy Cooperation – Regional Offshore Renewable Energy Cooperation

Ireland is part of the wider North Seas region, which has a large RE potential. The deployment of offshore wind energy will play an increasingly important role in reaching Europe's energy and climate goals. The EU Offshore Strategy has set the ambitious goal of 300 GW of offshore wind and 40 GW of ocean energy installed capacity by 2050. On 19th January 2023, the North Seas Energy Cooperation (NSEC) facilitated the development of the non-binding agreement on goals for offshore RE generation in 2050 with intermediate steps in 2040 and 2030 for priority Northern Seas offshore grids (NSOG) under the TEN-E Regulation. Targets for the NSOG priority offshore grid corridor constitute 60,3 GW in 2030, between 134,9 and 158 GW in 2040, and between 171,6 and 218 GW in 2050. This means a significant change of scale for the offshore sector, RE deployment and strategic integrated offshore development. High energy prices, e.g. in 2022, and geopolitical events threatening the European energy system have underlined the imperative of accelerating deployment of domestic RE generation capacities and regional offshore transmission networks as quickly as possible, thereby significantly improving energy security. Ireland works together with the other NSEC countries on identifying, analysing, and realising possibilities for concrete cooperation projects. NSEC is a voluntary, bottom-up, market-oriented, regional cooperation initiative established in 2016, which seeks to:

- Create synergies;
- Avoid incompatibilities between national policies;
- Share knowledge on international best practices;
- Foster joint strategies where possible and beneficial;
- Ministers responsible for energy regularly meet in the NSEC format. In 2023, NSEC consists of Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, and Sweden with the participation of the European Commission. On December 18th, 2022, NSEC energy ministers and the EU Commissioner for energy signed a Memorandum of Understanding on offshore RE cooperation with the UK. The establishment of this MoU was provided by the Trade and Cooperation Agreement between the European Union and the United Kingdom

of 30 December 2020, builds on NSEC, and is distinct yet complementary to the NSEC framework.

For the offshore wind sector, it is vital to offer a predictable and stable long-term operating environment to facilitate long-term investments and further cost reductions. To this end, existing barriers must be removed, and attractive investment conditions should be created. NSEC members work together to make an important contribution to achieving these goals through a regular exchange of expertise focused on several topics within the four NSEC Support Groups (SGs):

- SG1: development of hybrid and joint projects;
- SG2: permitting, maritime spatial planning (MSP) and environmental considerations;
- SG3: financing and support frameworks;
- SG4: long term grid and infrastructure planning;
- For each support group to deliver on its goal, the exchange between and within support groups is strongly encouraged and overseen at the NSEC coordinators level. Examples of this are on ports with SG1 and SG4, MSP and grid-planning with SG2 and SG4, and how non-price criteria can strengthen innovation on key challenges for an accelerated, cost-efficient, and responsible deployment of offshore wind with SG1, SG3 and SG4. Finally, the support groups also liaise closely with other international fora, such as the Pentilateral Energy Forum and the Clean Industrial Forum in regard to onshore grid planning, market-arrangements, and stakeholder-engagement.

Development of Hybrid and Joint Projects

NSEC's SG1 serves as a platform to collaborate on concepts for potential offshore wind projects and a coordinated electricity infrastructure, including transmission infrastructure. The group has increased its activity as NSEC countries have started more joint and hybrid projects in the North Seas to facilitate technical and ministerial discussions and sharing of best practices as the projects progress. Besides joint projects on offshore wind, which will be connected and supported by several countries, the support group also works on possible "hybrid" solutions that use cross-border options to connect offshore wind farms to more than one electricity market and create synergies between countries, as well as the corresponding EU and national market arrangements. The members of SG1 develop opportunities for collaboration on hybrid projects as well as on possible legal, regulatory, and commercial

barriers. SG1 will continue to work on overcoming barriers and taking steps toward hybrid and joint projects, which can be addressed on the national and regional level. Furthermore, the collaboration will continue to function as a forum to reflect on how to work on issues with legislative processes at the EU and national level.

Permitting, Maritime Spatial Planning and Environmental Considerations

In order to reach our energy and climate targets within the EU, there is a need to accelerate planning and permitting procedures at EU and national level, and at the same time better understand the possible ecological limits of large-scale wind development in the North Seas and the impacts on other users of the sea. SG2 made an inventory of spatial tensions of 2030 offshore wind farm developments on a regional sea scale. The next steps are to set to better define the ecological tensions and potential threats for development and define spatial strategies to avoid or mitigate such threats. To increase knowledge and support the deployment of offshore wind in the North Seas, the North Seas countries will continue to cooperate closely on MSP, environmental research, cumulative impact assessment of wind farms between responsible authorities for energy, maritime spatial planning, and environment.

Financing and Support Frameworks

Offshore tenders are a central topic for financing and support frameworks. NSEC members coordinate the offshore tenders by means of sharing information regarding the national tender schedules as a part of SG3. In the working group, the countries also exchange best practices concerning tender design, zero-subsidy support, design elements to foster system and sector integration as well as grid connection regimes. To achieve the ambitious goals that have been set out, joint projects are also becoming increasingly important. For this reason, the group also addresses financing opportunities for joint cross-border offshore projects, including via EU financing instruments such as the Connecting Europe Facility (CEF) and the Union Renewable Energy Financing mechanism. Finally, Power Purchase Agreements (PPAs) play an increasingly important role in the financing of offshore projects. The countries will address the issues, barriers, and solutions for a wider uptake of PPAs. Further, the group exchanges information on the decommissioning, lifetime extension and repowering of wind farms. The aim of the exchanges is also to jointly develop and discuss ideas for the medium-term future of the offshore energy system in terms of installed capacity, e.g. through the coordinated tender schedules.

Delivering 2050: Long-term Grid and Infrastructure Planning

NSEC's SG4 works with the European Network of TSOs for Electricity (ENTSO-E) to provide and coordinate input on the Offshore Network Development Plan for the Northern Seas offshore grids under the EU TEN-E regulation. Furthermore, SG4 aims to broaden the discussion on long-term grid planning to also include the early development and upscaling of green offshore hydrogen production and transportation, and its potential role in an increasingly interconnected North Seas energy system. Depending on production methods, hydrogen can be grey, blue, or green. Green hydrogen is the only type produced in a climate-neutral manner making it critical to reach net zero by 2050 and therefore will be important in decarbonising our energy system. Power-to-x, and especially hydrogen, will play a key role in providing flexibility where and when it is needed. Hydrogen demand is expected to grow significantly, especially after 2030 due to both its potential as a storable energy carrier and, as a fuel and raw material for hard-to-electrify activities. Several NSEC countries have announced targets for onshore and offshore green hydrogen production. In SG4, NSEC countries will exchange first experiences with hydrogen in correlation to offshore wind, and exchange knowledge on transport infrastructure, RES development and offshore Power-to-x production. They will work together to provide insights on offshore hydrogen production, to discuss the roll-out of electrolysis, and to increase the synergies between the long-term offshore grid and hydrogen network planning. In all aspects of medium- and long-term infrastructure planning, SG4 underlines the importance of broad engagement on this planning process with member states and relevant stakeholders, including industry and Non-Governmental Organisations (NGOs), to anticipate and tackle supply-chain bottlenecks (e.g., ports' development and availability) in the rollout and acceleration of delivering our North Seas energy system. This closely relates to the importance of safeguarding the security of offshore and underwater critical infrastructure, and the supply of critical raw materials, through innovation and enhanced circularity.

A new national policy on offshore islands was launched by Minister for Rural and Community Development in June 2023. Its goal is to see more people living and working on the islands with good career prospects, regardless of where their employer is headquartered. The vision is also to see offshore islands contributing to and benefiting from the transition to a low carbon economy and a climate-neutral society, with island communities, especially young people, having an active role in shaping the future for Ireland's islands.

Clean Energy for EU Islands Initiative

As part of the 'Clean energy for all Europeans' package, the Clean Energy for EU islands initiative, launched in 2017, provides a long-term framework to help islands generate their own sustainable, low-cost energy. This will result in:

- Reduced energy costs and greatly increased production of RE;
- Construction of energy storage facilities and demand response systems, using the latest technologies;
- Better energy security for islands, which will be less reliant on imports;
- improved air quality, lower GHG emissions, and less impact on islands' natural environments;
- The creation of new jobs and business opportunities, boosting islands' economic self-sufficiency;
- The initiative builds on a [political declaration](#) signed by the European Commission and 14 EU countries with large island populations (Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Malta, Portugal, Spain, and Sweden). As a follow-up, the parties also signed a [Memorandum of Understanding](#) in June 2020 to establish a long-term framework for cooperation to advance the energy transition and identify best practices on challenges that cannot be addressed at the island level.

Ireland has 5 island groups involved with the Clean Islands Energy Transition; [Aran Islands](#), [Bere Island](#), [Cape Clear](#), [Rathlin](#) and [Valentia](#). DECC has some responsibilities relating to Clean Energy Islands in the national policy on offshore islands as follows:

- Consider innovative solutions including funding and regulatory sandboxes to harness the RE potential of island communities including storage and connectivity solutions, as part of the Clean Energy for EU islands initiative. (DECC CRU Eirgrid ESB Networks Q4 2024);
- Support the transition to RE on the islands based on the Study on Regulatory Barriers and Recommendations for Clean Energy Transition on the islands of Ireland (DECC Eirgrid ESB Networks SEAI CRU DRCD Comhar na nOileáin ÚnaG Other Relevant Public Bodies Q4 2024);

- Extend the tools and techniques developed as part of the EU territorial cooperation initiative (InterReg) EU Ireland-Wales CHERISH project to island areas to inform their climate change plans and actions (DECC GSI Q3 2025); Provide grants and supports for energy-efficiency community projects, including Energy Master Plans for islands, through relevant SEAI schemes.

2. National Objectives and Targets

2.1 Dimension Decarbonisation

2.1.1 GHG Emissions and Removals

2.1.1.1 The Elements set out in point (a)(1) of Article 4 Effort Sharing Regulation

The "Effort Sharing Regulation" (ESR) sets out binding annual GHG emission targets for Member States for each year for the period 2021–2030. These targets cover sectors of the economy that fall outside the scope of the EU ETS. These non-ETS sectors, including transport, buildings, agriculture and waste management, account for almost 60% of total EU emissions and 76% of total emissions for Ireland. The Regulation is the follow-up to the Effort Sharing Decision (ESD), which established national emissions targets for Member States in the non-ETS sectors between 2013 and 2020. Ireland has been fully compliant with its emission reduction obligations to date.

Initially adopted in 2018, the ESR was amended in 2023. With new national targets Member States will collectively contribute to an emission reduction at EU level, in the Effort Sharing sectors, of 40% by 2030 compared to 2005 levels. The revision was adopted as part of a package of proposals aimed at reducing the EU's emissions by 55% by 2030 (compared to 1990 levels) and deliver the European Green Deal. National contributions under the ESR were determined with consideration of the different capacities and cost-efficiency opportunities in Member States so as to ensure a fair and balanced distribution of the effort. Targets were determined according to the relative GDP per capita of each Member State, with higher income Member States taking on more ambitious targets than those with a lower GDP per capita. To ensure efficiency, these targets were adjusted to reflect cost-effectiveness for those Member States with a GDP per capita above the EU average and to avoid some Member States' targets from increasing much more than the collective target. Member States target increases were limited to 12 percentage points. Ireland's revised 2030 target under the EU's ESR is to deliver a 42% reduction of emissions compared to 2005 levels by 2030. There are also annual binding emission allocations over the 2021-2030 period to meet that target. There are no individual targets for each sector in the ESR. The 42% reduction target that has been set for Ireland covers all non-ETS sectors, including transport, buildings, agriculture, and waste management.

Use of ESR Flexibilities

Flexibility options built into the ESR agreement allowed Ireland to transfer 4% of credits from the [EU Emissions Trading System](#) (ETS) and to account for Land Use, Land-Use Change and Forestry ([LULUCF](#)) credits equivalent to a maximum of 26.8 Mt CO₂ eq over the period 2021-2030. Following the revision of Regulation (EU) 2018/841 on GHG Emissions and Removals from LULUCF, this has been reduced by 50%. The accounting rules will change from net-net emissions to gross-net accounting of all sectoral emissions and removals post 2026.

ETS flexibility

Eligible Member States had to notify the Commission by the end of 2019 of the amount of this flexibility they will use over the period. Since the transfer was strictly limited in volume, and decided beforehand, predictability and environmental integrity are maintained. The ESR provides two flexibilities (EU-ETS and LULUCF) to allow for a fair and cost-efficient achievement of the targets. The full LULUCF flexibility of 26.8 Mt CO₂eq (theoretically available to Ireland under the ESR) is not considered to be possible to achieve based on the latest projections. New research led to a revision to the emission factor associated with forestry on organic (peat) soils and when this was implemented in the 2022 EPA Projections report, it led to decreased projected removals/increased emissions associated with forest land for all periods. The total amount of LULUCF flexibility now projected to be available is 9.3 Mt CO₂eq, significantly less than the theoretical flexibility available.

Revision of Regulation (EU) 2018/841 on GHG Emissions and Removals from Land use, Land-use change and Forestry

Under the European Green Deal, the European Union (EU) has committed to achieve net-zero GHG emissions by 2050 and set a more ambitious climate target of net-55% emissions reductions by 2030 compared to 1990 levels. Both ambitions rely fundamentally on the role of natural sinks from the LULUCF sector to compensate residual emissions. However, they also come at a time in which the EU's natural sinks are in decline. Over the last two decades, the EU's net-removals have fallen from a peak of -329 Mt CO₂eq in 2009 to -243 Mt CO₂eq in 2019, mainly due to an increase in forest harvesting rates, including for bioenergy. Therefore, achieving the EU's climate goals will require reversing this negative trend and securing a strong contribution from the land-use sector towards the EU's climate-objectives. For this to be achieved, climate change mitigation in the land-use sector needs to reduce risks to environmental integrity. Environmental integrity is achieved by ensuring that aggregated global GHG emissions do not increase because of a mitigation activity or

implementation of instruments. Among the most discussed risks to environmental integrity are additionality of mitigation measures, non-permanence (reversals) of emission reductions or removals, uncertainty in monitoring and risk of incomplete reporting, but also the challenge of ensuring other environmental and social safeguards.

The LULUCF Regulation (EU) 2018/841 regulates the EU emissions and removals from the land-use sector for the period 2021 to 2030. In 2030, LULUCF carbon removals will need to reach 310 Mt CO₂eq. Parliament approved the agreed text on 14 March 2023 and the regulation was published in the Official Journal on 21 April 2023 entering into force on 11 May 2023. The amended regulation is considered a paradigm shift in the treatment of the LULUCF sector in the EU's climate target architecture. The 2020 Kyoto protocol climate targets did not include the LULUCF sector due to the large uncertainties in emissions calculations and, whilst the 2018 LULUCF regulation included a no-debit rule which meant you must not disimprove from a baseline, it also provided substantial flexibilities to generate credits to use against the ESR targets. The 2023 amendment represents a major step-up in ambition for the LULUCF sector as it sets an extremely ambitious target for the EU LULUCF sector, with binding national contribution targets and additional limitations on existing flexibilities.

Main Changes and Implications for Ireland

The accounting rules will change to gross-net accounting of all sectoral emissions and removals post-2026. Therefore, the accounting rules will now be different for the two commitment periods of 2021-2025 & 2026-2030. For the first period (2021-2025), the original land accounting categories (e.g., afforested land) and the national “no-debit” rule remain in place. The adoption of this reporting format means that the accounting rules established through projected baselines (i.e., Forest Reference Level) and different historic reference periods (i.e., Grasslands, Croplands, Wetlands) will no longer be used. These changes are aimed at making the accounting rules more transparent to provide methodological consistency with the ESR (Regulation (EU) 2018/842). By changing the accounting rules for 2026-2030, all land emissions must be included in the accounts which will make the distance to the proposed annual targets from 2026-2030 much larger due to increased forest land emissions, which now cannot be factored out. The Commission has calculated Ireland's target to be a reduction in emissions of 0.626 Mt CO₂eq to 3.7 Mt CO₂eq by 2030 and to meet a 4-year budget period based on linear trajectory from 2026-2029. These binding targets contrast with the current no-debit rule and voluntary LULUCF flexibility which can be

utilised to reach the 2030 ESR target. Proposals on how Ireland will meet this obligation will inform the next update to the CAP.

National Policy Position

In June 2019, the Irish Government agreed to support the adoption of climate neutrality targets by 2050 at EU level, and to pursue a trajectory of emissions reduction nationally which is in line with reaching climate neutrality in Ireland by 2050, and to evaluate in detail the changes which would be necessary in Ireland to achieve this target at national level. Ireland's Climate Action and Low Carbon Development Act 2015-2021 was enacted in July 2021. The Act establishes in law Ireland's commitment to achieve 'climate neutrality' by 2050 at the latest. The Act also provides for a 51% reduction in GHG by 2030, compared to 2018 levels, and puts in place a rigorous governance structure to ensure that Ireland achieves its national, EU and international climate commitments in the near- and long-term. This framework includes a system of carbon budgets and sectoral emissions ceilings, and a requirement for Government to prepare and update a national CAP annually and a National Long-term Climate Action Strategy at least once every five-years. Ireland's Long-term Strategy on GHG Emissions Reductions was published in April 2023, and shared with the European Commission as stipulated by Article 15 of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (Governance Regulation). The Strategy seeks to identify the optimal pathways, beyond 2030, towards achieving a climate neutral economy in Ireland by 2050. Taking a 30-year perspective, the strategy builds upon the decarbonisation pathways set by the carbon budgets, sectoral emissions ceilings, and CAP 2023, and provides a crucial link between Ireland's 2030 climate targets and the long-term goal set by Ireland's National Climate Act and the European Climate Law. The Strategy is underpinned by robust technical analysis of potential decarbonisation pathways, across all key sectors of the economy. The Strategy will provide clarity on the long-term sectoral adjustments that will be required to reach climate neutrality; allowing Ireland to avoid costly investments in high-emissions technologies, support a just and equitable transition, promote technological innovation, plan for new sustainable infrastructure in light of future climate risks, and send early and predictable signals to investors about envisaged long-term societal changes. The current strategy has been informed by an extensive public consultation carried out in 2019. While the input received remains relevant, a second public consultation was carried out in 2023 to account for the important climate policy developments that have taken place in the intervening years. The input that has been received will provide the basis for an updated Long-Term Strategy to be prepared by the end of 2023, as committed to in the

annex of actions accompanying CAP. The updated Strategy will conform to the requirements of both EU and national legislation and, as such, will be Ireland's first strategy for GHG reduction to be prepared in line with the Climate Action and Low Carbon Development Act 2015-2021.

Table 2: Projected trends in GHG emissions (WEM)

ktCO ₂ eq	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
ETS sector emissions	15259.2	14491.7	14925.1	14388.8	13176.0	12998.9	12137.4	11720.1	11062.7	10055.2	9506.6	9699.5
Effort Sharing sector GHG emissions	46850.7	46637.6	45022.1	45020.4	44820.0	44810.7	44431.9	43993.5	43491.7	42812.1	38373.7	36732.9
LULUCF	7338.3	7305.1	7800.7	8718.0	8691.7	9367.9	9239.1	9436.3	9668.9	9665.8	10182.0	9383.1

Table 3: Projections of Sectoral Developments (WEM)

ktCO ₂ eq	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Energy Industries	10271.84	9662.90	10300.53	9783.27	8507.27	8310.76	7414.34	6962.11	6266.05	5188.82	4906.74	5284.55
Residential	6917.48	6197.92	5478.36	5641.44	5493.86	5306.03	5111.85	4902.56	4685.65	4455.01	3238.60	3207.53
Manufacturing Combustion	4624.47	4442.21	4259.95	4223.71	4293.66	4317.14	4342.91	4370.96	4385.26	4366.36	3884.39	3652.54
Manufacturing Combustion	4624.47	4442.21	4259.95	4223.71	4293.66	4317.14	4342.91	4370.96	4385.26	4366.36	3884.39	3652.54
Commercial / Public Services	1494.30	1427.98	1361.72	1368.12	1349.65	1325.07	1301.18	1274.91	1247.65	1213.44	1142.57	1260.24
Transport	10989.43	11845.10	11736.94	11615.42	11469.00	11406.26	11313.33	11195.27	11047.13	10869.95	7671.56	5323.78
Industrial Processes	2476.58	2506.90	2538.03	2568.81	2596.70	2597.54	2598.72	2599.89	2601.07	2602.24	2613.54	2623.33
F-Gases	766.24	757.58	746.60	746.75	710.58	680.33	670.35	648.89	641.53	647.07	841.84	1147.50
Agriculture	23626.15	23367.75	22621.86	22575.08	22703.11	23012.24	22980.36	22942.17	22884.49	22751.96	22971.89	23409.16
Waste	943.36	920.93	903.22	886.63	872.12	854.19	836.24	816.81	795.58	772.47	609.17	523.80

2.1.1.2 Where applicable, other national objectives and targets consistent with the Paris Agreement and the existing long-term strategies. Where applicable for the

contribution to the overall Union commitment of reducing the GHG emissions, other objectives and targets, including sector targets and adaptation goals, if available

Climate Adaptation

Ireland is committed to reducing the vulnerability of the State to the negative effects of climate change. Ireland's first statutory NAF was published in January 2018. The NAF identifies 12 key national sectors under the remit of 7 Government Ministers where sectoral adaptation plans were required to be submitted to Government for approval by 30 September 2019. The NAF was reviewed in 2022 in line with statutory requirements and a new NAF is currently being developed and is scheduled to be completed in 2024. Since 2019, the requirement to prepare LASs has effectively been superseded with a new statutory requirement for all Local Authorities to prepare LACAPs every five years. These plans are currently under development. The sectoral plans were approved by Government in October 2019. Plans were developed in line with the national guidelines "Sectoral Planning Guidelines for Climate Change Adaptation" which were published in May 2018 to ensure that a coherent and consistent approach to the development of plans was taken across Government. Under NAF Ireland's 31 Local Authorities also prepared local adaptation strategies in line with "Local Authority Adaptation Strategy Development Guidelines" published by DECC

Circular Economy

Ireland's national waste policy is based on the waste hierarchy: waste prevention; preparing for reuse; recycling; and energy recovery; with disposal, namely landfill, being the least desirable option. The current national Waste Action Plan for a Circular Economy (2020-2025) sets out a roadmap for Ireland to transition to a circular economy. This has been supported by the enactment of the Circular Economy and Miscellaneous Provisions Act 2022, which underpins Ireland's shift to a circular economy, as well as the ongoing implementation of the Whole-of-Government Circular Economy Strategy. As part of a series of measures included in CAP 2023, DECC plans to transform the national approach to waste in line with modern, circular economy principles.

Biodiversity

Biodiversity provides us with clean air, water, food, materials, medicines, and health benefits. It supports pollination and soil fertility, regulates climate, and protects us from extreme weather and other impacts arising from climate change. Biodiversity contributes to health, wellbeing and sustainable development as set out in the UN Sustainable

Development Goals (SDGs). Despite the important role that biodiversity plays in underpinning our economy, health, and resilience to climate change, we are losing biodiversity at a rate seen only during previous mass extinctions. By the end of the century, climate change is likely to become the most significant driver of biodiversity loss. Increases in temperature will change the timing of life cycle events and the distribution of species. The physical impact of more intense storms and increased winter/spring rainfall will accelerate the degradation of habitats that are already compromised by unsustainable practices. The conservation and sustainable use of biodiversity needs to be escalated. Actions within the build on the foundations of the National Biodiversity Action Plan (2017- 2021) and are aimed at improving sustainable agriculture and fisheries, better soil, and land management and, most urgently, the restoration of natural systems. The Biodiversity Adaptation Plan also emphasises the need to consider biodiversity as an adaptation tool for other sectors. The primary objective of the Biodiversity Adaptation Plan is to protect biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they increase the adaptive capacity of people and biodiversity while also contributing to climate change mitigation. A new and updated Biodiversity Action Plan is currently underway, scheduled to be published in Quarter 1 of 2024.

Bioeconomy

The EU's 2050 long-term strategy outlines the bioeconomy as one of the strategic priorities in the road to a climate neutral economy. The Department of Agriculture, Food and the Marine and DECC co-chair the [national Bioeconomy Implementation Group](#) through which Ireland's bioeconomy is promoted and action scaled up. A National policy statement on the bioeconomy was published in 2018, and the First Progress Report of the Group was published in September 2019. The importance of the bioeconomy is also recognised in the Government's CAP and other cross-sectoral policies including Future Jobs Ireland. The Government recognises that the bioeconomy is crucial for sustainability while also providing an impetus for rural development and employment. The Action Plan for Rural Development (2017) underlines how the bioeconomy can contribute to decarbonisation, sustainable growth, and job creation in the agricultural, industrial, and technological sectors in rural areas. With 80% of the agri-food sector based in rural Ireland, the potential for the bioeconomy to boost employment in regions is clear.

Ireland's key objective is to grow Ireland's ambition to be a global leader for the bioeconomy through a co-ordinated approach that harnesses Ireland's natural resources and competitive advantage and that fully exploits the opportunities available while monitoring and avoiding

unintended consequences. Our goal is to move Ireland beyond simply a focus on target compliance and carbon mitigation to integrating sustainable economic development into our economic model as we transition to a low carbon and circular economy.

Geothermal Energy

The Government's 'Policy Statement on Geothermal Energy for a Circular Economy', published July 2023, sets out the broad approach to be adopted in regulating the exploration for, and the utilisation of, geothermal energy as a natural resource and the scope of a strategy to promote the sustainable development of Ireland's geothermal resources to decarbonise the heating and cooling of buildings and for industrial uses and power generation.

Air Quality

Ireland's key objective in this area is to reduce harmful emissions and improve air quality in a manner which meets EU and international obligations and ensures a continuous reduction in health impacts which arise as a result of air pollution. Ireland's first National Clean Air Strategy was published in April 2023 and provides the high-level strategic policy framework necessary to identify and promote the integrated measures across Government policy that are required to reduce air pollution and promote cleaner ambient air, while also delivering on wider national objectives. It outlines how we will enhance and protect the quality of the air that we breathe and realise the full environmental and health benefits of cleaner air. This high-level strategic framework complements the more technical National Air Pollution Control Programme (NAPCP), which identifies the pathway to compliance with our national emissions targets for each pollutant. Our emissions are measured on an annual basis and Ireland has specific responsibilities and targets under a number of international and European agreements. The most notable of these are the international Convention on Long Range Transboundary Air Pollution (CLRTAP) and the EU National Emission Ceilings (NEC) Directive ((EU) 2016/2284). The Clean Air for Europe (CAFE) Directive underpins our responsibilities for ambient air quality, and this sets maximum concentration levels for a range of priority pollutants that impact on human health. The EU is currently revising the limit values set under the CAFE Directive, taking the more stringent World Health Organisation (WHO) guidelines into consideration. The proposed revision of the Ambient Air Quality Directives will set interim 2030 EU air quality standards, aligned more closely with WHO guidelines, while putting the EU on a trajectory to achieve zero air pollution at the latest by 2050, in synergy with climate-neutrality efforts.

There are a number of air pollutants that Ireland has been monitoring and reducing over the last few decades, and details of all these can be found in Ireland's Air Pollutant Emissions 2021 (1990-2030). However, the priority air pollutants are as follows:

- Nitrogen oxide (NO_x);
- Ammonia (NH₃);
- Fine particulate matter (PM_{2.5} and PM₁₀);
- Non-methane volatile organic compounds (NMVOCs);
- Sulphur dioxide (SO₂).

Air Quality in Ireland is generally good; however, air pollution is still a contributory factor in approximately 1,410 premature deaths per year in Ireland. There are specific pollutants of concern and certain localised air pollution issues which arise, in particular with particulate Matter (PM_{2.5} and PM₁₀), which is associated with residential burning of solid fuel and road transport. The new solid fuel regulations took effect from 31 October 2022. They include more stringent technical standards for all solid fuels to ensure that approved products are of the highest quality and that the most polluting products can no longer be made available on the Irish market and to assist the public in transitioning to less polluting alternatives. The latest emissions data shows we are in compliance with our 2021 emissions targets for all pollutants except NH₃. The NAPCP is a technical document which sets out the key policies and strategies to ensure that we meet our air quality commitments. It details our current air pollutant emissions (for five key pollutants) and our projected future emissions in relation to key EU target levels. Ireland submitted its first NAPCP in 2019 and an update to the programme was submitted to the EU in February 2021. A further NAPCP will be submitted by April 2024. The predicted impact of a range of cross-governmental policies and measures on air quality are incorporated into the annual EPA air quality projections. The most recent projections show that these measures will have significant co-benefits and if fully implemented will ensure that we meet all our legally binding emissions commitments and as such they also form the basis of our NAPCP. Ireland recognises the significance of clean air to the health and well-being of its citizens and its environment and is aware of its international obligations in this area. As the population and economy grow, and as sectors develop, there are both challenges and opportunities in managing future air quality. In this regard Ireland is fully committed to developing and deploying further measures and initiatives to enhance and protect air quality in parallel with broader national policy priorities of relevance.

Noise

The European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549/2018) transposes the Environmental Noise Directive 2002/49/EC which is the main EU law to identify noise pollution levels and act on them. The Directive aims to provide a common framework to avoid, prevent or reduce, on a prioritised basis, the harmful effects of exposure to environmental noise, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity. It focuses on four action areas:

- determining exposure to environmental noise and assessing its health effects at single dwelling level;
- ensuring that information on environmental noise and its effects is made available to the public;
- preventing and reducing environmental noise;
- preserving environmental noise quality in areas where it is good.

The Department's goal is to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. Our vision is in line with the Government's National Planning Framework Objective 65 which states the aim to 'Promote the proactive management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans.'

2.1.2 Renewable Energy

2.1.2.1 The elements set out in point (a)(2) of Article 4

Table 4 sets out the estimated trajectory for the overall share of RE for the below scenario:

- With Existing Measures (WEM), EU recommended harmonised fuel price trajectories with variable carbon tax to 2030, constant thereafter.

The table also provides a comparison between the estimated trajectory and the one set out in the Governance Regulation and set out the evolution of RES-E, RES-H and RES-T over the modelled horizon. The modelling indicates Ireland's overall renewable energy share (RES) of gross final energy consumption across the three energy sectors, for 2018, for a projection over the decade between, 2020 and 2030 and a snapshot for 2040 and 2050.

Table 4: Trajectories for renewable heating and cooling, electricity, and transport (WEM)

Renewable Trajectories	2018	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
RES-H&C (%)	6.4%	6.3%	5.1%	6.3%	11.8%	12.8%	14.6%	16.4%	17.7%	19.1%	20.7%	22.9%	38.6%	40.6%
RES-E (%)	33.3%	39.1%	36.4%	36.8%	39.2%	41.0%	41.7%	44.7%	47.0%	51.0%	57.7%	67.7%	80.1%	82.6%
RES-T (%)	7.2%	10.2%	4.4%	5.5%	5.3%	6.0%	6.8%	7.9%	9.2%	10.8%	12.6%	14.9%	52.5%	70.4%
Overall RES Share (%)	10.9%	16.26%	12.5%	13.1%	16.8%	18.1%	19.4%	21.1%	22.5%	24.3%	27.2%	31.4%	46.2%	51.1%
Article 4(a)(2) Target for RES Increase	-	-	-	18.0%	-	-	43.0%	-	65.0%	-	-	100%	-	-
RES Min Trajectory (%)	-	16.0%	-	19.3%	-	-	23.8%	-	27.8%	-	-	34.1%	-	-
RES Projected Trajectory (%)	-	16.26%	-	13.1%	-	-	19.4%	-	22.5%	-	-	31.4%	-	-
Shortfall (%)	-	-	-	6.2%	-	-	4.4%	-	5.3%	-	-	2.7%	-	-

It can be noted from the above table that Ireland’s proposed trajectory will not be in line with the desired trajectory set out in the Governance Regulation. This is primarily due to the fact that large projects, particularly offshore wind projects, cannot be constructed in shorter timeframes and will not be fully operational by the end of the decade. The above table captures the WEM-only scenario and does not represent a lowering of commitment. The table will be updated in the final version of the NECP.

2.1.2.2 Estimated trajectories for the sectoral share of renewable energy in final energy consumption from 2021 to 2030 in the electricity, heating and cooling, and transport sector

The table at section 2.1.2(i) sets out the estimated trajectory for the share of RE by sector. The figures provided for RES-T are based on actual energy share and do not include the use of multipliers as set out in the Renewable Energy Directive. In order to promote the use of RE in the heating and cooling sector, in line with Article 23.1 of the 2018 Directive on the promotion of the use of energy from renewable sources (recast), Ireland is adhering to the indicative 1.1 percentage point increase (i.e. without the inclusion of waste heat and cold). The use of district heating and cooling in Ireland is at a very low level and is estimated to account for less than 1% of heat consumption. Structural barriers to its expansion exist due to the nature of Ireland’s dispersed settlement structure with low population density. However, the 2022 National Heat Study, produced by the SEAI, highlights the potential for up to 54% of heat in buildings to be supplied by district heating. Measures to deploy energy from renewable sources in the heating and cooling sector include policy measures such as;

developing a legislative and regulatory framework and establishing a district heating centre of excellence, to support the expansion of district heating that uses renewable or waste heat sources, Ireland's Support Scheme for Renewable Heat (SSRH), and the introduction of the Renewable Heat Obligation (RHO). The SSRH has the primary objective of increasing the level of RE in the non-domestic heat sector. Heat pump uptake through building regulations and support schemes will also drive the growth of renewables. The SSRH, which supports businesses to decarbonise through either a capital grant or a tariff support, has been impacted by the EU's new State Aid guidance, which does not allow tariff support without a Contract for Difference if the generation is over 1 MW. This guidance was intended to prevent electricity producers using biomass from profiting, but in the Irish context it is preventing large heat users, who do not trade their heat or electricity production, from decarbonising, and thus is placing a significant roadblock on Ireland's efforts to achieve the decarbonisation targets in heating and cooling. This new restriction will come into effect from the 1st of January 2024.

Government has agreed to the introduction of an obligation in the heat sector which will incentivise suppliers of fossil fuels used for heat to ensure a proportion of the energy they supply is from a renewable source. The RHO will also support delivery of Ireland's National target of up to 5.7 TWh of indigenously produced biomethane by 2030. Use of the structures established under the national energy savings obligation set out in Article 7 of Directive 2012/27/EU will be considered when deciding on the further implementation and monitoring of the measures referred to in Article 23.3 of the Renewables Directive.

2.1.2.3 Estimated trajectories by renewable energy technology that the Member State projects to use to achieve the overall and sectoral trajectories for renewable energy from 2021 to 2030, including expected total gross final energy consumption per technology and sector in millions of tonnes of oil equivalent (ktoe) and total planned installed capacity (divided by new capacity and repowering) per technology and sector in MW

Table 5: Trajectories by RE technology (WEM)

Renewable Electricity-Installed Capacities (MW)													
	2018	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Hydro	237	237	237	237	237	237	237	237	237	237	237	237	237
Renewable Waste	39	39	39	39	39	39	39	39	39	39	39	39	39
Landfill Gas and Biogas	28	28	28	28	28	28	28	28	28	28	28	28	28
Biomass	81	81	81	81	148	148	148	148	148	148	148	30	30
Biomethane	0	0	0	0	0	0	0	0	0	0	0	0	0
Wind	3674	4339	4536	4740	4827	5029	5281	5869	6484	8144	10244	15694	19744
Solar PV	10	75	258	439	761	1512	1890	2772	3332	4172	4272	5272	6172
Marine	0	0	0	0	0	0	0	0	0	0	10	20	300

Renewable Electricity-Generation by Source (ktoe)													
	2018	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Hydro	62	66	66	63	63	63	63	63	63	62	58	50	49
Renewable Waste	28	30	30	28	29	28	28	29	28	28	25	21	20
Landfill Gas and Biogas	16	15	14	11	11	11	11	11	11	11	10	9	9
Biomass	29	40	44	59	88	88	88	87	87	87	86	12	12
Biomethane	0	0	0	0	0	0	0	0	0	0	0	0	0
Wind	748	928	959	1035	1097	1148	1254	1368	1529	1817	2302	4360	5500
Solar PV	2	7	13	26	45	80	132	176	235	300	342	365	418
Marine	0	0	0	0	0	0	0	0	0	0	0	3	50

*The electricity generation and renewable heat generation include contribution from fuels that have not been verified according to REDII

renewable Transport Consumption by Source (ktoe)													
	2018	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Renewable Electricity	4	15	24	48	71	99	135	174	232	299	393	2188	3714
Biofuels Food-based	27	20	23	20	23	25	25	24	24	23	22	9	1
Biofuels Advanced	0	0	2	13	19	26	43	59	75	90	105	380	299
Biofuels Alternative	254	151	177	146	148	150	151	152	152	153	154	107	32
Biomethane	0	0	0	0	0	0	0	0	0	0	0	0	0

Renewable Heat-Generation by Source and Sector (ktoe)														
	2018	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050	
<i>By source</i>														
Biogas	10	12	13	10	10	10	10	10	10	10	10	10	10	
Biomass	242	224	236	352	384	426	461	473	484	504	552	1043	1006	
Ambient Heat	44	79	100	139	169	216	269	322	377	434	492	851	1062	
Solar Thermal	14	14	14	15	15	15	15	15	16	16	16	19	22	
Biomethane	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>By sector</i>														
Industry	199	185	183	281	301	313	324	336	347	369	409	898	945	
Household	71	103	115	144	171	228	289	328	369	412	458	682	814	
Services	39	41	61	80	93	109	126	139	152	166	183	311	325	
Agriculture & Fisheries	0	0	5	10	14	18	18	18	18	18	21	31	16	

2.1.2.4 Estimated trajectories on bioenergy demand, disaggregated between heat, electricity, and transport

The following table sets out estimated trajectories on bioenergy demand by use.

Table 6: Bioenergy demand (WEM)

Bioenergy Demand, Total Final Consumption (ktoe)	2018	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Electricity													
<i>Solid Biomass</i>	29	40	44	59	88	88	88	87	87	87	86	12	12
<i>Biogas</i>	1	3	3	3	3	3	3	3	3	3	3	3	3
<i>Landfill Gas</i>	12	10	9	6	6	6	6	6	6	6	5	4	4
<i>Renewable Waste</i>	28	30	30	28	29	28	28	29	28	28	25	21	20
Heat													
<i>Solid Biomass</i>	242	224	236	352	384	426	461	472	483	503	550	1039	1001
<i>Biogas</i>	10	12	13	10	10	10	10	10	10	10	10	10	10
Transport													
<i>Ethanol</i>	27	20	23	39	44	49	48	47	46	45	44	19	3
<i>Biodiesel</i>	127	151	177	276	308	340	338	336	332	328	323	234	164

2.1.2.5 Where applicable, other national trajectories and objectives, including those that are long term or sectoral (e.g. share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, renewable energy communities and renewables self-consumers, energy recovered from the sludge acquired through the treatment of wastewater)

All relevant national trajectories are set out in the above sections

2.2 Dimension Energy Efficiency

2.2.1 The elements set out in point (b) of Article 4

Table 7: Energy efficiency primary and final energy consumption trajectories (WEM)

Energy Efficiency – Energy Consumption (ktoe)	2018	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Total Primary Energy Consumption	14875	13454	14145	14444	14669	14952	15013	15192	15201	15262	15291	15229	16120	16836
EED Total Final Energy Consumption	12398	11186	11421	12111	12032	12270	12435	12539	12648	12735	12817	12911	13492	13867

2.2.2 The indicative milestones for 2030, 2040 and 2050, the domestically established measurable progress indicators, an evidence-based estimate of expected energy savings and wider benefits, and their contributions to the Union's energy efficiency targets as included in the roadmaps set out in the long-term renovation strategies for the national stock of residential and non-residential buildings, both public and private, in accordance with [Article 2a of Directive 2010/31/EU](#)

Ireland's current Long Term Renovation Strategy (LTRS) outlines these milestones and indicators. The LTRS is available on the Irish [Government's website](#). The LTRS reflects the commitments in the National Development Plan (NDP) and the actions set out in the Irish Government's CAP. The CAP sets out a detailed roadmap for the period 2021 to 2030 with the objective of reducing CO₂eq emissions from the built environment by 40%-45% relative to 2030 projections. This includes the milestone targets for 2030.

In the residential sector, these include:

- Retrofitting the equivalent of 500,000 homes to a BER level of B2 or cost optimal equivalent or carbon equivalent;
- Local Authorities upgrading their housing stock under Phase 2 of the social housing retrofit programme to bring dwellings to a BER level of B2 or cost optimal equivalent;
- Installing 600,000 heat pumps (400,000 in existing buildings); and;
- advanced performance requirements in the current regulations combined with a mandatory renewables requirement, creating a rapid transition to low carbon heating systems in new dwellings.

Formal milestones have not been set for the residential sector for 2040, however as the 500,000 target for 2030 represents one third of the stock in the first of three decades, it is

currently considered likely that a further 500,000 retrofits would be an expected milestone target for 2040 ahead of achieving 1.5m houses retrofitted by 2050.

2.2.3 Where applicable, other national objectives, including long-term targets or strategies and sectoral targets, and national objectives in areas such as energy efficiency in the transport sector and with regard to heating and cooling

The CAP defines a roadmap to climate neutrality by 2050 for Ireland and sets out a coherent set of policy actions and targets up to 2030 that will set us on track to achieve that goal. In terms of energy efficiency, several actions across various sectors will contribute to achievement of Ireland's national energy efficiency contribution.

Buildings

- The Plan sets out targets for the significant improvement of energy efficiency in our building stock with a target of 500,000 existing buildings to be retrofitted to a B2 Building Energy Rating or cost optimal by 2030;
- All new dwellings built to NZEB standard from 1 November 2019. All new "Buildings other than dwellings" are built to NZEB from 1st Jan 2019;
- One third of all commercial (including mixed use) buildings to have a B Building Energy Rating (or carbon equivalent gains) by 2030.

Heating

- A shift to alternative heating sources is also set out in the Plan, with a target of 600,000 heat pumps installed over the period 2021-2030;
- In its Policy Statement on Geothermal Energy for a Circular Economy, the Government outlined the scope of a strategy for the greater deployment of geothermal energy in support of Ireland's climate goals, in particular the decarbonisation of heating and cooling. The scope of the strategy is aligned with the energy efficiency dimension of the energy union. To manage peak seasonal loads on the electricity grid, the strategy will examine targets for the optimal deployment of ground-source heat pumps relative to air-source heat pumps and promote the use of geothermal storage and re-use of heat to balance heating and cooling loads. Geothermal energy has been identified as a potentially significant source of heat for district heating networks and can play a role in balancing diverse loads in local networks, particularly those integrating industrial processes;

- Effectively ban the installation of oil boilers from 2022 and the installation of gas boilers from 2025 in all new dwellings through the introduction of new regulatory standards for home heating systems. Progressively phase out oil and gas boilers in existing dwellings through a combination of incentives, information, and regulatory measures;
- Phase 2 of the social housing retrofit programme to bring dwellings more than 40 years old (30% of the social housing stock) to a B2 equivalent BER.

Transport

In the transport sector, the 2019 CAP set out actions to accelerate the penetration of EVs, with the sale of cars and vans on the road to reach 100% of new vehicle sales by 2030 to be EVs, so that 936,000 EVs will be on the road by 2030. These targets were subject to a slight increase in the CAP21 Plan to a target of 945,000 by 2030. The Plan also committed to make growth less transport intensive through better planning, remote and home-working and modal shift to public transport, and this was strengthened in the CAP to include a further target of a 10% reduction in ICE car kilometres (km) by 2030.

- Increase the renewable biofuel content of motor fuels;
- Set targets for the conversion of public transport fleets to zero carbon alternatives.

Agriculture

The plan also aims to deliver substantial verifiable GHG abatement through the adoption of a specified range of improvements in farming practice.

Electricity Generation

The Plan aims to increase reliance on renewables from 30% to 80% adding 12GW of RE capacity (with peat and coal plants phased out).

Public Sector

- A 50% energy efficiency target for the Public Sector by 2030;
- Public sector buildings to have a B Building Energy Rating by 2030.

Energy Efficiency Obligation Scheme (EEOS)

36,424 GWh cumulative end-use energy savings to be delivered by 2030 under Ireland's Energy Efficiency Obligation Scheme (provided for under Statutory Instrument (SI) 522/2022.)

2.3 Dimension Energy Security

2.3.1 The elements set out in point (c) of Article 4 Gas & Electricity

Ireland has a small population base and consequently a high cost per capita to fund infrastructure. Its peripheral location at the end of the European electricity and gas grids means that our energy security profile is different to most other Member States. Ireland has a relatively high dependence on imported gas from the UK which has a key role in Ireland's energy system, providing almost 30% of our energy needs. Since the exit of the UK from the EU, we are no longer physically connected to the EU IEM. It is expected that peat and coal will no longer be part of Ireland's electricity generation mix post-2025. While this will have a positive impact on GHG and other harmful emissions, it will lead to an increased reliance on natural gas thus reducing the diversification of our fuel mix and impacting on security of supply. Given this profile, a review was carried out of Ireland's electricity, natural gas and oil systems. The Energy Security in Ireland to 2030 report outlines a new strategy to ensure energy security in Ireland for this decade, while ensuring a sustainable transition to a carbon neutral energy system by 2050.

The report emphasised:

- That Ireland's future energy supply will be more secure by moving to an electricity-led system;
- The importance of delivering on the plans already in place: Ireland's existing plans to grow renewable generation, demand-side flexibility, new gas-fired generation as back-up, interconnection and storage are the right ones to secure electricity supplies;
- The importance of balancing sustainable gas demand and supply: While gas supplies and infrastructure are adequate to meet our demand projections, there are risks in the event of disruption to infrastructure. To reduce reliance on gas imports, we will reduce natural gas demand and develop renewable, indigenous gas supply and renewable gas-compatible storage. As a transitional measure, we will introduce a Strategic Gas Emergency Reserve to address security needs in the medium-term, to be used only if a disruption to gas supplies occurs. Based on the preliminary analysis by DECC it is anticipated that a floating reserve (FSRU) will best meet the criteria set by the Government today, a solution preferred by a range of EU states; This will be examined by Gas Networks Ireland (GNI) and a detailed proposal will return to Government for final approval in 2024;

- The need for back-up reserves and distribution plans in case of an oil emergency to be sufficient. Into the future, we will need to ensure that commercial oil supplies into the State are robust, along with the infrastructure for distribution, and over time, oil demand will be reduced;
- The maintenance of a strong focus on anticipating risks and good governance to ensure delivery, robust risk management and adequate resources.

Given that the Irish oil market is characterised by a lack of indigenous crude oil production, with no commercially viable finds having been discovered, there is limited scope for reducing petroleum import dependency in the short to medium term. Ireland's domestic downstream oil industry is fully privatised and largely de-regulated with the origin of imports being determined by cost and logistical factors. A Policy Statement on Petroleum Exploration and Production in Ireland was published in August 2022, replacing the 2019 Policy Statement, to reflect the current policy and legislative position of the Government on petroleum exploration and production. This policy statement outlines that the Department stopped accepting new applications for exploration licences for oil from September 2019 and for natural gas from June 2020. In line with the implementation of the 2019 and 2022 policy statements, holders of all existing applications and authorisations in place before the respective dates can continue to apply to progress their authorisations through the licensing stages towards a natural conclusion, which may include expiry, relinquishment, production, or rejection. Any such applications will remain subject to Ministerial consent, and will continue to be required to meet environmental, technical, and financial standards.

Our objectives regarding oil are to:

- Provide a policy and regulatory framework to facilitate commercial oil companies in their supplying of product to the domestic market;
- Facilitate the continued operation of sufficient infrastructure to import and supply oil to the marketplace;
- Support renewable and sustainable alternatives to petroleum products, including EVs, biofuels and CNG in transports;
- Continue to engage in oil emergency planning, including the measures specified below.

Cybersecurity

The Commission Recommendation [\(EU\) 2019/553](#) provides non exhaustive guidance to Member States and relevant stakeholders, in particular network operators and technology suppliers, for achieving a higher level of cybersecurity in view of the specific real time requirements identified for the energy sector, cascading effects and the combination of legacy and state of the art technologies. The guidance aims at helping stakeholders keep in mind the specific requirements of the energy sector when implementing internationally recognised cybersecurity standards.

The recommendation calls on Member States to ensure the relevant stakeholders take the necessary measures and encourage them to build up knowledge and skills related to cyber security in energy. While dialogue on cyber security in the energy sector is mainly through the [NIS Co-operation Group](#) (Network and Information Systems Directive) the Commission provides regular updates to DECC and the Regulator through meetings of the Gas Coordination Group and Electricity Coordination Group. Co-operation on crisis management is fundamental to cyber security. Operators of Essential Services in the energy sector are advised to follow the recommendation and consider cybersecurity in regional/national risk assessments under [EU Regulation 2017/1938](#) for security of gas supply and under [EU Regulation 2019/942](#) for security of electricity supply.

[The National Cyber Security Centre](#) (NCSC) having due regard to the recommendation is working with providers of critical national infrastructure to improve the overall level of cybersecurity in the energy sector. The NCSC have developed cyber security guidance which provides a framework in alignment with international standards for cybersecurity, from which critical infrastructure providers can adopt a risk management culture to safeguard the protection and resilience of critical services. The NCSC is actively engaging with providers to develop communication channels within the energy sector to facilitate collaboration between key stakeholders. Incident guidance levels have been published to assist providers in the reporting of incidents, which can aid the sector in the prevention, detection, and management of incidents. In its ongoing engagement with stakeholders, the NCSC will proactively seek to improve the cyber security maturity level within the sector. The current [National Cyber Security Strategy](#) was published in December 2019, and follows on from the country's first Strategy which was published in 2015. It is a broader and more comprehensive document than the last one and takes advantage of the operational experience gained by the NCSC from 2015 to 2019, and from ongoing national and international engagements in the area. The vision behind the 2019 Strategy is to allow

Ireland to continue to safely enjoy the benefits of the digital revolution and to play a full part in shaping the future of the Internet. Some of the key objectives of the strategy are to continue to improve the ability of the State and to identify and protect critical national infrastructure by increasing its resilience to cyber- attack and by ensuring that operators of essential services have appropriate incident response plans in place to reduce and manage any disruption to services.

A mid-term review of the 2019 strategy was recently carried out, including an extensive public consultation, stakeholder engagement and further consideration by all relevant Government departments and agencies. Based on this, 18 new strategic actions have been added to the NCSS, which will be delivered across Government by the end of 2024. Responding to the cyber security skills gap in Ireland and globally, the Mid-Term Review includes new measures to continue the development of relevant cyber skills to fill skills gaps and support the potential growth of the cyber security industry in Ireland. In addition, a priority action will see the development of a whole-of-Government cyber security industrial strategy to support Ireland's cyber security industry to achieve its potential.

The Government will continue investment in the capacity of the National Cyber Security Centre (NCSC), particularly in its ability to monitor and respond to cyber security incidents and developing threats in the State such as ransomware. The Government has agreed to expand the range of entities supported by the NCSC, including a number of new measures to support small and medium enterprises (SMEs) and other stakeholders. The Mid-Term Review will also ensure Ireland plays a full and active part in cyber security discussions in the EU and internationally and is fully prepared to implement the revised EU Network and Information Systems Directive (NIS2) from next year. The delivery of these measures will continue to be overseen by the existing high-level Inter-departmental Committee, and annual reports will be published to provide greater transparency on the implementation of the Strategy.

2.3.2 National objectives with regard to increasing: the diversification of energy sources and supply from third countries for the purpose of increasing the resilience of regional and national energy systems

In relation to natural gas, Ireland has a number of challenges including a high import dependency, a lack of import route diversity, and a declining indigenous gas supply. In addition, Ireland has a small synchronous island electricity system and the envisaged increasing integration of RE sources for heat, transport, and power generation, including variable renewable sources. A continuing secure supply of gas is crucial to support a highly

renewable electricity system given the variability of wind and solar energy. Given the above, our objectives are to:

- Ensure that there is sufficient flexibility in the energy system to maintain energy security of supply and facilitate the integration and transition to clean energy sources in the most cost-effective way;
- Support further electricity interconnection to improve the functioning and flexibility of the national energy system;
- Support projects which are needed for energy security and consistent with national and EU climate policy objectives, including but not limited to the EU Projects of Common Interest process and EU funding mechanisms and projects agreed by Government of strategic importance to provide greater resilience and security to Ireland's energy system.

In relation to oil, although domestic production of biofuels and other alternative fuels has increased, the majority of feedstocks are imported. The sourcing of oil products is largely determined by pricing and logistics considerations. Crude oil is sourced mainly from the United States and product is currently imported primarily from UK refineries. The UK's withdrawal from the EU did not impact significantly on the volume of product imported from UK refineries. As things stand, some diesel is imported from elsewhere, including the Netherlands and France. Ireland will continue to ensure the oil industry has the flexibility to obtain sufficient oil supplies of the necessary quality and will:

- Continue to utilise European and international standards for petroleum products, through its membership of the European Committee for Standardisation (CEN);
- Continue to enforce fuel quality standards by confirming quality compliance and specifying instances of non-compliance periodically to the Commission under Article 8 of the Fuel Quality Directive.

2.3.3 Where applicable, national objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems

Given Ireland's high and increasing reliance on gas for electricity, our low import route diversity, relatively high dependence on imported gas, which is likely to increase as the Corrib gas field progressively depletes, and the potential increasing role of gas in the energy mix for heat, transport and power generation including as a back-up for variable power generation, our objectives are to:

- Ensure the resilience of the gas network to a long-duration supply disruption, in the context of EU and national climate objectives;
- Reduce natural gas demand and develop renewable, indigenous gas supply and renewable gas-compatible storage solutions;
- Introduce, as a transitional measure, a state-led Strategic Gas Emergency Reserve to address security needs in the medium-term;
- Actively participate in EU and regional initiatives to maintain and enhance security of supply including national, regional and EU co-operation on emergency planning and response for gas and electricity networks, including risk assessments, preventative plans and emergency plans;
- Following the withdrawal of the UK from the EU, engage with our EU partners to put in place an EU/UK framework for continued necessary regional co-operation between Ireland and the UK on matters related to gas and electricity security of supply, including emergency preparedness and response. DECC in conjunction with key stakeholders including EirGrid, the National Oil Reserve Agency (NORA) and Fuels for Ireland, have further advanced the production of a plan to supply gas power plants with secondary fuel in the event of a gas emergency. The plan will provide for NORA strategic reserves to be deployed to priority power generation sites in the event of a gas emergency. The use of NORA Reserves would allow industry's commercial stocks to remain the same and serve to limit the impact on domestic oil markets.

2.3.4 National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage

Given that Ireland has a small synchronous Island electricity system, and the envisaged increasing integration of RE sources for heat, transport and as a back-up for variable renewable power generation, our objectives are to:

- Ensure, in the most cost-effective and sustainable way, that there is sufficient flexibility in the energy system to maintain energy security of supply and facilitate the integration and transition to clean energy sources;
- Support further electricity interconnection to improve the functioning and flexibility of the national energy system;
- Improve demand flexibility and response to price, carbon and security signals.
- Support energy storage measures to better balance our variable RE supply and provide mitigation to fossil fuel import disruptions.

Ireland currently has no indigenous oil supplies and currently has limited domestic production of sustainable fuels. All oil imports are transported by sea and placed on the market through an oil terminal. Taking this vulnerability into account, the Oil Emergency Contingency and Transfer of Renewable Transport Fuel Functions Act 2023 was enacted in February 2023. The main purpose of the Act is to strengthen the Government's ability to manage oil stocks in the unlikely event of a significant oil emergency. It is an important Act which puts all aspects of oil emergency planning on a statutory footing. It will ensure adequate supplies for emergency and critical services, and for the use of oil to generate electricity, if necessary, in the event of a major gas shortage.

Ireland will continue to maintain existing policy measures and develop additional capacity to deal with an oil supply emergency, including:

- The ongoing maintenance of Ireland's strategic oil reserve of 90 days of net imports, stored in Ireland or within the EU, as required by EU legislation and IEA rules;
- Continued regional co-operation with Northern Ireland to ensure sufficient import capacity in the event of prolonged infrastructure disruption;
- Continued development of demand restraint measures aimed at reducing oil usage during a prolonged emergency, in particular in the transport sector;

- Further development of policy around Government intervention to ensure the supply of oil to critical infrastructure and for societal need, if required. A study of the Strategic Case for Oil Refining requirements in Ireland, which takes into account recent developments on energy security and domestic climate action policy, will be completed in 2023.

Geothermal Energy

The Government's 'Policy Statement on Geothermal Energy for a Circular Economy', published in July 2023, sets out the scope of a strategy to promote the sustainable development of Ireland's geothermal resources to decarbonise the heating and cooling of buildings and for industrial uses and power generation. The optimal deployment of geothermal energy will increase the flexibility of the national energy system through the moderation of demand for electricity, particularly in winter, and through geological energy storage. In the longer term, geothermal energy could potentially generate electricity to provide baseload supply that is constant, further reducing dependence on fossil fuels for electricity generation.

2.4 Dimension Internal Energy Market

2.4.1 Electricity Connectivity

Ireland's 2030 electricity interconnectivity ambition aims to reach and then surpass the EU's electricity interconnection target of 15% generation capacity by 2030. This is supported with a strategy that the level from 2021 onwards is defined in close co-operation with affected Member States, taking into account the 2020 interconnection target of 10% and the following indicators of the urgency of action:

1. Price differential in the wholesale market exceeding an indicative threshold of EUR 2/MWh between Member States, regions or bidding zones;
2. Nominal transmission capacity of interconnectors below 30 % of peak load;
3. Nominal transmission capacity of interconnectors below 30 % of installed renewable generation.

Each new interconnector shall be subject to a socioeconomic and environmental cost-benefit analysis and implemented only if the potential benefits outweigh the costs. As set out in the [2023 National Policy Statement on Electricity Interconnection](#), Ireland's Interconnection policy objectives are:

- Creating the necessary export opportunities to match the State's growing renewable energy generation capacity;
- Ensuring electricity security and resilience through diversified energy supply and market access;
- Lowering energy prices by gaining access to other electricity markets;
- Facilitating the achievement of a Net Zero power system;
- Supporting the carbon budget programme.

We will take a structured and integrated forward planning approach to deliver the necessary infrastructure to both meet Ireland's need and make Ireland central to Europe's energy future. Ireland's Single Energy Market (SEM) interconnection capacity currently stands at 500 MW in a single connection to the UK. Capacity is set to more than treble by 2027 to 1,700 MW including a return of direct interconnection between Ireland and the EU via the Celtic Interconnector. Envisaged connection to the IEM by 2030 is 700 MW.

Additionally, the existing 300 MW North-South Interconnector linking Ireland to Northern Ireland, while internal to the SEM, provides further interconnection to the UK. A further 1500 MW North-South Interconnector is in development.

Ireland's updated National Policy on Electricity Interconnection envisages a further connection with the UK by 2030 bringing the total anticipated interconnection capacity of 2,450 MW. Additionally existing and planned interconnection from GB to Northern Ireland will mean a total of 3,650 MW SEM interconnector capacity by 2030.

Had the UK not departed from the European Union, Ireland would have achieved its 15% target. The completion of the Celtic Interconnector in 2027 will see the return of direct connectivity to the EU via France. Development momentum on projects with the UK continues and Ireland will be well-served for interconnection by 2030. Further connection to the IEM is being explored with partner Member States for delivery in the next decade in the context of Ireland's RE ambitions and energy security needs.

2.4.2 Energy Transmission Infrastructure

2.4.2.1 Key electricity and gas transmission infrastructure projects, and, where relevant, modernisation projects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union Strategy

On 28 November 2023, the European Commission published the updated list of [Projects of Common Interest](#) (PCIs), the sixth such list, which is published on the EC [website](#). PCIs are intended to help the EU achieve its energy policy and climate objectives: affordable, secure and sustainable energy for all citizens.

Table 8: Irish projects included on the sixth PCIlist

PCI Number	Project Promoter	Project Title
1.3	EirGrid & Réseau de Transport d'Electricité (RTE)	France - Ireland interconnection (known as Celtic Interconnector)
1.13	Third party	Hydroelectric Power Station Silvermines

[The European Network of Transmission System Operators for Electricity \(ENTSO-E\)](#) publishes a Ten-Year Network Development Plan (TYNDP) every two years. The most recent TYNDP is TYNDP 2022. The TYNDP includes projects of pan-European significance:

Table 9: Irish projects included in TYNDP 2022

TYNDP Number	Project Promoter	Project Title
81	Eirgrid, SONI	North South Interconnector
107	Eirgrid/RTE	Celtic Interconnector
286	Greenlink Interconnector Ltd	Greenlink
349	Mares Interconnector Holdings Limited	MaresConnect
1040	Transmission Investment	LirLC
1082	Siga Hydro Limited	Sea Socket
ST 1025	Siga Hydro Limited	Silvermines Hydroelectric Power Station

2.4.2.2 Where applicable, main infrastructure projects envisaged other than Projects of Common Interest (PCIs)

To help plan and the develop energy networks for the future, both EirGrid and GNI produce ten-year network development plans. EirGrid also produces a ten-year Generation Capacity Statement and a ten-year All-Island Transmission Forecast Statement. These network development plans and statements are future-oriented documents that allow both EirGrid and GNI to assess the demand for and development of energy networks and related infrastructure in Ireland.

In addition to the PCI projects set out above and the projects developed by EirGrid and GNI, the Energy Security in Ireland to 2030 Report provides that Ireland will introduce a state-led Strategic Gas Emergency Reserve to address security needs in the medium-term. This will be examined by GNI, and a detailed proposal will return to Government for final approval in 2024. In addition, as Ireland transitions itself to a low carbon economy, the gas and electricity networks must be planned and developed to make the transition as smooth as possible. As we make this transition the energy networks in Ireland will face many challenges. For example, as the penetration of electricity generated from wind increases the electricity network must be flexible enough to handle the unpredictability of wind while still operating in a secure manner. The increased penetration of wind energy also places an increased reliance on Ireland's gas network. Following on from EU support to twin the final 50 km of the gas interconnector system from Scotland to Ireland, further work has commenced by GNI to fully separate the two gas interconnectors and they will be able to operate independently from each other from 2024/25 which will further increase the resilience, flexibility, and capacity of the gas system. Every year the Commission for the Regulation of Utilities (CRU) holds a public consultation on GNI's Network Development Plan and on EirGrid's Transmission Development Plan. The CRU's public consultation gives stakeholders the opportunity to express their views on the plans. The Development Plans present GNI and EirGrid's views of the future needs of the gas and electricity networks in Ireland. It also presents plans to meet the needs of the network over a ten-year period. The Development Plans include, among other things, investment needs, planned network investment, and supply and demand forecasts. Two merchant project interconnectors are anticipated to be developed by 2030: The Greenlink Interconnector, between Wexford and Wales, which is expected to be commissioned by the end of 2024. Greenlink is a subsea and underground electricity interconnector cable (with two associated converter stations) linking the existing electricity grids in Ireland and GB and has a nominal capacity of 500 MW with flow in both directions. It has the potential to power 380,000 homes; it will increase energy security and will have strategic importance by doubling the interconnection capacity between Ireland and GB. It will deliver greater market integration and competition to benefit consumers in Ireland, GB, and continental Europe. The MaresConnect project, a point-to-point interconnector project from Ireland to GB is currently in development phase. It has just recently progressed under the new round of the TYNDP 2024 application process. This 750 MW electricity interconnector linking the Irish and GB electricity transmission networks could enable bi-directional flow of power, responding to the varying supply and demand dynamics between the two nations. MaresConnect is the only Ireland-GB project in Window 3 of the

Ofgem process and is therefore the project with the most realistic prospect of delivery by 2030.

To support Ireland's progress towards a renewables-led energy system, the Energy Security in Ireland to 2030 report commits to undertake a Network Transition Plan for Ireland's natural gas network to determine and support its long-term planning, usage, and investment requirements of our energy system in line with our sectoral emissions ceilings.

2.4.3 Market Integration

Reform of the Wholesale Electricity Market and Decarbonising the Electricity System

Ireland's wholesale electricity market redesign which took place in 2018, together with other related initiatives, forms an interlinked policy-aligned system of measures which underpin and facilitate greater renewable electricity penetration in Ireland and progressive decarbonisation of its wholesale electricity sector, while also ensuring efficiency and security of electricity supply. The system comprises both policy and regulatory measures which can be grouped under three headings as follows:

- A SEM;
- A competitive auction-based capacity mechanism in the wholesale market compliant with state aid measures and the CEP;
- Regulated TSO payments for system services known as DS3, soon to be supplemented and then replaced by the Future Arrangements for System Services

These elements correspond to payment categories, or revenue streams, that the electricity industry can expect from the market, for energy, capacity, and system services, respectively. The implementation of reforms in these revenue streams provides industry with the certainty needed for investment and encourages this through means that also contribute to secure and efficient decarbonisation. These interlocking measures are designed to work together and to reinforce each other and thereby facilitate delivery of energy policy goals over a sustained period, in line with typical electricity market investment time frames over decades rather than years. It is important when considering Ireland's approach to decarbonising its electricity market to take these elements together as a coherent whole, rather than evaluate any one aspect of the whole market separately, be it energy, capacity, or system services measures.

Ireland's Wholesale Electricity Market – SEM

Ireland operates as part of a SEM, which is the wholesale electricity market on the island. It is jointly administered and regulated with the Irish and Northern Irish authorities via their regulators (Commission for Regulation of Utilities (CRU) in Ireland and the Utility Regulator (UR) in Northern Ireland) and the TSOs – EirGrid in Ireland and SONI in Northern Ireland.

By combining what were two separate jurisdictional electricity markets (for Ireland and Northern Ireland), the SEM became one of the first of its kind in Europe when it went live on 1 November 2007. The SEM, including its Market Design, is overseen, and administered by a statutory SEM Committee (SEM C) comprising the two energy regulators and independent members. The SEM promotes the interests of consumers by enabling greater competition through cost reflective prices, while also working to secure a diverse, viable and environmentally sustainable long-term energy supply.

Following Brexit, the continued operation of the SEM is explicitly provided for in the Withdrawal Agreement, including the Protocol on Ireland/Northern Ireland which entered into force on 1 February 2020 which was negotiated between the European Commission and UK Government.

Ireland is interconnected to Northern Ireland through three transmission connections. Only one of these has significant capacity, the Louth – Tandragee 275 kilovolt (kV) line is the primary means for power to flow between Ireland & Northern Ireland today. The two other connections are 110 kV lines from Corraclassy to Enniskillen and from Letterkenny to Strabane. They only provide local support to the network and because of this, they do not have sufficient capacity to carry surplus power. There are plans in progress for the development of a second North-South interconnector. There are currently two interconnectors connecting the SEM to other markets, the 500 MW East West Interconnector (EWIC) which connects Ireland and GB and the 500 MW Moyle Interconnector between Northern Ireland and Scotland. Trade in electricity across the interconnectors between GB and the SEM has continued without tariffs since 1 January 2021. However, this trade is less efficient, as day ahead trading can no longer be used on these interconnectors. Scheduling of flows on each of the interconnectors is determined by the price spread between the SEM and GB in the IDA 1 and IDA 2 auctions. The Trade & Cooperation Agreement (TCA) provides a mechanism to ensure that the current system is made more efficient and should be based on the concept of multi-regional loose volume coupling (MRLVC).

A new market design for the SEM, substantially different to the original 2007 design took place under the Integrated Single Electricity Market (I-SEM) Project over six years going live

in 2018. This included the establishment of new Day-Ahead, Intra-Day and Balancing Markets, with an ex-ante clearing price compared to the previous ex-post gross mandatory pool system, and a new obligation on participants to take responsibility for imbalances. This market redesign had the objectives of facilitating greater market integration through the application of IEM rules and enhancing competitive outcomes to benefit consumers. It also had the objective of ensuring compliance with the network codes and guidelines developed under [Regulation \(EC\) 714/2009](#) within the EU's Third Energy Package and with the principles of wholesale market design laid out in the CEP, and particularly the [recast electricity market](#) regulation.

The SEM Capacity Mechanism

Ireland like several European countries is strongly supportive of the capacity mechanism provided for in the European framework and has learned the strategic importance of this policy lever in achieving a secure transition and successfully operating a majority renewable power system. The SEM includes a competitive capacity remuneration mechanism (CRM) as an integral feature of the market, which was [State Aid](#) approved by the European Commission in November 2017. Consistent with EU law, including Article 22 of the CEP recast Electricity Market Regulation and the terms of the state aid approval, the SEM's CRM is established to address existing resource adequacy issues. Considering the level of projected demand growth in Ireland, the transition to ever higher levels of variable renewables, and the need to manage the transition from an aging fleet of conventional fossil fuel units, the SEM CRM will continue to play a central role in securing the level of investment required in the coming years. Given the importance of the CRM as a measure, any policy changes or amendments must remain sufficiently flexible both to ensure generation adequacy and security of supply and to facilitate the achievement of the ambitious decarbonisation objectives on the island of Ireland in a cost effective and efficient manner. Given the extent and ambitious nature of Ireland's 2030 80% renewable electricity generation target, the SEM's CRM, in conjunction with the energy and ancillary services markets, provides a necessary revenue stream to ensure adequate levels of future investment including in flexible generation, such as demand response and battery storage. During the recent electricity market design (EMD) negotiations, Ireland along with several other Member States successfully argued for a more flexible and simplified process for assessing capacity mechanisms from a state aid perspective. It was agreed that the Commission will come forward with proposals with a view to streamlining and simplifying the process for assessing capacity mechanisms shortly after entry into force of the EMD

Regulation. This commitment is very welcome and will be monitored closely as EMD progresses. The state aid decision on Ireland's capacity mechanism is due to expire in 2028. The SEM will be required to apply for a new decision from the European Commission. In preparation for this application, the Department will engage with key stakeholders across the SEM to develop a shared vision for how to ensure optimum operation of the CRM in the period to 2038 against the backdrop of the energy transition. Unlike the pre-ISEM project administratively determined capacity payment mechanism, the value of capacity in the market under the CRM is determined through competitive auction. The CRM includes penalties for generators that receive reliability option payments after a successful bid but are then not available to produce at times of system stress. Despite these changes, the CRM has not performed to the level required to keep up with increasing tightness between supply and demand in the electricity market in Ireland. The CRU is implementing a program of actions to address electricity security supply risks over the coming years.

[The Implementation Plan for Ireland](#) was prepared in fulfilment of the requirement set out in Article 20 of the Regulation 2019/943 on the internal market for electricity (recast), part of the Clean Energy Package (CEP). The requirement is for Member States with capacity mechanisms to prepare and submit an Implementation Plan containing information about its measures under certain pre-defined headings relating to principles and objectives for market operation. The submission of the Implementation Plan is followed by a review by the Commission, both being legal conditions for the approval of any national capacity mechanism. This was detailed in the Guidance for Member States on implementation plans pursuant to Art. 20 (3)-(5) of Regulation (EU) 2019/943 ("Market Reform Plans"). Ireland's Implementation Plan recognises that markets, if well designed, free of regulatory distortions and sufficiently connected to the EU electricity grid, can provide the right amount and type of capacity to meet demand. Capacity mechanisms should only be introduced to address residual concerns, i.e., problems or circumstances which cannot be solely resolved by market reforms. Once the residual concerns have been eliminated and market reforms have started to work, adequacy problems are expected to decrease and ultimately disappear. To enable this, regulatory measures to eliminate distortions and to reform markets need to be effective and credible for investors and other market participants. In December 2019, Ireland's draft Implementation Plan was submitted to the Commission, which published it as part of their consultation process in early 2020. The Commission sent its opinion to DECC in April 2020 and subsequently published the opinion on 28th May 2020. The Implementation Plan was updated to reflect the Commission's suggestions on priority action in the wholesale market. The Commission emphasised the requirement for thorough implementation of CEP

rules in the Irish wholesale market. The updated Implementation Plan was published on the Department's website on 9 October 2020. Article 20 (6)-(8) of Regulation (EU) 2019/943 (Electricity Regulation) and requires all Member States with identified adequacy concerns to monitor the application of their implementation plans and to publish the results of the monitoring in an annual report ("Monitoring Report") that shall be submitted to the Commission. This report contains updates on the progress to date achieved towards measures detailed in the Implementation Plan relating to market reform, resource adequacy, and ongoing or future market reform measures. This report also details and explains any previous delays or possible future delays, whilst also setting out upcoming issues and planned mitigation measures. The first monitoring report was prepared in fulfilment of this requirement for Commission opinion under Article 20 (7) and submitted in February 2022. The second report was submitted in early 2023 and sets out the additional progress on those measures made since the first monitoring report was submitted. Ireland is currently drafting the third monitoring report which will be submitted in the coming weeks.

Electricity Market Design and REMIT

In March 2023, the European Commission (EC) published a suite of legislative proposals looking to reform the Electricity Market Design (EMD). These legislative proposals followed a public consultation that was initiated to better protect consumers from excessive price volatility, support their access to secure energy from clean sources, and make the market more resilient. The Presidency aims to close the file before the end of 2023.

Alongside the EMD proposals, the Commission also published proposals for the Regulation on wholesale energy market integrity and transparency (REMIT). These proposals will provide stronger protection against market manipulation in energy trading, enhancing confidence and integrity in relation to REMIT. The Council and the Parliament reached a provisional political agreement on the regulation on 16th November. The provisional agreement now needs to be endorsed and formally adopted by both institutions. Broadly, Ireland welcomed the EMD and REMIT proposals and supported the objective to optimise the market to ensure best value for consumers who have been materially impacted by recent price shocks. Ireland advocated during the process that delivering the benefit of renewable electricity to consumers should be a guiding principle in all measures considered by the European Commission and Member States in the electricity market design process.

Ireland is pioneering the integration of large volumes of variable renewables into the power system, which is proving to be instructive for de-carbonising economies all over the world. It shows the great potential that Europe has to lead this agenda. However, it also highlights the

importance of market signals and incentives that enable investment in modern, low-emitting, renewable-gas ready conventional generation and other low carbon technologies. Implementation of EMD and REMIT will be a major undertaking and will be progressed rapidly. This is expected to commence in early 2024.

DS3 System Services

Due to Ireland's isolated island status and the dramatic increase in wind penetration levels in recent years, the level of non-synchronous power on the SEM system has risen at a faster rate than in any other region in Europe over this timeframe. In order to address some of the potential problems resulting from these unprecedented levels of intermittent renewables, the DS3 Programme was established by the Single Electricity Market Committee (SEMC) to provide for the introduction of a number of new system services by the TSOs, EirGrid and SONI, to ensure a safe and secure energy system, while also facilitating increased levels of non-synchronous generation (primarily renewables). To date, the DS3 Programme has enabled EirGrid and SONI to increase levels of instantaneous system non-synchronous penetration (SNSP) of up to 75%. Work has now begun on increasing the figure to 95% by 2030 in order to achieve RE targets. The DS3 programme has therefore been overwhelmingly successful in facilitating the integration of renewables into the SEM system, which in terms of SNSP is unprecedented.

2.4.3.1 National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals, including a timeframe for when the objectives shall be met

Ireland's national objective relating to the EU is, and has been over the long term, to continue to deepen the integration of Ireland's wholesale electricity market, and its regulation, with the EU IEM, building on ongoing plans, programmes, and actions in this regard. As has been the position for many years, it is the objective of Ireland to participate in and contribute to the continued development of the EU IEM and remain coupled with other EU electricity markets to as great an extent as possible.

In July 2022 Ireland, notified the Commission of the full legal transposition of the Internal Market Electricity Directive 2019/944 into Irish law. These measures as outlined below have further strengthened consumer protection measures and the flexibility and transparency of

the retail market. These measures will be given further opportunity to embed, and their impact will be reviewed.

From the market regulation perspective, the main objectives over the next few years consist of:

- Maintaining and developing the successful all-island wholesale SEM, ensuring that all aspects of the I-SEM market, the capacity mechanism and other planned or signalled reforms are fully implemented;
- Ensuring the continued focus on the development of an open and competitive Irish retail energy market and maintain extensive market monitoring to ensure this competition is of benefit to final customers;
- Implementing the requirements of EU rules and legislation under the CEP and EU Electricity Network Codes, along with upcoming legislative proposals such as EMD and REMIT, in the Irish electricity market;
- Ensuring continued compliance of Ireland's SEM capacity mechanism with the obligations in the CEP and in the European Commission's November 2017 State Aid approval. Ireland is currently in the process of updating our Reliability Standard in this regard;
- Designing and implementing the next phase of the DS3 System Services programme to provide enhanced system flexibility to accommodate increased renewables on the electricity system. (DS3 is soon to be supplemented and then replaced by the Future Arrangements for System Services);
- Developing a new demand strategy project to support the energy system by reducing load at times of peak demand, thereby also improving security of supply, or increasing demand at time of high RE availability, led by the CRU.

2.4.3.2 Where applicable, national objectives related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets, including a timeframe for when the objectives are to be met

Initial auctions that have taken place under the CRM in the SEM successfully procured future investment in flexible generation, including DSU and battery storage that will be required to complement Ireland's high and rising volume of intermittent renewables. In particular, the early auction results suggested that the advent of the CRM in the SEM had

further spurred development of demand side response. The introduction of a firm Day Ahead Market schedule and price, resulting in more efficient short-term price signals, has also played a role in stimulating more DSU investment. Looking ahead to future reforms related to demand side participation, in order to comply with the European Commission's State Aid ruling of November 2017, it is intended to modify the participation of DSU in the When establishing the CRM, the SEM C determined that DSUs, although able to participate in the CRM auctions, would be exempt from reliability option (RO) payments where the contracted demand is delivered. RO difference payments would be applied to DSUs only when the demand reduction was not delivered, and the Strike Price was exceeded by the Market Reference Price (MRP). This decision recognised the fact that DSUs do not have offsetting energy payments, unlike other auction participants.

The Commission's November 2017 State Aid approval facilitated this different treatment of DSUs, but only as a temporary measure, with the Regulatory Authorities obliged to end the exemption from payback obligations for DSUs from the delivery period starting October 2020. To this end in March 2019 the SEMC published "DSU Compliance with State aid Consultation Paper" to provide stakeholders with an opportunity to comment on the proposals for achieving compliance with State aid, following which a formal [decision paper](#) was published in July 2019.

Due to the timescales involved in making system changes and developing the profiles and code changes required to determine the actual delivered quantity of an Individual Demand Site (IDS) and therefore a DSU and to avoid double-counting of energy, the SEM Committee have proposed an interim solution, with an enduring solution to follow. It includes the following key features:

- The assumption that dispatched quantity was a suitable proxy for metered quantity for DSUs;
- Use of the Socialisation Fund to socialise the costs of DSU energy payments across Suppliers; and
- Option for DSUs energy payments to be always made, or only at times of scarcity.

Regarding the enduring permanent solution, the SEMC determined that the choice of mechanism should be determined in line with the following principles:

- The socialisation mechanism must be robust to the lumpy nature of DSU energy payments and must ensure that all DSU energy payments are made;

- The recovery mechanism should allocate the costs between Suppliers in a fair and reasonable way, in line with the equity assessment criteria applied in the design of the I-SEM, i.e. “that the market design should allocate the costs and benefits associated with the production, transportation and consumption of electricity in a fair and reasonable manner”; and
- The mechanism must be capable of implementation for 1 October 2020.

The enduring solution is in the process of being implemented.

The DS3 Programme, soon to be supplemented and then replaced by the Future Arrangements for System Services, has been and will remain a vital ingredient in power generation decarbonisation and procurement of flexible generation on the island of Ireland and the integration of record levels of intermittent RES, primarily wind, onto the SEM system. The CAP commits to strengthening the policy framework to incentivise electricity storage and interconnection. Increased levels of storage and interconnection will be critical to absorbing high levels of renewable generation on to the system, as renewables require back-up which will have to be provided by quick response plant, storage, or interconnection.

2.4.3.3 Where applicable, national objectives with regard to ensuring that consumers participate in the energy system and benefit from self-generation and new technologies, including smart meters

Ireland is committed to supporting customers’ participation in the energy system and enabling them to sell excess electricity they have produced back to the grid. In this regard, we have established the following key objectives: in February 2022 Ireland signed into law the Renewable Energy Regulations 2022 establishing among other things, an obligation on energy suppliers to offer the Clean Export Guarantee (CEG) tariff to new and existing renewables self-consumers, who are engaging in the generation of renewable electricity, primarily for their own self-consumption. This tariff offers these active energy consumers an opportunity to receive payment for excess renewable electricity they export to the grid, reflective of the market value. The CEG tariff represents a key aspect of a comprehensive enabling framework for active energy customers in Ireland, which is supported by other key enablers including the national smart meter roll-out programme, support schemes for smart consumer assets (including micro-generation) and the ongoing development of the necessary regulatory frameworks to allow citizens and energy communities to participate in energy markets.

Smart Meters

Smart meters enable consumers to participate in the energy transition to a decarbonised system as outlined in the CAP. Smart meters support the migration to a carbon free electricity network and support smart grids, e-driving, e-heat, and micro- and small-scale generation. The current status of smart meter rollout in Ireland is as follows;

- Ireland's National Smart Metering Programme (NSMP) will roll out and install over 2.4m meters by 2025 and in the process will make available new products and services to energy consumers. It is being co-ordinated by the CRU with ESB Networks (ESBN) delivering the electricity meter rollout;
- As of November 2023, over 1.5m smart meters have been installed nationwide.
- ESNB are working with customers, electricity supply companies and other industry stakeholders to upgrade meters for customers who have informed them that they have installed micro-generation, which can be done by submitting an NC6 form to ESNB.

Micro-Generation

In regard to microgeneration, the aim had been to deliver a pilot solar photovoltaic (PV) micro-generation scheme, with a view to the commencement of an enduring support scheme by 2021 to ensure that people can sell excess electricity they produce back to the grid. It was also aimed to develop an enabling framework for micro- generation which tackles existing barriers and establishes suitable supports within relevant market segments. In December 2021, the Government approved the design of the Micro-Generation Support Scheme (MSS), as a means of supporting 380MW of new micro-generation capacity by 2030. This would generate over 300 GWh of renewable electricity per annum, with the potential to abate 1.4 Mt of CO₂eq over the lifetime of the installations. The MSS provides support to domestic and non-domestic applicants for renewable installations up to 50 kW, in the form of grants provided through the SEAI. These applicants are also eligible to avail of the Clean Export Guarantee (CEG) tariff, allowing them to receive payment from their electricity supplier for excess renewable electricity they export to the grid, reflective of the market value of the electricity.

2.4.3.4 National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production, including a timeframe for when the objectives are to be met

A core objective of changes to market trading rules introduced in recent years has been to facilitate a more flexible energy system, with increased efficiency of cross border trade across interconnectors and the additional volumes of renewables, DSU and storage required to facilitate power generation decarbonisation. In addition, a more flexible energy system, which can integrate higher volumes of renewables onto the grid is of paramount importance to meeting the ambitious goals outlined in the CAP.

2.4.3.5 Where applicable, national objectives to protect energy consumers and improve the competitiveness of the retail energy sector

Consistent with European energy regulation policy, the electricity and gas markets in Ireland are commercial, liberalised, and competitive. The CRU ended its regulation of retail market prices for electricity in 2011 and for gas in 2014. The position of successive Governments has been that competitive energy markets result in greater choice for consumers and businesses, in terms of suppliers, products and prices. Government policy on energy costs is focused on supporting the competitive market to drive down prices. While electricity and gas retail market prices are no longer regulated, the CRU has a statutory obligation to closely monitor electricity and gas retail markets to ensure that competition continues to develop. DECC took a phased approach to the legal transposition of the CEP Directive regarding the common rules for the internal market in electricity. For future national objectives, the CRU will continue to monitor the retail market to ensure that final customers are benefiting from competition in the supply of electricity and gas, as per its statutory functions set out in SI 630/2011. This S.I. sets out CRU's oversight of the development of competition, wider market monitoring, dispute resolution and enforcement functions. The CRU also has a statutory responsibility for customer protection under S.I. 463 2011. This S.I. sets out national consumer protection objectives to protect energy customers specifically addressing matters relating to vulnerable customers, customer charters, codes of practice for consumer protection, dispute resolution, single points of contact for information, and enforcement powers for CRU.

The CRU, as regulator has the key role in ensuring customer protection and the rights of customers in the market. A condition of a supplier's Electricity Supply Licence is that they fulfil their obligations as set out within the CRU Supplier Handbook. Suppliers must prepare and submit to the CRU for its approval terms and conditions of supply, Codes of Practice and Customer Charters in line with CRU guidelines. The Supplier Handbook is the guideline from which Codes of Practice and Customer Charters should be developed. The

transposition of article 10, 'Basic Contractual Rights' within Directive 2019/944 was provided for within the above tools.

The transposition also provided for categories of licences to be created for new market activities including aggregation, demand response and energy storage. Provision was also made for the creation of a non-licence-based registration framework for "relevant market participants" who engage in activities for which they have obligations under the Directive but for whom the standard licensing regime would prove unnecessarily onerous. These market participants are essential to allow for citizen participation in the clean energy transition, which is necessary to meeting our ambitious climate targets. This will allow a greater variety of actors to engage in the production of renewable electricity, and other associated activities such as aggregation and demand response, which are essential to the resilience of the electricity market in meeting Ireland's ambitious climate targets. The CRU has established a new licensing team, who, under the policy oversight of the DECC, will bring full effect to this legislation. To further support these measures the rollout of the smart metering programme and the availability of dynamic price contracts and time of use tariffs have also been prioritised within transposition.

The Department, in consultation with relevant stakeholders, is providing regular input to the triologue discussions currently underway for the proposed reform of the Electricity Market Design and looks forward to working with these stakeholders to ensure implementation of these measures designed to shield consumers from price spikes, accelerate the deployment of renewable energy, improve consumer protection and implement the necessary steps to stress test supplier hedging strategies.

2.4.3.6 Where applicable, national objectives to enable and develop demand response, including those addressing tariffs to support dynamic pricing

As set out in CAP, smart electricity meters will be installed in every house by 2024. The delivery plan has been phasing in smart services since 2021, giving consumers more choice and information and enabling them to be more proactive in their use of electricity and save money.

Demand Strategy

A key element in managing energy demand and supporting high RE on the system is effective demand flexibility. Demand flexibility can support the energy system by reducing load at times of peak demand, thereby also improving security of supply, or increasing demand at time of high RE availability. For Ireland to meet its carbon emissions targets, it is

necessary for electricity demand to become more flexible, to optimise the use of renewable generation and to minimise demand during times of high carbon intensity on the electricity grid. This will require new demand connections, especially large energy users, to invest in flexibility capability from the outset, and for all customers to increasingly shift their consumption away from peak-times and times of high-carbon intensity on the grid and towards times of high-renewable output. The CRU has been designated as the lead organization to bring this project to fruition through the publication of an Electricity Demand Side Implementation Plan which will be finalised, following recent consultation, by Q1 2024. In addition, The Future Arrangements for System Services, along with the DS3 Programme which it is intended to replace, will be key to achieving a more flexible, dynamic Irish energy system.

2.4.4 Energy Poverty, Where applicable, national objectives to protect energy poverty, including a timeframe for when the objectives are to be met

Ireland's strategy to combat energy poverty is laid out in the Energy Poverty Action Plan, published in December 2022. People at risk of energy poverty need to access different combinations of available measures to meet their individual needs and circumstances. Table 10 and Table 11 below show the change cost of an estimated annual bill during the month of December between 2020 and 2023, as well as the percentage increase in estimated annual bill between December 2023 and 2022 relative to December 2021.² Despite recent welcome price reductions apparent from Table 10, estimated annual bills remain 54% higher for electricity and 77% higher for gas than they were in December 2021. For these reasons, Ireland has developed a whole-of-Government strategy laid out in the Action Plan.

² December 2023 figures are based on November 2023 figures reported by the CRU and assume no further change, as indicated by energy suppliers.

Table 10: Estimated Annual Bills for major energy suppliers Dec-20 – Dec-23

STANDARD ELECTRICITY EAB	Dec-20	Dec-21	Dec-22	Dec-23
Energia	€1,194	€1,643	€ 2,271	€1,966
Electric Ireland	€1,098	€1,237	€ 2,120	€1,917
Bord Gais	€1,102	€1,190	€2,305	€1,948
PrePay Power	€1,261	€1,381	€2,245	€ 2,023
SSE Airtricity	€ 1,137	€1,406	€2,267	€ 2,024
Flogas	€1,214	€1,987	€ 2,983	€ 2,088
Pinergy	€ 1,280	€ 2,029	€ 2,193	€2,185
Weighted Average	€1,106	€1,247	€2,170	€1,926
STANDARD GAS EAB	Dec-20	Dec-21	Dec-22	Dec-23
Energia	€ 856	€1,199	€1,860	€ 1,550
Bord Gais	€774	€897	€1,865	€1,607
PrePay Power	€ 836	€968	€ 1,886	€1,691
SSE Airtricity	€811	€1,032	€1,821	€1,679
Electric Ireland	€755	€880	€1,893	€ 1,693
Flogas	€ 876	€1,485	€2,682	€ 1,920
Weighted Average	€ 794	€934	€ 1,887	€ 1,651

Table 11: Percentage Change in EABs Dec '22 and Dec '23 vs. Dec '21 for Electricity and Gas

ELECTRICITY EAB	Dec 21 - Dec 22 Increase	Dec 21 - Dec 23 Increase
	%	%
Bord Gais	94	64
PrePay Power	63	46
Electric Ireland	71	55
Energia	38	20
Flogas	50	5
Pinergy	7	8
SSE Airtricity	61	44
Weighted Average	74	54
GAS EAB		
Bord Gais	108	79
Electric Ireland	115	92
Energia	55	29
Flogas	81	29
SSE Airtricity	76	63
PrePay Power	95	75
Weighted Average	102	77

This Plan sets out the range of measures implemented across Government during winter 2022/23 to support people with energy costs, as well as the longer-term actions taken to ensure those most at risk of energy poverty can adequately heat and power their homes. A cross-departmental and inter-agency Steering Group was established to develop, implement, and oversee the policies and measures detailed in the Action Plan.

The plan sets out actions in four areas:

- Meeting the Cost of Energy;
- Energy Efficiency;
- Research;
- Governance and Communications.

Progress on measures set out in the Action Plan are monitored by the Energy Poverty Steering Group. The Action Plan aims to alleviate the burden of energy poverty on the most vulnerable in society through actions focused on improving the efficiency of homes, supporting lower income households with their energy costs and minimising the costs to consumers associated with action on climate change and with ensuring security of supply. This strategy is underpinned by empirical research undertaken within the department and by the Economic and Social Research Institute of Ireland (ESRI). In Ireland energy poverty has been measured as a household having to spend more than 10% of its income on energy. The ESRI has estimated, on this basis and with unprecedented energy inflation, 29% of households in Ireland are in energy poverty and that this will rise with increases in energy costs. However, this methodology is limited as it provides no indication as to the intensity of the energy poverty being experienced or correlation to the energy efficiency levels of these homes. As energy costs are a huge driver for the overall rise in the cost of living, with impacts on levels of energy poverty, it is essential that this methodology is improved and optimised for Ireland's situation. As such funding has been provided to the ESRI to develop new methods of quantifying and understanding energy poverty in Ireland, thus ensuring that better targeted measures may be used by Government to support households.

2.5 Dimension Research, Innovation and Competitiveness

2.5.1 National objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union, including, where appropriate, a timeframe for when the objectives are to be met.

Given the level of Ireland's ambition regarding the reduction of GHG emissions, new technologies must be developed and deployed in the coming years. A key metric for the assessment of innovation activity is Research & Development (R&D) intensity (R&D expenditure as a percentage of Gross National Product (GNP) which reflects the extent of research and innovation activities undertaken in a country in terms of resources input. Ireland's Research, Development, and Innovation (RDI) intensity rate is estimated at 1.45%

(€4,686bn) of GNP for 2021, a small decline from the rate of 1.54% (€4,299bn) of GNP in 2020 and increased from 1.50% (€4,136bn) in 2019. Since the publication of Innovation 2020 in 2015, direct Exchequer funding of RDI (GBARD) has increased from €736m in 2015 to an estimated €869m in 2020. This is the highest level of public expenditure on RDI since 2009. Despite the gradual reduction in the RDI intensity rate, GBARD has managed to remain consistently at around 1% of total Government expenditure since 2011, with a slight estimated decline in 2020 to 0.82%, in part to the Covid-19 Pandemic. Overall expenditure on RDI (GERD) increased from €3.1bn in 2015 to an estimated €4.0bn in 2020, an increase of €900m. GERD has increased year on year since committing to the Europe 2020 target, with an overall increase of €1,463m since 2011. However, reaching the 2.5% of GNP intensity rate target presents a very significant challenge. In 2020 our GNP intensity level stood at an estimated 1.47% of GNP, down from 1.99% in 2012. Even when using GNI* as a complementary indicator (GNI* removes globalisation impacts on the Irish economy), the RDI intensity rate is estimated at 1.88% for 2020. This is in part due to the strength of our economic performance and subsequent increases in GNP growth rates year on year over the last number of years. Our challenge is to increase the level of investment in RDI to keep pace with GNP growth rates.

Impact 2030 is Ireland's strategy for research and innovation to 2030. Impact 2030 positions research and innovation (R&I) at the heart of addressing Ireland's societal, economic and environmental challenges. Impact 2030 identifies 'Climate, Environment and Sustainability' (including energy) as a key challenge area. It aims to position R&I as critical enablers to support the delivery of our climate action targets and to address wider environmental and sustainability challenges. Ireland's overall level of public investment in R&D as measured by R&D intensity is low relative to the target set by the European Commission. In addition, analysis by the International Energy Agency (IEA) indicates that Ireland's public investment in energy R&D is one of the lowest in the OECD. In order to address this, DECC intends to increase in a stepwise fashion public funding for the SEAI National Energy Research Development & Demonstration (RD&D) Funding Programme. This funding will supplement the funding provided to the Prototype Development Fund, and other national initiatives funded by other Government Departments. This funding will allow DECC's national energy authority (SEAI) to instigate new initiatives, expand current activities, develop strategic collaborative partnerships with national & international organisations and further strengthen the capacity of the energy RD&D system in Ireland. This increased investment in energy RD&D will also assist Ireland in meeting its medium- and long-term low-carbon transition targets and obligations and will unlock enterprise opportunities for Irish businesses.

In addition, the Renewable Energy Directive (RED III) Article 3 sets a target of at least 5% of new RE capacity to be of innovative RE technology by 2030. Ireland is addressing this challenge through different instruments. Increased funding will be invested in offshore test sites and a new Technology Development and Demonstration Pilot which will be launched in 2024 within the SEAI National Energy RD&D Funding Programme. The Pilot will invest in a number of key innovative technology development and demonstration projects in Ireland and will be open to applications from a range of RE technology areas, effectively fostering an indigenous innovative technologies pipeline to contribute to installed capacity. Offshore renewable energy (ORE) has been identified as key to decarbonising Ireland's energy system. Reflecting this, continued and increased funding will be allocated to Ireland's suite of offshore/ocean test site facilities. Access programmes will be continued and enhanced to maximise the benefit Ireland's suite of ORE test-sites:

- Lir National Ocean Test facility in Cork, a small-scale site includes state-of-the-art wave tanks comprising a deepwater basin and wave test tanks, that allow for scaled testing in a controlled environment, addressing TRL 1-4.
- SmartBay Marine and RE Test Site in Galway Bay is an intermediate scale site, for marine energy and monitoring technology, addressing projects at TRL4-6 stage.
- AMETS (Atlantic Marine Energy Test Site) off the Mayo coast, where it is intended that full scale Marine Energy devices could be tested at their final stages of pre-commercial development, TRL 7-9. (under development, intended to be ready for access by 2027)

2.5.2 Where available, national 2050 objectives related to the promotion of clean energy technologies and, where appropriate, national objectives, including long-term targets (2050) for deployment of low-carbon technologies, including for decarbonising energy and carbon-intensive industrial sectors and, where applicable, for related carbon transport and storage infrastructure

Ireland's CAP 2019 puts in place a decarbonisation pathway to 2030 that is consistent with the adoption of a net zero target in Ireland by 2050. The Plan also committed to evaluating in detail the changes which would be necessary in Ireland to achieve this target. The Climate Action and Low Carbon Development (Amendment) Act 2021 sets Ireland on a legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions by the end of 2030. Ireland's CAP 2021 continues to drive additional actions related to energy innovation. Examples of this include:

- Action 116 to develop a new offshore renewable energy development plan (ORED II);
- Action 123 to support the offshore and ocean energy research, development and demonstration pathway for technologies and associated test infrastructure through:
 - Roadmap and provision of ORE funding to industry, academia and test infrastructure;
 - Economic analysis for >5 GW offshore RE including 2030+ roadmaps and pathways to deploy technology and develop energy markets.

The 2023 CAP is the first CAP update following the introduction of economy-wide carbon budgets and sectoral emission ceilings, which were approved and adopted in May and July 2022 respectively. It identifies abatement technologies that will need to be implemented across key sectors including renewables, the built environment, transport, agriculture, enterprise, and land use. The 2023 CAP includes, for the first time, a dedicated R&I chapter which outlines the current situation in climate and climate-related R&I nationally and internationally, assessing any gaps in the area, and identifying potential cross-cutting initiatives. A series of R&I actions are included in the Plan's Annex of Actions. These include the publication of Ireland's Five-Year Assessment Report on Climate Change, and the launch of a €65m National Challenge Fund.

The societal benefits of research and innovation are both significant in scale and wide-ranging. Research and innovation play a key role in addressing global and national challenges and improving quality of life in all sectors and segments of Ireland's economy and society. Two 'Project Ireland 2040' funds launched under Ireland's NDP have supported innovation in areas relevant to Ireland's NECP. The first is the Climate Action Fund, which provides assistance and financial support to projects which will help Ireland achieve its climate and energy targets. The Disruptive Technologies Innovation Fund, while not specifically aligned with climate action, has to-date supported 10 projects to a total value of €24.5m in the area of 'Environment, Climate and Sustainability'. These funds have a collective budget of an estimated €1bn over the period 2018-2027. They offer the potential for innovative interventions which in the absence of support from the funds, would not otherwise be developed. There is a need to ensure that the best scientific evidence and advice is available to underpin Government policy and support the actions in Ireland's NECP. Ireland has strategically programmed and built a strong energy and climate science research and innovation infrastructure in recent years, with funding provided to Ireland's research organisations to carry out science and policy-relevant research. The inclusion of

‘Climate, Environment and Sustainability’ and ‘Agriculture, Food and the Marine’ as key challenge areas in Impact 2030 reflects the continuing urgency of the need to address climate change. The National Energy RD&D Programme is aligned to national research objectives. It concentrates on innovation in the clean energy transition including supports to accelerate the development and deployment of competitive energy-related solutions; solutions that enable the overcoming of barriers to market uptake; capacity and skills building; and to provide support to policy makers through results and outputs. SEAI’s strategy for 2022 to 2025 lays out a pathway for SEAI to achieve Ireland’s energy targets in areas like home upgrades, supporting businesses and the public sector, increasing the uptake of EVs and the phasing out of fossil fuels across the economy. This will be informed by the strong research and analysis functions of SEAI and underpinned by robust corporate governance structures.

Through Ireland’s active participation in Europe’s SET-Plan Steering Group and within individual SET-Plan Implementation Groups, research calls are aligned with SET-Plan priorities. This enables better alignment of Irish research priorities with research and innovation programmes both at EU level and across other member states. This also increases co-operation between national programmes to avoid duplication of research.

EPA Research 2030 is a 10-year strategic framework for the EPA Research Programme that aims to generate evidence to support Ireland’s response to global challenges, including climate change and biodiversity loss. EPA Research 2030 seeks to put science and innovation at the centre of environmental protection in Ireland through the development and proactive transfer of knowledge. Framed around four thematic research hubs, EPA Research 2030 will support research in diverse areas related to climate, the environment and sustainability that will contribute to advancing Ireland’s ambitions to become carbon neutral and climate resilient and support us in meeting our national and international commitments.

Transport Infrastructure:

Ireland’s CAP set out an ambitious set of domestic targets in the transport sector, including the following:

- Reduce CO₂eq emissions from the sector by between 42-50% relative to a 2018 emissions baseline of 12.2 Metric tons of carbon dioxide equivalent (Mt CO₂eq);
- Increasing the fleet of EVs and low emitting vehicles (LEVs) on the road to 945,000, comprising:

- 845,000 electric passenger cars
- 95,000 electric vans and trucks
- 3,500 low emitting trucks
- 1,500 electric buses, and
- An expanded electrified rail network;
- Reduce ICE km by c.10% compared to present day levels and undertook to further refine measures to deliver additional abatement of c.0.9 Mt CO₂eq reduction by 2030 in a fair and equitable manner;
- The expansion of the EV charging network to support the growth of EVs is now expected to be progressed in line with the mandatory targets that have recently been set out in the EU Alternative Fuels Infrastructure Regulation, with our National EV Charging Infrastructure Strategy, and National En-Route EV Charging Plan setting out proposed high-power fast-charging infrastructure on the National Road Network including the TEN-T roads. The Destination and Residential/Neighbourhood charging plans will complement the en route plan and will cater for localised initiatives including for those without the capability to charge at home;
- Require at least one recharging point in new non-residential buildings with more than 10 parking spaces;
- Raise the blend proportion of renewable transport fuel (biofuels) in road transport to an equivalent of 10% in petrol and 20% in diesel by 2030 (or interim 12% in diesel by 2025).

Storage infrastructure:

The only large-scale energy storage device in Ireland is a [pumped hydro station at Turlough Hill](#), consisting of 4 x 73 MW generators, and with a storage capacity of 1750 MWh. The Government's Energy Policy (White) Paper, [Ireland's Transition to a Low Carbon Energy Future 2015-2030](#), states that Carbon Capture and Storage (CCS) is recognised as a potential bridging technology that could support the transition to a low carbon economy. Ireland adopted a 5-year CCS review process, which will inform any decision to commit resources to put regulatory and permitting systems in place.

Support for Deployment of Low-Carbon Technologies in Ireland:

The SEAI technology team provides market support to the energy and low carbon technology sector and technology-related policy support to DECC. It covers areas such as wind & electricity, heat & bioenergy, solar, ocean and smart grids. The group develops technology roadmaps (informed by SEAI modelling), promotes the growth of relevant supply chains, represents Ireland in technology fora, develops guidance relevant to technology sub-sectors for suppliers, installers, manufacturers, and consumers, and supports critical supply chain development, often in collaboration with partner state agencies such as the [Industrial Development Authority of Ireland](#) (IDA Ireland) and [Enterprise Ireland](#). In 2023 SEAI plans to carry out a detailed technology analysis of each energy/low carbon technology which will be required to meet Ireland's long-term targets. This modelling will assist with energy research & innovation investment prioritisation with a view of achieving targets in 2030 and 2050. This will be done with the goal of building capacity in the energy research & innovation system in Ireland and developing enterprise opportunities. It will then analyse the RD&D readiness of technologies against which research resources are available and identify any gaps for these technologies and how targeted mission-oriented RD&D can fill those gaps. Technologies identified as ready for market deployment will be analysed to identify their respective resources and any gaps that may need to be addressed to support mass deployment of that technology to help Ireland achieve its 2030 and 2050 target and objectives. Finally, for mature technologies, SEAI will continue to examine how it can maximise supply chain opportunities.

2.5.3 Where applicable, national objectives with regard to competitiveness

[Ireland's National Competitiveness Council \(NCC\)](#) reports to the Irish Government on key competitiveness issues facing the Irish economy and provides recommendations on policy actions required to enhance Ireland's competitiveness position. Details in this section are drawn from Ireland's Competitiveness Challenge 2023 Report, published in September 2023. The report identifies four broad medium and long-term strategic challenges and outlines 19 tangible, actionable policy recommendations to the Government aimed at enhancing Ireland's competitiveness and productivity performance.

The four key challenges identified in the report are as follows:

- Reduce the cost of doing business in Ireland;
- Significantly improve the planning, development, and delivery of infrastructure;

- Accelerate progress on the usage and generation of energy in line with our climate targets;
- Enable stronger productivity growth through research, development, and innovation.

Competitiveness is a multidimensional concept incorporating many interlinked and interdependent factors. Reflecting this complexity, [Ireland's Competitiveness Scorecard](#) analyses over 170 measures, each of which articulates an aspect of Ireland's competitiveness performance. Competitiveness performance reflects the interaction of a wide range of factors that, combined, determine the ability of firms to compete successfully in international markets. Ireland's performance across several international competitiveness indices has improved in recent years.

3. Policies and Measures

3.1 Dimension Decarbonisation

3.1.1 GHG Emissions and Removals

3.1.1.1 Policies and measures to achieve the target set under Regulation (EU) 2018/842 as referred in point 2.1.1 and policies and measures to comply with Regulation (EU) 2018/841, covering all key emitting sectors and sectors for the enhancement of removals, with an outlook to the long-term vision and goal to become a low emission economy and achieving a balance between emissions and removals in accordance with the Paris Agreement

Building on the policy framework of the National Mitigation Plan and Project Ireland 2040, the Government published its first CAP in June 2019. The Plan identifies how Ireland will achieve its 2030 targets for GHG emissions which is also consistent with a trajectory to achieve net zero emissions by 2050. The Plan sets out over 180 actions, together with hundreds of sub-actions, that need to be taken, and encompasses every relevant sector: electricity, enterprise, housing, heating, transport, agriculture, waste, and the public sector. The Plan, which is updated annually and reported on quarterly, also includes actions to ensure that citizens become engaged and mobilised to take climate action, while ensuring that the necessary societal and economic transition that we must make is fair, both in Ireland and globally. A [National Dialogue on Climate Action](#) had already been established to provide an opportunity to create awareness, engagement, and motivation to act (locally, regionally, and nationally) in relation to the challenges presented by climate change. It also created structures and information flows to facilitate people gathering to discuss, deliberate and achieve consensus on appropriate responses to these challenges as well as enable and empower appropriate action. The Plan takes into account the outcomes from the examination of the issue of climate action by the "[Citizens' Assembly](#)" as well as the work of the [All-Party Committee on Climate Action](#). A Climate Action Delivery Board was established to ensure coordination and accountability across Government on the various actions identified and to focus effectively on timely implementation.

Reflecting the central priority of climate change in our political and administrative systems into the future, the Plan sets out new governance arrangements including carbon-proofing of our policies, establishment of carbon budgets, a strengthened CCAC and greater accountability to the Parliament. A new legal framework will drive the definition of targets and

the governance process. In early 2020, the Government published the general scheme of a new that will provide an unprecedented national legal basis for the setting of mitigation targets and the governance of climate policy. Under the proposed legislation, Ireland will adopt five-year carbon budgets at a national level following recommendations by a strengthened, statutorily independent Climate Action Council. Three five-year budgets (i.e. up to 2035 in the first instance) would be approved by the Government and by the Dáil. In addition, the Government is proposing to set target ranges and trajectories for each sector within the overall carbon budget. It is proposed that considerations, such as distributional effects and cost effectiveness, will be considered in the establishment of budgets and target ranges based on criteria to be set out in the legislation. The governance of the plan will follow the approach successfully applied in the Action Plan for Jobs. A very detailed list of actions and measures are assigned at Department level and implementation will be monitored and reported on a quarterly basis under the supervision of the Department of the Taoiseach.

Some of the key measures set out in the Plan include:

- Committing to a trajectory of carbon pricing, to create behavioural change and avoid locking in carbon intensive technologies;
- Establishing a system of 5-year carbon budgets and sectoral targets;
- Carbon proofing all Government decisions and major investments;
- The establishment of a Just Transition Commission;
- A mandate on all public bodies to adopt a Climate Action Mandate;
- A new Climate Action Act, to include 2050 targets;
- The establishment of a parliamentary Standing Committee on climate action;
- The elimination of non-recyclable plastic, including: the imposition of higher fees on the production of materials which are difficult to recycle, and the implementation of measures to ban products such as single-use plastic plates, cutlery, straws, balloon sticks and cotton buds;
- Increasing the penetration of renewable electricity;
- Phasing out coal and peat fired generation;
- The provision of a regulatory framework and development of a strategy for the optimal deployment of geothermal energy, to support the decarbonisation of heating

and cooling in buildings, industry, and power generation;

- Putting in place a coherent support scheme for micro-generation, facilitating the sale of excess power to the grid;
- Setting stricter energy & climate requirements for new buildings and substantial refurbishments;
- The adoption of new Local Authority Climate Action Plans (LACAPs) within each of Ireland's 31 Local Authorities, setting out mitigation and adaptation measures to be adopted locally;
- Working toward the upgrade of 500,000 homes to at least BER B2;
- Building a supply chain and a model for aggregation where home retrofits are grouped together;
- Accelerating the penetration of EVs into sales of cars and vans and deliver a nationwide charging network;
- Expanding the network of cycle paths and of "Park and Ride" facilities
- Making growth less transport intensive through better planning, the promotion of remote or hybrid working, and modal shift;
- Increasing the proportion of renewable transport fuel (biofuel) in transport through ongoing implementation of the Renewable Transport Fuel Policy, including annual increases in the rate of the Renewable Transport Fuel Obligation (RTFO);
- Deliver substantial, verifiable GHG abatement through the adoption of a specified range of improvements in farming practice in line with recommendations from Teagasc.
- Promoting the increased use of domestic harvested wood in longer lived products, which will enhance the storage of carbon in these products and act as a substitute for materials with a higher carbon intensity;
- Delivering an expansion of forestry planting and soil management to ensure that carbon abatement from land-use is delivered in 2021-30 and in the years beyond; and
- Supporting diversification within Agriculture and land use to develop sustainable and circular value chains and business models for lower carbon intensity farming.

The following sections provide an overview of the various actions covering all key emitting sectors.

Electricity Generation

Energy is indispensable to contemporary social and economic functioning. Energy policy seeks to balance the occasionally competing aspects of sustainability, competitiveness, and security of supply. Given the scale, scope, and extent of energy use, it inevitably has significant environmental impact: including GHG emissions arising from power generation, heating, and transport. Harnessing Ireland's RE resources will play a key role in the transition towards a sustainable, secure, and competitive energy system. A key sector in this transition is electricity generation: which, since 2005, has been subject to the EU's ETS. Representing just under a third of emissions from the energy sector, electricity has been an area of considerable decarbonisation success and a target area for future progress. <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

Some of the key actions for the decarbonisation of the electricity sector include:

- Increase electricity generated from renewable sources to 80% by 2030, underpinned by the Renewable Electricity Support Scheme (RESS);
- Streamline consenting and connection arrangements;
- Phase-out of coal and peat-fired electricity generation;
- Introduce a support scheme for micro-generation;
- Facilitate community participation in renewable generation;
- Provide funding supports for new technologies onshore and offshore;
- Deliver [Smart Metering Programme](#) in line with current timelines;
- Support the ocean energy research, development and demonstration pathway for emerging marine technologies and associated test infrastructure.

Built Environment

Improving energy efficiency is central to the transition to a low carbon economy. Using less energy, and using it in a more flexible way, is the most cost-effective and accessible way to tackle climate change. This is why conserving energy and shrinking our energy use is the first step to take in the process of decarbonising the built environment. The more that energy use is reduced through energy efficiency measures, the fewer the emissions produced, and

the easier the effort required to achieve RE targets. Ireland recognises that, in terms of energy efficiency, attaining the objective of a low carbon future will involve radically changing behaviour as citizens, industry and Government and becoming significantly more energy efficient. Energy efficiency upgrades to the fabric of buildings by, for example, carrying out works such as insulation and airtightness, reduces the amount of energy needed for heating and cooling and reduces the CO₂ emissions connected with our energy use in those homes and workplaces. However, this is just the first step. To decarbonise the built environment, the switch from using fossil fuel as the source of energy in buildings to alternative energy sources will be vital. There are two main options for switching away from fossil fuels: renewable fuels such as biomass or electrification of heat using technologies such as heat pumps. However, it is critical that the fabric of a building is upgraded first so that the desired levels of comfort and function are maintained in homes and workplaces when a less energy intensive RE system is used. The principle of ‘fabric first’ is now embedded in existing support for energy efficiency upgrades and will continue to define the ongoing development of measures to combine energy efficiency improvements with the fuel switching necessary to make real progress on decarbonising Ireland’s built environment. Ireland is facing significant challenges as we move to decarbonise the built environment across residential, public, and commercial sectors. Through Ireland’s energy agency, the SEAI, Ireland offers a range of supports to business, encompassing grants for audits, energy efficient design, renewable heat and solar. SEAI also supports a large industry energy network (LIEN), which brings large energy users together to exchange best practice and experience and provides training for the non-domestic sector through its online energy academy. In the public sector, SEAI has been operating a Pathfinder programme for the last 6 years providing opportunities for public sector bodies to implement pilot retrofit projects. Through the Pathfinder projects, public bodies learn how to replicate retrofit successfully across their wider building estates. Ireland has also established a network of energy performance officers across public sector bodies and developed a comprehensive public sector energy efficiency monitoring and reporting system used by public bodies to report energy consumption and savings to SEAI. In order to drive forward the level of change at scale that is required, the Minister for the Environment, Climate and Communications in Ireland, set up a Heat and Built Environment Taskforce to accelerate and drive delivery in relation to retrofitting, renewable heat, district heat and decarbonisation of the building stock in industry and across the residential and non-residential sectors in Ireland. Six working groups have been set up under the Taskforce, including one on the commercial built environment and one on the public sector-built environment. The public sector working group is currently finalising guidance for public

sector bodies on building stock plans aimed at enabling a strategic overview of the national portfolio of buildings occupied by public bodies. This is intended to contribute to the development of a prioritisation exercise in delivering building retrofit across the public sector. The commercial-built environment roadmap, under development by the commercial-built environment working group, will provide clarity for the commercial-built environment sector in terms of the decarbonisation pathway to 2050, at a rate that is consistent with the carbon budget programme, sectoral emissions ceilings, CAP and taking into account the findings of the National Heat Study. Some of the key actions for the Built Environment sector include:

- Stricter requirements for new buildings and substantial refurbishments;
- Design policy to upgrade 500,000 homes to B2 Building Energy Rating (BER);
- Install 600,000 renewable energy heating sources;
- Build a supply chain and a model for aggregation where home retrofits are grouped together to allow this level of activity to be funded and delivered;
- Develop a plan to ensure that the grant schemes, new finance models and the delivery system are effectively integrated;
- Skill-up current contractors/other industry players in deep retrofit, NZEB and new technology installations;
- Implement a coordinated approach to the development of district heating through establishing a District Heating Centre of Excellence;
- Develop a legislative and regulatory framework to support the expansion of district heating;
- Provide a regulatory framework and develop a strategy for the optimal deployment of geothermal energy to support the decarbonisation of the heating and cooling of buildings;
- Increase the number of Sustainable Energy Communities to 1,500;
- The public sector is tasked with reducing GHG emissions by 51% by 2030).

Under Directive 2023/1791 on Energy Efficiency, there is a specific obligation for the public sector to achieve an annual energy consumption reduction of 1.9%. In addition, Member States are required each year to renovate at least 3% of the total floor area of buildings owned by public bodies. The Directive came into force on 10 October 2023 and Ireland has two years to transpose the requirements of the Directive into Irish law. The Energy

Performance of Buildings Directive (EPBD) is still being renegotiated at EU level with a December 2023 date currently projected for agreement on the final text. Ireland will likely have further obligations across the built environment (residential and non-residential) in relation to building energy performance when the Directive comes into force.

Transport

Moving to a low carbon society represents a significant challenge for Ireland's expanding transport sector where the use of fossil fuels is firmly embedded in driving culture and travel demand is increasing in response to population and economic growth. To address the challenge of transitioning from conventionally fuelled vehicles to alternative fuels and technologies, an ambitious national target was established in the Programme for Government whereby a commitment was made for all new cars sold in Ireland to be zero carbon emission or zero emission-capable by 2030, via a proposed ban on the sale of ICE vehicles, as well as for the electrification of our public transport buses and rail lines. However, we now understand that as the EU has legislated under the Regulation on CO₂ emission standards for cars and vans to set a phase out date for the sale of new fossil-fuelled cars and vans of 2035, that Member States are obligated to allow goods that are legally produced and marketed in other Member States to circulate and to be placed on the Irish market. As such, Ireland expects that we will need to achieve 100% of new registrations to be zero emission in advance of this date to meet our national emissions targets. The Zero Emission Vehicles Ireland (ZEVI) office was established in July 2022 to help us achieve this ambition. Ireland's long-term ambition is to decarbonise the national passenger car fleet by 2050 and increase the use of alternative fuels in the freight sector. A mix of further measures, developments and initiatives will be needed to continue to respond to the climate challenge into the future. New technology deployment and behavioural change initiatives need to be advanced across the transport sector, stimulating changes to the way people travel and the type and amount of fuels that are used. Further measures being progressed are:

- The implementation and review of the [National Planning Framework](#), which aims to ensure better integration of land use and transport planning policy in order to reduce commuter travel demand and support more efficient patterns of development and travel;
- The development of a National Demand Management Strategy to secure a shift, where feasible alternatives exist, away from private car use;

- Enhancing public transport and walking/cycling, with major public transport infrastructure schemes in Ireland's cities, and the NTA's Connecting Ireland Rural Mobility Programme in towns and villages;
- A programme of 'pathfinder projects' to demonstrate the benefits of sustainable transport; encouraging the take-up of alternative fuels to petrol and diesel;
- And the increase of the national mandate minimum renewable transport fuel in transport energy consumption through the statutory renewable transport fuel obligation to further reduce the concentration of high-emitting fuels.

In addition, the potential role of taxation, the impact of eco-driving, and driving behaviours are also being examined and advanced. Alongside national policy objectives, the transport sector is also bound by certain commitments at EU level. [The Renewable Energy Directive](#) specifies a legally binding target of 14% RE in transport by 2030 to be achieved by all Member States. The renewable transport fuel obligation is the primary mechanism being deployed to achieve this target. Progress is being made in increasing the share of RE in Ireland's transport energy. Ireland's RES-T in 2022 under RED II methodology was 5.5% (Some of the key actions to be progressed for the Transport sector include:

- Accelerate the penetration of EVs so that 936,000 will be on the road by 2030, underpinned by policy tools such as vehicle and fuel taxation measures, and a strong carbon tax trajectory;
- Make growth less transport intensive through better planning and transport orientated development, encourage remote working (where feasible) and greater modal shift through the delivery of major projects such as BusConnects, DART+, MetroLink, Cork Commuter Rail and an expanded network of an additional 1,000 km in walking and cycling infrastructure;
- Increase the proportion of renewable transport fuel in transport underpinned by the annual rate of increase of the renewable transport fuel obligation;
- Set targets for the conversion of public fleets underpinned by a Green Public Procurement Framework and a public sector mandate;
- The expansion of the EV charging network to support the growth of EVs will be progressed in line with the mandatory targets now set out in the EU Alternative Fuels Infrastructure Regulation and National EV Charging Infrastructure Strategy, with

high-power fast-charging infrastructure on the TEN-T network and Destination and Residential Charging for those without the facility to charge at home.

Local Authority Climate Action Plans and Capacity Building

The Climate Action and Local Carbon Development (Amendment) Act 2021 provides for an additional Section 14B (1) of the Climate Action and Low Carbon Development Act 2015 in relation to the role of Local Authorities. This sets out that each Local Authority shall prepare plan (referred to as an LACAP) specifying the mitigation and adaptation measures to be adopted for a period of five years. The plans are due to be adopted in early 2024, having gone out to public consultation and following adoption by the elected members in each Local Authority. The Climate (Amendment) Act amends the Planning and Development Act 2000 by stating that Local Authority Development Plans must take account of the LACAPs. As stated in the Planning Act, Local Authority Development Plans shall include objectives for the promotion of sustainable settlement and transport strategies including the promotion of measures to reduce emissions and address climate adaption, taking account of any LACAP, in particular relating to the location, layout and design of new development. The City and County Development Plans are the key statutory documents in delivering policy change at Local Authority level. The policy making and implementation role of local Government in support of national and international climate action has been expanded through climate legislation. There is a greater emphasis on Local Authorities and regional assemblies as leaders in creating more sustainable, cleaner, biodiversity rich administrative areas. Delivering on national climate obligations and remaining within the statutory carbon budgets will require strengthened activity by Local Authorities. In recognition of this, Government has invested significantly in funding climate-related programmes and roles in each Local Authority to increase their capacity to respond. These new specialist resources form the nucleus of the Local Authority climate action teams. As climate change is a cross-cutting challenge, it requires involvement from across the entire range of Local Authority functions and cross-departmental working. Local Authority staff from across functional areas will support climate action policy development and will be responsible for the delivery of climate actions. Organisational support and governance are integral to the success of the actions put forward in the LACAPs. Each Local Authority will take a multi-disciplinary approach to climate action by putting in place a defined governance structure. DECC is supporting the LACAP process and broader climate delivery by funding Climate Action Coordinators and Officers in each Local Authority. Strand 1 of the Community Climate Action Programme from DECC provides funding for Community Climate Action Officers in each Local Authority. Government has been supporting capacity building in the local Government sector. DECC

funds the Local Authority Climate Action Training Programme, which is delivered by the Eastern and Midlands CARO through the Local Authority Services National Training Group. Building climate action capacity in the Local Authorities is essential to support their leadership role in the fight against climate change and to build resilience. The programme comprises a suite of training pillars designed for specific target groups, covering areas such as climate science, the adaptation of national policy to local requirements, leadership, and local innovation. Strategic training priorities are identified, and learning objectives are developed to suit the target learning groups, which include Local Authority front line staff, senior management, climate action teams, and elected members. The programme commenced in January 2021 and by October 2023 circa 23,000 training places had been provided to approximately 20,600 people. This equates to around 71% of Local Authority staff and 35% of elected members having received training. An analysis of training needs for the programme will be carried out in 2024 to determine its future direction, training target numbers, and specific target groups to help strengthen the implementation of climate action.

In addition, the Department of Transport is funding the building up of capacity in Local Authorities through the Smart and Sustainable Mobility Accelerator Project which is being delivered by the Regional Assemblies. Phase 2 of the programme will be rolled out by Q4 2024.

Agriculture, Forestry and Land Use

The agriculture sector is the largest contributor to Ireland's GHG emissions. While challenging from an Irish perspective, and unusual in an international context, this fact reflects the economic and historical importance of agriculture, relative to other industries, in the Irish economy. Reducing emissions in agriculture is not a uniquely Irish challenge – throughout Europe, reducing GHG emissions in agriculture has proven difficult. What sets Ireland apart from its EU counterparts is the scale of our beef and dairy primary production industries relative to our population and land size, and the lack of heavy industry in Ireland's economic make-up.

Emissions reduction in the agriculture sector is particularly challenging because it is a biological system. There will always be residual emissions associated with food production. Some time is needed to develop the technological and innovative solutions, and also to determine whether the measures are having the desired impact. However, the implementation of measures to mitigate agricultural emissions, such as the use of protected urea fertilisers, have valuable co-benefits for other environmental concerns.

To meet the required level of emissions reduction by 2025, the CAP has set out a pathway for this sector which includes:

- Significantly reducing our use of chemical nitrogen as a fertiliser;
- Increasing the uptake by farmers of low-emission slurry spreading to 90%;
- Improving how farmers feed their animals by reducing the crude protein content of their feed;
- Increasing the focus on low-methane traits within animal breeding programmes;
- Encouraging processors and farmers to reduce the average age of slaughter;
- Increasing the resilience of the sector through the integration of climate adaptation considerations in policy planning;
- Supporting livestock farmers' transition to alternative land uses through the provision of Agriculture diversification options including;
- Increasing the level of organic farming to 250,000 hectares (ha);
- Expanding the indigenous biomethane sector through anaerobic digestion (AD);
- Increasing the area of tillage;
- Contributing to the delivery of the LULUCF targets for afforestation and reduced management intensity of organic soils.

To meet the required level of emissions reduction by 2030, we will:

- Take steps to continue to reduce the use of chemical nitrogen as a fertilizer on farms;
- Continue to focus on low-methane traits within animal breeding programmes;
- Take steps to improve how farmers feed their animals by reducing the crude protein content of their food;
- Encourage a reduction in the average age of slaughter to 22-23 months;
- Support a further transition to alternative land uses through diversification options, including;
- Incentivise an increase in the level of organic farming;
- Contribute to the delivery of the LULUCF targets for afforestation and reduced management intensity of organic soils;

- Continue to increase the resilience of the sector through the integration of climate adaptation considerations in policy planning.

With regards to the expansion of forestry planting and soil management to ensure that carbon abatement from land-use is delivered in 2021-30 and in the years beyond, we will:

- Increase the annual planting of new forests, and the sustainable management of existing forests, including the increased use of harvested wood products;
- Increase the area of reduced management intensity of grasslands on drained organic soils;
- Better management of grasslands, tillage land and non-agricultural wetlands;
- Develop exemplar networks with leaders in adopting best practice to improve soil fertility and optimise fertiliser use leading to reduced GHG emissions and enhanced carbon sequestration in soil/biomass;
- Implement and review roadmap for achieving afforestation rates as outlined in the Programme for Government and Forestry Programme Mid-Term Review;
- Support diversification within Agriculture and land use to develop sustainable and circular value chains and business models for lower carbon intensity farming including organic production and protection, and enhancement of biodiversity and water quality; and the production of bio-based products and bioenergy through the Common Agricultural Policy and implementation of the National Policy Statement on the Bioeconomy;
- National Bioeconomy Implementation Group to examine sectoral coherence, network and awareness raising, research and innovation and the circular bioeconomy potential of harnessing the value from side-streams from both agriculture and forestry;
- Actively engage all stakeholders to develop a roadmap to ensure that the future development of the agriculture and land-use (including forestry) sector will be built on environmental sustainability, and contribute fairly to Ireland's climate, air and energy targets;
- Upskill farmers and foresters to ensure they have the knowledge and tools required to implement climate mitigation practices;

- Set a target for the level of energy to be supplied by indigenous biomethane injection in 2030, taking into account the domestic supplies of feedstock that meet strict sustainability criteria and consider how the supports necessary to reach such a target would be funded.

With regard to the LULUCF, as outlined in 2.1.1. GHG Emissions and Removals, the impact of the Revision of Regulation (EU) 2018/841 on GHG Emissions and Removals from Land use, Land-use change, and Forestry is in the progress of being incorporated into the CAP.

Other Sectors

The Plan also includes actions in relation to other sectors of the economy which have an important role to play such as enterprise and the waste sector. Key actions in these sectors include:

- Develop coherent Reduction Strategies for Plastics, Food Waste and Resource Use;
- Increase the level and the quality of recycling with less contamination and greater replacement of virgin materials by recycling;
- Reduce the reliance on landfill with sharp reductions in plastics and compatibles entering landfill;
- Embed energy efficiency, replacement of fossil fuels, careful management of materials and waste and carbon abatement across all enterprises and public service bodies;
- Mobilise clusters regionally and sectorally to become centres of excellence for the adoption of low carbon technologies;
- Develop networks in key industry sectors and a roadmap of actions to support decarbonisation of large industry;
- Expand the [EXEED \(Excellence in Energy Efficient Design\) programme](#) to influence and deliver new best practices in energy efficient design;
- Develop and implement a new integrated National Waste Management Plan, due to be published in early 2024, that will guide our transition to a circular economy;
- Develop new and expanded environmental levies, such as the Waste Recovery Levy, to encourage reduced resource consumption and incentivise higher levels of re-use and recycling;

- Publication of a Whole-of-Government Circular Economy Strategy and promotion of the Circular Economy, including Green Public Procurement. Ireland's first Whole of Government Circular Economy Strategy 2022-2023 was published in 2021 and the next iteration will be published in 2024. A new GPP Strategy and Action Plan is due for publication in 2024.

3.1.1.2 Where relevant, regional co-operation in the area

Details of regional co-operation under the five energy dimensions, including detail on the North Seas Energy Co-operation, the Clean Energy for EU Islands Initiative, the British-Irish Council, and interconnection co-operation are set out under the relevant sections. Co-operation in these forums contributes to our long-term vision and goal to become a low emission economy.

3.1.1.3 Without prejudice to the applicability of State aid rules, financing measures, including Union support and the use of Union funds, in this area at national level, where applicable

provides an allocation of €300m to fund the Support Scheme for Renewable Heat and €200m to support the uptake of EVs. The Climate Action Fund was approved by Government in May 2018 and will, over the course of the NDP, invest a total of €500m. The objective of the Climate Action Fund is to support initiatives that contribute to the achievement of Ireland's climate and energy targets in a cost-effective manner or offer the potential for innovative interventions in these sectors that, in the absence of support from the Fund, would not otherwise be developed.

Financing the domestic transition envisaged under the CAP as well as the agenda under Article 2 of the Paris Agreement on making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development is an important issue for Ireland. On the private sector side, green and sustainable finance is an emerging high-growth international financial services (IFS) sub-sector. Importantly from a financial markets perspective the significant funding requirement to achieve this transition to a sustainable climate resilient world is well recognised. Over the next 15 years, the G20 estimates that the world will need to invest around US\$90 trillion in sustainable infrastructure assets.

Turning to state-funded green finance, Ireland has a strong record of supporting international climate action, making significant advances in the delivery of climate finance in recent years. A consistent approach to programming climate support, based on policy prioritisation on addressing climate finance, is improving the predictability of Irish climate finance. The

majority of Ireland's financial support of €175m to be provided over the period 2016 to 2020 is provided through Irish Aid.

3.1.2 Renewable Energy

3.1.2.1 Policies and measures to achieve the national contribution to the binding 2030 Union target for renewable energy and trajectories as referred to in point (a)(2) Article 4, and where applicable or available, the elements referred to in point 2.1.2 of this Annex, including sector-and technology-specific measures

Harnessing Renewable Energy Through Support Schemes

Ireland has, since the 1990s, had in place support schemes to encourage the development of RE. While the first two of these are now closed for new applicants, Ireland will continue to operate these support schemes until the contracted support period ends, these schemes are:

- the Alternative Energy Requirement (AER) scheme;
- the [Renewable](#) Energy Feed-In Tariff scheme (REFIT).

The AER scheme was launched by the then Department of Transport, Energy and Communications in 1996 and was the first step towards a market support for wind energy as part of the Department's programme to promote generation of electricity from renewable resources (when planning these measures, Member States shall take into account the end-of-life timeframes of existing installations and the potential for repowering). The programme involved the tendering for contracts of certain fixed amounts of capacity, by potential RE generators. The last AER project stopped receiving support in 2021. REFIT 1, was open for applications until 31 December 2009. The technologies covered in REFIT 1 are small wind (< 5 MW), large wind (>5 MW), Hydroelectricity and Biomass/Landfill gas. The support is provided for a period of 15 years. Due to delays in grid rollout for REFIT 1 projects, and with State Aid approval in August 2013, the backstop date for REFIT 1 was extended by two years to 2027.

REFIT 2, which succeeded REFIT 1, came into operation in March 2012. It provides for up to 4,000 MW of renewable generation. The technologies covered are small wind (< 5 MW), large wind (>5 MW), Hydroelectricity and Biomass/Landfill gas. The backstop date for REFIT 2 is 2032 and the scheme closed to new applications in 2015.

REFIT 3 aimed to support the addition of 310 MW of biomass technologies including AD and Combined Heat and Power (CHP). CHP is the simultaneous generation of useable heat and

electricity in a single process and is regarded as a highly efficient energy production process. It makes use of the heat produced in electricity generation instead of releasing it into the atmosphere. The heat generated in a CHP plant can be used for many purposes including district heating and displacing industrial heat demand. The backstop date for REFIT 3 is 2030 and the scheme closed to new applications in 2015.

The RESS is the primary Government policy to help deliver the onshore renewable electricity generation capacity required to ensure Ireland meets our ambitious climate and energy targets, as set out in the CAP. The RESS is an auction-based support scheme which invites grid-scale renewable electricity generation projects to compete to receive a guaranteed price for the electricity they generate under a two-way floating deed in premium. These auctions provide pathways for renewable developers to plan and develop their projects.

The primary policy objective of the RESS is the delivery of renewable electricity in a sustainable, cost-effective, and secure framework, in the context of Ireland's 80% renewable electricity target by 2030. Supported technologies include onshore wind, solar, and hybrids (co-located wind, solar, storage), as well as offshore wind projects through dedicated offshore auctions. It will also allow Ireland to take advantage of new technologies as they emerge.

The RESS design includes high in-built consumer protection where bidders will provide a strike price for use in two-way settlement arrangements, i.e. when the market price is lower than the strike price, support is provided by the Public Service Obligation (PSO) levy, paid for by the electricity customers but when the market price is higher than the strike price, then a refund will be made by the bidder to electricity customers through the PSO. State Aid for the RESS was granted on 20 July 2020 and was notified for a period of five years. The RESS was designed to support projects which would be unviable without support. The scheme was re-notified under the EU Temporary Framework to account for changes required for ORESS 1 (Offshore RESS), ORESS 2, and RESS 3 and was approved in June 2022.

The first RESS auction (RESS 1) successfully concluded in September 2020 with over 1 GW of new capacity procured – amounting to an increase of over 15% to Ireland's RE generation capacity. RESS 1 projects have a final deadline of 31/12/2023 to achieve commercial operation. The energisation of RESS 1 projects led to 2022 being a record-breaking year for renewable connections to the grid in Ireland.

The second RESS auction (RESS 2) was held in 2022, with the final results published in June 2022. The total capacity procured represented a potential increase of nearly 20% in

Ireland's RE generation capacity. RESS 2 projects are contracted to deliver by year-end 2025 at the latest.

The third RESS auction (RESS 3) was held in September 2023. The volume procured represents a potential increase of 12% in Ireland's RE generation. RESS 3 projects are contracted to be delivered by 30 April 2027, at the latest. This ensures a steady pipeline of projects connecting annually (RESS 1 – 2023, RESS 2 – 2024 & 2025, RESS 3 – 2026 & 2027) to assist in meeting Ireland's 2027 interim target.

The fourth RESS auction (RESS 4) is planned to follow in 2024 and is expected to be a much larger auction. There are also plans for a fifth RESS auction (RESS 5) to be held before the end of 2025, as per the published RESS Auction Calendar.

Alternative Routes to Market

In addition to the RESS, subsidy free RE through [corporate power purchase agreements](#) (CPPAs) provide a route to market for renewable project developers in the shorter term, providing them with a real opportunity to boost Ireland's RE capacity. In March 2022, DECC published the Renewable Electricity Corporate Power Purchase Agreement Roadmap, which sets out Ireland's policy on CPPAs.

The roadmap sets out that CPPAs have an important role to play in helping Ireland to reach our ambitious renewable electricity targets and includes the Principles of Good Practice for Renewable Electricity CPPAs, which state that such agreements should:

- Clearly deliver additional GHG emissions reductions and contribute to Ireland's 2030 renewable electricity and climate targets;
- Lower the net costs of the energy transition to Irish consumers and the State;
- Be measured and reported in a way that accurately reflects actual emissions reductions from final energy use in space and time and avoids 'greenwashing';
- Align with Government and EU policy regarding delivering on the energy transition for communities, including the Just Transition.

By providing another route to market for RE generation projects, CPPAs not only ensure that there is a greater amount of RE on the grid but can contribute significantly to our national security of energy supply. It is absolutely essential that RE generation projects funded under CPPAs include community benefit funds of equivalent value to those required under the RESS (currently €2/ MWh).

Offshore Wind

Ireland has significant ambitions with respect to offshore wind development and is targeting at least 5 GW of installed capacity by 2030, with a further 2 GW earmarked for the production of green hydrogen and other non-grid uses. To achieve this, Ireland has adopted a phased approach to a plan-led regime for Offshore Renewable Energy (ORE) development. Phase One is intended to deliver the maximum competitively procured offshore wind capacity at the earliest feasible deployment stage, from the most advanced offshore wind projects, with developers leading on site selection. Phase Two will procure the remainder of the 5 GW capacity target for 2030 at the ORESS2 auction for specific maritime areas dedicated to offshore wind development referred to as Designated Marine Area Plans (DMAPs). The final phase in the transition to a plan-led regime is referred to as the Future Framework which will establish the pathway for centralised ORE development from 2030 to 2050 and beyond.

Offshore Wind Delivery Taskforce and Offshore Wind Energy Programme

Realising Ireland's potential in offshore wind requires concerted action across many Government Departments and Agencies. This is to ensure that all aspects of the regulatory framework related to the construction and operation of offshore wind farms are in place, that the grid projects required to support the deployment of additional offshore capacity are operational and that the potential economic and societal benefits from the industry are maximised. Central to this is the Offshore Wind Delivery Taskforce, and the Offshore Wind Energy Programme.

The Offshore Wind Delivery Taskforce was established in April 2022 and its membership includes the State organisations with key actions to deliver to enable the offshore wind industry in Ireland. The current membership is set out below.

Table 12: Membership of Offshore Wind Delivery Taskforce

Department/Agency	Area of remit
Department of the Environment, Climate and Communications	Energy Policy, Routes to Market, Future Framework policy, ORE Communications
Department of Housing, Local Government and Heritage	Marine Planning Policy, Marine Environment
Department of Transport	Ports Policy
Department of Enterprise, Trade and Employment	Supply Chain and Industrial Strategy
Department of Further and Higher Education, Research, Innovation and Science	Skills
Department of Public Expenditure and Reform	Finance, NDP
Department of Rural and Community Development	Communities
Enterprise Ireland	Supply Chain
Commission for Regulation of Utilities	Markets, Networks Regulation & Licensing
EirGrid	Grid connection and development
Maritime Area Regulatory Authority	Maritime Areas Consents and Licensing
Sustainable Energy Authority of Ireland	Energy research

The Taskforce has developed the Offshore Wind Energy Programme to coordinate ongoing activities across Government in relation to offshore wind and has established a Programme Management Office to drive its implementation.

Offshore Wind Maritime Area Planning and Consenting

Ireland's ambitions for the offshore RE sector are contingent on delivering a licensing and regulatory regime for offshore renewable energy. The Maritime Area Planning Act 2021 (MAP Act) and the National Marine Planning Framework (NMPF), Ireland's first marine spatial plan, provide for long-term forward planning for Ireland's maritime area and will enhance the effective management of marine activities and more sustainable use of our marine resources. The NMPF provides a holistic, overarching policy framework for how Ireland will use, protect, and enjoy its seas while incorporating ecological, economic, and social priorities. The NMPF applies to all decision-makers and State actors in the maritime area and places ocean health, protection of our marine ecosystem and co-existence between multiple marine activities, at the heart of all decision-making, plans and policies. The MAP Act has created a new State consent, the Maritime Area Consent (MAC), as a first step in a new and streamlined planning process. This replaces the existing regime of foreshore leases and licences. The MAC regime assesses the viability of proposed ORE developers in a number of key areas, including in respect of their financial and technical competency, in advance of developers proceeding to environmental studies. The robust assessment of potential offshore developers who apply for a MAC will ensure that only the most viable offshore projects will have the opportunity to apply for development permission from An Bord Pleanála. Developers who have been assessed for, and are subsequently awarded, a MAC can then proceed to apply for development permission, where they will undergo environmental assessment.

The Minister for the Environment, Climate and Communications issued MACs to the first phase of offshore RE projects, known as the Phase One projects on 23 December 2022. These projects were then eligible to compete in ORESS1, the first offshore auction. The MAP Act also provides the legislative framework for forward planning for the maritime area, which includes the creation of a comprehensive sub-national planning process referred to as Designated Maritime Area Plans (DMAPs). On 13 July 2023, Minister Ryan launched the first DMAP Proposal for Offshore Renewable Energy. This signalled Ireland's first step into the systemic, plan-led development of our huge offshore wind potential. DMAPs will

determine the broad area where ORE projects can be developed and will act as a management plan for a specific area of our marine waters.

This first ORE DMAP for the South Coast puts forward an initial ‘proposed’ geographical area within which future offshore renewable energy development may take place. This area will be refined through a process of public engagement and consultation, expert environmental impact assessments and other expert analysis of the maritime areas, to assess its suitability for offshore renewable energy development. Following a period of public engagement, a ‘Draft DMAP’ (which is anticipated to encompass a significantly smaller footprint than the one initially outlined in proposal) will be published. Following this, statutory public consultation will take place, before the Draft DMAP is presented to both Houses of the Oireachtas, Ireland’s parliament, for approval.

The MAP Act also provided for the establishment of the Maritime Area Regulatory Authority (MARA), which occurred on 17 July 2023. This agency has responsibility for assessing applications for MACs, as well as the management of the existing Phase One MACs. MARA is also responsible for granting licences for certain activities in the maritime area. The establishment of the MARA marks the transition to the new maritime consenting regime, and it is a key enabler in respect of Ireland’s ambitions for the Offshore Renewable Energy sector.

Route to Market – ORESS

The Offshore Renewable Electricity Support Scheme (ORESS) is an auction-based process which invites RE projects to compete against each other, by bidding as low as possible, in order to win contracts to provide electricity at the bid price for a twenty-year period. The first auction under ORESS (known as ORESS1) was held in 2023. The auction results, which were finalised in June 2023, surpassed expectations, both in terms of the total volume of RE procured and the low price at which it has been secured. The hugely competitive price secured — at an average of €86.05/MWh — is one of the lowest prices paid by an emerging offshore wind market in the world. Over 3 GW of capacity has been procured from four offshore wind projects, which will deliver over 12 TWh of renewable electricity per year. This is the largest volume of RE Ireland has ever procured at auction — equivalent to over a third of Ireland’s entire electricity consumption this year and over a quarter of projected 2030 electricity demand. The next auction is expected to take place in 2024 and will align with Ireland’s ORE Phase Two. This auction will relate to the delivery of offshore wind capacity on the south coast of Ireland, geographically aligned with available onshore grid capacity. This auction, and all subsequent Phase Two auctions, will result in the development of

offshore wind capacity within DMAPs. This plan-led approach will ensure that development is managed in a planned, strategic, and sustainable way. Importantly, it will provide greater certainty for all maritime users as to where development will be situated.

Future Framework

The final phase in the transition to a plan-led regime is referred to as the Future Framework, which will establish the pathway for centralised ORE development from 2030 to 2050 and beyond. The Future Framework will align essential policy for ORE including marine spatial planning, industrial strategy, interconnection, renewable hydrogen development, private wires, storage, demand side management and technology innovation. This alignment will provide clarity for stakeholders on their role and opportunities for engagement and participation in the plan led regime. It will explore and analyse economic opportunities both domestically and internationally, including an analysis of the export potential for surplus electricity, energy, and green products and services, from Ireland, specifically through increased interconnection and green hydrogen. The purpose is to provide evidence-based ORE policy based on an analysis of financial mechanisms and job creation opportunities, and in due consideration of environmental and social impacts. In September 2023, DECC procured expert consultancy services to provide future Irish and European energy system demand forecast scenarios, analysis, and modelling, as a robust evidence base to inform Future Framework policy decisions. After undergoing public consultation, the Future Framework policy statement is expected to be published in 2024. Given the physical constraints associated with bottom-fixed turbine installation – including water depth – it is acknowledged that Ireland must harness wind power from floating offshore turbines in order to fulfil its ORE ambitions by 2050. This will require extensive technological innovation stimulated by Government policy direction. DECC is working closely with relevant Government authorities, industry stakeholders and consultants to ensure a robust path to floating offshore wind policy. This will include, but is not limited to, developing test sites for floating turbines, incentivising innovation, and technology commercialisation, and establishing a market for the produced energy. As will be outlined by the Future Framework Policy Statement, this energy market will include expanding domestic demand, promoting electricity exports via interconnection and establishing a growing green hydrogen industry. Under the Future Framework, the State will ensure that the economic, environmental, and societal benefits of ORE are realised for everyone.

Supply chain and ports

The development of an offshore wind industry of scale in Ireland will generate significant regional employment opportunities across Ireland, particularly in coastal communities which have a long maritime tradition and capability; it will also stimulate inward investment and help to decarbonise our economy. The Department of Enterprise, Trade and Employment (DETE) is developing a National Industrial Strategy for Offshore Wind (NISOW), the Strategic Roadmap for which is to be published in the first half of 2024. This Strategy will aim to ensure that Ireland maximises the economic benefits associated with our targets for offshore wind. This will involve identifying measures to build a capable and resilient supply chain and ensure that our strong RD&I ecosystem extends to the offshore wind sector. In the longer term, it will aim to ensure that Ireland achieves the greatest economic impact possible arising from the routes to market for our abundant RE, as well as assessing opportunities for strategic spatial development in our coastal areas and around our ports. The NISOW will involve a programme of stakeholder consultation, establishing engagement with and active participation of industry. DETE has convened an industry forum, featuring balanced representation from companies of all sizes in the offshore wind supply chain and industry representative groups, as well as an interdepartmental group. DETE have also engaged in extensive public engagement, including a series of targeted consultation workshops both for SMEs and larger industry. A policy statement on the facilitation of Offshore Renewable Energy by ports was published in December 2021. This sets out that Ireland will potentially need to build, on a phased basis, a number of port facilities that will act as construction, deployment, and maintenance ports for ORE infrastructure.

A multiport approach to the provision of port infrastructure to facilitate the development of ORE in Ireland will help maximise the economic benefits at regional as well as national level in terms of the creation of jobs and new SMEs that can support the development of the ORE industry. This includes maximising the value that can be created from supply chain activities and by developing supply chain clusters in and around our ports. The Policy Statement also makes it clear to the offshore industry that the Government recognises the important role for Ports in Ireland for the facilitation of ORE developments. In line with the Policy Statement, a Ports Co-ordination Group has been established to co-ordinate and monitor the progress of the ports with their ORE projects.

Wind Energy Development Guidelines (WEDG)

A review of the 2006 Wind Energy Development Guidelines (WEDG) is currently underway, led by the Department of Housing, Local Government and Heritage and supported by the

DECC. The review is addressing a number of key aspects, including noise, setback distance, shadow flicker, community obligations, community dividend, and grid connections. Both Departments are engaging on this review to ensure that when they are published the revised guidelines are robust and fit for purpose, having regard to, inter alia, the revised 2030 target to generation 80% of our electricity from renewable sources. The revised WEDG's will be published in 2024.

Renewable Electricity Spatial Policy Framework (RESPF)

Ireland is currently developing a Renewable Electricity Spatial Policy Framework (RESPF) White Paper which will set out Government's intentions with respect to the delivery of its onshore renewable energy targets. Aligned with the ongoing review of the National Planning Framework, the RESPF will promote a plan-led and evidence-based approach to the allocation of renewable electricity generation capacities across the three Regional Assemblies, to facilitate the achievement of the national target of 80% renewable electricity by 2030. In developing their Regional Renewable Electricity Strategies, the Regional Assemblies will consider how the regional renewable electricity generation targets can be distributed and allocated among the Local Authorities in the most equitable and strategic manner, in a way that integrates with wider planning policies for the region. They will develop a preferred approach to where and how the wind and solar generation capacity can be best delivered by considering the particular social, economic, and environmental characteristics of the region. Allocating the regional target across the Local Authorities will involve exploring opportunities – for example for employment creation, Just Transition, new infrastructure as well as identifying environmental constraints. The development of LARES was influenced by International, European and National Legislation and policy.

Small-Scale Renewable Electricity Support Scheme (SRESS)

The Small-Scale Renewable Electricity Support Scheme (SRESS) offers support for renewable electricity installations, primarily solar PV, which are not suited to the RESS (above) or the Microgeneration Scheme (below). The SRESS aims to provide increased levels of new small-scale generation and assist with providing at least 500 MW of local community-based renewable energy projects by 2030. The first phase of SRESS has been providing assistance since July 2023, in the form of grants to renewable self-consumers, for installations between 50 kW to up to 1 MW in size, alongside similar grants for non-domestic installations in the 6 kW up to 50 kW range. The second phase of SRESS, including tariff rates, is due to launch in the coming months.

Microgeneration Scheme

In December 2021, the Government approved the design of the Micro-Generation Support Scheme (MSS), as a means of supporting 380 MW of new micro-generation capacity by 2030. This would amount to 60,000 homes and 9,000 non-domestic installations, such as small farms and businesses, schools, and community groups, etc. and would generate over 300 GWh of renewable electricity per annum, with the potential to abate 1.4 Mt of CO₂eq over the lifetime of the installations. The MSS provides support to domestic and non-domestic applicants for renewable installations up to 50 kW, in the form of grants provided through the SEAI. These applicants are also eligible to avail of the Clean Export Guarantee (CEG) tariff, allowing them to receive payment from their electricity supplier for excess renewable electricity they export to the grid, reflective of the market value of the electricity. The first phase of the MSS brought the introduction of the Domestic Solar PV grant scheme in February 2022. The Domestic Solar PV grant scheme has gone from strength to strength since its launch, with over 10,000 applicants supported by the end of 2022 and a total installed capacity of 46.5 MW. 2023 is expected to provide record levels of supports for over 22,000 households, with an additional 100 MW of installed capacity. There are currently over 72,000 registered Microgenerators in Ireland and it is expected that over 25,000 Solar PV installations will be connected in 2023. The second phase of the MSS commenced in September 2022, when the SEAI extended the solar PV grant scheme to the non-domestic sector, including schools, businesses, small farms, and community enterprises, for installations up to 6 kW. This scheme is also proving very successful, with installations amounting to over 60 MW of capacity to date. In July 2023, an extended funding range was introduced to support non-domestic installation sizes between 7 kilowatt peak (kWp) and 1,000 kWp (1 MW) capacity, on a pilot basis until the end of the year.

Increased Electricity Interconnection

Electricity interconnection will play a central role in Ireland's journey to Net Zero transition. Increased interconnectivity is needed to enable our RE ambitions and improve collective security of supply. Increased interconnection helps balance electricity supply and demand between countries and provides a valuable backup power supply for when the Irish electricity system has reduced capacity. It allows for increased imports in the case of an adverse shock such as extreme weather or the failure of a major power plant. The role of interconnection will increase in importance as variable renewables become a larger proportion of supply in the Irish and European electricity system both in relation to import and export of electricity. Under Ireland's previous policy framework set out in 2018 capacity is set to more than treble

by 2026 to 1,700 MW including a return of direct interconnection between Ireland and the EU via the Celtic Interconnector and an additional 500 MW connection to GB in the Greenlink interconnector. Envisaged connection to the IEM by 2030 is 700 MW. Ireland's updated 2023 National Policy on Electricity Interconnection envisages a further connection with the UK by 2030, bringing the total anticipated interconnection capacity to 2,450 MW. This includes a further Connection to GB, MaresConnect, that has been supported for inclusion in ENTSO-E's 2024 TYNDP. Additionally, existing and planned interconnection from GB to Northern Ireland will mean a total of 3,650 MW SEM interconnector capacity by 2030. The 2023 policy reflects the radically changed circumstances including the departure of the UK from the European Union, net zero targets and geopolitical energy challenges.

Ireland's Interconnection policy takes into account the broader context of interconnection and energy policy. The landscape of policy is currently fast-moving with policies in the process of coming into being i.e., emergent. Ireland has high ambitions in terms of becoming a net renewables energy exporter, but the current policies need to work, and projects need to be consented and delivered, meaning interconnection policy will be contingent on these factors coming together. The manner of how we create, consume, and transmit renewables is on a fast-evolving trajectory. New technologies are emerging, breakthroughs are coming all the time, and our policy needs to be flexible enough to allow for and harness these advances. We will take a structured and integrated forward planning approach to deliver the necessary infrastructure to both meet Ireland's needs and make Ireland central to Europe's energy future that will be expressed in an Offshore Transmission Strategy. This Strategy will be aligned with our forthcoming offshore Future Framework policy and National Industrial Strategy for Offshore Wind. Industry has expressed significant interest in progressing Multipurpose Interconnector (Hybrid) projects under the transmission strategy both to GB and the continent.

Ireland will establish our anticipated interconnection needs to be tested for technical feasibility, financial viability and benefits to the State and people. Further detail in Section 4 below.

<https://www.dccae.gov.ie/en-ie/energy/publications/Pages/National-Policy-Statement-on-Electricity-Interconnection.aspx><http://www.eirgridgroup.com/site-files/library/EirGrid/EWICTradingBrochure.pdf>

Within the SEM there is an existing North South interconnector usually operating at 300 MW capacity. A second 1500 MW North South interconnector is planned and has PCI status.

Phasing Out Fossil Fuels

Phasing out fossil fuels from the grid in a secure way will be necessary to meet Ireland's sectoral emissions ceilings for electricity. Ireland has committed to end the burning of coal in ESB's Moneypoint generation plant by 2025, and to replace coal-fired generation with low-carbon and renewable technologies. The ESB is engaging with DECC regarding the future of Moneypoint as it will be retained as a backup unit operating on HFO for several years until sufficient alternative plant is developed. Peat-fired generation is expected to cease at the end of 2023, when the last remaining plant that uses peat as a fuel source will switch to 100% biomass fired generation. Mitigating measures to ensure that impacts on regional employment in the affected regions, where peat and coal fired electricity generation are to be phased out, will be critical to ensuring a [just transition](#). Initiatives such as including the Midlands Region in the EU Coal Regions in Transition Platform and implementing a wider cross-Government policy framework supporting employment in the region will ensure a just transition.

Renewable Transport Fuel Policy

The Minister for Transport published the updated Renewable Transport Fuel Policy Statement 2023-2025 on 28 June 2023, following stakeholder engagement and consultation. The renewable transport fuel policy sets out a pathway to incentivise supply of renewable transport fuel through annual increases in the Renewable Transport Fuel Obligation (RTFO) rate to 2030, as well as ensuring European sustainability and GHG reduction criteria are adhered to. The policy continues to provide a framework for ongoing consultation, analysis and review towards meeting targets set out in the CAP and European obligations for renewable energy supply for use in transport. The renewable transport fuel policy is reviewed every two years.

Renewable Transport Fuel Obligation (RTFO)

National and European targets for renewable transport fuel are mandated through the Renewable Transport Fuel Obligation (RTFO) under the National Oil Reserves Agency (NORA) Act 2007. The RTFO places a statutory obligation on suppliers of road transport (fossil) fuels to ensure that a proportion of the fuels they place on the market in Ireland is produced from renewable sources. This includes the independent verification of proof of sustainability and GHG reduction criteria from an EU approved voluntary scheme. The obligation is administered by the NORA which grants RTFO certificates to the obligated parties for renewable transport fuel supplied to the market. The RTFO rate is currently set at 17% by energy and is to be increased to 21% in 2024, with increases planned each year to

reach an indicative RTFO rate of 49% by 2030. In its 2022 Renewable Transport Fuel Annual Report the NORA, which administers the RTFO, set out that approximately 307m litres (9.6 PJ) of liquid biofuel and 1,105k Nm³ (0.04 PJ) of gaseous biofuel were placed on the market, with additional tailpipe emission GHG savings of 0.2 Mt CO₂eq over the 2018 baseline. On 1 January 2023, Ireland introduced an advanced biofuel obligation rate for supply of a proportion of biofuel to be produced from advanced feedstocks as defined in Annex IX Part A of the Renewable Energy Directive. The advanced biofuel obligation rate is established at 0.03% by energy (as a % of fossil fuel supply) for the 2023 obligation period and will increase to 1% for the 2024 obligation period. It is intended to be increased annually, aligning to the sub-targets for supply of advanced biofuels specified in the Renewable Energy Directive. The annual trajectory of increases in the advanced biofuel obligation rate is set out indicatively in the Renewable Transport Fuel Policy Statement 2023-2025.

District Heating

The CAP contains a range of actions designed to support the expansion of district heating, including the setting up of a District Heating Steering Group to advise Government in the context of strategic targets for the sector and the strategic aim of decarbonising the built environment. The District Heating Steering Group Report was approved by Government in July 2023 and contains recommendations that set the future policy direction for district heating in Ireland. The CAP 2023 contains further actions which build on the previous CAP. These include the delivery of up to 2.7 TWh of district heating by 2030. To help deliver on that target, the key priorities for the Department are:

- The establishment of a District Heating Centre of Excellence to, inter alia, co-ordinate and drive delivery of the pipeline of Local Authority and other district heating projects throughout 2023 and onwards, provide technical support, and to support upskilling of Local Authority staff;
- Ensuring that a legislative and regulatory framework for district heating is implemented as soon as possible, in conjunction with the CRU. A comprehensive assessment was carried out by the Sustainable Energy Authority of Ireland (SEAI) in 2022. Alongside the comprehensive assessment, the SEAI conducted a National Heat Study. The Heat Study produced several reports detailing options for decarbonising the heating and cooling sectors in Ireland to 2050. Analysis undertaken as part of the National Heat Study suggested that district heating could supply upwards of 50% of building heating demand in Ireland.

[The National Planning Framework](#) also highlights the role of district heating in developing sustainable compact urban growth – particularly in relation to the cities of Dublin, Cork, Limerick, Galway, and Waterford. The Climate Action Fund provided support of approximately €5m to the Tallaght District Heating Scheme (a suburb of Dublin), which recently commenced operation, and this fund has allocated funds for the Dublin District Heating Project in central Dublin. The National Heat Study recognised geothermal energy as a significant potential source of heat for district heating networks, whilst also highlighting that further work is required to better understand the suitability of geothermal resources (either alone, or as part of a mix of RE resources) for district heating at various locations across Ireland. DECC is pursuing a number of research projects to identify available geothermal heat gradients and subsurface properties in urban areas, building on the Department’s 2020 report ‘An Assessment of Geothermal Energy for District Heating in Ireland’, which reviewed Ireland’s geothermal energy resources and in particular, the potential for deep geothermal energy to contribute to decarbonised district heating in Ireland.

Geothermal Energy

The Government’s [‘Policy Statement on Geothermal Energy for a Circular Economy’](#), published July 2023, sets out the broad approach to be adopted in regulating the exploration for, and the utilisation of, geothermal energy as a natural resource and the scope of a strategy to promote the sustainable development of Ireland’s geothermal resources to decarbonise the heating and cooling of buildings, for industrial uses, and power generation. The regulatory framework, underpinned by legislation, will licence the exploration for and utilisation of geothermal energy, including in integrated energy networks and will integrate with policy and legislation for district heating. The strategy will build on existing data gathering and research, which is being drawn together in a National Geothermal Database to de-risk investment in geothermal exploration. The strategy will also identify appropriate metrics to measure and set targets for geothermal’s contribution to the decarbonisation of the heating and cooling of buildings, industrial processes, and power generation. The strategy will also include targets for established technologies using ground-source energy to contribute to meeting the RES-H modal target for heating and cooling for residential, commercial, and industrial applications, and any other binding EU targets as they are adopted. The NECP 2021-2030 contains a target of installing 600,000 heat pumps during the period to decarbonise the built environment. A target for ground source heat pumps will consider the potential differential demand for electricity of ground and air source heat pumps and the levelised cost of energy. Additionally, the strategy will examine the case for financial incentives to promote deployment, the knowledge, skills, and capacity needed in industry

and regulatory bodies, including planning functions, and information resources and engagement with the public.

Critical Raw Materials Raw Materials

The Government's ['Policy Statement on Mineral Exploration and Mining – Critical Raw Materials for a Circular Economy'](#), published December 2022, is aligned with the Critical Raw Materials Act, and aims to maximise the contribution that sustainable exploration and mining can make to the transition to climate neutrality through the secure and sustainable supply of critical raw materials necessary for achieving the Union's targets for renewable energy.

3.1.2.1 Where relevant, specific measures for regional co-operation, as well as, as an option, the estimated excess production of energy from renewable sources which could be transferred to other Member States in order to achieve the national contribution and trajectories referred to in point 2.1.2

North Seas Energy Co-Operation (NSEC)

The North Seas Energy Co-operation works to increase electricity transmission capacity among the countries involved in the group, as well as to the rest of Europe. The NSEC aims to ensure a sustainable, secure, and affordable energy supply in the North Seas region through further integration of wholesale electricity markets. A key element in this integration is to increase the interconnection between countries in the region that could be promoted through the NSEC. Ireland is committed to exploring further opportunities for hybrid interconnection/offshore assets as part of the NSEC and to implement regulatory arrangements to support new interconnection, including hybrid assets as set out in Action 23 of the CAP.

Cross-Border Participation in Support Schemes

As part of the design of the RESS, Ireland is committed to opening the scheme to participants from other European Member States with whom Ireland has a direct electricity connection, provided a co-operation agreement has been signed by both parties.

It is expected that Producers located in other European Member States (or in a neighbouring State with which a free trade agreement exists) will be allowed to bid for a certain percentage of the capacity allocated within the tenders. The support quota for each participating member state will be based on the volume of imported electricity, the RES-E share in total final electricity consumption of that country and the total final electricity consumption in Ireland.

The participation of producers from other States in the RESS is subject to the following conditions:

- A co-operation agreement with the relevant State is in place; the co-operation agreement describes the rules to prove physical delivery of the green electricity;
- The projects in the relevant State fulfil the same requirements as the projects located in Irish territory.

3.1.2.2 Specific measures on financial support, where applicable, including Union support and the use of Union funds, for the promotion of the production and use of energy from renewable sources in electricity, heating and cooling, and transport

Many of the measures and schemes set out in the preceding sections are considered financial supports including, the Climate Action Fund, the Support Scheme for Renewable Heat and the supports provide to incentivise the uptake of EVs and other low emission vehicles (LEVs). There are no European funds involved in these measures to date. The costs of the AER, REFIT, and RESS schemes are recovered directly from electricity consumers or electricity suppliers through an annual public service obligation (PSO) levy, payable by all final electricity consumers or suppliers with power purchase agreements with RESS projects (depending on the cost of wholesale electricity versus the RESS strike prices).

3.1.2.4 Where applicable, the assessment of the support for electricity from renewable sources that Member States are to carry out pursuant to Article 6(4) of Directive (EU) 2018/2001

An ex-post evaluation of the RESS is currently being undertaken as part of the RESS State Aid Decision and is due to be submitted to the EU Commission Directorate General for Competition by end 2024.

3.1.2.5 Specific measures to introduce one or more contact points, streamline administrative procedures, provide information and training, and facilitate the uptake of PPAs

These measures will be developed as part of the implementation of Articles 15 and 16 of the recast Renewable Energy Directive. As stated above, DECC published the Renewable Electricity Corporate Power Purchase Agreement Roadmap, which sets out Ireland's policy on CPPAs.

The Roadmap sets out that CPPAs have an important role to play in helping Ireland to reach our ambitious renewable electricity targets and includes the Principles of Good Practice for Renewable Electricity CPPAs. The Marine Planning and Development Management (MPDM) Bill will significantly streamline ORE procedures by a single consent principle: one state consent MAC to enable occupation of the Maritime Area and one development consent (planning permission), with a single environmental assessment.

Summary of the policies and measures under the enabling framework Member States have to put in place pursuant to Article 21(6) and Article 22(5) of Directive (EU) 2018/2001 to promote and facilitate the development of self-consumption and renewable energy communities

Microgeneration, small-scale generation, and community-based projects play a key role in enabling a further reach for deployment of RE projects throughout the economy, whilst in turn offering financial return, security, and ownership over energy supply for residences, communities, small businesses, and farming. The CAP identifies the Micro-generation Support Scheme (MSS) and the Small-Scale Renewable Electricity Support Scheme (SRESS) as key tools to incentivise investment in micro- and small-scale generation technology.

The MSS received Government approval in December 2021 and the final scheme design was approved in December 2022. The MSS offers capital grant support for new domestic and non-domestic solar PV installations. It works in tandem with the Clean Export Guarantee (CEG) tariff, for which an interim enabling framework was published by the CRU in 2021. The CEG is an export payment for residual renewable electricity exported to the grid by renewables self-consumers and renewable energy communities. The CRU are currently conducting a review of the interim CEG and will publish a decision to put in place an enduring CEG framework following the completion of this review.

The SRESS aims to provide increased levels of new small-scale generation and assist with providing at least 500 MW of local community-based renewable energy projects by 2030. The first phase of SRESS has been providing assistance since June 2023, in the form of grants to renewable self-consumers, for installations between 50 kW up to 1 MW in size, alongside similar grants for non-domestic installations in the 6 kW up to 50 kW range. The second phase of SRESS, including tariff rates, is due to launch in early 2024.

3.1.2.6 Assessment of the necessity to build new infrastructure for district heating and cooling produced from renewable sources

As set out above, a District Heating Centre of Excellence is being established within the SEAI and an appropriate legislative and regulatory framework is being developed to support the expansion of district heating in Ireland.

District heating and cooling in Ireland is at a very low level and is estimated to be less than 1% of heat consumption. Structural barriers arise due to the nature of Ireland's dispersed settlement structure with low population density. However, the National Heat Study, produced by the SEAI in 2022, highlights the potential for up to 54% of heat in buildings in Ireland to be supplied by district heating.

3.1.2.7 Where applicable, specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilisation taking into account:

- Biomass availability, including sustainable biomass: both domestic potential and imports from third countries,

- Other biomass uses by other sectors (agriculture and forest-based sectors); as well as measures for the sustainability of biomass production and use.

The Support Scheme for Renewable Heat incentivises the installation and use of biomass and AD heating systems. The scheme includes detailed sustainability criteria in line with the recast Renewable Energy Directive. Uptake of biomass usage under this scheme will suffer a significant negative impact due to the new State Aid guidance from the EU, where it requires a contract for difference for tariff support when the capacity is over 1 MW; the rationale for this new guidance is intended to prevent electricity producers from profiting, but in the Irish context, and this particular scheme, which supports non-ETS businesses to decarbonise their heat needs, it means that no support to large heat users to decarbonise will be available from the 1st of January 2024. Government will continue financial supports for the continued mobilisation of biomass from forests by supporting measures such as forest road construction, knowledge transfer groups and decision support tools. Wood fibre used for energy generation will continue to be used in the forest products sector to dry sawn timber reducing the dependency on fossil fuels. Use of biomass for heat and electricity generation will continue to use small diameter material which facilitates the sustainable management of forests where harvesting is regulated by the Forestry Act 2014. Forests felled are replanted ensuring that biomass is harvested from sustainable resources. The Irish Forest estate is forecasted to increase the supply of wood biomass for energy and wood-based panels from 1.8m cubic metres currently, to over 4 m cubic metres by 2035. Volume in excess of these figures will be used by the sawmilling sector. Where demand exceeds available domestic supply biomass will be imported from third countries from sustainable

sources which also must satisfy the requirements of the EU timber regulation. Planned increases in afforestation as set out in Ireland's CAP will take place while protecting and increasing the levels of biodiversity. All land converted to forestry is regulated by the requirements of the Forestry Act 2014 and adherence to a suite of environmental requirements which aims inter alia to protect existing water courses, biodiversity, and archaeology. All land use change to forestry requires a detailed assessment by the competent authority to ensure that there are no significant impacts on statutory designations as regulated by the Habitats Directive.

3.1.3 Other Elements of the Dimension

3.1.3.1 Where applicable, national policies and measures affecting the EU ETS sector and assessment of the complementarity and impacts on the EU ETS

The EU ETS includes some 11,000 stationary installations (over 100 currently in operation in Ireland of which approximately 70 are industrial installations) with an installed power-generation capacity of more than 20 MW; Irish-based ETS plants are mainly in power-generation and large-scale industrial production. The system covers emissions of carbon dioxide (CO₂) from power and heat generation and a wide range of energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, and bulk organic chemicals. Nitrous oxide emissions from the production of certain acids and emissions of perfluorocarbons from aluminium production are also included. Since 2012, CO₂ emissions from aviation have been included in the Emission Trading System (EU ETS). The Directive requires all airlines operating within the European Economic Area (EEA), to record, report and verify emissions and surrender allowances against those emissions. The ETS legislation applies to EU and non-EU airlines alike. During 2023 an agreement was reached to revise ETS for Aviation to increase its environmental ambition. Entering force by way of Directive 2023/958, the revision phases out provision of free allowances to aircraft operators by 2026, thereby encouraging aircraft operators to make further emissions reductions. It also reserves a total of 20m allowances to incentivise the uptake of sustainable aviation fuels (SAF), for the period 2024 to end 2030. Aircraft operators who uplift SAF will be able to request free allocation of these allowances. A key part of the revision of EU ETS for Aviation was to bring the Carbon Offsetting and Reduction Scheme in International Aviation (CORSIA) under EU law both legally and administratively. CORSIA was established by the International Civil Aviation Organisation (ICAO) and all EU Member States including Ireland have participated in the scheme since its inception. The EU ETS, now in its third phase, covers about 45% of

total EU emissions, but just 25% of total emissions in Ireland, based on the latest (2021) inventories published by the Irish EPA in April 2023. The relatively small share of total GHG emissions which the ETS sector in Ireland accounts for is owing to the relatively light industrial base in Ireland and the disproportionately large agricultural sector for which emissions are captured in the non-ETS inventory. Since 2005, emissions in the ETS sector have decreased by 31.7% or 7.12 Mt CO₂eq. Within the ETS sector, the electricity generation and the cement sectors are responsible for most of the decrease.

3.1.3.2 Policies and measures to achieve other national targets, where applicable

Climate Adaptation

In outlining a whole of Government approach to climate adaptation, Ireland's NAF sets out a wide range of policies and measures. The Plan identifies 12 key sectors under the remit of 7 Government Ministers where sectoral adaptation plans will be prepared. Key policies and measures provided for under the NAF include:

- Preparation of sectoral adaptation plans by 7 Government departments for 12 key sectors;
- Putting in place revised governance and reporting arrangements;
- Formalising the status of existing adaptation guidelines and decision-making supports - these include the online climate information platform Climate Ireland, adaptation planning guidelines for the 12 key sectors and Local Authority adaptation strategy development guidelines;
- Increasing awareness around climate adaptation and resilience;
- Integrating climate adaptation into key national plans and policies.

Sectoral plans were approved by Government in 2019. Plans were developed in line with the national guidelines [“Sectoral Planning Guidelines for Climate Change Adaptation”](#) which were published in May 2018 to ensure that a coherent and consistent approach to the development of plans was taken across Government. Table 13 below sets out the sectors and lead Government departments that have prepared plans under the NAF. The NAF was reviewed in 2022 in line with current statutory requirements, and a new NAF is scheduled to be completed in the first half of 2024.

Table 13: Sectoral adaptation plans under the National Adaptation Framework

Theme	Sector Level	Lead Department for Sectoral Adaptation Plans
Natural & Cultural Capital	Seafood	Department of Agriculture, Food and the Marine
	Agriculture	
	Forestry	
	Biodiversity	Department of Culture, Heritage, and the Gaeltacht
	Cultural, Built and Archaeological Heritage	
Critical Infrastructure	Transport infrastructure	Department of Transport, Tourism and Sport
	Electricity and Gas Networks	Department of Communications, Climate Action and Environment
	Communications Networks	
Water Resource & Flood Risk Management	Flood Risk Management	Office of Public Works(OPW)
	Water Quality	Department of Housing, Planning and Local Government
	Water Services Infrastructure	
Public Health	Health	Department of Health

Chapter 22 of the CAP covers climate adaptation, primarily in the context of the ongoing implementation of the NAF and sectoral plans. For 2023, the actions in the Plan relate to the development of early warning systems, mainstreaming climate adaptation into flood policies and ensuring climate resilience of critical infrastructure as well as improving data availability. Institutional governance and monitoring - Since 2015 sectoral coordination of national adaptation policy has taken place under the auspices of the National Adaptation Steering Committee. As a key action under the NAF, the National Adaptation Steering Committee has been reviewed and restructured to ensure that a coordinated, comprehensive, and coherent approach continues to operate in implementing actions under the NAF. The need for appropriate cross sectoral coordination and consultation is identified as crucial in the NAF and the Climate Act and the Steering Committee have a key role to play in promoting and encouraging work in this regard. Members of the Steering Committee include Departments preparing sectoral plans under the NAF; Department of Foreign Affairs and Trade; Irish Water; EPA; regional and local Government; the National Standards Authority of Ireland; and Met Éireann.

Regional and local level adaptation

National climate action policy in Ireland recognises the potential which exists within the local Government sector to contribute to the transition to a low carbon and climate resilient future. The NAF identifies the critical role to be played by Local Authorities in addressing climate change adaptation. In January 2018, the Minister for Communications, Climate Action and Environment announced the provision of €10m in funding over 5 years to the Local Authority sector to establish 4 CAROs. This commitment recognises the significant obligation which has been placed on local Government to develop and implement its own climate action measures, as well as the need to build capacity within the sector to engage effectively with climate change, both in terms of mitigation and adaptation. The CAROs are being operated by a lead Local Authority in 4 different regions grouped according to shared climate change risks. These offices have been enabling a more coordinated engagement across the whole of Government and will help build on the experience and expertise which exists across the sector. The CAROs are a core component of climate delivery within the local Government sector. In 2018, Government and the County and City Management Association (CCMA) established four CAROs in recognition of the need to build capacity within the local Government sector to respond to climate change. They were initially set up to focus on adaptation, but their role has since expanded. The CAROs play an important role in ensuring that cross-sectoral climate issues impacting on the sector are identified and addressed in a coordinated manner.

They provide a shared service function and are guided by the CCMA to ensure a consistent, sector-wide approach. The CAROs coordinate between DECC, other departments and agencies, and the local level, including Local Authorities and energy agencies. They have led and been involved in a number of climate projects by providing technical expertise, acting as a conduit of information from the top down and bottom up and taking on an enabling role. They also work on ensuring community engagement and doing community outreach and awareness raising. Under the NAF the 31 Local Authorities in Ireland have developed their own adaptation strategies in line with guidance to be developed for the sector. Work on the development of strategies was undertaken by individual Local Authorities with support from the CARO in their region. Local Authorities have adopted their local adaptation strategies in 2019. The requirement to prepare LASs has effectively been superseded with a new statutory requirement for all Local Authorities to prepare LACAPs every five years. These plans are currently under development and will be adopted in each Local Authority in early 2024.

Monitoring at local level

CAROs are monitored by a CARO Management Group structure, comprising Local Authority representatives and DECC. The function is overseen by a Strategic Implementation Group (SIG) which has membership from the local Government representative body (the CCMA) and DECC. A wider Stakeholder Advisory Group (SAG) brings together sectoral inputs. The CAROs and the Local Authority sector are also integrated into national oversight bodies for climate action, with representatives on the National Adaptation Steering Committee and the Adaptation Committee of the [Climate Change Advisory Council](#) (CCAC).

Progress under EU Strategy on Adaptation to Climate Change

Ireland is committed to ensuring comprehensive and transparent reporting on adaptation in line with the requirements of the Governance of the Energy Union and Climate Action Regulation and facilitating the EU's commitments on adaptation under the UNFCCC and the Paris Agreement. The latest reporting under Article 19 was submitted to the Commission on 15 March 2023. In February 2021, the EU published a new EU Climate Change Adaptation Strategy^[1], Forging a Climate-resilient Europe. The new strategy was developed in recognition of adaptation as a crucial component of the long-term global response to climate change. The strategy aims to increase and accelerate the EU's efforts to protect nature, people, and livelihoods against the unavoidable impacts of climate change. It outlines a long-term vision of creating a climate resilient EU by 2050 by making adaptation smarter, more systemic and swifter, and by stepping up international action. Implementation of the strategy is ongoing. The EU's first Climate Change Risk Assessment is currently underway and will be concluded by 2024. A Risk [Data Hub](#) is in place, and the EU Mission on Adaptation under the Horizon Europe Programme, which aims to support at least 150 European regions and communities to move towards climate resilience by 2030 has, to date, welcomed the signatures of 308 regions and Local Authorities who have signed up to the mission charter under the [EU Mission for Adaptation to Climate Change](#). This includes seven Local Authorities in Ireland. Louth, Mayo, Offaly, and Sligo County Councils, as well as Cork, Dublin, and Galway City Councils, have signed the mission charter and pledged to develop adaptation and mitigation strategies. This entitles them to expert advice and guidance through the identified and appropriate resilience solutions implemented.

Alignment of Climate Adaptation and Disaster Risk Reduction

The NAF acknowledges the requirement to enhance coherence and complementarity between the Paris Agreement, the Sendai Framework for Disaster Risk Reduction as well as the UN SDGs. Ways to enhance coherence between adaptation and disaster risk reduction

policies and practices in Ireland have also been considered in research reports published by the [EPA in 2018](#). National and International research and best practice, such as the outcomes of the Platform for Climate Adaptation and Risk Reduction (PLACARD), will continue to inform Irish policy in this regard and work on policy integration and indicators are identified as future research priorities in the NAF. The NAF recognises that effective climate adaptation can minimise risks and costs and protect lives and property by building resilience into existing systems. This can ultimately help minimise the emergency response that is necessary in the event of severe weather events. In Ireland statutory responsibility for emergency planning lies across several Government departments. For example, the Department of Housing, Planning and Local Government is designated as the Lead Government Department for coordinating the response to severe weather emergencies. [“Strategic Emergency Management National Structures and Framework”](#) sets out the national arrangements for the delivery of effective emergency management. It outlines the structures for coordinating a “whole of Government” approach and the framework for achieving a systems approach to emergency management. This Framework will be complemented by a series of [‘Strategic Emergency Management \(SEM\) Guidelines’](#) dealing with specific aspects of strategic emergency management. This will include a Guideline on climate change.

The NAF contains a specific objective to “Ensure continued alignment with emergency planning for extreme weather events including where plans related to emergencies assigned to a sectoral department as Lead Government Department under the “Strategic Emergency Management National Structures and Framework.” The NAF also specifically recommends that sectors developing sectoral plans ensure that any plans related to emergencies assigned to a sectoral department as Lead Government Department under the Strategic Emergency Management National Structures and Framework are climate-proofed. The NAF also identifies the need for climate research and modelling programmes that support climate adaptation by delivering climate services at a local level across all sectors of the economy, including emergency management. Local Authorities are designated as the lead agency for coordinating and delivering the response on the ground to severe weather emergencies and lead the local response in collaboration with the other Principal Response Agencies – An Garda Síochána (Ireland’s National Police Service) and the HSE (Health Services Executive). The CAROs will further improve alignment between adaptation policy and emergency responses at local level. The NAF identifies the importance of any developments in the area of emergency management undertaken in line with the NAF and recognises existing structures and the policies underpinning them at a national level. The NAF therefore

seeks to ensure coherence between how the impacts of climate change will influence responses to both adaptation planning and national emergency planning for extreme weather events. This approach will help to align with the key responsibilities outlined under the Strategic Emergency Management National Structures and Framework and the associated guidance documents.

Insurance

The NAF recognises that the private sector has significant experience in quantifying, pricing, reducing risk and managing weather-related risks across the relevant sectors. In partnership with Government, therefore, it can play an important role in collecting and disseminating data on weather and catastrophe risk, financing risk assessments, and supporting the design and provision of insurance schemes. One project that sought to examine climate impacts on the insurance industry was the Adaptive Responses to Climate impacts (ARC) project. The aim of the ARC project, funded by the EPA, was to develop a framework for costing the impacts of climate change on the Irish economy and assessing the options for adaptation, with a specific focus on the role of key stakeholders. The study applied a framework to the specific case of flood risk in Cork and the Southwest region of Ireland. The ARC project included a stakeholder forum, comprised of policy makers, Local Authorities, business groups and the insurance industry, to assess information needs and concerns of those exposed to current and future climate risks. It proceeded to examine two parallel but interlinked strands of research:

- Empirical estimates of the costs of climate impacts without adaptation, particularly focused on flooding;
- The range of adaptation options available, including the appropriate role for insurance.

The outputs from this project included: costs of flooding; recommendations on the use of tools and methods for costing climate impacts; policy recommendations on the design of adaptation strategies; and implications for the private sector, including insurance.

The benefits of a proactive adaptive approach and the role of insurance in this is identified as a research priority under the NAF. Awareness raising is a key action under the NAF and part of this will help individuals and businesses to reduce their own risk profiles. Information platforms such as Climate Ireland can help address both of these issues by providing insurers with more accurate information on household risk level e.g. through flood mapping while also supporting households in taking actions to lower their risk level.

The NAF outlines Ireland's reporting obligations at International, EU and National levels. Ireland will continue to meet its EU and international obligations on adaptation, including forthcoming requirements on adaptation under the EU Governance of the Energy Union and Climate Action Regulation.

Biodiversity

As set out under section 2.1.1(i), the conservation and sustainable use of biodiversity needs to be escalated. Actions within the Biodiversity Sectoral Climate Change Adaptation Plan build on the foundations of the National Biodiversity Action Plan (2017- 2021) and are aimed at improving sustainable agriculture and fisheries, better soil, and land management and, most urgently, the restoration of natural systems. Ireland's National Biodiversity Action Plan is underpinned by seven strategic objectives together with 119 targeted actions. The Plan lays out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond. The key policies under that Plan include:

- Mainstreaming biodiversity across the decision-making process in the State;
- Strengthening the knowledge base underpinning work on biodiversity issues;
- Increasing public awareness and participation;
- Ensuring conservation of biodiversity in the wider countryside;
- Ensuring conservation of biodiversity in the marine environment;
- Expanding and improving on the management of protected areas and protected species;
- Enhancing the contribution to international biodiversity issues.

The Biodiversity Sectoral Climate Change Adaptation Plan was published in September 2019 and sets out the key goal of protecting biodiversity from the impacts of climate change and to conserve and manage ecosystems so that they deliver services that increase the adaptive capacity of people and biodiversity, while also contributing to climate change mitigation. A wide range of policies and measures are set out under the Adaptation Plan including 6 strategic objectives linked with the aims of the action Plan. Some of the key measures under the Adaptation Plan include:

- Restore and enhance natural systems through management to increase resilience;
- Establish and implement an all-island invasive species programme;

- Develop and implement a National Soil Strategy to increase the resilience of soils;
- Develop an integrated coastal management strategy which includes ecosystem-based adaptation actions;
- Promote ecosystem restoration and conservation through Payment for Ecosystem Services and investment in actions that increase carbon sinks while promoting biodiversity;
- Carry out a comprehensive vulnerability assessment of biodiversity in Ireland;
- Develop an impact assessment tool to screen for potential maladaptation impacts;
- Design corridors and buffer zones to enhance the resilience of protected areas and designated sites by increasing opportunities for dispersal across the landscape
- Implement measures to reduce the barrier effects of roads, railways and technical, objects in rivers and streams to facilitate species spatial responses to climate change;
- Undertake natural capital accounting in all sectors to ensure natural capital is being valued and Ecosystem Based Adaptation and green infrastructure options are being employed.

A new and updated biodiversity action plan is underway and is due to be published in Q1 of 2024.

Circular Economy

The transition to a circular economy is a key strategic goal for Government. In line with the evolution of EU and UN environmental policy, Ireland's Waste Action Plan for a Circular Economy 2020-2025 (WAPCE) was published in September 2020 and provides a robust policy framework for transitioning from a focus on managing waste to a much greater focus on adapting patterns of production and consumption; preventing waste generation; and extending the productive life of all goods and products in our society and economy. In line with the objectives set out in the WAPCE, a Circular Economy Unit was established within the DECC in 2020 with a mandate to ensure a whole of Government approach to Ireland's transition to a circular economy. Implementation of the WAPCE is ongoing. Ireland's first Circular Economy Strategy was published in December 2021 and sets out an overall approach to circular economy policy and a vision for Ireland's transition to a Circular Economy. The Circular Economy and Miscellaneous Provisions Act 2022 was enacted in July 2022 and provides a statutory framework for the transition.

Ireland is committed to leading the transformation from waste management to circular economy practice through the national Waste Action Plan 2020 - 2025. Key objectives already committed to and underway under the CAP and national Waste Policy include:

- Incentivising the use of reusable and recyclable alternatives to a range of wasteful single-use disposable packaging and other items through the phased introduction of new environmental levies;
- Re-designating the existing Environment Fund as a Circular Economy Fund, which will remain ring-fenced to provide support for environmental and circular economy projects;
- The establishment of the Circular Economy Innovation Grant Scheme in 2021, to support innovation and demonstration circular economy projects by small to medium enterprises and social enterprises, with funding allocated to date of €1.25m;
- The publication of Ireland's National Food Waste Prevention Roadmap 2023-2025, setting out 38 priority actions to reduce food waste by 50% by 2030, a UN SDG;
- The hosting in Dublin of Circular Economy Hotspot, a flagship international event, over 4 days in May 2023, highlighting Irish circular economy innovation;
- The introduction of an obligation on waste collectors, from 1 July 2023, to provide all commercial customers with a mixed dry recycling, biowaste and residual waste bin, and to charge fees which incentivise waste segregation;
- The introduction of a new Waste Recovery Levy of €10 per tonne on 1 September 2023 with the existing Landfill Levy increased by €10 per tonne from the same date;
- The launch of a first national Communications Campaign to raise public awareness of Circular Economy concepts;
- Maintain Government leadership in taking responsibility for own resource consumption, particularly single use plastics, energy, waste, and water;
- Identify opportunities to strengthen the regulatory and enforcement frameworks and structures for the waste collection and management system, to maximise the collection of clean, segregated materials for reuse and/or recycling from all households and businesses;
- Incentivise consumers to reduce, reuse and recycle;

- Regulate and incentivise producers of waste, particularly packaging, to ensure the prevention of waste and the use of recycled materials in packaging products;
- Scope a number of possible environmental levies, including a possible levy on single use plastics, as part of the review of the Environment Fund. Further detailed research would be required prior to the introduction of any new levy;
- Identify and commence delivery of measures to address the key regulatory barriers to the development of the bio economy, including exploring opportunities to establish “End of Waste” criteria for certain bio-wastes.

Bioeconomy

In seeking to expand our bioeconomy, Ireland will undertake a number of policies and measures as set out under the national Plan including:

- Ensure that there is coherence between all sectoral strategies which impact on the bioeconomy in Ireland;
- Establish a network comprising representatives of commercial entities operating within the bioeconomy and relevant public bodies to inform the future development of the bioeconomy - this network may make additional recommendations to be followed up; (This could also include the sharing of best practice regarding applications for BBIJU, SC-2 and H2020 funding);
- Encourage the translation of research into real world applications through promoting collaboration between research institutions (academia) and industry - through the use of pilots/demonstrations at the model demonstrator facilities (Lisheen site, the Marine Research Cluster in Connemara);
- Assess the current legislative definition of waste and recommend whether a redesignation is necessary for residual waste flows to be successfully managed for use in the bioeconomy;
- Ensure greater sectoral coherence within the bioeconomy through the development of risk assessment and management protocols regarding the use of by-products which encourages the piloting of opportunities;
- Progress the leading value chain propositions identified in the Bio-Eire project by establishing the conditions required for their commercial viability and how these might be fulfilled;

- Examine how greater primary producer, public and consumer awareness of the bioeconomy and its products could be built up - through knowledge transfer, advisory, sustainable business models, public procurement, consumer awareness campaigns and product labelling initiatives etc.

Air Quality

Ireland's projections show that some positive changes have been made since 1990, benefiting air quality and human health. The implementation of the policies and measures set out under this Plan and the CAP will have significant benefits in relation to air quality. In particular, actions to reduce the use of fossil fuels, increase electrification of the national transportation fleet and further increase penetration of renewables in electricity generation will have knock on effects on the level of emissions of key pollutants across the state.

Biomethane

Domestically produced biomethane was first introduced onto Ireland's gas network in 2020, and its quantity is increasing year-on-year. Following an engagement process with current and potential future biomethane producers toward developing a roadmap toward facilitating Ireland's biomethane ambitions, a Biomethane Energy Report was recently published in September 2023. The report outlined a potential of 14.8 TWh per annum of biomethane production from 176 potential producers – a number which represents 26% of Ireland's gas network and, if achieved, would have the potential to reduce GHG emissions by 3.94m tonnes of CO₂eq per annum – 6.5% of Ireland's total emission in 2022. It is crucial that Ireland learns from the experience of other member states including Germany, France, Italy, and Denmark if it is to realise its potential and become a leader in biomethane production. Ireland's CAP identifies a potential of up to 5.7 TWh of biomethane production by 2030, a figure which, if achieved, would reduce emissions by about 1.5m tonnes of CO₂ equivalent.

The Renewable Transport Fuel Policy Statement 2023-2025 sets out the policy framework for all renewable transport fuels, including biomethane. In April 2023, legal provision was made for the award of additional renewable transport fuel obligation (RTFO) certificates for supply of biomethane for use in transport, to incentivise its supply. RTFO certificates for biomethane supply in the transport sector can be traded with obligated parties within the RTFO. Public consultation commenced on a potential heat sector obligation in August 2023. The potential for an Exchequer funded support would need to include consideration of the availability of funds, in particular the ability to fund within existing allocations provided under the NDP.

Hydrogen

Irish policy on the role of hydrogen, and the actions needed for its development, are set out in the National Hydrogen Strategy, published in July 2023. The National Hydrogen Strategy is our first major policy statement on renewable hydrogen and marks an important first step in developing an indigenous hydrogen sector in Ireland. The Strategy sets out our strategic vision for the role that hydrogen will play in Ireland's energy system and as a key component of our zero-carbon economy. The Strategy considers the needs of the entire hydrogen value chain, including production, end uses, transportation and storage, safety, regulation, markets, innovation, and skills. Ireland will focus its efforts on the scale up and production of renewable "green" hydrogen as it supports both our decarbonisation and energy security needs. Prior to 2030, we will explore the potential to produce green hydrogen from grid-connected electrolysis using surplus renewables, which arise as we move towards an 80% RES-E system. It is also proposed to develop an innovation fund to support the demonstration of green hydrogen technologies in Ireland during this time.

A 2 GW target to produce renewable hydrogen sourced from offshore wind is also set to be in development by 2030, which will help to provide greater certainty for investors and create the scales needed to enable greater infrastructure deployment.

The deployment of renewable hydrogen in Ireland will focus on hard-to-decarbonise sectors where energy efficiency and direct electrification are not feasible or cost-effective solutions. In the coming years, renewable hydrogen is envisioned to play an important role as a zero-emission source of dispatchable, flexible electricity, as a long-duration store of RE, in decarbonising industrial processes, and as a transport fuel in sectors such as heavy goods transport, maritime and aviation. Ireland has the potential to become a net exporter of RE including green hydrogen in the long-term, due to our abundance of offshore renewables potential, with some of the best natural wind resources in all of Europe.

There have been 21 short-term actions identified within the National Hydrogen Strategy to enable the development of the hydrogen sector in Ireland. These actions aim to remove any barriers which could inhibit early hydrogen projects from progressing today, and to enhance our knowledge through targeted research and innovation across the hydrogen value chain, laying the groundwork to deliver on our long-term strategic vision for hydrogen in Ireland.

Carbon Capture & Storage

While reducing GHG emissions is a priority for climate action, the potential for capturing anthropogenic CO₂ is also being mooted globally to prevent further CO₂ from entering the

atmosphere and contributing to climate change. Technology is rapidly developing in this area, and it is essential that Ireland remains abreast of relevant developments. Further to the commitment under the CAP, a Steering Group was established in 2019 to examine the feasibility of the utilisation of CCS in Ireland and to develop policy in the area. In terms of CCS and regional co-operation, in 2019 Ervia signed a Memorandum of Understanding with Equinor (Norway) and received letters of support for its successful PCI application from the Dutch Ministry and other CCS project developers; Athos (Netherlands), Gasunie (Netherlands), Sapling (Scotland), Northern Lights (Norway), UKCCS Research Group, Bellona (Norway) and Port Talbot (Wales). Supported by the Irish Government, the project received PCI status in October 2019 and applied for CEF funding in Q2 2020. The project, alongside European partners, was successfully granted European Horizon 2020 (H2020) funding to demonstrate a carbon capture plant on Ireland's only oil refinery and is expected, subject to the necessary approvals, to seek funding from the H2020 Geological Storage Pilot to progress studies into the potential for storing CO₂ in the Kinsale Gas Field and another potential field in Europe.

Carbon Tax

The Irish Government's Finance Act, 2010 introduced a carbon tax which is applied to mineral oils, natural gas and solid fuels supplied for combustion in Ireland. The Finance Act 2020 legislated for carbon tax increases to be applied successively, with an increase of €7.50 per tonne of CO₂ emitted, from €48.50 to €56.00, announced in Budget 2024. Ireland has committed to a long-term trajectory of annual increases in the carbon tax rate leading to a rate of €100 per ton in 2030. A large portion of Ireland's carbon tax revenues are ringfenced to fund measures which contribute to a just transition, with €412m allocated in 2022 to the following programmes:

- €174m on targeted social welfare and other initiatives to prevent fuel poverty and ensure a just transition;
- €202m to partly fund a national retrofitting programme targeting all homes, but with a particular emphasis on households in or at risk of energy poverty;
- €36m to other sectors to support programmes such as peatlands rehabilitation and the Midlands Just Transition Fund.

Aviation

The ICAO CORSIA requires airlines in participating States to report emissions and offset these emissions above a baseline level, within a 3-year compliance cycle. The scheme

allows Aircraft operators to reduce their offsetting requirements by claiming emissions reductions from the use of CORSIA Eligible Fuels (CEF), i.e. sustainable aviation fuels recognised by the scheme. The scheme aims to address CO₂ emissions from international civil aviation above a baseline level, which for its pilot phase (2021-2023), was above 2019 levels. The 2022 ICAO Assembly agreed that the baseline will be 85% of 2019 levels from 2024 onwards. The scheme is currently voluntary for its pilot phase and first phase but will become compulsory from the beginning of its second phase in 2027. Ireland has voluntarily participated in the scheme since its inception along with all other EU Member States.

In 2023, the EU ETS was revised to incorporate CORSIA in EU law both legally and administratively. The EU ETS continues to apply to intra-EEA aircraft operations while CORSIA applies to extra-EEA aircraft operations. ICAO, In October 2022, the 41st ICAO Assembly adopted an ambitious long-term aspirational goal (LTAG) for emissions reductions, including a collective global goal of achieving Net Zero carbon emissions from aviation by 2050. In recognition of this, ICAO convened the Third Conference on Aviation and Alternative Fuels (CAAF/3) which took place in November 2023. The outcome of CAAF/3 was the agreement of an interim, non-binding target to reduce CO₂ emissions from global aviation by 5% by 2030 through the use of Sustainable Aviation Fuel (SAF), Low Carbon Aviation Fuel (LCAF) and other aviation cleaner energies (compared to zero cleaner energy use).

National Digital Strategy

A new national digital strategy, Harnessing Digital – The Digital Ireland Framework, was announced by the Government in February 2022, to drive and enable the digital transition across the Irish economy and society. The high-level framework sets out a pathway to support Ireland’s ambition to be a digital leader at the heart of European and global digital developments; and places a strong emphasis on inclusiveness, security, and safety, underpinned by strong governance and a well-resourced regulatory framework. For example, the new Online Safety and Media Regulation Bill will help to protect Irish citizens from the spread of harmful online content.

The Government will ensure its benefits are achieved by:

- Making connectivity available to everyone, including through the National Broadband Plan, Remote Working Hubs, and Broadband Connection Points, with a target of having all Irish households and businesses covered by Gigabit network no later than 2028 and all populated areas covered by 5G no later than 2030;

- Providing digital skills for all – from school to further and higher education, to life-long learning, with a target of increasing the share of adults with at least basic digital skills to 80% by 2030;
- Ensuring widespread access and use of inclusive digital public services, with a target of 90% of services to be consumed online by 2030;
- Helping small businesses benefit from digital opportunities by providing grants and assistance, with a target of 90% of small-medium enterprise (SME) at basic digital intensity by 2030 and 75% enterprise take-up in cloud, AI and big data;
- Investing in cyber-security to protect Irish citizens and businesses, including increased resources for the NCSC;
- Ensuring a modern and well-resourced regulatory framework;
- Playing a leading role in Europe right across the digital agenda.

This digital strategy aligns with both EU priorities, under the Digital Decade, and national priorities, under the 2021 Economic Recovery Plan and Ireland’s National Recovery and Resilience Plan. It also complements our work towards achieving Ireland’s climate targets, with our green and digital ambitions re-enforcing each other.

The new National Digital Strategy places a particular emphasis on cyber security and commits to reviewing the National Cyber Security Strategy in 2022, to recognise progress made and to respond effectively to an evolving landscape. The National Cyber Security Strategy focuses on the protection of the State, its people and businesses, and its critical national infrastructure. As we progress implementation of the Strategy, further measures to enhance and strengthen Ireland’s approach, will be considered as part of the review.

All groups will be enabled to benefit from digital opportunities under this new Digital Ireland Framework. The Government will ensure effective delivery, through strong political leadership and oversight on digital issues, and strengthened governance structures; as well as active consultation with stakeholders.

3.1.3.3 Policies and measures to achieve low emission mobility (including electrification of transport)

As regards to the private vehicle fleet, in line with Ireland’s CAP, Ireland plans to progressively electrify our mobility systems, moving away from polluting and carbon-intensive propulsion systems to new technologies, such as EVs and introduction of electric and hybrid traction systems for public transport fleets, so that by 2040 Ireland’s cities and

towns will enjoy a cleaner, quieter environment free of combustion engine-driven transport systems. Ireland's CAP contains a commitment to maintain and build on existing tax and financial incentives for low emissions vehicles, and in line with the requirements of the recently adopted EU Alternative Fuels Infrastructure Regulation, Ireland will also update its National Policy Framework: Alternative Fuels Infrastructure for Transport in Ireland: 2017-2030 to reflect new targets and ensure that charging and refuelling infrastructure supports the vehicle transition.

Low Emission Vehicles

Zero Emissions Vehicles Ireland (gov.ie/zevi) was established in July 2022 which oversees and accelerate Ireland's transition to zero emission vehicles. There are a range of measures in place to support the uptake of LEVs which include:

- Vehicle Registration Tax (VRT) relief of up to €5,000 on the purchase of newly registered battery EVs;
- A purchase grant of up to €3,500 for battery EVs;
- Accelerated Capital Allowances (ACAs) for EVs;
- A grant of up to €10,000 to support the purchase of a battery EV in the taxi/hackney/limousine sector with an additional €2,500 available for those choosing to make their vehicle wheelchair accessible. Those scrapping older, more polluting, or high mileage vehicles are now eligible for double the normal grant if they make the switch to electric with up to €20K available for a new BEV, €25K for a new wheelchair accessible BEV and €15K for a new wheelchair accessible PHEV;
- In addition to these grants, SPSV owners who switch to an EV can also avail of VRT relief (up to €5,000) and a Domestic Charger Scheme (up to €600);
- An Alternatively Fuelled Heavy-Duty Vehicle grant scheme for HDVs to bridge the gap between a zero-emission vehicle and a fossil fuel vehicle;
- Benefit-in-Kind tax relief for battery EVs;
- Low motor tax for EVs;
- A public awareness campaign led by the SEAI.

In addition, to support the development of charging infrastructure, the following supports are in place:

- A grant of up to €600 towards the cost of the installation of a domestic charge point in private dwellings with off-street parking and in multi-unit developments;
- Accelerated Capital Allowances for businesses to support investment in charging infrastructure;
- Support of €10m from the Climate Action Fund to support ESB e-cars in renewing the existing public charging network and rolling out 50 fast chargers (50 kW) and 90 superfast chargers (150 kW) across the country;

There are also plans for new fund Schemes to be delivered in 2024 to 2026 to support the roll out of EV Infrastructure for Destination and Residential charging schemes:

- In addition to a general destination charging scheme, a number of bespoke schemes are also in advanced stages, including:
- A shared Island funded Sports Club scheme, which will install up to 200 fast chargers. €15m has been secured for the provision of charge points under this scheme;
- An EU Just transition Fund supported scheme for Community Facilities, which plans to install 60-80 chargers in the Just Transition areas. €15m has been secured for the provision of charge points under this scheme.

In January 2023, the national Strategy for the development of EV charging infrastructure was launched, covering the crucial period out to 2025, alongside an Implementation Plan. The strategy sets out the Government's ambition regarding the delivery of a public EV charging network to support up to 195,000 electric cars and vans by the middle of the decade. The strategy focuses on the provision of publicly accessible charging infrastructure for electric cars and light-duty vehicles. The strategy also addresses the needs of heavy-duty vehicles as required by EU regulations. It identifies four main categories of charging infrastructure. Each serves a different user need and depends on where and when people need to charge their EVs.

- Home/apartment charging - AC, off-peak charging to be encouraged;
- Residential neighbourhood charging - AC, replicating off-peak charging options for people without access to a home charge point;
- Destination charging - AC or DC, depending on the type of destination;

- Motorway/en-route charging - DC high-powered charging at highest charge power capacities.

Building on the EV Infrastructure Strategy, ZEVl is currently working with the TII, the Local Authorities, Regional Assembly's and ESB Networks in developing a National EV Charging Infrastructure Plan. The first part of this plan – the National EV Charging Network Plan [En-Route] will be published in the coming months. In 2022, ZEVl provided funding to a number of Local Authorities and public sector organisations to undertake pilot projects for EV charging. This not only provides for early installations but also provides learning and evaluation of various EV charging models and activities.

Under the 'Avoid, Shift, Improve' principle, the aim is to shift away from the private car to greater use of active travel and public transport. As part of this, ZEVl is considering the provision of EV charging infrastructure at e-Mobility hubs. Local charging can also support car-sharing e-mobility solutions, which can in turn support wider access to EVs where access to sustainable mobility options is limited. ZEVl will work with the car-sharing sector and Local Authorities to pilot the provision of charging infrastructure to support e-car clubs. Draft Universal Design Guidelines for EV Charging Infrastructure was published for public consultation on 30th June 2023. The document summarises key considerations when designing, installing, and operating EV charging stations.

These include:

- the design of the charging station;
- the accessibility of the site;
- the information and communications to inform users before, during, and after a charging session.

There are also measures in place to support the uptake of other LEVs including:

- VRT relief on the purchase of newly registered hybrid EVs;
- GNI are planning to roll-out a further 8 compressed natural gas (CNG) fuelling stations;
- Excise duty on CNG is set at a significantly reduced level from the comparable levels that apply to petrol and diesel;
- Accelerated capital allowances for gas-propelled vehicles and refuelling equipment.

ZEVI will continue to consider further potential policies and measures to support the uptake of LEVs. The Department of Transport convened the EV Policy Pathway (EVPP) Working Group to produce a roadmap to achieving the 2030 EV target. The EVPP Working Group comprises senior officials and has considered regulatory, financial, and taxation policies to help drive a significant ramp-up in passenger EVs and electric van sales.

The recommendations of the EVPP Working Group were approved by Government and the full report is now available online. An Implementation Group has been established to progress the recommendations contained in the Report of the EV Policy Pathway (EVPP) Working Group and consider further potential measures and barriers to the adoption of the EVs. This Group reported on its progress to Government in December 2022.

The CAP sets out a number of actions to further support the uptake of EVs including to:

- Develop a roadmap on the optimum mix of regulatory, taxation and subsidy policies to drive significant ramp-up in passenger EVs and electric van sales from very early in the next decade;
- Develop the EV charging network necessary to support the growth of EVs in line with the mandatory targets set out under the recently adopted EU's Alternative Fuels Infrastructure Regulation, including development and implementation of residential, community, destination, and en-route charging plans;
- Develop and implement planning rules and guidelines across residential and non-residential parking locations for EV charging infrastructure;
- Ensure our regulatory regime for buildings requires the installation of EV charging infrastructure.

The CAP and Road Haulage Strategy also recognise the need to incentivise the growth of LEVs in the commercial sector. In particular Ireland became a signatory to the Global Memorandum of Understanding on Zero-Emission Medium and Heavy-Duty Vehicles at COP27, which seeks to ensure that 30% of new sales of MHDVs would be zero-emission by 2030. Furthermore, the demand and future role for hydrogen and liquified methane in road transport vehicles – particularly for heavy duty vehicles – will be further considered as part of a required update to Ireland's National Policy Framework for Alternative Fuels Infrastructure 2017-2030. The renewable transport fuel obligations detailed above ensure the continued increase in the use of sustainable biofuels, biogas, and other renewable fuels in the transport sector.

Land Use Planning

Ireland has a relatively low population density with 70 persons per square kilometre compared to 117.7 for the EU-28. Such settlement patterns give rise to dispersed journeys for which public transport provision is not always feasible. The net result is a higher dependence on private car use and longer journeys compared with more densely populated urban settlements. In addition, Ireland is experiencing population growth with an increasing tendency towards dispersed, low-density developments. The largest increases in population over the past twenty years have been in Fingal, Cork (outside Cork City Council area), Kildare, Meath, Laois, and Galway County (outside Galway City Council area) accounting for approximately 45% of the additional population growth since [1996](#). These extensive catchments and dispersed land-use development patterns have resulted in greater car dependency, longer commutes, a high demand for road infrastructure and difficulties in supplying adequate public transport provision. Transport policies aimed at reducing travel demand and travel distances can only be delivered if there are effective spatial policies in place. The location of schools, jobs, shops, local services, and other land uses relative to the location of residential developments are critical determinants of the need to travel, the distances to be travelled and the modes of transport chosen. Additionally, the provision of sustainable transport alternatives can only be effective if matched with complementary development patterns which support and facilitate their use. Future investment in new public facilities must take account of the need for access without reliance on the car. Better integrated land use and transport planning and transport-orientated development is a key objective in national policies to help counteract dispersed settlements and facilitate more sustainable travel by active travel and public transport.

One of the ten goals of the National Sustainable Mobility Policy is to better integrate land use and transport planning at all levels to support the National Strategic Outcomes of the National Planning Framework relating to compact growth, sustainable mobility and transition to a low carbon and climate resilient society. This is supported at a metropolitan level through the metropolitan area transport strategies which are in place in the five cities (Cork, Dublin, Galway, Limerick, and Waterford) and which set out programmes of proposed transport investment in active travel, bus and rail for each city over a 20-year period. The Cork Metropolitan Area Transport Strategy was published by the National Transport Authority (NTA) in 2020 while the Limerick-Shannon Metropolitan Area Transport Strategy and Waterford Metropolitan Area Transport Strategy were published in 2022. A revised Transport Strategy for the Greater Dublin Area (GDA) 2022-2042 was published by the NTA in 2023 and work is underway to develop a new Galway Metropolitan Area Transport

Strategy to replace the 2016 Galway Transport Strategy. These metropolitan area transport strategies are consistent with the spatial planning objectives in the National Planning Framework and the relevant Regional Spatial and Economic Strategy. The statutory basis on which these strategies are developed differs currently with an explicit statutory basis to the transport strategy in the GDA and a specific statutory role for the NTA. Outside the GDA, the metropolitan area transport strategies are currently non-statutory plans which are developed by the NTA in co-operation with the relevant Local Authorities and other agencies. The National Planning Framework: Ireland 2040, the National Sustainable Mobility Policy and the CAP include a commitment to extend the NTA's statutory remit for transport planning in the GDA to the other cities.

The CAP highlights the importance of embedding transport orientated development (TOD) at all stages of planning and development, particularly the siting of services and multi-use development at transport nodes. TOD is a well-established plan-led approach that seeks to provide higher density mixed-use development in close proximity to high quality transport services. The Department of Housing, Local Government and Heritage and the Department of Transport jointly established a working group in December 2021 under the Government's Housing for All plan to consider opportunities for TOD in major urban centres. The working group has completed a review of TOD opportunities in Dublin and is now focusing on TOD opportunities in the wider eastern region and in Cork, Galway, Limerick, and Waterford.

In line with the energy efficiency first principle, public transport use and modal shift should be encouraged through efficient planning. The review and implementation of the National Planning Framework will be central in setting the context for future national planning objectives and will ensure that all future land use and transport planning are fully aligned to successfully influence how people travel. Land use policy is a key determinant in transport investment decisions at both the strategic and local level. The Framework has set National Strategic Outcomes for Sustainable Mobility and the Transition to a Low Carbon Climate and Climate Resilient Society. The Government has identified the transition to EVs (EVs) and other LEVs as a critical factor in delivering these outcomes, through:

- The provision of adequate charging infrastructure: The Government's vision is that, where feasible, EVs are charged primarily where they are parked overnight and that supplementary charging opportunities are made available at suitable locations and destinations where vehicle parking is provided and along key travel routes;
- Local Authority Development Plans: The cost of retrofitting charging infrastructure to existing homes, businesses, car parks and other locations can be a barrier to its

installation and therefore to the transition to EVs. Consequently, it is vital that Local Authorities should ensure that provision is made for EV charging within their Development Plans, particularly at the point of development and construction;

- The provision of adequate charging LEV infrastructure: The provision of adequate fuelling infrastructure nationally for other LEVs (such as CNG, liquefied natural gas and hydrogen) should be facilitated, where appropriate, to support the uptake of these vehicles and their rollout nationally.

A Working Group set up under the LEV Taskforce considered the role that planning policy and legislation, building regulations and state leadership may play in facilitating charging and refuelling infrastructure deployment. Planning Authorities play an important role in future proofing the need for LEV recharging/refuelling infrastructure through the planning process. Currently, in Ireland all Planning Authorities are required to have a Development Plan for their functional area which must support the promotion of measures to reduce greenhouse gases and address the necessity of climate change adaptation.

To integrate LEVs further into Development Plans the LEV Taskforce recommended that the Guidelines be updated to include references to evolving Government LEV policies to support the roll out of LEV infrastructure through Planning Authority functional areas; making sure certain adequate numbers of EV charging points are installed and provision is made (e.g. through the installation of ducting) for future installation of EV charging points at all appropriate locations where parking is provided for passenger vehicles (including homes, businesses, on street and car parks); safeguards that ensure adequate numbers of public EV charging points are 'accessible for all'; and ensure locations that cater for traditional fuelling of vehicles (i.e. filling stations) provide charging for EVs and, where applicable, and in line with Government policy, fuelling for other LEVs. The Taskforce also recommended that guidance be issued to planning authorities to ensure a consistent and future-proofed approach to the rollout of EV charging infrastructure through planning decisions.

Improving the Efficiency of Public Transport

The [Public Sector Energy Efficiency Strategy](#) highlights the role that the public sector fleet can play in piloting, facilitating and accelerating market uptake of new, energy efficient technologies and alternative fuels. The efficiency of the public transport fleet is incrementally being improved through the replacement of older vehicles with newer models and accelerating the roll-out of battery powered and more energy efficient vehicles.

A. Public transport infrastructure investment

The DART (Dublin Area Rapid Transit) system is an electrified commuter rail network serving the east coast of Dublin, including its city centre. Passenger demand grew by more than one-third on DART and commuter rail services from 2013 to 2019, with 35.6m passenger journeys. The DART+ Programme will create a full metropolitan area DART network for the GDA and will transition current diesel commuter lines to electricity from the city centre to Drogheda, Co. Louth, and to Celbridge/Hazelhatch and Maynooth, Co. Kildare. This will also involve a new interchange station with bus, LUAS (light rail) and planned MetroLink networks. This part of the national rail network carries over 75% of total rail passengers each year. This will triple the amount of electrified track in the GDA from 50km to 150km by 2030. Delivery also commenced in 2022 of Ireland's first diesel-electric trains, which will enable the enlargement of the rail fleet by approximately some 300 new rail carriages. Under the NDP 2021-2030, BusConnects programmes will be substantially delivered in all of Ireland's five cities by the end of the decade. BusConnects programmes comprise a number of different elements including the network redesign of bus services and the development of core bus corridors infrastructure, including segregated cycling facilities on the busiest routes to make journeys faster, more predictable and reliable. BusConnects will enhance the capacity and potential of the public transport system by increasing and replacing the bus fleets with LEVs and introducing a new system of Next Generation Ticketing and cashless payments. MetroLink, which is another key project under the NDP, will be a fully segregated and mostly underground new rail line from the Swords area in north Dublin to Charlemont in the south of Dublin City Centre. This new link will form a key spine of the overall public transport system for Dublin, alongside BusConnects and DART+, and facilitate compact transport orientated development at key locations. The Cork Area Commuter Rail Programme represents the largest investment in the rail network in Cork undertaken by the State. The programme comprises several separate but interrelated projects. These include the integration of the three existing railway corridors in the Cork area; full electrification, or alternative fuelling of the suburban rail network; other infrastructure improvements to accommodate a transformative 10-minute frequency for the suburban rail network in Cork; additional rolling stock; and a multi-modal integrated transport hub for the city. This could potentially be implemented across the wider fleet. These major rail projects will help supplement the range of viable low carbon alternatives to private passenger car travel and positively impact on our sectoral emissions and energy profile.

B. Cessation of Diesel Urban Bus Purchasing

In the urban bus fleet, a clear trajectory towards low emission has firmly been established. The NDP committed Ireland to no longer purchase diesel-only buses for the urban public bus

fleet from July 2019, which is supported by the NTA, which is responsible for procurement of vehicles in the public service obligation (PSO) fleets. The CAP sets a target to accelerate the decarbonisation of the public bus fleet with the objective to only have low-emitting buses in the urban PSO bus fleet by 2035, with an expected 1,500 low-emission buses serving PSO routes by 2030.

In order to inform such future purchasing decisions, the Department of Transport, launched a low-emission bus trial in December 2018. The trial assessed full electric, diesel-electric hybrids, CNG, and hydrogen buses, with a final report on these trials published on the [Government website](#) in 2022, and which will continue to inform subsequent procurement decisions. In March 2022, a major framework contract for the provision of up to 800 double deck electric buses was signed, supplementing a similar framework agreement for up to 200 single deck electric buses signed in 2021. First deliveries of new electric buses have commenced, with buses due to go into service in 2023 following testing and commissioning, and completion of depot charging. The recast Clean Vehicles Directive also contains new stringent sub-targets for zero- emissions buses to promote cleaner and energy-efficient public transport vehicles. It is expected that this Directive will result, in the longer term, in acceleration and wider deployment of clean and energy efficient buses. Supporting these goals, Ireland also became a signatory to the Global Memorandum of Understanding on Zero-Emission Medium and Heavy-Duty Vehicles at COP27, which sets a non-binding target which seeks to ensure that by 2030, a minimum of 30% of new sales of MHDVs (trucks and buses) would be zero-emission.

C. Electrification of New Public Transport Projects

Ireland also launched its first all-electric town bus service in Athlone in January 2023, as part of a €10m investment by the NTA. This was the first project to launch under the Government's Pathfinder Programme – a package of exemplar transport projects to be delivered by state agencies and Local Authorities around the country by 2025, in order to demonstrate the benefits of sustainable mobility.

D. Demand Management

In the design of a decarbonisation pathway capable of meeting a 50% emissions abatement target, it is clear that demand management and the enhanced provision of sustainable transport alternatives will be required. The CAP sets out a number of actions and targets including some which should encourage a reduction in vehicle km driven on Irish roads with an enhanced focus on the Avoid Shift Improve framework for greater transport sustainability and increased wellbeing.

Reduced car usage would be beneficial in several ways, including improved air quality, less congestion, and lower levels of CO₂ emissions. In order to encourage the transition away from fossil fuels into more sustainable forms of transport, the Plan commits to the development of a national demand management policy. The development of this policy, which is already underway, will be informed by the previous Five Cities Demand Management Study and the modelling undertaken by the NTA. Six key areas of focus have been identified and these are:

- Optimal Use of Space;
- Fiscal Measures;
- Generators of Demand (Movement of People);
- Generators of Demand (Movement of Goods);
- Integrated Land Use and Transport Planning;
- Car Captive Users.

A number of cities and countries have introduced various suites of demand management measures to limit traffic and encourage alternative transport modes, especially in urban areas due primarily to congestion and air quality concerns. These measures include parking policies; low emission zones; tolling; and teleworking practices.

Implementation of the required and most appropriate measures in each case will require cross-Governmental collaboration and buy-in but will mainly fall to Local Authorities. Work to identify legislative barriers to the implementation of demand management measures has already been completed and the department will work closely with those concerned to bring forward solutions to these barriers.

E. EV Deployment Roadmap

Passenger cars account for over half of all land transport emissions in Ireland; therefore, a transition to low and zero emission cars is one of the necessary changes required if Ireland is to substantially reduce its transport emissions and energy use. Accordingly, EVs are a prominent mitigation in the CAP, which sets targets of 195,000 EVs on Irish roads by 2025, and 936,000 EVs by 2030. With almost 100,000 EVs in Ireland at the end of July 2023, these targets are broadly in line with the profiled trajectory to achieve but will remain very challenging and are indicative of the scale of the transformation that is needed across all sectors if Ireland is to reduce national emissions and reach its legally binding emission ceiling in future years.

It is widely expected that, over the coming years, the combination of; improvements in technology; reductions in EV purchase prices; increasing driving ranges and model availabilities; Government incentives and new investment in the recharging network, will maintain the current positive policy environment under which we have seen EV sales rise steeply over the past year, albeit from a low base.

To date, the Irish Government, supported by the LEVs Taskforce, has worked to ensure that conditions and policies are in place to support citizens in making greener vehicle choices. Several Government Departments have responsibility for incentives to encourage a move towards EVs; this concerted work across several Departments will continue in order to accelerate the current trajectory of EV sales. The CAP commits the recently established Zero Emissions Vehicles Ireland office (established July 2022) to continue with and review the development of a roadmap on the optimum mix of regulatory, taxation and subsidy policies to drive significant ramp-up in passenger EVs and electric van sales from very early in the next decade.

Modal Shift/Share

Alongside technological developments, behavioural change amongst motorists will be critical in reducing emissions in the transport sector. Many mitigation measures are dependent on modal shift or a change in the fuel and/or technology currently employed to meet travel demands. It is critical to develop a better understanding of the important role that behavioural economics and psychology play in decision making to facilitate a greater uptake of energy efficient or sustainable travel options. Normalising new technologies and addressing consumer concerns will be required to accelerate the mitigating impact that alternative fuels and technologies can potentially have.

"A New Transport Policy for Ireland 2009-2020" set out key modal share targets for achievement by 2020. These targets were aimed at reducing work-related commuting by car as a modal share of 65% to 45% and accommodating car drivers on other modes of transport such as walking, cycling, public transport and car sharing to the extent that commuting by these modes would rise to 55% by 2020 (or through other measures such as e-working). However, owing to the challenging economic and financial conditions experienced following the economic downturn from 2008 onwards, which restricted funding capacity for new infrastructure, the implementation of this policy was significantly challenged.

Figures released from the Central Statistics Office (CSO) in the Census 2022 indicated that 750,000 people, a third of workers, now worked from home for at least some part of their week, while the number of people who drove to work increased by 4% to 1.2m between

2016 and 2022. However, more positive behavioural change signals were recorded with respect to education-related journeys, with 88% more primary school children commuting by bicycle than in 2016, and the number of students aged 13 to 18 cycling to school up by 79%. This has occurred against a background of strong economic recovery, growth in the numbers of people at work, and consequent increases in travel demand and the number of people commuting as the country has emerged from COVID-19 public health restrictions.

In the GDA, there has been a much greater and a more significant modal shift. The Canal Cordon Report 2022 recently published by Dublin City Council and the NTA - which provides data on trends in mode share of vehicles and people crossing the Canal Cordon in Dublin between 7am and 10am - indicates that a strong modal shift has been occurring in the Dublin City Centre area. It shows that over 70% of all inbound trips crossing the canal cordon were made by a sustainable mode which includes cycling, walking, taxi and other public transport, with the total number of trips recorded crossing the cordon in 2022 (177,243) at c.80% of pre-pandemic levels, capturing some of the impact of working-from-home policies that have now become embedded.

In order to continue to build on this momentum and to encourage further modal shift nationally, over €110m in capital funding is being directly allocated to develop cycling and walking infrastructure in the GDA, Galway, Limerick, Cork and Waterford over the period 2018-2021. A further €135m capital funding is allocated over this same period for investment in Sustainable Urban Transport projects, and these will include projects that will provide either direct or indirect improvements for urban cycling. €2.5m per annum is also spent on behavioural change programmes including Green Schools, Cycle Right and Smarter Travel Workplace and Campus programmes aimed at encouraging a modal shift.

3.1.3.4 Where applicable, national policies, timelines and measures planned to phase out energy subsidies, in particular for fossil fuels

Fossil Fuel Subsidies

Ireland's CAP highlights the need to decouple economic growth from fossil fuel dependency and is reflective of the environmental goals of the 2015 Paris agreement and the European Green Deal. CAP commits to developing a roadmap for the review and transition away from fossil fuel tax subsidies in the transport sector by 2024. The first step in this action is a review of existing fossil fuel tax subsidies.

The CSO estimated total fossil fuel subsidies in Ireland amounted to €2.2bn in 2020, with indirect subsidies arising from revenue foregone due to tax abatements accounting for

87% of this figure. As mentioned above, as part of the Budget Quality of Life Assessment, the Department of Finance publishes green budgeting tax analysis. In 2022, this analysis concluded that the tax system as a whole is climate positive from a monetary perspective and has grown significantly over time from a €1.4bn climate positive monetary balance in 2011 to a balance of €2.5bn in 2020. This means that the tax system collects more revenue from fossil fuel use than it provides in relevant tax expenditures. It does not account however for fossil fuel subsidies provided through state spending generally.

Just Transition

The CAP recognises that the high level of change envisaged to decarbonise Ireland's economy cannot be avoided. However, it is essential that the burdens borne are seen to be fair and that every group is seen to be making an appropriate level of effort. This will be essential to maintaining the high level of political and civic consensus which has been built through the work of the Citizens' Assembly and the All-Party Committee on Climate Action.

A Just Transition Commission will be established in 2024, with a mandate to:

- Monitor the implementation of the just transition principles set out in CAP and producing reports and recommendations to the Government and to the Oireachtas on progress;
- Commission research to examine which sectors of the economy are most likely to experience disruption as a result of the transition, as well as exploring solutions to mitigate against these challenges;
- Advise and support the Minister and Government in relation to social dialogue, including the National Dialogue on Climate Action, in a manner which effectively integrates just transition considerations;
- Examine specific just transition challenges as requested by the Minister and providing recommendations to Government on potential solutions to mitigate against these challenges.

A Just Transition Taskforce was convened in 2023, to provide advice to Government through a report to the Minister for the Environment, Climate and Communications containing its recommendations to support the constitution of a Just Transition Commission on an enduring basis. This report is expected to be delivered in Q1 2024.

The Government recognises that addressing just transition is also about empowering communities and households to prepare for and to realise the opportunities that will be afforded by a low carbon transition. Ireland will:

Improve the resilience of communities and households by providing information and building capacity, taking account of the distinctive needs of urban and rural communities

- Provide improved training and support initiatives for community and voluntary stakeholders to support community, local and national low carbon action;
- Work to refine how our energy schemes target those most in need, to make them as efficient as possible;
- Address the impact of proposals for carbon pricing on low-income groups and those facing greater challenges in reducing their emissions;
- Enhancing the capacity of our education and training system to support a just transition, including more explicit focus on the skills needed for the low-carbon transition. This includes supports for workers in vulnerable sectors and returnees to the labour market through a focus on career advice, up-skilling and re-training, as well as the development of new skills and expertise in our education and training system.

The Government is committed to delivering a just transition to those who are negatively impacted by climate action. The Government has sought to ensure that revenue from increases in the carbon tax will be ring-fenced to protect those who are most exposed to higher fuel and energy costs and has committed one third of all additional carbon tax revenues over the next decade to targeted measures such as a socially progressive national retrofitting scheme. Additional funding is being provided to support lower income households to participate in retrofitting schemes, with the Warmer Homes Scheme delivering a range of energy efficiency measures free of charge to lower income households vulnerable to energy poverty.

In response to rising energy prices in 2022, DECC2 also released the Energy Poverty Action Plan, which set out a range of measures, in the near and medium term, to tackle energy poverty. This Action Plan was developed in participation with Departments including Social Protection (DSP), Housing, Local Government & Heritage, Health, Community & Rural Development, the CRU, Sustainable Energy Authority Ireland (SEAI) and the HSE. Measures combatting energy poverty are outlined in more detail in section 3.4.4 of this document.

Just Transition in the Electricity Sector

Bord na Móna has been harvesting peat for electricity generation in the Midlands of Ireland for over 70 years. There are three electricity generating plants in the Midlands that use peat as the primary fuel, totalling 350 MW of electricity. One plant at Edenderry is currently co-firing with peat and biomass. While there were plans to co-fire with peat and biomass and eventually move to 100% biomass by 2027 in all three plants, due to several issues, including planning approvals, supply of indigenous biomass, compliance with EU and national objectives, and economic viability (carbon price, fuel costs, sustainability, etc.), two of these plants will close by the end of 2020 when current planning permission expires. The third plant is likely to seek planning to move to 100% biomass when its current planning approval expires in 2023, thus maintaining some fuel diversity and possibly an indigenous fuel source if sufficient biomass can be produced locally.

Bord na Móna has been an integral part of the commercial and social development of the Midlands since 1947, creating significant employment in the region. Several supports are being put in place in the context of the Government's response to the cessation of peat harvesting by Bord na Móna.

The National Just Transition Fund was made available in 2020 and continues to support communities transitioning to a low carbon economy, facilitating innovative projects that contribute to the economic, social, and environmental sustainability of the Wider Midlands region and have significant employment and enterprise potential. The Government has provided €22.1m in grant funding to 56 projects, and the Fund focuses on retraining workers and generating sustainable employment in green enterprise across the region.

To support the preparation of Ireland's EU Just Transition Fund Programme, development of Ireland's first Territorial Just Transition Plan, which provides an evidence-base for the designated Territory, sets out the impacts on the Territory as a result of the ending of peat extraction for energy production and identifies the development needs and priorities for the territory in order to address these impacts.

The EU JTF Programme provides funding of up to €169m to address the development needs identified in the Territorial Plan. The Programme is managed by the Eastern and Midland Regional Assembly, focusing on three priorities:

- Generating employment by investing in the diversification of the local economy;
- Supporting the restoration and rehabilitation of degraded peatlands and the regeneration and repurposing of industrial heritage assets;

- Providing former peat communities with smart and sustainable mobility options to enable them to benefit directly from the green transition.

Underscoring the role of the Midlands Region in working with central Government in addressing the ongoing transition, the region is also represented, through the Midland Regional Transition Team, in the EU Just Transition Platform, National and EU Just Transition Funds within the impacted territory.

3.2 Dimension Energy Efficiency

The Climate Action Plan sets out the policies, measures and programmes that Ireland is already undertaking, developing and considering to achieve energy efficiency and climate objectives. Following the recast of the Energy Efficiency Directive, Ireland's further commitment for 2030 will intensify its efforts.

The target for energy efficiency savings to be pursued in Ireland is based on the continuation of measures already in place, upscaling and adding to those measures based on the approach and level of investment set out in the National Development Plan together with the actions and intensifications outlined in the Climate Action Plan.

This level of achievement will be a significant challenge for Ireland. The key measures in each sector are set out in the Climate Action Plan.

This scale of retrofit ambition is a significant challenge for Ireland. While significant progress has been made on improvements in energy efficiency for new dwellings, existing dwellings, commercial premises and buildings occupied by the public sector require significant retrofit in order to meet our energy and climate targets. In the public sector, critical barriers to retrofit include limited internal capacity, funding shortfalls and very few completed projects to learn and benchmark from. Public policy has been geared towards trying to overcome those barriers to advance retrofit of public buildings, in particular via the SEAI Public Sector partnership programme and the SEAI Pathfinder programme. The first programme, the public sector partnership, is based around engagement with public bodies. This includes training and advice on operational actions public bodies can take to reduce day-to-day energy consumption and the administration of a system for monitoring and reporting of energy data in the public sector.

The SEAI Pathfinder has been the key policy lever and driving force behind public sector capital retrofit in the last 6 years. The programme involves SEAI collaborating with national estate portfolio leads and providing match-funding as a means of leveraging their willingness

and commitment to engaging in retrofit projects, building from shallow to deep retrofit projects. SEAI has entered into individual agreements under Pathfinder with the Health Service Executive (HSE), Department of Education, Department of Further and Higher Education (D/FHERIS in relation to buildings under the Higher Education Authority and Education and Training Boards), the OPW and individual Local Authorities/ CAROs.

Co-funding has served as the policy lever to engage portfolio leads and enable them to find the pathway to deliver, or plan to deliver, deep retrofit projects. The national portfolio leads are at various stages of advancement, with some having now completed several deep retrofits (D/Education, D/FHERIS) and others having done shallow retrofit measures only and being at the early stages of the deep retrofit process (HSE, OPW, Local Authorities.) Under the Pathfinder programme SEAI provides technical support and capital support. Projects are complex and require management under a detailed project management approach.

On the commercial built environment, support is provided through the LIEN operated by SEAI and the energy academy training platform. In addition, the Excellence in Energy Efficiency Design (EXEED) scheme supports organisations with the costs of embedding energy efficient design in their assets, to reduce lifecycle impact through lower energy use and reduced carbon emissions. This scheme is targeted towards organisations, both public and private, that are planning a major investment in an energy efficient design project, regardless of project scale.

The primary objective of Support Scheme for Energy Audits (SSEA) is to support small and medium-sized enterprises (SMEs) in carrying out energy audits. The scheme offers €2,000 towards the cost of a professional high quality energy audit which is carried out by a SEAI Registered Energy Auditor selected by the SME.

Planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2, including planned measures and instruments (also of a financial nature) to promote the energy performance of buildings, in particular with regard to the following:

3.2.1 Energy efficiency obligation schemes and alternative policy measures under Articles 7a and 7b and Article 20(6) of Directive 2012/27/EU and to be prepared in accordance with Annex III to this Regulation

Ireland currently intends to deliver the energy savings required by Article 8 of the Directive 2023/1791 through a combination of an obligation scheme to achieve energy savings targets on certain energy companies and a range of alternative measures. SI 522/2022 European Union EEOS) Regulations 2022 sets a total EEOS target for the obligation period 2021-2030 of 36,424 GWh cumulative end-use energy savings on parties obligated under the EEOS.

The revised EED has significantly increased Ireland's cumulative energy savings target under Article 8 and considerations are underway as to how best to ensure that a significantly higher target can be achieved between EEOS and alternative measures. No decision has yet been taken as to the split between EEOS and alternative measures pending that analysis.

3.2.2 Long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, including policies, measures and actions to stimulate cost-effective deep renovation and policies and actions to target the worst performing segments of the national building stock, in accordance with Article 2a of Directive 2010/31/EU

A recast Energy Performance of Buildings Directive is currently being renegotiated at EU level with negotiations expected to conclude by the end of 2023. The draft Article 3 and Annex II of the new Directive include a requirement to implement National Building Renovation Plans, which will replace the Long-Term Renovation Strategy (LTRS). The latest version of the LTRS was prepared by DECC in 2020. Under the 2020 LTRS Ireland already has a number of supports in place to encourage retrofitting of homes, businesses and public sector buildings as set out below.

Existing Measures:

Residential

Government funds a number of energy efficiency supports for the residential sector. These are administered by SEAI and include:

- Free Upgrades for households at risk of energy poverty are provided under the Warmer Homes scheme. This scheme prioritises the worst performing homes;

- Grants for households taking a step-by-step approach to upgrading the energy performance of their home and moving away from fossil fuel heating;
- A One Stop Shop service for households undertaking a whole-house upgrade project including switching to a heat pump. This scheme requires homes to achieve a minimum uplift in energy performance, thereby incentivising poorer performing homes to avail of the supports.
- Social Housing Retrofit Programme – the social housing stock is undergoing a programme of energy efficiency renovation

Commercial

There are a wide range of supports and measures funded by DECC and administered by the SEAI. The supports are intended to enable all businesses to improve their energy efficiency, reduce carbon emissions, reduce energy consumption and costs and, in the process, enable them to become more competitive.

The EXEED scheme supports organisations with the costs of embedding energy efficient design in their assets, to reduce lifecycle impact through lower energy use and reduced carbon emissions. This scheme is targeted towards organisations, both public and private, that are planning a major investment in an energy efficient design project, regardless of project scale.

The primary objective of Support Scheme for Energy Audits (SSEA) is to support SMEs in carrying out energy audits. The scheme offers €2,000 towards the cost of a professional high quality energy audit which is carried out by a SEAI Registered Energy Auditor selected by the SME.

The SEAI's Energy Academy is an online resource that provides businesses with free access to high quality energy training, providing energy training to 4,150 existing users. Development of this resource continues, with new training modules added on an ongoing basis. There are currently 28 Modules available, with more being added on an ongoing basis.

The Large Industry Energy Network (LIEN) is a network of large organisations who, with the support of the SEAI, work together to improve their energy performance and share experiences amongst members. The members of the network are comprised of organisations that account for circa 20% of Ireland's energy use.

The SEAI provides a wide range of advice, information, and mentoring services to businesses. These include briefings, workshops, workplace resources, access to energy auditing services and case studies of best practice.

ACA - The Accelerated Capital Allowance (ACA) is tax incentive operated by Revenue which encourages businesses to upgrade to the most energy-efficient equipment.

Public Sector

The SEAI Public Sector partnership programme is based around engagement with public bodies. This includes training; advice on operational actions public bodies can take to reduce day-to-day energy consumption and the administration of a system for monitoring and reporting of energy data in the public sector.

The SEAI Pathfinder programme involves SEAI collaborating with national estate portfolio leads in the public sector and providing match-funding as a means of leveraging their willingness and commitment to engaging in retrofit projects, building from shallow to deep retrofit projects.

Cross Sectoral

Energy Efficiency Obligation Scheme (2021-2030) – Ireland has established an obligation scheme under Article 7 of the EED. SI 522/2022 European Union (Energy Efficiency Obligation Scheme) (EEOS) Regulations 2022 sets a total EEOS target for the obligation period 2021- 2030 of 36,424 GWh cumulative end-use energy savings on parties obligated under the EEOS. Under the SI, there are two binding sub-targets (5% energy poverty and 10% residential.) Beyond that, obliged energy companies may deliver energy savings in any sector.

The revised EED has significantly increased Ireland's cumulative energy savings target under Article 8 and considerations are underway as to how best that significantly higher target can be achieved between EEOS and alternative measures. No decision has been taken yet as to the split between EEOS and alternative measures pending that analysis. The Community Energy Grant scheme offering supports for groups of buildings to carry out retrofitting as part of a community project. The projects can involve residential, commercial, public and community buildings. This scheme also requires a minimum energy performance uplift for any residential retrofits.

Planned Measures

Building Standards, Retrofitting and Energy Efficiency

- The National Retrofit Plan sets out the Government's approach to achieving the Climate Action Plan targets of upgrading 500,000 homes to a Building Energy Rating (BER) of B2 or cost optimal level and installing 400,000 heat pumps to replace older, less efficient heating systems by 2030. The Plan is designed to address barriers to retrofit across four key pillars: driving demand and activity; financing and funding; supply chain, skills and standards; and governance. Actions under the Plan are updated on an annual basis;
- 500,000 homes to be retrofitted to a B2 Building Energy Rating or cost optimal;
- Local Authorities will upgrade their housing stock under Phase 2 of the social housing retrofit programme to bring dwellings more than 40 years old (30% of the social housing stock) to a B2 equivalent BER;
- The Public Sector Energy Efficiency Strategy and its associated support programme are designed to assist public bodies in achieving the national energy efficiency targets of 33% 2020, and 50% by 2030;
- The EXEED programme will help commercial buildings and businesses embed energy efficiency measures in the design of their projects, processes, and assets;
- Develop the necessary supply chain, including working with Regional Skills Fora to train skilled workers.

Smart Finance

Develop a smart finance initiative to provide a competitive funding offer with State support. A guarantee-based product will offer both a degree of risk-sharing to lenders, and an additional leverage effect, which means that the funding is used in a more efficient way.

3.2.3 Description of policy and measures to promote energy services in the public sector and measures to remove regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models

The Energy Contracting Support Scheme administered by SEAI is a pilot programme that provides supports and expertise across the business and public sectors to deliver energy efficiency through Energy Performance Contracts, Local Energy Supply Contracts and Energy Performance Guarantees. SEAI is currently supporting a small number of projects in the public sector under this scheme.

The Department of Education has used the ESCO model in replacing the heating system in a number of schools where fossil fuel boilers have been replaced with biomass boilers. The ESCO operates the boiler on behalf of the school over a fixed number of years.

Ireland, in conjunction with the European Commission, under the Sustainable Energy Investment Forums (SEIF) initiative hosted a national roundtable on 9 November 2023 to promote dialogue between the public sector and key stakeholders in the field of sustainable energy financing with regard to leveraging private finance for public sector retrofit.

Ireland expects to take forward this theme through the national hubs being established under the recently announced European Energy Efficiency Financing Coalition (EEEEFC).

The Commission envisages that Member States would chair national hubs and define priorities in line with EEEFC objectives. The overall objective is to facilitate the mobilisation of private financing for energy efficiency at scale, including a more favourable environment for an energy efficiency market. The EEEFC should make national and local financial institutions and stakeholders more aware of market opportunities on energy efficiency.

3.2.4 Other planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2 (for example measures to promote the exemplary role of public buildings and energy-efficient public procurement, measures to promote energy audits and energy management systems, consumer information and training measures, and other measures to promote energy efficiency)

Existing Measures

SEAI have established a Behavioural Economics Unit which is focused on encouraging measurable changes to homeowners' and businesses' energy behaviour, using the latest evidence from Behavioural Science and Economics; their work also helps inform policies through SEAI.

SEAI engages frequently with consumers and business and carries out regular surveys of attitudes towards and perspectives on energy efficiency. SEAI's website also provides useful information on taking action on energy efficiency for consumers and businesses;

A national 'Reduce Your Use' campaign for the general public was run in Winter 2022/2023. This covered all media formats.

For businesses, SEAI provide a range of guidance and supports. These include;

- Online guidance and information including guidance on energy audits for identifying energy efficiency opportunities;
- Classroom based energy management training for companies;
- Audits – For larger enterprises SEAI operate an Energy Audit Scheme which helps larger enterprises comply with their obligations under Article 11 of the Energy Efficiency Directive (recast October 2023);
- The Support Scheme for Energy Audits (SSEA) is to support SMEs in carrying out energy audits. The scheme offers €2,000 towards the cost of a professional high quality energy audit which is carried out by a SEAI Registered Energy Auditor selected by the SME. Public bodies may also avail of this scheme;
- Ireland's Building Energy Rating system provides homeowners with information on the efficiency of their home as well as guidance on the steps they can take to reduce their energy usage and their costs;
- Government has also funded the rollout of Home Energy Savings Kits across libraries, where individuals can borrow a kit of practical tools that will help them to understand their energy usage and take steps to become more efficient.

SEAI, through the public sector energy efficiency partnership provides energy management and advisory supports to circa 350 public bodies and 4,000 schools to help them achieve energy efficiency savings. The programme offers comprehensive support and engagement to guide public bodies in reaching their energy saving targets focusing on capacity-building and energy management principles, which are low cost means of delivering energy efficiency improvements.

The SEAI Pathfinder, has been the key policy lever and driving force behind public sector capital retrofit in the last 6 years. The programme involves SEAI collaborating with national estate portfolio leads and providing match-funding as a means of leveraging their willingness and commitment to engaging in retrofit projects, building from shallow to deep retrofit projects. SEAI has entered into individual agreements under Pathfinder with the HSE, Department of Education, Department of Further and Higher Education (D/FHERIS in relation to buildings under the Higher Education Authority and Education and Training Boards), the OPW and individual Local Authorities/ CAROs. Co-funding has served as the policy lever to engage portfolio leads and enable them to find the pathway to deliver or plan to deliver deep retrofit projects. The national portfolio leads are at various stages of advancement, with some having now completed several deep retrofits (D/Education,

D/FHERIS) and others having done shallow retrofit measures only and are at the early stages of the deep retrofit process (HSE, OPW, Local Authorities). Under the Pathfinder programme SEAI provides technical support and capital support.

The Public Sector Working Group Under the Heat and Built Environment Taskforce is undertaking work to identify the public sector buildings that consume the most energy and generate the most GHG emissions to develop a public sector buildings decarbonisation roadmap that includes the identification of costs involved and considerations of cost-effective retrofit options.

The OPW run a state-wide staff energy conservation campaign, entitled 'Optimising Power @ Work' which operates in Central Government buildings. The core principle of the campaign is to intensively work and engage with staff to encourage behavioural change on energy use and to identify and eliminate energy waste. Participating buildings can achieve average annual energy savings of 20%.

All public bodies lead by example by signing up to the Sustainable Energy Authority of Ireland (SEAI) and the OPW "Reduce Your Use" winter campaign in proactively lowering energy consumption and carbon. This campaign was first run with public bodies in Winter 2022/23 and is again being run in Winter 2023/24. Some case studies on the campaign can be found here: <https://www.seai.ie/reduceyouruse/public-bodies/energy-efficiency-campaig/A>

A carbon price of at least €80 per tonne by 2030 has been announced by Government (current price is €56 per tonne since 11 October 2023). This will improve the payback period for investments and increase the uptake of energy efficiency measures by factoring the cost of carbon into decision-making.

More stringent building regulations are in force since November 2019, with all new buildings to be Nearly Zero Energy Buildings (NZEB) and existing dwellings undergoing major renovations (more than 25% of the building envelope) to meet cost optimal performance equivalent to a BER of B2.

Planned Measures:

Market Signals

Smart-ready electricity meters will be installed in every house by 2024 under the Smart Metering Programme. This will facilitate consumers in improving energy efficiency.

Regulation of New Buildings and Renovations:

These will be progressively strengthened to order to further improve energy efficiency performance, including to phase out the installation of oil boilers.

Examine ways in which audits for commercial buildings can be further progressed through the use of existing policy levers.

At least 40% of all new homes nationally will be delivered within the built-up footprint of existing settlements under our commitment to promote compact and sustainable growth of our cities, towns, and villages. Better spatial planning will reduce the carbon emissions of new developments, and deliver a better quality of life, including shorter commute times, better connections between our places of work and homes, and more vibrant, people-focused environments. Concrete actions being taken to make this a reality include the Land Development Agency aggregating sites, pre-planning of transport, and ensuring that our education and health needs are met.

District Heating

It is anticipated that a District Heating Centre of Excellence will be established to, inter alia, co-ordinate and drive delivery of the pipeline of Local Authority and other district heating projects throughout 2023 and onwards, and provide technical support, and staff upskilling to Local Authorities.

In addition, there is an objective to ensure that a legislative and regulatory framework for district heating is implemented in conjunction with the CRU.

It is also hoped that learnings from the Tallaght District Heating Scheme and the Dublin District Heating Project to develop experience and knowledge that can promote and inform further schemes nationwide to facilitate greater uptake of district heating through self-financed heat networks.

Geothermal Energy

A strategy is being developed and implemented for the optimal deployment of geothermal energy, including investigating the introduction of a requirement that geothermal energy be assessed for deployment in publicly funded buildings that are new builds or where there is a material change in the heating or cooling systems. Assessments will consider the long-run cost and gross FEC of alternative renewable heating/cooling systems.

Commercial Sector

Work is underway to develop a **non-domestic retrofit support scheme** for high impact measures on a staged basis. In Budget 2023, €50m funding from the Climate Action Fund (CAF) was announced to support the Scheme initially. The scheme is intended to assist SMEs in progressing retrofit including through targeted capital support and technical support.

3.2.5 Where applicable, a description of policies and measures to promote the role of local renewable energy communities in contributing to the implementation of policies and measures in points 3.2.1, 2, 3 and 4

CAP sets out a number of steps to support communities to take local action by linking to existing and new networks and clustering initiatives. The CAROs will lead a step-up in climate action within Local Authorities. Several measures in CAP focus on building awareness in local communities of their energy use and how to reduce it. CAP aims to expand the SEC Network to 1500 communities all over Ireland receiving support to plan for a sustainable energy future.

3.2.6 Description of measures to develop measures to utilise energy efficiency potentials of gas and electricity infrastructure

The generation of electricity using peat and coal is being phased out. This generation will be replaced by a combination of RE, interconnection imports and, in the short to medium term, by generation from natural gas. Electricity is produced from natural gas at an efficiency of circa 50% on average in Ireland compared to 30-35% for peat and coal. The move from high-carbon solid fossil fuels to natural gas, utilising the available capacity in the gas network, will lead to a significant increase in efficiency.

3.2.7 Regional co-operation in this area, where applicable

The policies listed in this section and section 3.4.4 apply nationally. The mainstream grant schemes, programmes and other supports are administered centrally and are available nationwide.

3.2.8 Financing measures, including Union support and the use of Union funds, in the area at national level The Programme for Government commits to increasing the carbon tax progressively over the period 2030, and using the revenue raised for additional spending over the period 2021 – 2030. An estimated €9.5 billion in additional revenue that will be raised by the planned increases in carbon tax.

The Programme for Government commits to increasing the carbon tax progressively over the period to 2030, and using the revenue raised for additional spending over the period. An estimated €9.5 billion in additional revenue will be raised by the planned increases in carbon tax.

This funding will be used to:

- Ensure that the increases in the carbon tax are progressive by spending €3 billion on targeted social welfare and other initiatives to prevent fuel poverty and ensure a just transition;
- Provide €5 billion to part fund a socially progressive national retrofitting programme;
- Allocate €1.5bn of additional funding to encourage and incentivise farmers to farm in a greener and more sustainable way. Ireland is using European Regional Development funding to co-fund the energy efficiency retrofit programme for low-income households under Ireland's Regional Operational Programme 2021-2027.

Ireland and the European Investment Bank (EIB) have reached an agreement that paves the way for Government-backed, low-interest home energy upgrade loans

The revised National Development Plan commits to €35bn. Of that:

- €11.6bn will be allocated to new public transport infrastructure;
- €1bn will be allocated to specific carbon reduction measures, including the continued delivery of improved vehicle efficiencies, incentives to encourage the switch to EVs, EV infrastructure, alternative fuels and demand management measures;
- BusConnects will be substantially delivered in all five cities across the country, massively expanding access to public transport and radically improving cycling infrastructure. On rural and regional bus services, around €350m will be invested in renewing and expanding fleets across the country.

The new LIFE Regulation 2021-2027 [Regulation \(EU\) 2021/783](#) entered into force on 17 May 2021 and applies retroactively from 1 January 2021. The financial envelope for the

programme under the new regulation is €5.432bn, which represents a significant increase compared to the €3.46bn available to the programme under the previous regulation.

3.3 Dimension Energy Security

3.3.1 Policies and measures related to the elements set out in point 2.3

Ireland is committed to maintaining the security of our energy system in the most cost-effective manner and in line with our sustainability objectives. Ireland is cognisant of the risks posed by the impacts of climate change to our energy security. The policies and measures set out under this plan, both in terms of mitigation and adaptation, serve to offset those risks. In addition, the impact of the wide range of policies and measures aimed at increasing energy efficiency will contribute considerably to ensuring security of our energy system. Ireland has established quantifiable objectives regarding indigenous production of clean energy. These, together with the measures detailed in this plan on improving the flexibility of our system, will strengthen Ireland's capacity to deal with the consequences of the planned closure of coal and peat plants.

A review has been carried out on Ireland's electricity, natural gas, and oil systems. The Energy Security in Ireland report to 2030 sets out a strategy to ensure energy security in Ireland for this decade, while ensuring a sustainable transition to a carbon neutral energy system by 2050. In terms of gas and electricity the key policies and measures, in line with national policy set out in the Energy Security in Ireland to 2030 Strategy and CAP, include:

- Ireland's future energy supply will be more secure by moving to an electricity-led system;
- Delivering on the plans already in place: Ireland's existing plans to grow renewable generation, demand-side flexibility, new gas-fired generation as back-up, ensuring interconnection and storage facilities are in place to secure electricity supplies;
- Balancing sustainable gas demand and supply: While gas supplies and infrastructure are adequate to meet our demand projections, there are risks in the event of disruption to infrastructure. To reduce reliance on gas imports, we will reduce natural gas demand and develop renewable, indigenous gas supply and renewable gas-compatible storage. As a transitional measure, we will introduce a Strategic Gas Emergency Reserve to address security needs in the medium-term, to be used only if a disruption to gas supplies occurs. Based on the preliminary analysis of the Department (DECC) it is anticipated that a floating reserve (FSRU) will best meet the

criteria set by the Government today, a solution preferred by a range of EU states. This will be examined by GNI, and a detailed proposal will return to Government for final approval in 2024;

- Robust oil supply: Back-up reserves and distribution plans in case of an oil emergency are sufficient. Into the future, we need to ensure commercial oil supplies into the State will be robust, along with the infrastructure for distribution. Over time, oil demand will be reduced;
- Anticipating Risks: Maintaining a strong focus on anticipating risks and good governance to ensure delivery, robust risk management and adequate resources.

The need for adaptation to address the current and future risks posed by a changing climate is both urgent and essential to successfully transition to a climate resilient economy and society by 2050. As referred to under the section on adaptation, tackling climate change will require the effort of our entire society and the electricity and gas networks sector is included in this. As these changes continue and if, as predicted, increase over the coming decades, the energy sector must prepare for, and adapt to, these new conditions. By identifying areas of vulnerability now, steps can be taken, and measures put in place to avoid or minimise future adverse impacts within the sector and to exploit opportunities. The Government's ['Policy Statement on Geothermal Energy for a Circular Economy'](#), published July 2023, sets out the scope of a strategy to promote the sustainable development of Ireland's geothermal resources to decarbonise the heating and cooling of buildings and for industrial uses and power generation. The optimal deployment of geothermal energy will increase the flexibility of the national energy system through the moderation of demand for electricity, particularly in winter, and through geological energy storage. In the longer term, geothermal energy could potentially generate electricity to provide baseload supply that is constant, further reducing dependence on fossil fuels for electricity generation.

Ireland's oil emergency management takes place within the framework of Ireland's membership of the European Union and the IEA. Strategic stocks are the cornerstone of oil security of supply and provide a robust buffer against an oil emergency. In accordance with EU Council Directive 2009/119/EC and IEA rules, Ireland holds 90 days of a strategic oil reserve to be used in the event of a supply disruption. The NORA is responsible for acquiring and managing Ireland's strategic oil reserve. NORA is funded by a Government levy of 2 cents per litre on oil disposals. At the end of Q3 2023, NORA held approximately 75% of its stocks on the island of Ireland, with the remaining 25% of stocks held abroad.

In the event of an oil supply disruption, the Department will liaise with NORA and the oil industry on the evolving situation. Where a stock release is warranted, a recommendation is made to the Minister for Environment, Climate and Communications by Departmental officials. The Minister informs his cabinet colleagues of his decision and instructs NORA to release stocks, specifying the product categories, volumes, and location from which the stocks are to be released. NORA has a Stock Drawdown Plan in place to deal with such a situation. NORA updates its stock drawdown procedure regularly. NORA also has a Memoranda of Agreement with five shipping companies that considerably strengthens the Agency's ability to ship products from storage locations at home and abroad to where it is needed in the event of a shortage of supply.

In the case of a domestic issue requiring stock drawdown, the Department would inform the EU/IEA of its actions and engage with NORA on the replenishment of stocks. In the case of collective EU or IEA action, stocks would be released in accordance with agreed procedures.

The Oil Emergency Contingency and Transfer of Renewable Transport Fuel Functions Act 2023, which was enacted in February 2023, puts all aspects of oil emergency planning on a statutory footing.

Ireland's procedures for responding to an oil emergency are contained in the Oil Emergency Response Plan (OERP), as provided for in the Oil Emergency Contingency and Transfer of Renewable Transport Fuel Functions Act 2023. The OERP, which has been developed by DECC, sets out the framework for a national response to a petroleum fuel shortage in the domestic market, taking into account the fuels that may potentially be in short supply and the severity and duration of any supply constraint. The OERP is updated frequently, influenced by learnings from recent market disruptions.

The OERP includes measures to deploy the State's strategic oil reserve of 90 days of supply, reduce fuel usage, and by way of the provisions of the associated Oil Emergency Allocation Schemes (OEAS), protect the operation of the emergency and critical services.

The OEAS provides for the measures to enable Government to intervene effectively in the petroleum product markets, where it is absolutely necessary for it to do so, to ensure product availability for critical functions. The OEAS enables the allocation of oil to ensure the continuation of societal functioning in a scenario where oil availability is limited or in the unlikely event of an Oil Emergency. The OEAS is modular in nature, consisting of a number of schemes, which, if required, may be enacted in their entirety, depending on the extent and duration of the emergency and the fuel type(s) in short supply. Quantities of fuel allocated to various fuel users may also be varied during the lifetime of the plan, based on the level of fuel stocks at the Minister's disposal.

The Department works closely with NORA and the Irish oil industry (through Fuels for Ireland (FFI), the industry body representing oil importers and distributors) on the development of oil emergency management policies and procedures. Several cross sectoral oil emergency exercises have been held, involving the other Government departments, NORA, and FFI, with the most recent being in September 2023. These are scenario based and explore the impacts of an oil emergency across all sectors, with an emphasis on a whole-of-Government response, taking into account the extent of the supply deficit in the market.

Refined product is largely sourced from the UK, with crude oil being mostly imported from USA. Ireland cooperates with other Member States through the EU's Oil Coordination Group and with other International Partners through the IEA. As Ireland has no indigenous oil reserves, all oil must be imported. The oil market is largely deregulated, with the oil companies sourcing product based on cost and logistical factors. While it is expected that the decarbonisation of transport and heating will decrease petroleum product usage over time, post Covid-19 the demand for some refined product within the Irish market is increasing, driven largely by demand from the transport sector, particularly the aviation industry. Although the increased use of biofuels has begun to displace a small volume of petroleum product, there is no expectation that Ireland will be able to decrease its reliance on imported oil product in the short to medium term.

3.3.2 Regional co-operation in this area

To ensure continued and ongoing regional co-operation Ireland will:

- Continue to implement the requirements of EU regulation 2017/1938 (Measures to safeguard security of gas supply) including risk assessments, preventative action plans, and emergency plans. The CRU is the designated competent authority for this regulation;

- Implement the requirements of EU regulation 2019/941, which came into force on 4 July 2019, on Risk Preparedness in the Electricity Sector. This Regulation provides for Member State co-operation on common methods for assessing risks and to establish a framework for a more systematic monitoring of security of supply issues;
- Seek to maintain strong regional co-operation with the UK on emergency preparedness and response for gas and electricity;
- Following the UK leaving the EU, continue to work with EU partners and the UK to identify and put in place any measures and arrangements necessary for continued regional co-operation on emergency preparedness and response, and security of supply for gas/electricity systems;
- Participate in EU fora for gas, electricity, and oil security of supply;
- Cooperate with the Department of the Economy in Northern Ireland on the all-island dimensions of oil security, particularly around the utilisation of import infrastructure on an island-wide basis, in the event of a disruption to the capacity to move product through a major oil terminal.

Memoranda of Understanding were signed between the Irish and UK Governments in September 2023 on Cooperation in the Energy Transition, Offshore Renewables and Electricity Interconnection and on Cooperation for Natural Gas Security of Supply, strengthening co-operation between both countries on a range of energy related matters including energy security.

3.3.3. Where applicable, financing measures in this area at national level, including Union support and the use of Union funds

Maintaining the security of our energy system requires adequate infrastructure and diversity of supply. This must be achieved in the most cost-effective manner. Access to suitable financing measures is essential to realising this objective. This plan sets out several financing measures relevant and necessary to furthering our climate and energy goals, including support schemes for electricity and heat. These will impact positively on security of supply. One of the key financing measures regarding security of supply is the EU CEF funding. EU energy Projects of Common Interest (PCIs) are eligible to apply for CEF funding for works or studies, providing they satisfy certain criteria set out in both the PCI and CEF Regulations.

Most recently, two Irish Interconnection Projects Greenlink and the Celtic Interconnector qualified for CEF funding. Greenlink was also included in the third Project of Common Interest (PCI) list published in 2018 and in the fourth PCI list published in October 2019, pre withdrawal agreement. Further detail can be found in Section 4 below. While a PCI is eligible to apply for funding under CEF, it is not guaranteed. In general, projects that are commercially viable would not receive funding under CEF. CEF funding is only allowable for a maximum of 50% of the project costs, if recommended. It is vital that access to this funding would continue to be available to Irish projects now that the UK has become a third country. Project promoters may also avail of European Investment Bank (EIB) funding opportunities to support projects. The EIB offers financial support to projects through innovative financial instruments such as guarantees and project bonds.

These instruments create significant leverage in their use of EU budget and act as a catalyst to attract further funding from the private sector and other public sector actors. Regulated assets can also be funded by tariff-related expenditure, which is subject to the approval of the CRU, Ireland's national energy regulator.

3.4 Dimension Internal Energy Market

Ireland's wholesale electricity market, together with other related initiatives, form an interlinked, policy-aligned system of measures which underpin and facilitate greater renewable electricity penetration in Ireland and progressive decarbonisation of its wholesale electricity sector, and ensure efficiency and security of electricity supply. Ireland's national objective relating to the EU IEM is, and has been over the long term, to continue to deepen the integration of Ireland's wholesale electricity market, and its regulation, with the EU IEM, building on well-known ongoing plans, programmes, and actions in this regard.

Brexit has added a level of complexity to this ambition. As of 1 January 2021, the Day Ahead Market (DAM) in the SEM is no longer coupled, with cross border trading taking place only in the intraday timeframe (IDA) with GB. Scheduling of flows on each of the interconnectors is determined by the price spread between the SEM and GB in the IDA 1 and IDA 2 auctions. The Trade & Cooperation Agreement (TCA) provides a mechanism to ensure that the current system is made more efficient and should be based on the concept of multi-regional loose volume coupling (MRLVC).

Ireland is committed to supporting customers' participation in the energy system and enabling them to sell excess electricity they have produced back to the grid. Ireland's peripheral location at the north-western edge of mainland Europe presents obvious challenges to interconnection, not least around costs, yet may also highlight the desirability of interconnection, particularly in the context of security and diversification of electricity supply. National and regulatory policy combined have now created a model environment for the proposal of additional interconnection, as appropriate, to assist in meeting our national targets.

3.4.1 Electricity Infrastructure

3.4.1.1 Policies and measures to achieve the targeted level of interconnectivity as set out in point (d) of Article 4

Ireland's interconnection capacity currently stands at 500 MW in a single connection to the UK. Capacity is set to more than treble by 2027 to 1,700 MW including a return of direct interconnection between Ireland and the EU via the Celtic Interconnector. Envisaged connection to the IEM by 2030 is 700 MW.

The Celtic Interconnector between Ireland and France remains on target for integration into the IEM in 2027. Construction activity has commenced in France with a planned construction start date in Ireland before the end of 2023. The completion of the Celtic Interconnector in 2027 will see the return of direct connectivity to the IEM following the departure of the UK from the European Union.

Ireland's updated National Policy on Electricity Interconnection envisages a further connection with the UK by 2030 bringing the total anticipated interconnection capacity to 2,450 MW. Additionally, existing and planned interconnection from GB to Northern Ireland will mean a total of 3,650 MW SEM interconnector capacity by 2030.

Ireland's updated National Policy Statement on Electricity Interconnection published in June 2023 sets out our interconnection ambitions. Targeting increased connection to the IEM and recognizing the key energy relationship with the UK, Ireland will explore the feasibility of the following at a minimum:

- A second connection to France by the middle of the next decade. This will build upon the collaborative relationship between EirGrid and the French TSO in progressing the Celtic Interconnector;
- A connection to Spain, if feasible considering the practical geographical challenges;

- A connection to Belgium/Netherlands, potentially a hybrid or multi-purpose project;
- A further connection to GB, potentially a hybrid interconnector, beyond 2030 seeking to give effect to the April 2023 Ostend declaration of energy Ministers;
- Any further interconnection required to support export of renewable electricity in the context of other uses such as green hydrogen and new demand centres.

We will take a structured and integrated forward planning approach to deliver the necessary infrastructure to both meet Ireland's need and make Ireland central to Europe's energy future that will be expressed in an Offshore Transmission Strategy that will be aligned with our forthcoming offshore future framework policy and National Industrial Strategy for Offshore Wind. Industry has expressed significant interest in progressing Multipurpose interconnector (Hybrid) projects under Transmission strategy both to GB and the continent.

Ireland's next focus is the exploration of a further connection with France. To give effect to this Ireland and France made a [Joint Declaration of Intent](#) in November 2023 committing to making progress on assessing a second Ireland-France Interconnector building on the ongoing work at EU level on the Offshore Network Development Plan, which is due to be published early next year. Should that assessment indicate that a second interconnector could be considered, both member states would be positively disposed to the TSOs advancing towards a prefeasibility study to progress towards a second interconnector. Progress was further buttressed by the signing of a [Memorandum of Understanding](#) between the respective TSOs.

Further connection to the IEM will be explored with partner member states for delivery in the next decade in the context of Ireland's renewable energy ambitions and energy security needs. The 2023 policy also acknowledges the potential for commercial projects, augmenting those of Eirgrid, to maximise future interconnection.

Ireland's National Regulator CRU assesses electricity interconnection applications based on a set of technical, economic, and regulatory criteria. In particular, the impact of each project both in terms of its socio-economic benefits as well as in terms of costs under a range of different scenarios and sensitivities. In carrying out this evaluation, CRU has due regard for the long-term interest of final consumers, particularly in ensuring that the impact on national tariffs does not represent a disproportionate burden for the Irish consumer.

The CRU continues to support further interconnection, with statutory responsibility for:

- Deciding on appropriate regulatory support to underpin interconnection investment;

- Cooperating with other National Regulatory Authorities and the Agency for Cooperation of Energy Regulators in the PCI process;
- Cross border cost allocation decisions as part of the PCI process;
- Approving EirGrid's submissions on national grid infrastructure upgrades that may be associated with new interconnectors connecting to the transmission system;
- Granting licences to transport electricity and maintain an interconnector as per the Electricity Regulation Act 1999;
- Granting authorisation to construct an interconnector, along with the appropriate regulatory regime for the specific interconnector, considering the interests of final customers of electricity;
- The CRU will continue to effectively deliver these functions in future. Additionally, CRU's considerable regulatory experience will inform the development and evolution of the Offshore Transmission Strategy.

EirGrid is the certified independent TSO in Ireland and will play a vital and central role in the expansion of Ireland's offshore grid. EirGrid's remit has been extended significantly to support our offshore energy and interconnection ambitions.

As per [SI 445/2000](#) , EirGrid will operate and ensure the development and maintenance of a safe, secure, reliable, economical and efficient electricity transmission system, and to explore and develop opportunities for interconnection of its system with other systems, always with a view to ensuring that all reasonable demands for electricity are met and having due regard for the environment.

[The 2021 Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System](#) set out EirGrid's intended role relating to offshore grid development. In addition to its central role in design and construction EirGrid's technical expertise and experience will be fundamental in informing the Offshore Transmission Strategy.

3.4.1.2 Regional co-operation in this area North Seas Energy Co-operation

NSEC Support Group 1 (SG1) is a project-based support group for hybrid assets (multipurpose interconnectors) and joint projects between member countries. The group also concentrates on regulatory aspects and methods to overcome barriers to hybrid projects. This is a new and emerging policy area with only one developed hybrid project in the EU, although there are various projects, initiatives, and models in progress or development across the Union.

Ireland's engagement with SG1 to date has been productive in leveraging the experience of other Member States that will be vital in furthering Ireland's energy transition. As additional Member States' specific projects, initiatives and models develop it is intended to intensify our engagement with this support group in relation to:

- The establishment of Offshore Bidding Zones;
- The alignment of development of offshore energy & routes to market including interconnection;
- Ensuring consistency of approach towards hybrid projects with the UK across member states;
- In 2022 under Ireland's Presidency of the NSEC, a joint MOU of co-operation in the development of ORE was signed with GB. The cooperation under the MoU implements Article 321 of the EU-UK Trade and Cooperation Agreement, which provides that the EU and the UK are to enable the creation of a specific forum for technical discussions on offshore renewable energy development, building on NSEC, in a number of areas. The MoU gives effect to this provision and establishes a new relationship between NSEC and the UK, building on the existing NSEC structures. Through the MoU, GB does not become an NSEC member but benefits from a privileged framework for cooperation with the NSEC members.

A key challenge has emerged from hybrid projects in development with the UK. Effective operation of hybrid projects requires an efficient market design. The Advanced Hybrid Coupling (AHC) approach endorsed by the Commission is not applicable to the UK under the Trade and Cooperation agreement. Alternative approaches are in discussion through the Specialised Committee for Energy. A successful outcome to that process will be fundamental in progressing Hybrid projects with the UK.

General Co-operation

Ireland - France Joint Declaration of Intent on energy transition cooperation.

On 13 November 2023, Ireland and France signed a Joint Declaration of Intent (JDol) on 'Energy Transition Cooperation'. The declaration provides a framework for the mutual willingness of both countries to accelerate the decarbonisation of energy systems and is part of a wider collective ambition for Europe to become the first climate neutral continent by 2050.

The Joint Declaration of Intent also builds upon existing commitments set out in the ‘Ireland France Joint Plan of Action 2021-2025’, adopted by both countries in August 2021. The joint action plan set out several priority projects in a number of areas, including efforts to support sustainability, with a focus on ‘renewable energy’. It signals greater co-operation on onshore wind and solar development and a commitment to accelerating the deployment of offshore renewables and energy systems, including intensifying cooperation bilaterally and regionally in the North Sea.

In the near term, both countries will endeavour to make progress on the assessment of opportunities to increase electricity interconnection capacities, building on the ongoing work at EU level on the Offshore Network Development Plan, which is due to be published early next year. Should that assessment indicate that a second interconnector should be considered, the signatories would be positively disposed to the TSOs advancing towards a prefeasibility study to progress towards a second interconnector.

Ireland – United Kingdom

The UK remains a key energy partner for Ireland despite its departure from the European Union. In addition to geographical proximity, the existing IE-GB energy links, proximity and growing array of interconnectors with other member states, the Single Energy Market includes Northern Ireland and crosses national jurisdictions requiring close cooperation.

There are several fora for cooperation stemming both from the Good Friday Agreement and the general need for collaboration including:

- The British–Irish Intergovernmental Conference;
- Energy MOUs;
- British Irish Council – Energy Work Sector;
- The British–Irish Intergovernmental Conference (BIIGC) is an intergovernmental organisation established by the Governments of Ireland and the UK under the Good Friday Agreement in 1998. When the Northern Ireland Assembly is suspended, devolved matters revert to the BIIGC's remit. The BIIGC guarantees the Government of Ireland a say in areas of bilateral co-operation and on those matters not yet devolved to the Northern Ireland Assembly or the North/South Ministerial Council. The latest meeting took place at in Dublin on 19 January 2023 with Energy security as a key focus and is complemented by regular and ongoing official level workshops and discussion fora. It was agreed to explore increased cooperation on offshore renewable energy and security of supply, including in relation to offshore grids,

electricity interconnection, and development of hybrid/multipurpose projects combining offshore wind generation with interconnection.

- Continue the policy dialogue between relevant Departments and agencies in the context of the forthcoming Memorandum of Understanding for cooperation on gas security of supply.
- Jointly examine the scope for further cross-border cooperation and coordination around low carbon hydrogen.

In September 2023, Ireland signed two Memoranda of Understanding with the UK on increased cooperation for developing offshore renewable energy, exploring further electricity interconnection opportunities, and strengthening cooperation on security of gas supplies.

The benefits of cooperation between the participants are to accelerate the delivery of offshore renewable generation, interconnection, and offshore hybrid assets, which includes hybrid interconnector projects that connect directly with offshore wind farms and energy islands, and the importance of wider regional cooperation to facilitate this.

Under the Electricity MOU a Joint Working Group to explore increased interconnection, including hybrids, is being established.

British – Irish Council – Energy Work Sector

The British-Irish Council is a practical forum where national and devolved administrations work together on issues of common interest to citizens across these islands. The Council allows Ministers to consult, share expertise and build strong partnerships.

Member Administrations meet regularly throughout the year, including when Heads of Administration and Ministers come together at biannual Summits. The Council remains responsive to evolving policy priorities and its current work programme prioritises eleven specific work sectors where it can deliver for citizens and stakeholders.

In these work sectors Ministers, civil servants and, when relevant, invited stakeholders, are collaborating across a diverse range of social, economic, and environmental topics. The energy work sector covers a range of energy topics of common interest including grid and interconnector development. Co-operation between the two countries will be imperative over the coming decade.

3.4.1.3 Where applicable, financing measures in this area at national level, including Union support and the use of Union funds

Celtic Interconnector

In December 2019 TSOs EirGrid and RTE entered into the current grant agreement under the CEF with the Climate Infrastructure and Environment Executive Agency (CINEA) to establish funding for the Celtic Interconnector project. The total CEF grant for this project is a maximum of €530.7m.

The regulators in Ireland and France reached a joint decision in 2019 on the “Cross Border Cost Allocation” for the project. Based on the benefits, the regulators have ultimately agreed that 65% of the project’s estimated construction costs will be allocated to Ireland and 35% to France, subject to a substantial grant from CEF.

In 2021 CRU granted EirGrid a fully regulated regulatory model consisting of two phases for the Celtic Interconnector in Ireland. Phase 1 – Pre-Operational (i.e. developments & construction), the remuneration of the project will be limited to qualifying debt costs, with any returns for equity risk during that period being deferred to Phase 2. CRU has decided to allow EirGrid to recover their efficient cost of debt service during construction.

In operational Phase 2 a full Regulatory Asset Base (RAB) x Weighted Average Cost of Capital (WACC) model would apply with EirGrid permitted to recover their efficient cost of debt and a return on equity.

Greenlink Interconnector

In 2018, Greenlink Interconnector Limited (GIL) entered into a grant agreement with CINEA in respect of the Greenlink Interconnector Ireland-UK. The total CEF grant for this project is a maximum of €4,762,957.

In 2021, CRU published in it is [decision paper](#) on the Cap and Floor regulatory framework for the Greenlink interconnector in Ireland. The Cap and Floor Regime will promote the development, financing, and construction of the Interconnector where it is demonstrably beneficial to consumers.

The paper also includes the CRU’s initial estimate of the Cap and Floor levels that would apply to a maximum of 50% of the project costs and revenues, reflecting the costs applicable to Ireland. An annual assessment period will be carried out over the 25-year regime from the commissioning date. This has established a regulatory model in Ireland that can be applied, if appropriate, to future commercial interconnectors to EU member states and the UK.

TSO and future developments

CRU published its [Price Review 5L](#) ('PR5') Determination Papers. The Final Determination sets out the CRU's decision on the network companies' revenues for the 2021 to 2025 period and examines the cost and performance over the previous five years (2016 to 2020). Price review 6 to 2030. The designation of EirGrid as the system operator and asset owner of Ireland's offshore electricity transmission system under the [Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System 2021](#), will ultimately provide Eirgrid with a much larger asset base, increase its standing as a central market operator and its borrowing potential. CRU recently published a [call for evidence](#) to gather stakeholder feedback on the revenue recovery model to be applied to EirGrid in its new role as offshore asset owner to match our offshore generation and grid ambitions. The CRU is of the view that EirGrid will require significant levels of equity to be injected into the business in order raise sufficient capital to fund the build out of the offshore transmission grid. Further financial measures to support EirGrid in its role as offshore TSO are in active development.

Other supports

DECC received funding from the European Union via the Technical Support Instrument in cooperation with the Directorate-General for Structural Reform Support of the European Commission (DG REFORM). Funding was set at €430K. This project seeks to underpin the plan-led regime for Offshore Renewable Energy (ORE) in Ireland and to inform future policy. Deliverable 3 of the project is an Analysis for Setting Up an Appropriate Policy Framework for Hybrid Interconnection that is nearing completion and will inform the development of the Offshore Transmission Strategy and NSEC SG1 engagement.

3.4.2 Energy Transmission Infrastructure

3.4.2.1 Policies and measures related to the elements set out in point 2.4.2, including, where applicable, specific measures to enable the delivery of Projects of Common Interest (PCIs) and other key infrastructure projects.

Government policy statement on the strategic importance of transmission and other energy infrastructure

In July 2012, the Government produced a policy statement on the Strategic Importance of Transmission and other Energy Infrastructure. This statement reaffirmed the need for the development and renewal of energy networks to meet economic and social goals. It stated that the planning process provides the necessary framework for ensuring that all necessary standards are met, and that comprehensive statutory and non-statutory consultation is built into the process. It confirmed that Government "endorses, supports and promotes the

strategic programmes of the energy infrastructure providers.” The 2021 Policy Statement on the Framework for Ireland’s Offshore Electricity Transmission System set out a number of measures and policies to support the development of Ireland’s offshore transmission infrastructure including:

- A phased transition from the current decentralised offshore transmission system model to a centralised model ultimately resulting in Eirgrid being the exclusive developer of offshore transmission infrastructure;
- The designation of EirGrid as the system operator and asset owner of Ireland’s offshore electricity transmission system;
- Transmission system assets developed by RE projects must comply with functional specifications provided by EirGrid.

Compliance with Trans-European Energy Infrastructure Regulation

Ireland is compliant with [EU Regulation 347/2013](#) which promotes the development of trans-European energy infrastructure. Under Article 8 of the regulation, IE has designated Ireland’s planning authority, An Bord Pleanála, as the competent authority responsible for facilitating and coordinating the permit granting process for projects of common interest.

An Bord Pleanála was designated Competent Authority for the purposes of Article 8.3(c) of Regulation 347/2013. An Bord Pleanála is carrying out this role in accordance with the requirements of Regulation 347/2013 for a streamlined permit granting procedure. The competent authority, in consultation with other consenting authorities, sets the time limits in accordance with Article 10 of the Regulation on which individual decisions shall be issued for a PCI.

EU Regulation 347/2013 lays down rules for the timely development of trans-European energy projects in order to achieve the energy policy objectives of the EU. The Energy Infrastructure Regulation contains guidelines for the identification of projects known as Projects of Common Interest (PCI). The PCI designation carries certain conditions and entitlements, including more streamlined planning and regulatory processes at Member State level. The regulation facilitates the timely implementation of projects of common interest by streamlining, coordinating more closely, and accelerating permit granting processes and by enhancing public participation.

TSO Public Engagement

In the next decade, EirGrid will need to develop large amounts of new grid infrastructure - significantly more than in the last ten years. More than ever before, it is important that we gain the support of individual landowners, their neighbours, and their wider communities. Eirgrid acknowledges the challenges of what they ask from individuals and communities for the benefit of the entire population.

EirGrid has been making community engagement and participation part of their core competence. In early 2020 EirGrid established a programme delivery team to find ways to improve public engagement. This team then started a detailed process of investigation and recommendation. They outlined goals, assessed practices, gathered learnings and defined a path to new standards. This process was informed by a comprehensive analysis of independent reviews on this topic. These included independent reports carried out by external consultants. The research also considered insights from workshops held with internal and external stakeholders. Finally, the team evaluated local case studies, and a range of international and European best practice reviews.

This process allowed them to consider specific lessons learnt from their own projects, and from similar work across the energy sector. In particular, they examined the detail of recent engagements with landowners, community, and industry. This allowed EirGrid to make informed and considered recommendations to create their strategy for effective public engagement. EirGrid published their strategy for effective public engagement in 2021 and have been pursuing the actions laid out in the strategy ever since. This strategy focuses on the three pillars of Social Acceptance, Capacity and Partnerships.

Goal 1: Social Acceptance

Social acceptance is the biggest challenge EirGrid faces when developing new electricity grid infrastructure. As a result, they have been placing greater emphasis on engaging with and listening to affected communities.

To help overcome the challenge of social acceptability, EirGrid have been:

- Considering the social acceptability of each solution
- Improving Participation and engagement methods
- Enhancing community benefits
- Delivering ambitious education and information campaigns
- Improving their approach to landowner engagement

Goal 2: Greater public engagement capacity

For public engagement to become a core competence, EirGrid have been developing a dedicated in-house team with specialist skills in this area. This team focuses on developing programmes and protocols to ensure they deliver a consistent and appropriate approach to every project.

To build on their Public Engagement capacity, EirGrid have been:

- Reviewing and updating their processes and outputs
- Restructuring their teams with a great focus on public engagement
- Increasing their public engagement capacity by adding personnel
- Carrying out independent evaluation and certification of their public engagement every year
- Expanding their public engagement toolkit

Goal 3: Partnerships

EirGrid has a deeply interconnected role in leading the changes necessary for a clean electricity system. This is reflected in the many partnerships they are renewing, building and developing with stakeholders such as; Government, local Government, state bodies, NGOs and local community and voluntary groups.

To develop these partnerships, EirGrid has been

- Working with Government on a multi-partner campaign about climate action to support public policy
- Supporting and encouraging the energy sector to work together more effectively
- Strengthening relationships with community organisations
- Renewing and developing new alliances with enabling organisations

For more information, please refer to our Public Engagement Strategy [here](#).

3.4.2.2 Regional co-operation in this area

EirGrid and GNI work very closely with all European Transmission System Operators (TSOs) through ENTSO-E and ENTSO-G. Significant areas of work include the TYNDP and Network Codes. A joint TYNDP is produced by ENTSO-E and ENTSO-G. Network Codes are a common set of rules being adopted by the European Union which will enable electricity and

gas network operators, generators, suppliers, and consumers to operate more effectively in the pan-European electricity and gas market. The harmonisation of national rules will promote the efficient use of cross-border interconnection between countries and will provide more secure and reliable systems with an increased level of renewable generation.

3.4.3.3 Where applicable, financing measures in this area at national level, including Union support and the use of Union funds

The majority of projects are financed through customers that use the transmission systems in Ireland. Both the Celtic and Greenlink interconnector have received CEF funding for studies. Greenlink was granted funding of €3.6m in 2019, and Celtic has received three grant awards including two for approx. €3.75m and €4m. On 2 October 2019, the European Commission announced the allocation of a €530.7m grant from the CEF for the Celtic Interconnector between Ireland and France. This grant reflects the project's value in terms of solidarity and security of supply, as well as its contribution to achieving the EU's energy policy objectives.

3.4.3 Market Integration

3.4.3.1 Policies and measures related to the elements set out in point 2.4.3

Some of the regulatory policies and measures related to the national objective for market integration in section 2.4 are already provided for in existing plans and programmes, comprising the I-SEM market design, the associated capacity mechanism and the DS3 programme which is soon to be supplemented and then replaced by the Future Arrangements for System Services. Further regulatory measures in the SEM over the coming years are set to be implemented to ensure compliance with relevant EU energy acquis requirements, and in accordance with regulatory and system operator work programmes and timelines.

The requirements flow from the EU relevant network codes and guidelines, the electricity market regulation in the CEP, reform the electricity market design (EMD) and regulation on wholesale energy market integrity and transparency (REMIT) that is currently being negotiated at EU level, and the requirements of the SEM capacity mechanism State Aid approval. Further details on the main elements of these policies and measures are contained in this following section.

Given that the I-SEM project was being developed as the CEP was being negotiated and the depth and broad scale of reforms implemented in the new market design, in many respects the SEM was already largely compliant with the principles for the design and operation of

electricity markets outlined in the CEP recast electricity market regulation. That said, there were requirements that needed to be implemented relating to the electricity market regulation such as changes to emissions limits for participation in the CRM, implementation of non-priority dispatch renewables, and changes to the SEM's definitions of dispatch and redispatch. This CRM introduced in 2017 is State Aid approved and is also similarly aligned in many respects with the regulation.

The ISEM launched on 1st October 2018 and included the establishment of Day- Ahead, Intra-Day and Balancing Markets, with an ex-ante clearing price compared to the previous ex-post gross mandatory pool system, and a new obligation on participants to take responsibility for imbalances.

The Day-Ahead Market (DAM), Intra-Day Market (IDM) and Balancing Market (BM) are the exclusive routes for contracting and physical scheduling of generation in the SEM. Financial Transmission Rights (FTRs) were sold until 2021 when the Withdrawal Agreement entered into force. FTRs were the only forward, cross-border contracting available to market participants. FTRs will be sold again on the Celtic Interconnector once energisation is complete.

Market participants are required to provide bids and offers to provide this energy to the TSOs in the Balancing Mechanism (BM), up to the technical capability of the market participant to respond to dispatch instructions.

Through the ability to trade closer to real time, the revised arrangements are also facilitating the continued growth of renewable generation and decarbonisation of Irish power generation. It is also important to note the non-discriminatory nature of participation in the new market and its capacity mechanism, which has led to a marked increase in demand side participation and battery storage in the SEM.

The Capacity Mechanism in the SEM

Ireland, like several European countries is strongly supportive of the capacity mechanism provided for in the European framework and has learned the strategic importance of this policy lever in achieving a secure transition and successfully operating a majority renewable power system. The SEM includes a competitive CRM as an integral feature of the market, which was [State Aid](#) approved by the European Commission in November 2017.

Consistent with the thrust of EU acquis, including Article 22 of the CEP recast Electricity Market Regulation and the terms of the state aid approval, the SEM's CRM is a measure (in energy sector terms) established to address existing resource adequacy issues. Considering

the level of projected demand growth in Ireland, the transition to ever higher levels of variable renewables, and the need to manage the transition from an aging fleet of conventional fossil fuel units, the SEM CRM will continue to play a central role in securing the level of investment required in the coming years.

Given the importance of the CRM as a measure, any policy changes or amendments must remain sufficiently flexible both to ensure generation adequacy and security of supply and to facilitate the achievement of the ambitious decarbonisation objectives on the island of Ireland in a cost effective and efficient manner. Given the extent and ambitious nature of Ireland's 2030 80% target, the SEM's CRM, in conjunction with the energy and ancillary services markets, provides a necessary revenue stream to ensure adequate levels of future investment including in flexible generation, such as demand response and battery storage.

During the recent electricity market design (EMD) negotiations, Ireland along with several other Member States successfully argued for a more flexible and simplified process for assessing capacity mechanisms from a state aid perspective. It was agreed that the Commission will come forward with proposals on streamlining and simplifying the process for assessing capacity mechanisms shortly after the EMD Regulation enters into force. This commitment is very welcome and will be monitored closely as EMD progresses. The state aid decision on Ireland's capacity mechanism is due to expire in 2028. The SEM will be required to apply for a new decision from the European Commission. In preparation for this application, the Department will engage with key stakeholders across the SEM to develop a shared vision for how to ensure optimum operation of the CRM in the period to 2038 against the backdrop of the energy transition.

Unlike the pre-ISEM project administratively-determined capacity payment mechanism, the value of capacity in the market under the CRM is determined through competitive auction. The CRM includes penalties for generators that receive reliability option payments after a successful bid but are then not available to produce when required at times of system stress. Despite these changes, the CRM has not performed to the level required to keep up with increasing tightness between supply and demand in the electricity market in Ireland. The CRU is implementing a programme of actions to address electricity security supply risks over the coming years.

[The Implementation Plan for Ireland](#) was prepared in fulfilment of the requirement set out in Article 20 of the Regulation 2019/943 on the internal market for electricity (recast), part of the CEP. The requirement is for Member States with capacity mechanisms to prepare and submit an Implementation Plan containing information about its measures under certain pre-

defined headings relating to principles and objectives for market operation. The submission of the Implementation Plan is followed with a review by the Commission, both being legal conditions for the approval of any national capacity mechanism. This was detailed in the Guidance for Member States on implementation plans pursuant to Art. 20 (3)-(5) of Regulation (EU) 2019/943 (“Market Reform Plans”).

Ireland’s Implementation Plan recognises that markets, if well designed, free of regulatory distortions and sufficiently connected to the EU electricity grid, can provide the right amount and type of capacity to meet demand. Capacity mechanisms should only be introduced to address residual concerns, i.e., problems or circumstances which cannot be solely resolved by market reforms. Once the residual concerns have been eliminated and market reforms have started to work, adequacy problems are expected to decrease and ultimately disappear. To enable this, regulatory measures to eliminate distortions and to reform markets need to be effective and credible for investors and all other market participants. In December 2019, Ireland’s draft Implementation Plan was submitted to the Commission, which published it as part of their consultation process in early 2020. The Commission sent its opinion to the DECC in April 2020. It then published the opinion on 28th May 2020. The Implementation Plan was updated to reflect the Commission’s suggestions on priority action in the wholesale market. The Commission emphasised its opinion of the requirement for thorough implementation of CEP rules in the Irish wholesale market. The updated Implementation Plan was published on the Department’s website on 9 October 2020. Article 20 (6)-(8) of Regulation (EU) 2019/943 (Electricity Regulation) requires all Member States with identified adequacy concerns to monitor the application of their implementation plans and to publish the results of the monitoring in an annual report (“Monitoring Report”) that shall be submitted to the Commission. This report contains updates on the progress to date achieved towards measures detailed in the Implementation Plan relating to market reform, resource adequacy, and ongoing or future market reform measures. This report details and explains any previous delays or possible future delays, whilst also setting out anticipated issues and planned mitigation measures. The first monitoring report was prepared in fulfilment of this requirement for Commission opinion under Article 20 (7) and submitted in February 2022. The second report was submitted in early 2023 and sets out the additional progress on those measures made since the first monitoring report was submitted. Ireland is currently drafting the third monitoring report which will be submitted in the coming weeks.

DS3 System Services

Due to Ireland's isolated island status and the dramatic increase in wind penetration levels in recent years, the level of non-synchronous power on the SEM system has risen at a faster rate than in any other region in Europe over this timeframe. Overseen by the SEM Committee, DS3 was initiated in 2011 and was established to increase the amount of non-synchronous generation on the Irish power system in a safe and secure manner. EirGrid, as the Transmission Service Operator, is responsible for administering DS3 which involves the procurement of a suite of system services from a range of service providers, including conventional generators, wind farms, interconnectors, storage and demand side units. The services provided through DS3, which range from inertia, reserves, voltage, and ramping, offer an enhanced portfolio of options to the TSO for managing an electricity system with higher penetrations of renewable generation. The programme also encourages new entrants to the energy market. It is important to highlight the overwhelming success of the [DS3 programme](#) in facilitating the integration of renewables on the SEM system, which in terms of SNSP is unprecedented.

During a period of considerable upheaval, DS3 provides a reasonably predictable revenue stream, which in conjunction with energy market revenues in the CRM, are considered vital to facilitating the necessary investment in flexible generation to meet Ireland's ambitious climate action goals. To date, the DS3 Programme has enabled EirGrid and SONI to increase levels of instantaneous SNSP to 75% with plans identified to move to SNSP of 95% by 2030. As highlighted in section 2.4.3, EirGrid's DS3 Programme has been and will remain a vital component in the decarbonisation of the power sector on the island of Ireland and the integration of intermittent RES, primarily wind, onto the SEM system. It is important to highlight that the nature of System Services on the Irish system is continuously evolving. The original aim of the DS3 programme was to ensure that the TSO could securely operate the power system with increasing amounts of variable non-synchronous renewable generation as Ireland progressed toward its 2020 renewable electricity target.

The existing arrangements give service providers a good estimate of revenues to 2023, with the possibility to extend to 2026. The SEM Committee is now working on the implementation of Future Arrangements for System Services which will include daily auctions for system services accompanied by a layered procurement framework for products that are not amenable to daily auctions at Go Live. The RAs are working closely with TSOs on the implementation of this project which will allow the SEM system to facilitate closer to 100% non-synchronous generation – a key component of Ireland's decarbonisation pathway.

Ireland's ambitious renewable energy targets create a host of new challenges for our all-island electricity system. In this regard, the next phase of the TSO System Services programme will be critical in meeting these challenges.

The SEM also ensures that liquid and transparent trading arrangements are accessible by all market participants. Transparency of data facilitates competition and provides an effective market power mitigation measure, enabling participants and stakeholders to comprehend price formulation and market signals. Physical cross-zonal capacity is released for use only in centralised short-term markets, facilitating scheduled flows of power to and from the all-island market where it is efficient to do so, and increasing competition and efficiency.

The design provided for Inter-TSO collaboration to effect flows close to real-time and intra-day cross border trades occurring in the Intra-day market in order to facilitate the efficient use of the interconnector in real time.

3.4.3.2 Measures to increase the flexibility of the energy system with regard to renewable energy production such as smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, real-time price signals, including the roll-out of intraday market coupling and cross- border balancing markets

The introduction of a firm Day Ahead Market schedule and price under I-SEM, resulting in more efficient short-term price signals, will also have played a role in stimulating more DSU investment. The continued roll-out of smart metering in Ireland is also anticipated to see a further increase in aggregated demand side response.

The DS3 Programme has been and will remain a vital ingredient in power generation, decarbonisation and procurement of flexible generation on the island of Ireland and the integration of record levels of intermittent RES, primarily wind, onto the SEM system.

The CAP commits to strengthening the policy framework to incentivise electricity storage and interconnection. Increased levels of storage and interconnection will be critical to absorbing high levels of renewable generation on to the system, as renewables require back-up which will have to be provided by quick response plant, storage or interconnection.

3.4.3.3 Where applicable, measures to ensure the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets

In regard to non-discriminatory participation of renewables, demand response and storage, national policy in Ireland will continue to be in accordance with and framed by adherence to EU legislation and future implementation of the Clean Energy Package.

Initial auctions that have taken place under the CRM in the SEM successfully procured future investment in flexible generation, including DSU and battery storage that will be required to complement Ireland's high and rising volume of intermittent renewables. In particular, the early auction results suggested that the advent of the CRM in the SEM had further spurred development of demand side response.

The introduction of a firm Day Ahead Market schedule and price, resulting in more efficient short-term price signals, will also have played a role in stimulating more DSU investment.

Looking ahead to future reforms related to demand side participation, in order to comply with the European Commission's State Aid ruling of November 2017, it is intended to modify the participation of DSU in the SEM CRM. When establishing the CRM, the SEM C determined that DSUs, although able to participate in the CRM auctions, would be exempt from reliability option (RO) payments where the contracted demand is delivered. RO difference payments would be applied to DSUs only when the demand reduction was not delivered, and the Strike Price was exceeded by the Market Reference Price (MRP). This decision recognised the fact that DSUs do not have offsetting energy payments, unlike other auction participants.

The Commission's November 2017 State Aid approval facilitated this different treatment of DSUs, but only as a temporary measure, with the Regulatory Authorities obliged to end the exemption from payback obligations for DSUs from the delivery period starting October 2020. To this end in March 2019 the SEMC published "DSU Compliance with State aid Consultation Paper" to provide stakeholders with an opportunity to comment on the proposals for achieving compliance with State aid, following which a formal decision paper was published in July 2019. Due to the timescales involved in making system changes and developing the profiles and code changes required to determine the actual delivered quantity of an Individual Demand Site (IDS) and therefore a DSU and to avoid double-counting of energy, the SEM Committee have proposed an interim solution, with an enduring solution to follow. It includes the following key features:

- The assumption that dispatched quantity was a suitable proxy for metered quantity for DSUs;
- Use of the Socialisation Fund to socialise the costs of DSU energy payments across Suppliers;

- Option for DSUs energy payments to be always made, or only at times of scarcity.
- Regarding the enduring permanent solution, the SEMC determined that the choice of mechanism should be determined in line with the following principles: The socialisation mechanism must be robust to the lumpy nature of DSU energy payments and must ensure that all DSU energy payments are made;
- The recovery mechanism should allocate the costs between Suppliers in a fair and reasonable way, in line with the equity assessment criteria applied in the design of the I-SEM, i.e. “that the market design should allocate the costs and benefits associated with the production, transportation and consumption of electricity in a fair and reasonable manner”;
- The mechanism must be capable of implementation for 1 October 2020.

The enduring solution is in the process of being implemented.

The DS3 Programme, soon to be supplemented and then replaced by the Future Arrangements for System Services, has been and will remain a vital ingredient in power generation decarbonisation and procurement of flexible generation on the island of Ireland and the integration of record levels of intermittent RES, primarily wind, onto the SEM system.

The CAP commits to strengthening the policy framework to incentivise electricity storage and interconnection. Increased levels of storage and interconnection will be critical to absorbing high levels of renewable generation on to the system, as renewables require back-up which will have to be provided by quick response plant, storage, or interconnection.

3.4.3.4 Policies and measures to protect customers, especially vulnerable and, where applicable, energy poor customers, and to improve the competitiveness and contestability of the retail energy market

Under national objectives to protect energy customers and improve the competitiveness of the retail energy sector the CRU has been assigned a range of statutory functions under the Electricity Regulation Act 1999 (as amended).

As per the CRU’s statutory functions set out in SI 630/2011 the CRU monitors the retail market to ensure that final customers are benefiting from competition in the supply of electricity and gas. This S.I. sets out the CRU’s oversight of the development of competition, wider market monitoring, dispute resolution and enforcement functions.

Wider Market Monitoring

The CRU carefully monitors wholesale and retail gas, and electricity prices and publishes an annual Energy Monitoring Report, the most recent of which was published in July of 2023 and presents an overview of the year 2022. The CRU monitors the effect of competition in the market, including monitoring for any distortion of competition in the supply of electricity and gas to final customers and monitors the relationship between household and wholesale prices.

The CRU also oversees non-price aspects of competition and has taken steps to facilitate market access for new supplier firm entrants and increase transparency and consumer engagement in retail markets. Six major suppliers make up approximately 98% of market share of both retail electricity and gas; Electric Ireland (EI), Bord Gáis (BGE), Energia, SSE Airtricity, PrePayPower and Pinery. Electric Ireland held 48% electricity market share at the end of 2022, while Board Gáis held approximately 42% of the gas market. This owes to both companies' historic positions as monopoly holders prior to the liberalisation of the market in the early 21st century. Market shares of between 1.5%-25% among other suppliers across electricity and gas indicate the competitive health of these markets. One new energy supplier, Yuno Energy, entered the Irish retail energy market in 2023.

Recently the Minister for the DECC, requested that a review of the pricing and hedging strategies of retail energy suppliers be carried out to ascertain if there had been any market failures (particularly in the case of vulnerable customers) during the energy crisis. The CRU published their report in September 2023 which outlines that there was no evidence of market failure within Ireland's retail energy markets. The CRU found no evidence of suppliers short selling or taking speculative positions. This prudent approach to hedging taken by suppliers protected customers from the worst impact of the extreme volatility that was seen in wholesale gas markets.

Under article 27 of the 2019 Electricity Directive, Member States are obligated to ensure that all household customers, and where Member States deem it to be appropriate, small enterprises, enjoy universal service, namely the right to be supplied with electricity of a specified quality within their territory at competitive, easily and clearly comparable, transparent and non-discriminatory prices. This has been provided for in domestic legislation through numerous statutory instruments. Ireland operates a Supplier of Last Resort (SoLR) framework in line with this article. The primary objective of the SoLR process is to ensure that customers' electricity and gas supply is not interrupted. In Ireland to date there have been three managed supplier exits. The mechanism functioned as intended and all domestic

and non-domestic customers of the exiting suppliers were transferred to the respective SoLR in electricity and gas with no loss of supply. Transferred customers are placed on the standard market tariff of the SoLR. The CRU is currently undertaking a review of the SoLR framework with a view to incorporate lessons learned from the previous three supplier exits and examine further measures to strengthen protections for Irish customers that are experiencing an SoLR event.

The CRU investigates any suspected anti-competitive behaviour in the energy market that falls within its statutory remit, noting the role and competencies of other authorities within the state. Investigations conducted as recently as 2022 found the full compliance of all parties with all statutory requirements and the terms electricity supply.

Protection from unfair pricing, restrictive pricing and anti-competitive behaviours in the energy market

In addition to its continued responsibility for ensuring retail market competition the CRU has an important statutory customer protection role. Below are examples of the suite of protections & tools in place for gas and electricity customers.

- **Estimated Annual Bill Reports:** In June this year, the CRU began publishing Estimated Annual Bill reports monthly, across the gas and electricity retail markets. The purpose of the reports is to provide consumers and industry with relevant up-to-date information on household electricity and gas prices available, with the aim of empowering consumers to decide a tariff suitable to them. The CRU actively encourages customers to switch supplier to avail of the best and most suitable tariff for them. This encourages competition across gas and electricity suppliers;
- **Biannual retail market reports:** The CRU publishes a bi-annual report on arrears and non-payment of account disconnections. The purpose of this information paper is to provide customers, industry, and other interested stakeholders with information on trends in the number and percentage of customers in arrears and the number of disconnections carried out due to non-payment of account;
- **Regular reporting on arrears and disconnections:** The CRU also keeps the Department up to date on the number of customers in arrears on their energy bills and the number of customers disconnected for reason of non-payment of account on a monthly basis;
- **Switching:** Switching is a key indicator of competition and supplier activity within the retail market and an opportunity for customers to make savings. Switching rates were

robust in 2022, with 16.85% of domestic electricity customers and 17.82% of domestic gas customers switching supplier during the year. The CRU reports on switching rates regularly to the Department and publishes these within their biannual retail market reports. The CRU approves certain price comparison websites via an accreditation process to ensure that customers can access clear, independent and accurate information to determine the best price plan and energy supplier based upon their usage. The CRU carries out ongoing reviews and audits of the accredited price comparison websites;

- **Consumer Rights:** The CRU has a dedicated section on their website informing customers of their rights as an energy customer from their energy supplier or network operator with information provided in relation to marketing and advertising, billing, vulnerable customers, connections and pre-pay or pay as you go meters;
- **Customer Care Team annual and quarterly insights reports:** The CRU has a dedicated Customer Care Team (CCT) which provides an information and dispute resolution service to customers, from which we receive valuable insights on issues faced by customers on a quarterly basis. Key issues and trends are regularly shared with the CRU's policy and compliance teams where further action may be required. The CRU publish data on the volume of contacts and complaints received, broken down by area and provider with a more detailed annual report that also includes case studies of disputes the CRU has handled;
- **Consumer surveys:** Each year the CRU commissions surveys of residential and small business gas and electricity customers, to measure consumer engagement, experience and attitudes in the electricity and gas markets in Ireland. The findings of these surveys are published on the CRU's website. The CRU is currently reviewing the approach taken to these surveys, including the scope of questions asked, before commencing the next survey;
- **Annual Compliance and Enforcement Report:** This report provides an insight into the CRU's compliance and enforcement activities undertaken each year across energy suppliers and network operators. These audits and investigations are the result of direct reporting by market participants, trends in customer complaints received by the CRU and other topical issues identified by the CRU policy teams. These audits and investigations are an important regulatory tool to ensure suppliers and network companies are adhering to the terms and conditions of their licences and that customers rights are protected;

- **Electricity & Gas Supplier Handbook:** The CRU regularly updates this handbook which sets out the minimum levels of service that licensed energy suppliers are required to adhere to in their interactions with energy customers. Suppliers are required to have in place a customer charter and a series of codes of practice on marketing and advertising, customer sign up, billing, disconnection, complaint handling, vulnerable customers, PAYGM and budget controllers, and the terms and conditions for supply;
- **Additional Customer Protection Measures:** The CRU published Additional Customer Protection Measures for domestic electricity and gas customers for winter 2022 and again for winter 2023. These measures aim to protect customers, particularly those in financial hardship, during winter months and are in addition to the existing protection measures in the above-mentioned handbook. The measures this year also include extensions to the disconnection moratoria for both vulnerable and other domestic customers for non-payment of account;
- **Vulnerable customers:** One key consumer protection measure was that suppliers were required to proactively inform all domestic customers of the eligibility criteria, how to apply, and the benefits of registering as a vulnerable customer. This measure saw the number of electricity and gas customers registering as vulnerable increase significantly. Suppliers have also indicated there was an increase in customers signing up to have a 'nominated representative' to manage their account, after information was transmitted to customers about this last winter.

3.4.3.5 Description of measures to enable and develop demand response, including those addressing tariffs to support dynamic pricing

Many of the objectives listed under section 2 in relation to the IEM, regarding demand response, were either addressed in the I-SEM market design or were already implemented, or being implemented, by the regulators and TSOs as part of that process or are being addressed as part of the implementation of the Electricity Market Regulation in the SEM, again by the Regulators and the TSOs.

In 2024 the CRU will be leading on the Electricity Demand Side Implementation plan. The proposed project scope consists of the following priority focus areas:

- Area 1: Smart Services - putting in place regulatory measures that will encourage greater flexibility among domestic customers and smaller business customers;

- Area 2: Demand Flexibility and Response - putting in place schemes to incentivise the provision of demand response at certain times, or system conditions;
- Area 3: New Demand Connections - targeted initially at very large electricity and gas energy users seeking to connect new demand. This will include a review to provide a pathway for new Large Energy User (LEU) connections to the electricity and gas systems which ensures large demand connections are low or zero carbon, or bring significant flexibility with them when they connect. A subsequent focus will be on existing demand, where there is contracted demand already in place.

Given the urgency of delivering outcomes promptly to maximise the impact on carbon emissions, there will be an emphasis on progressing the project at pace. This will be done using phasing, paralleling of workstreams and adopting a discovery-led approach where appropriate.

As set out in the CAP, a comprehensive roll-out of smart meters to every house in Ireland began in March 2021, and is expected to complete by the end of 2024. The first phase of the National Smart Metering Programme culminated in the Smart Metering services activation in February 2021, which introduced remote meter readings, smart bills, access to historical consumption, and time-of-use tariffs to the Irish market. The CRU are currently reviewing the uptake of time-of-use tariffs as part of their Energy Demand Strategy, and working to identify measures which will enable consumers to take advantage of the benefits they offer. CRU published a consultation paper on how to incentivise greater uptake in June 2023, and are targeting the release of a decision paper in Q4 2023.

Dynamic pricing will enable consumers to reduce their energy costs by responding to price changes in spot markets, and by doing so, facilitate greater levels of consumer demand response. CAP requires the CRU to implement 'Dynamic Green Electricity Tariffs' by 2024, and a consultation on this implementation process is forthcoming.

3.4.4 Energy Poverty

The ESRI has estimated that, with unprecedented energy inflation, 29% of households are in energy poverty in Ireland and that this will rise with increases in energy costs. However, this methodology is limited by the fact it does not tell us enough about the intensity of the energy poverty being experienced or correlate that with the energy efficiency level of these homes. As energy costs are a huge driver for the overall rise in the cost of living, with impacts on levels of energy poverty, it is essential that this methodology is improved and optimised for

Ireland's situation. As such, the Government has funded the ESRI to pursue the following actions:

- Recommend a methodology for measuring energy poverty in Ireland;
- Commence a survey which would provide the data required to inform this measurement and enable tracking over time;
- Carry out analysis on the policies in place to determine which can best alleviate energy poverty;
- Allow Ireland to achieve compliance with the requirements set out in EU legislation in relation to measuring, tracking and publishing levels of energy poverty.

Ireland's current strategy to combat energy poverty is laid out in the Energy Poverty Action Plan, approved by Government and published in December 2022. This Plan set out the range of measures implemented across Government during winter 2022/23 to support people with energy costs, as well as the longer-term actions taken to ensure those most at risk of energy poverty can adequately heat and power their homes. A cross-departmental and inter-agency Steering Group was established to develop, implement, and oversee the policies and measures detailed in the Action Plan.

The Group is chaired by DECC and has been meeting regularly since August 2022. The members of the Group represent: DECC (Chair), Department of Social Protection, Department of Health, Department of Housing, Heritage and Local Government, CRU, Sustainable Energy Authority Ireland, Health Service Executive, Department of Public Expenditure, NDP Delivery and Reform, Department of Finance, the Department of Rural and Community Development and the Economic and Social Research Institute.

A central part of the work of the Steering Group is to facilitate structured, whole-of-Government engagement with key stakeholders. The Action Plan outlined that this engagement should include events such as an annual plenary session with stakeholders to ensure their voices are heard as part of the annual report process. This builds on the significant engagement that has continued with stakeholders since a public consultation was held in 2022 during development of the Energy Poverty Action Plan.

The Energy Poverty Stakeholder forum was the first conference held under the aegis of the Energy Poverty Action Plan on the questions of energy poverty, efficiency, and affordability. The forum was held in-person, on Friday, 7 July 2023 at the Radisson Blu Royal Hotel, Dublin.

The forum was organised and hosted by the Energy Poverty Action Plan Steering Group, and was opened by Ossian Smyth TD, Minister of State with responsibility for Communications and the Circular Economy. This inaugural Energy Poverty Stakeholder Forum provided a valuable opportunity for the voices of relevant stakeholders to be heard as part of the annual report process, and in advance of Budget 2024. This Forum will be held annually, building continually on the engagement with stakeholders so far.

The actions fall into two overarching categories – near-term, where the focus is on supporting people to get through winters immediately following the publication of the plan, and medium- to long-term, with a focus on using deeper energy efficiency upgrades to help tackle the root causes of energy poverty and ensure an inclusive and just transition to a carbon neutral society.

The near-term actions that were implemented last year and this winter, are the result of work that has been underway throughout 2022 and 2023 across three main areas:

- Income support (with a total of €2.9bn being allocated to the three Electricity Costs Emergency Benefit Schemes – €1.57bn in 2022 and €1.2bn in 2023);
- Targeted social protection (through €1.2bn of social protection lump sum payments in 2022 and 2023);
- Consumer protection (through a package of strengthened obligations on suppliers and network operators mandated by the CRU).

The impact of these measures for Winter 2022/23 was monitored and found by the ESRI to have been effective in mediating energy poverty. Measures for Winter 2023/24 will be monitored closely and evaluated in Q1 2024.

In addition, further measures are being introduced to strengthen the safety net for people struggling to meet their energy costs. These measures operate alongside existing sources of support, such as the energy supplier hardship fund or the Additional Needs Payment scheme operated by the Department of Social Protection (DSP).

DECC will also seek to inform people of their potential eligibility for ‘vulnerable customer’ status. This will extend the protection against disconnection for non-payment of account for a longer period over the winter. This winter the vulnerable customer moratorium runs from 1 December 2023 to 31 January 2024 for all bill pay customers and from October 2023 to 31 March 2024 for vulnerable customers.

These actions are also closely linked with a communications and market research initiative led by DECC to measure customer sentiment and ensure the consumer experience informs ongoing policy action. How best to target energy poverty measures has been a key concern. To date, this has primarily been done by providing lump sum payments through existing social protection measures. This is a challenge across the EU and the European Commission estimates that only one third of expenditure to assist in meeting energy costs across the EU has been targeted at the financially vulnerable.

The Action Plan also complements the Government 'Roadmap for Social Inclusion 2020-2025', which has the primary ambition to reduce consistent poverty to 2% or less. The Roadmap includes a number of goals, but of particular relevance is Goal 60, which seeks to improve how current energy poverty schemes target those most in need, as part of the CAP. Goal 60 was delivered earlier this year with changes introduced to ensure that the Warmer Homes Scheme better prioritises those most in need. The most recent progress reports recognise the challenges of increased energy costs and acknowledges the steps taken by Government in response.

While this Action Plan has been developed in response to an unprecedented rise in energy and wider living costs, the core principles that defined the previous Strategy to Combat Energy Poverty still stand:

- Adequate supplies of light, heat and power are fundamental to being able to participate in society and essential for social inclusion;
- Energy poverty is a function of three elements: a household's income, the cost of energy and the level of energy efficiency of the home;
- Energy poverty is strongly correlated with basic deprivation i.e. it is a symptom of inadequate resources to cover living costs rather than solely an energy problem;
- Energy poverty has long-term debilitating effects for individuals and society with growing evidence that it contributes to higher levels of respiratory and cardiovascular disease, excess winter mortality and poorer overall states of mental health and wellbeing.

The Steering Group will be responsible for drawing together updates on key indicators from across its membership to provide short quarterly updates on issues such as volumes of disconnections and arrears, consumer sentiment and progress under key actions. An annual report outlining activity and progress under the various strategy actions in the previous year will be submitted to Government and published in Q1 2024. The Group may also make

recommendations for policy changes or new measures as part of these reports. This will facilitate next steps particularly ahead of Q1 2024 when a revised action plan is due to be published.

3.4.4.1 Policies and Measures to Achieve the Objectives set out in point 2.4.4

Existing Measures:

Housing Upgrade Energy Efficiency Measures

- Better Energy Warmer Homes Scheme – free energy efficiency home upgrades for lower income households, including deeper measures and heating upgrades where appropriate;
- BEC Scheme – subsidised energy efficiency home upgrades for lower income households;
- Energy Efficiency Obligation Scheme – Under SI 522/2022 5% of an obligated party's annual EEOS target must be delivered in an eligible energy poor home;
- Local Authority housing upgrade programme - programme to upgrade the social housing stock;
- Housing Assistance for Older People - support for older people to upgrade their home, can include insulation and heating upgrades in some cases;
- Housing Adaptation Grant – support for adaptations to the home which can include insulation and heating upgrades in some cases.

Consumer Protection Measures

Special protections against vulnerable customers including rights against disconnection for priority vulnerable customers. The Energy Supplier Handbook – puts a code of practice in place that sets out, in plain English, the services an energy supplier will provide, and the quality levels offered, including in relation to vulnerable consumers

The consumer protection obligations on suppliers mandated by the CRU are:

- Winter moratorium on disconnections for all domestic electricity and gas customers will be from 1 December 2023 until 31 January 2024;
- Extended debt repayment periods of 24 months minimum;
- Reduced debt burden on pay-as-you-go top-ups - a maximum of 10% of a single customer vend can be put against debt;

- Increase of PAYG emergency credit from €10 to €20;
- Better value for customers on financial hardship meters – by being automatically placed on the most economic tariff;
- Promotion of the Vulnerable Customer Register, which has seen an increase in registration of 30%;
- The CRU has suspended the €200 gas meter exchange siteworks charge associated with a customer moving from a PAYG gas meter to a billpay meter. This ensures customers do not face a penalty for moving from PAYG to billpay.
- Vulnerable customers who are critically dependent on electrically powered equipment, cannot be disconnected for non-payment of account at any time. It is important that people who are in such situations contact their energy supplier to register with them as a vulnerable customer. Their energy supplier will then notify ESB Networks, which maintains a Vulnerable Customer Register;
- Suppliers are also required to ensure that all registered vulnerable customers are on the most economic tariff available for their chosen payment method and billing format.

Additional Consumer Protections Measures

- **Emergency Costs Electricity Benefits Scheme III** – The delivery of three electricity credits to every household worth €137.64 each in the billing cycles of December 2023, January/February 2024 and March/April 2024;
- **Household Benefits Package** – monthly income support to assist eligible households with their electricity and gas bills;
- **Lump Sum Payment** – additional payments to cost of living recipients to help with cost-of-living crisis of which energy costs are the largest portion;
- **Fuel Allowance** – weekly income support paid during the winter months to assist households in receipt of eligible social protection payments with their energy costs.

Windfall Gains Tax Measures

- The Government has brought in measures to address windfall gains in the energy sector on the back of Council Regulation 2022/1854 (on an emergency intervention to address high energy prices);

- Government implemented the measures outlined in this Regulation by way of two separate pieces of legislation:
 - A Temporary Solidarity Contribution (TSC), based on taxable profits in the fossil fuel production and refining sectors (which apply for 2022 and 2023);
 - A Cap on Market Revenues of some generators (such as wind, solar and hydropower) in the electricity sector (which will apply for the period December 2022 to June 2023);
- The first return from the TSC amounted to €167m and will be used towards the cost of providing the payments under the Electricity Costs Emergency Benefit Scheme III;
- There will be another return made in 2024 for the fiscal year 2023. The legislation providing for a Cap on Market Revenues was enacted on 17 November 2023. It is envisaged that payment into a dedicated fund from this measure will be made in Q1 2024;
- These funds are required under the Regulation to be used to support final electricity consumers.

Solar PV for the Medically Vulnerable

- A new Solar PV scheme for vulnerable customers registered as being dependent on electrically powered assistive devices, is currently underway;
- This €20m scheme is targeted to provide direct support to over 3,000 vulnerable customers who may have limited opportunity to reduce their demand;
- The scheme will provide customers with a 2 kW solar PV system, to meet some of their electricity requirements.

Reduce Your Use Campaign

- During the evolving energy crisis, the ongoing Government of Ireland Reduce Your Use/Stay Warm and Well public information campaign has provided and continues to provide clear and timely advice to Irish families, households, and businesses;
- A key component of the campaign strategy is to ensure that Government is actively listening to people, understanding and responding to their needs and concerns to determine the most useful advice, information and interventions that can be provided;

- To ensure this is achieved, quantitative research has been carried out by Amárach Research fortnightly since October 2022, and monthly since April 2023;
- A nationally representative group is surveyed to test response to messaging and consumer sentiment;
- The results of this tracker indicate that overall, there has been some reduction in the difficulty of meeting energy costs since October 2022.

Energy Engage Code

- The Department has engaged with Irish energy suppliers and their advocacy group, the Electricity Association of Ireland (EAI), advising on the drafting of their 'Energy Engage Code;'
- This is a document, recently updated in October 2023, which provides guidelines to energy suppliers on how they treat customers;
- Among the items included is an important, Department-supported policy which states that energy suppliers will not disconnect a customer for reason of non-payment when they continue to engage with their supplier;
- This policy in conjunction with CRU moratoria has seen disconnections for reason of non-payment reduce dramatically since 2020.

Planned Measures

- Funding ESRI Research Programme in order to develop better indicators of energy poverty and conduct further research on the theme in Ireland;
- Budget 2024 – announcement of ring-fenced revenue from increases in the carbon tax for climate action, including to fund energy efficiency in lower income households and social housing.

3.5 Dimension Research, Innovation and Competitiveness

3.5.1 Policies and measures related to the elements set out in point 2.5

[Impact 2030](#) commits to maximising the collective impact of research and innovation in meeting Ireland's climate targets, including through support and delivery of R&I commitments in the annual CAP. Included in the [National Recovery and Resilience Plan](#) are details that outline how Ireland will use funding from the EU's Recovery and Resilience Facility to address the green and digital transitions. This includes the establishment of a

[National Challenge Fund](#), administered by Science Foundation Ireland, to fund research and innovation projects to develop solutions in the areas of Climate and Digital. The [National Smart Specialisation Strategy for Innovation 2022-2027](#) has identified ‘Green Transformation for Enterprise’ as one of five national strategic priorities, along with ‘International collaboration on Research, Development and Innovation’ and ‘Improving the national or regional enterprise research and innovation system’.

Ireland’s CAP 2023 includes, for the first time, a dedicated R&I chapter which outlines the current situation in climate and climate-related R&I nationally and internationally, assessing any gaps in the area, and identifying potential cross-cutting initiatives. A series of R&I actions are included in the Plan’s Annex of Actions. Headline Actions for 2023 are:

Action
National Agricultural Soil Carbon Observatory to be fully operational
Effectively coordinate and prioritise national environmental research priorities, including climate, and inform research gaps
Increase knowledge transfer and provide expertise in the development of policy
Publish Ireland's Five-year Assessment Report on Climate Change
Support national LULUCF commitments
Develop governance and monitoring of selected NPWS ecosystem observation sites for integration into LTER, and establish long-term ecosystem monitoring, including GHG measurement
Support Irish engagement and participation in IEA activities
Provide a national level assessment of the size and location of potential candidate areas for district heating including pilot feasibility study
Produce a practical guide for manufacturing companies looking to integrate renewables onto their site
Launch annual National Energy Research, Development and Demonstration (RD&D) Funding Programme Call
Stimulate research, development and demonstration projects across industry and enterprise sectors with a focus on accelerating energy decarbonisation e.g., innovative

approaches to decarbonising heat and electricity, energy storage solutions, RE and energy efficiency solutions
Enhance the National Energy Modelling Framework
Conduct research on household sustainable heating
Supplement national-level statistics with county and Local Authority level breakdowns
Improve citizen engagement pathways and uptake on sustainability initiatives
Support the Climate-neutral and Smart Cities Mission and the Climate Adaptation Mission
Implement the National Challenge Fund, a €65 million all-of-Government endeavour, funded under the EU Recovery and Resilience facility and administered by SFI
Implement EPA Research Strategy
Ensure that research and research activities are funded in an environmentally sustainable way
Support the coordination of Ireland's interests in EU's Destination Earth initiative
Establish governance and data structure to support Ireland's membership of Integrated Carbon Observation System European Research Infrastructure Consortium

The benefits to Ireland from joining the Mission Innovation Initiative are currently under consideration by DECC and a decision will be made in due course. Ireland has strong connections with our international energy research & innovation counterparts through participation in the European Commission's Strategic Energy Technology Plan (SET Plan), energy research & innovation programmes run by the European Commission (such as H2020/Horizon Europe, ERA-NET Partnerships, Clean Energy Transition Partnerships etc.) and through several IEA Committees in which DECC and SEAI participate or facilitate participation. Therefore, we are in the strong position to evaluate the benefits of Ireland joining Mission Innovation, in consultation with countries who have developed some experience of the initiative to date.

Ireland takes a technology-agnostic approach when funding energy RD&D. Prioritisation of energy areas to be funded are decided on the basis of an annual cross-Government consultation which is run by the SEAI (which focuses specifically on the energy sector and its connections to other sectors). This coordinated approach ensures that energy research funding is highly targeted. Funding is available to all relevant areas, and recent research

projects include those in areas such as: bioenergy, offshore wind energy, ocean energy, smart grids, hydrogen, solar energy, energy in transport, energy in agriculture, energy efficiency, behavioural change and energy modelling.

The SEAI National Energy RD&D Funding Programme seeks to grow national capacity in energy research such that researchers in academia and industry are well placed to compete for national non-domain specific R&D funding and are in a position to be international thought leaders and actors (through, for example, thought leadership within relevant domains, playing leadership roles in IEA activities, and leading & participating in international collaborative initiatives such as Horizon Europe). Increased and sustained investment will help to ensure that companies and research performing organisations in Ireland are encouraged and enabled to invest time and resources in performance of energy RD&D, resulting in skilled and experienced researchers in the energy domain being developed and retained in Ireland.

SEAI's remit in respect of RD&D activities is to coordinate Irish energy research, lead and support excellent research, development, demonstration & innovation activities, to be at the forefront of knowledge generation relevant to the energy sector, and to promote its application in policy and practice. SEAI Research & Innovation funding is invested in projects for the following purposes: applied research, research for practice, research for policy, development, and demonstration projects in the energy domain. SEAI funding is primarily invested in companies, universities, institutes of technology, research institutions, semi state bodies and public bodies. SEAI works to ensure that outputs arising from SEAI-funded research are openly available and requires this of research awardees. SEAI supports impact research outcomes by ensuring accessibility, by bridging these outcomes to policymakers, and by practically implementing them into programmes, ensuring that state-of-the-art considerations are brought to customers in a timely manner.

Climate science aspects of the Environmental Protection Agency Research Programme aim to provide

- Advanced analysis of GHG emissions and removals, enabling improved policy development and decision making;
- Research based information in support of risk and vulnerability analysis and adaptation actions in Ireland;
- Solutions to achieve our 2020 targets and to identify and test solutions for achievement of societal and economic low carbon transformation to 2050;

- Information on pathways for achievement of highest air quality standards in Ireland and advance integrated assessment of air pollution, short life climate forcers, and other wider environmental issues.

Domain-agnostic funders of research in Ireland also have an important part to play in the energy & climate research ecosystem in Ireland. Enterprise Ireland, the Irish Research Council and Science Foundation Ireland are part of a broader network which supports energy & climate research in Ireland - the focus of the Irish Research Council and Science Foundation Ireland is primarily on early-stage research, whilst the focus of Enterprise Ireland is primarily on supporting R&I by businesses in the manufacturing and internationally-traded services sectors.

3.5.2 Where applicable, co-operation with other Member States in this area, including, where appropriate, information on how the SET Plan objectives and policies are being translated to a national context

North Seas Energy Co-operation (NSEC)

Ireland works in the NSEC on the prioritisation of the offshore research agenda and according SET plan funds.

National Energy RD&D Funding Programme and SET Plan Objectives

The National Energy RD&D Funding Programme aims to stimulate and accelerate the development & deployment of energy/low-carbon technology related products, processes & systems in the Irish marketplace, to grow Ireland's national capacity to carry out internationally leading RD&D activities; and to support solutions that enable technical & other barriers to market uptake of energy/low-carbon technology related products, processes & systems to be overcome. Through Ireland's active participation in Europe's SETPlan Steering Group and within individual SETPlan Implementation Groups, research calls are aligned with SETPlan priorities. This enables alignment of national research priorities with research and innovation programmes both at EU level and across other member states. This also increases co-operation between national programmes to avoid duplication of research.

Ireland and the International Energy Agency (IEA)

The Sustainable Energy Authority of Ireland is designated by DECC to manage Ireland's participation in IEA activities. Ireland is currently a member of nine IEA Technology Collaboration Partnerships (TCPs). The strategy for TCP engagements aligns with national strategic objectives related to renewable energy, energy efficiency, climate action and

coordination of energy-related research. Each Executive Committee is represented by a designated SEAI staff member. Ireland supports 39 tasks/annexes and has identified an additional 8 tasks/annexes to which it intends to support.

SEAI coordinates Ireland's participation in these tasks/annexes through a competitive appointment call released on an annual basis. The call is open to public and private sector organisations based in the Republic of Ireland (including Irish subsidiaries of overseas companies) including businesses, research performing organisations (e.g., Universities, Institutes of Technology and publicly funded research institutions), and NGOs.

In March 2023, the Hydrogen TCP Executive Committee voted to invite Ireland to become a member. The process to formalise this membership is underway. In addition, it is Ireland's ambition to join the Heat Pumping Technologies TCP (HPTTCP) in 2023. A formal expression of interest has been submitted to the HPTTCP Secretariat accordingly.

3.5.3 Where applicable, financing measures in this area at national level, including Union support and the use of Union funds

The National Energy RD&D Funding Programme aims to stimulate and accelerate the development and deployment of energy/low-carbon technology related products, processes and systems in the Irish marketplace, to grow Ireland's national capacity to carry out internationally leading RD&D activities; and to support solutions that enable technical and other barriers to market uptake of energy/low-carbon technology related products, processes and systems to be overcome. The programme underpins Ireland's efforts to transition to a low carbon economy, and to support the development of jobs and enterprise opportunities associated with the low carbon transition.

The EPA Research Programme includes a specific strand on climate change evidence needs, recognising the need for research to inform a practical response to, and strategic engagement on, climate change. EPA Research has a strong focus on informing policy and knowledge transfer. The EPA has a statutory role in coordinating environmental research in Ireland and convenes a coordination group comprising relevant public bodies across the research and policy domains. Up to €16m was available by the EPA for new research projects to be awarded in 2023. Domain agnostic funders of research in Ireland also have an important part to play in the energy and climate research ecosystem in Ireland. Enterprise Ireland, the Irish Research Council and Science Foundation Ireland are part of a network which supports energy & climate research in Ireland - the focus of the Irish Research Council and Science Foundation Ireland (SFI) is primarily on early-stage research, whilst the focus of

Enterprise Ireland is primarily on supporting R&I in businesses in the manufacturing and internationally traded services sectors. Science Foundation Ireland is managing the €65m National Challenge Fund, supported by funding from the EU's Recovery and Resilience Facility under the National Recovery and Resilience Plan. SFI has launched eight challenges, including challenges in 'Energy Innovation', 'A Healthy Environment for All' and 'Sustainable Communities.' DETE provides funding for the Disruptive Technologies Innovation Fund (DTIF), which is a €500M fund targeted at a number of technology areas. While not specifically aligned with climate action, the DTIF has to-date supported 10 projects to a total value of €24.5m in the area of 'Environment, Climate and Sustainability'.

The EU Framework Programmes for RTD are an importance source of funding to support researchers based in Ireland to collaborate with partners from Europe and further afield. In H2020, the Framework Programme which ran from 2014-2020, researchers based in Ireland won approximately €81M in energy-related RD&D funding and approximately €41M in funding from Societal Challenge 5 (Environment).

Horizon Europe, the successor programme to H2020, is the EU's main instrument for funding research and development. It has a budget of nearly €96bn over 7 years. A budget of €15.1bn has been allocated to Climate, Energy and Mobility for the period 2021-2027, with a further budget of €9bn allocated to Food, Bioeconomy, Natural Resources, Agriculture and Environment. Irish industry, academia, public sector bodies and civil society organisations participate in Horizon Europe with SEAI fulfilling the role of National Contact Point for Energy within Global Challenge Cluster 5 (Climate, Energy and Mobility).

The EPA fulfils the role of National Contact Point for Environment within Global Challenge Cluster 6 of the Horizon Europe Work Programme (Food, Bioeconomy, Natural Resources, Agriculture and Environment). Clusters 5 and 6 are the main sources of environment, climate, and energy research funding in Horizon Europe. Researchers based in Ireland have won €116M from Clusters 5 and 6 during the first two years of the programme.

DECC hosts the National Contact Point for the LIFE programme, which provides funding for the support of Environment, Nature Conservation and Climate Action, and for the Innovation Fund, which supports the demonstration of innovative low-carbon technologies. Since 2013, Irish researchers and innovators have won €88M from the LIFE programme. Ireland has recently won funding for two projects from the Innovation Fund, including a project to decarbonise the production of high-pressure steam used in an aluminium refinery.

Ireland also participates in several energy and climate related European Partnerships under Horizon Europe ERA-Nets and Joint Programme Initiatives (JPIs), including the Climate JPI, biodiversa+, and the Clean Hydrogen JU.

Ireland is participating in the Horizon Europe Missions related to energy and climate:

- Adaptation to Climate Change;
- Restore our Ocean and Waters;
- 100 Climate-Neutral and Smart Cities;
- A Soil Deal for Europe.

DECC is providing national coordination and support for the Adaptation to Climate Change and 100 Climate-Neutral and Smart Cities Missions. The same is provided by the Department of Agriculture, Food and the Marine for the A Soil Deal for Europe Mission and by the Marine Institute for the Restore our Ocean and Waters Mission. Dublin, Cork and Galway are participating in the Cities Mission.

Section B: Analytical Basis

4. Current Situation and Projections with Existing Measures

4.1 Projected Evolution of Main Exogenous Factors Including Energy System and GHG Emission Developments

Ireland's draft NECP 2023-2030 is based on one scenario; the WEM scenario. WEM includes policies implemented and adopted by the end of 2021. This scenario includes a varying carbon tax that increases by €7.50 per annum and reaches €100 per tonne by 2030. Post-2030 the carbon tax remains constant at €100 per tonne to 2050. This scenario includes a varying Emissions Trading Scheme (ETS) price that increases annually to €80 per tonne by 2030 and €160 per tonne by 2050. There is ongoing analysis being conducted on the WEM and With Additional Measures (WAM) scenario in the context of Ireland's revised European targets. The final version of the NECP will include an updated WEM and WAM. Ireland will address additional measures under the WAM scenario in the Final NECP. This will include measures post-2021.

4.1.1 Macroeconomic forecasts (GDP and population growth)

Between 2016 and 2022, Ireland's population increased by 387,274. Natural increase made up 167,487 of the change. The estimate for net migration therefore is 219,787. Gross domestic product (GDP) increased by 13.6% in 2021 while gross national product (GNP) rose by 14.7%. These updated results are similar to the preliminary 2021 estimates published in March 2022 which showed GDP increasing by 13.5% and GNP increasing by 11.5%. Projections for gross value added (GVA) are also sourced from the ESRI, from the Environment, Energy and Economy [I3E](#) computable general equilibrium (CGE) model. The I3E model is an intertemporal computable general equilibrium (CGE) model, which reproduces the structure of the economy in its entirety. It includes productive sectors, households, and the Government, among others. In the model, the nature of all existing economic transactions among diverse economic agents is quantified. According to microeconomic behaviour, producers/consumers maximise their profits/utility given their budget constraints. In other words, a CGE model examines how inputs and outputs flow between production sectors of the economy and finally result in final goods consumed by households. This section will be expanded and updated in the final NECP.

Table 14: Macroeconomic forecasts (WEM)

Macro-Economic Forecasts	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
GNI*	€Million	-6.58	-3.76	3.59	3.48	3.37	3.25	3.25	3.25	3.25	3.26	3.30	3.26
Population	€Million	4.65	4.93	4.97	5.01	5.05	5.09	5.13	5.17	5.22	5.26	5.69	6.17

4.1.2 Sectoral changes expected to impact the energy system and GHG emissions

Projections for GVA are also sourced from the ESRI, from the Environment, Energy and Economy (I3E) computable general equilibrium (CGE) model. This section will be further developed in the final version of the NECP.

4.1.3 Global energy trends, international fossil fuel prices, EU ETS carbon price

The projections use fuel prices from the European Commission recommended harmonised trajectories. The prices were chosen to reflect the likelihood of near-term sustained higher prices and intensified uncertainty around longer-term future fuel prices.

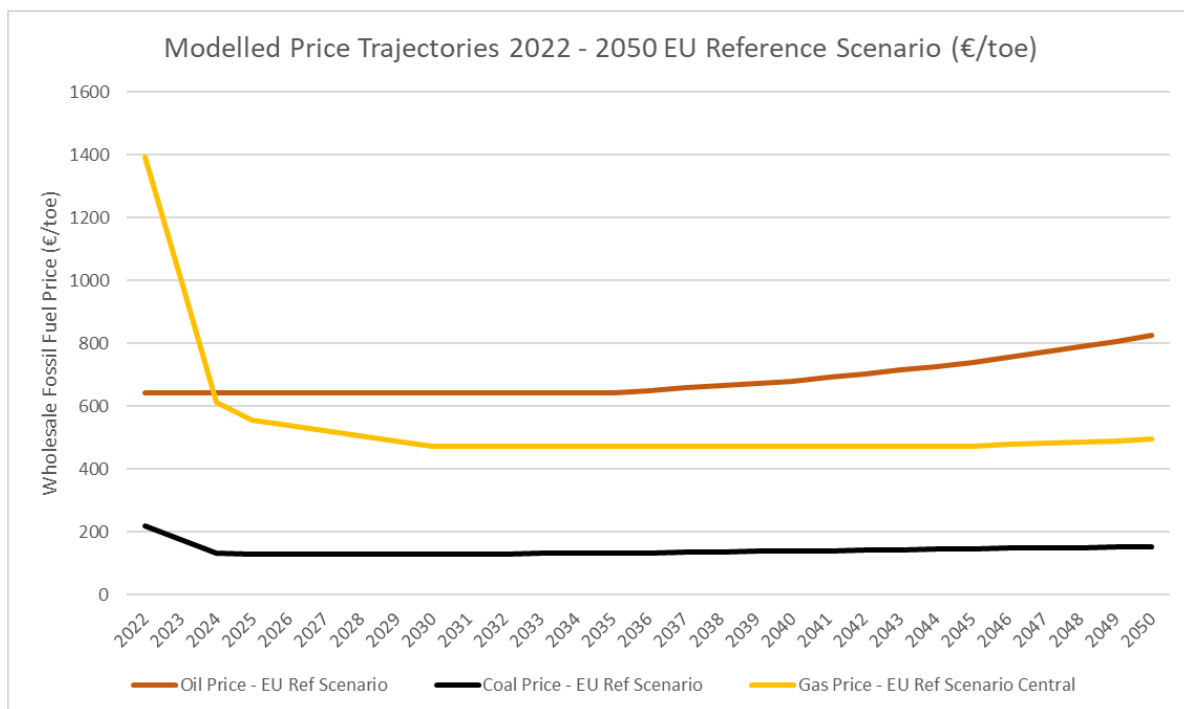


Figure 1: EU Reference Scenario price projections used in modelling

Table 15: Projected global energy price trends (WEM)

	Unit	2021	2022	2023	2024	2025	2030	2035	2040	2045	2050
International Fuel Prices											
Oil	€ (2020)/toe	438	643	643	643	643	643	643	680	738	824
Gas	€ (2020)/toe	634	1,391	1,005	611	554	473	473	473	473	494
Coal	€ (2020)/toe	157	220	176	132	128	130	130	139	146	153
Carbon Price ETS Sector	€ (2020)/toe	54	75	77	78	80	80	80	85	130	160

4.1.4 Technology cost developments

Since the last NECP, updates have been made to how technology cost development is calculated. There are number of reports due to be completed next year. This section will be updated in the final NECP.

4.2 Dimension Decarbonisation

4.2.1 GHG Emissions and Removals

4.2.1.1 Trends in current GHG emissions and removals in the EU ETS, effort sharing and LULUCF sectors and different energy sectors

Table 16: Projected trends in GHG emissions (WEM)

	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
ETS Sector emissions	ktCO ₂ eq	15259.2	14491.7	14925.1	14388.8	13176.0	12998.9	12137.4	11720.1	11062.7	10055.2	9506.6	9699.5
Effort sharing regulation sector GHG emissions	ktCO ₂ eq	46850.7	46637.6	45022.1	45020.4	44820.0	44810.7	44431.9	43993.5	43491.7	42812.1	38373.7	36732.9
LULUCF	ktCO ₂ eq	7338.3	7305.1	7800.7	8718.0	8691.7	9367.9	9239.1	9436.3	9668.9	9665.8	10182.0	9383.1

The EPA has produced final estimates of GHG emissions for the period 1990-2021. The final estimates of GHG emissions indicate that Ireland exceeded its 2021 annual limit, without the

use of flexibilities, set under the EU's ESR by 3.29 Mt CO₂eq. 2021 is the first year of compliance under the ESR.

For 2021, final total national GHG emissions (excluding LULUCF) are estimated to be 62.11 Mt CO₂eq which is 5.2% higher (or 3.05 Mt CO₂eq) than emissions in 2020 (59.06 Mt CO₂eq) and follows a 3.4% decrease in emissions reported for 2020. Emissions are over 1.5% higher than pre-pandemic 2019 figures.

Emission reductions have been recorded in 5 of the last 10 years. Ireland's ESR emissions annual limit for 2021 is 43.48 Mt CO₂eq. Ireland's final 2021 GHG ESR emissions are 46.77 Mt CO₂eq, this is 3.29 Mt CO₂eq more than the annual limit for 2021. This value is the national total emissions less emissions generated by stationary combustion and aviation operators that are within the EU's emissions trading scheme. This indicates that Ireland is not in compliance with its 2021 ESR annual limit, exceeding the allocation by 1.38 Mt CO₂eq after using the ETS flexibility.

Table 17: GHG emissions for 2020 and 2021 for Ireland Mt CO₂eq

Mt CO ₂ eq	2020	2021	% Change
Agriculture	22.81	23.63	3.6%
Transport	10.30	10.99	6.7%
Energy Industries	8.74	10.27	17.6%
Residential	7.36	6.92	-6.0%
Manufacturing Combustion	4.51	4.62	2.5%
Industrial Processes	2.11	2.48	17.5%
Commercial Services	0.72	0.77	6.5%
F-Gases	0.85	0.84	-2.0%
Public Services	0.68	0.66	-3.4%
Waste	0.97	0.94	-3.0%
LULUCF	7.04	7.34	4.2%
Total	59.06	62.11	5.2%
Total including LULUCF	66.10	69.45	5.1%

Agriculture is the largest contributor to overall emissions at 38.0% of the total (excluding LULUCF). Transport and Energy Industries are the second and third largest contributors at 17.7% and 16.5% respectively. Residential and Manufacturing Combustion emissions account for 11.1% and 7.4% respectively. These five sectors accounted for 90.9% of national total emissions in 2021. The remainder is made up by the Industrial Processes

sector at 4.0%, F-Gases at 1.2%, Commercial Services at 1.3%, Public Services at 1.1% and Waste at 1.5%.

Agriculture emissions increased by 1.9% or 0.38 Mt CO₂eq in 2018 following an increase in 2017 of 2.9%. The most significant drivers for the increased emissions in 2018 are higher dairy cow numbers (+2.7%) with an increase in milk production of 4.4%. In the last 5 years, dairy cow numbers have increased by 27% and corresponding milk production by 40%. This reflects national plans to expand milk production under Food Wise 2025 and the removal of the milk quota in 2015. In 2018, there were also increased CO₂eq emissions from synthetic fertiliser application on agricultural soils (+10.6%). Other cattle and sheep numbers decreased by 1.2% and 1.7% respectively, whereas pig and poultry numbers increased by 0.7% and 0.5% respectively. Total fossil fuel consumption in agriculture, forestry and fishing activities increased by 7.8% in 2018. Agriculture emissions increased by 3.6% or 0.82 Mt CO₂eq in 2021, driven by increased fertiliser nitrogen use (5.2%), limestone application (49.5%) increased numbers of livestock including dairy cows (2.8%), other cattle (0.3%), sheep (0.3%) and pigs (4.5%). Total milk production increased by 5.5% in 2021, with milk output per cow also increasing (2.5%). GHG emissions from the Transport sector increased by 6.7% or 0.69 Mt CO₂eq in 2021. This increase was largely driven by ending COVID travel restrictions on passenger car and public transport usage in 2021. At the end of 2021, there were just over 47,000 battery electric (BEVs) and plug-in hybrid electric (PHEVs) vehicles in Ireland, approximately 24% (compared to 14% in 2020) of the CAP target for 2025 of 195,300 or <5% of the 2030 policy target of 945,000 vehicles. As a result, the continued uptake of EVs has meant the annual trajectory target in 2021 was exceeded. Sectoral emissions in the Energy Industries sector show an increase of 17.6% in 2021 which is attributable to a more than tripling of both coal and fuel oil use in electricity generation. The use of peat has continued to decline, a 68% reduction in 2021, and is currently at an all-time low within the electricity generation sector. There was also a reduction in natural gas use by 8.9% as plants were offline in 2021. In 2021, overall electricity share generated from renewables reduced from 42% in 2020 to 35%, due to low rainfall for hydro and low wind. Electricity generated from hydro reduced by 20% and from wind by 16% in 2021. The reduction in hydro and wind generation, combined with an increase in coal and oil use, resulted in the emissions intensity of power generation in 2021 increasing by 11.9%, 346g CO₂/kWh compared with 309g CO₂/kWh in 2020.

In 2021 renewables accounted for 34.8%, (down from a high of 42.3% in 2020) and natural gas 46.0% of electricity generated. In 2021, Ireland also imported almost 1,600 GWh of

electricity which would have resulted in additional emissions of over 500 kt of CO₂, if generated in Ireland.

Emissions in the Residential sector are 6.92 Mt CO₂eq in 2021 and decreased by 6.0% or 0.44 Mt CO₂eq since 2020. Among the different fuels used in household space and water heating, decreases were seen in; coal, peat and kerosene by 4.9%, 5.0% and 11.8% respectively. Natural gas however increased by 0.9% in 2021. There were 2.5% less heating degree days (HDD) in 2021 than in 2020. Fuel switching, from coal and peat to oil and natural gas use, as well as improvements in buildings regulations helped reduced emissions per household from 7.5 t/CO₂ per year in 1990 to a low of 3.6 t/CO₂ per year in 2014. Since 2014, fuel use per household has increased by 14.9% with CO₂ emissions per household increasing to 3.8 t CO₂ in 2021.

Emissions relating to Manufacturing Combustion and Industrial Processes combined accounted for 11.4% of Ireland's total emissions in 2021, or 7.10 Mt CO₂eq. Emissions from the Manufacturing Combustion sector increased by 2.5% or 0.11 Mt CO₂eq in 2021. There were decreases in combustion emissions from major sub sectors including chemical and the food processing, beverages, and tobacco sector, i.e. 2.3% and 2.8% respectively. However, combustion emissions from non-metallic minerals (including cement) increased significantly by 15.1% and 0.16 Mt CO₂eq.

Emissions from the Industrial Processes sector increased by 17.5% (0.37 Mt CO₂eq) in 2021 from 2.11 Mt CO₂eq to 2.48 Mt CO₂eq, following a 7.0% decrease in 2020. The yearly increase is due to an upturn in cement production levels after a COVID affected year in 2020. Total process emissions from the mineral products subsector (including cement) increased by 18.3%. In 2021, total emissions (combustion and process) from the cement sector increased by 16.8% and amount to 3.13 Mt CO₂eq, or 5.0% of national total emissions. Cement sector emissions are now 106.2% higher than the 2011 low during the economic recession. Emissions from Commercial Services and Public Services decreased by 2.0% and 3.4% respectively. Natural gas use in both sectors decreased by 3.9% with oil also reducing by 3.3% within Public Services.

Emissions from the Waste sector decreased by 3.0% in 2021, largely as a result of a decrease in emissions of methane from landfills by 4.8%. Overall emissions from the waste sector decreased by 0.03 Mt CO₂eq.

F-Gas emissions were up 6.5% from 2020 to 2021, following a decrease of 17.7% in the previous year. This is driven by an increase in refrigeration and air conditioning emissions.

The LULUCF sector is made up of six land use categories (Forest Land, Cropland, Grassland, Wetlands, Settlements, and Other Land) and Harvested Wood Products. This sector accounts for 10.6% of national total emissions (including LULUCF). These categories are sub-divided into land remaining in the same category (e.g. Forest land remaining forest land) and land converted from one category into another (e.g. grassland converted to forest land).

Looking at longer term trends, the share of CO₂ in total GHG emissions has increased to 60.5% of total GHG emissions in 2021 compared to 59.2% in 1990. The share of CH₄ and N₂O emissions, primarily from the agriculture sector, have fallen from 40.7% of total GHG emissions in 1990 to 38.3% in 2021 as emissions (primarily CO₂) from other sectors grew at a faster rate. Emissions from F-gases account for 1.2% of the total in 2021. The trend in national total emissions (excluding LULUCF) from 1990 to 2021 is +11.6%.

Between 1990 and 2021, Transport shows the greatest overall increase of GHG emissions at 113.7%, from 5,143.3 kt CO₂eq in 1990 to 10,989.4 kt CO₂eq in 2021, with road transport increasing by 115.7%. Fuel combustion emissions from Transport accounted for 9.2% and 17.7% of total national GHG emissions in 1990 and 2021, respectively. The increase in emissions up to 2007 can be attributed to general economic prosperity and increasing population, with a high reliance on private car travel as well as rapidly increasing road freight transport. Over this time period passenger car numbers increased by 181% and commercial vehicles increased by 167%. Both the increase in transport emissions up to 2007 and the subsequent fall during the financial crisis highlight that transport emissions have not yet been effectively decoupled from economic activity through sustainable planning or electrification. Energy Industries show a decrease in emissions of 9.4% over the period 1990 to 2021. Over the time series, emissions from electricity generation have decreased by 10.5% whereas total electricity consumption has increased by 151.0%. Emissions from electricity generation increased from 1990 to 2001 by 54.3% and have decreased by 42.0% between 2001 and 2021. This decrease reflects the improvement in efficiency of modern gas fired power plants replacing older peat and oil-fired plants and the increased share of renewables, primarily, wind power along with increased interconnectivity. This year was the lowest year in the 32-year time series for peat fired electricity generation, 68% less than in 2020. These reductions reflect the gradual ending of peat fired electricity generation for market and climate policy reasons. Emissions from electricity generation had decreased year-on-year from 2016 to 2020, but 2021 has seen an increase of 18.8% compared to 2020. In 2021, there was a tripling of coal and oil used for electricity generation due to the unavailability of enough gas-fired generation and lower renewables. This threatens to undo

some of the good work done over recent years and negatively impact achievement of National targets, particularly for the first carbon budget period.

The latest estimates show that total emissions in the agriculture sector have increased by 15.4% from 1990 to 2021 mainly driven by a 17.6% increase in methane emissions from enteric fermentation and a 29.0% increase in emissions from manure management. After initially showing a rising trend in emissions in the 1990s, the agriculture sectoral emissions began to decrease steadily between 1998 until 2011. However, since 2011, emissions have trended upwards again with an overall peak in emissions reported in the latest inventory year, 2021. Meanwhile, total fossil fuel combustion emissions from agriculture/forestry/fishing activities have decreased by 17.0% since 1990. In the last 10 years, dairy cow numbers have increased by 44.5% with a corresponding milk production increase of 62.8%. This reflects national plans to expand milk production under Food Wise 2025 and the removal of the milk quota in 2015. In the same 10-year period sheep numbers increased by 20.2%, pigs by 9.9% and poultry by 27.7%.

Increased housing stock and a growing population drove the gradual upward trend in the emissions from the Residential sector after 1997 following emission reductions in the early 1990s due to fuel switching, from coal and peat to oil and natural gas, to reach a peak in 2010. The 2021 emissions in this sector are 6.0% lower than 2020 levels and are 8.6% lower than their 1990 level, whereas the housing stock increased by 82.6% and population by 42.9% between 1990 and 2021. Winter heating demand is the most important annual variable in emissions from this sector.

4.2.1.2 Projections of sectoral developments with existing national and Union policies and measures at least until 2040 (including for the year 2030)

Table 18: Projections of sectoral developments (WEM)

Sector	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Energy Industries	ktCO ₂ eq	10271.84	9662.90	10300.53	9783.27	8507.27	8310.76	7414.34	6962.11	6266.05	5188.82	4906.74	5284.55
Residential	ktCO ₂ eq	6917.48	6197.92	5478.36	5641.44	5493.86	5306.03	5111.85	4902.56	4685.65	4455.01	3238.60	3207.53
Manufacturing Combustion	ktCO ₂ eq	4624.47	4442.21	4259.95	4223.71	4293.66	4317.14	4342.91	4370.96	4385.26	4366.36	3884.39	3652.54
Commercial / Public Services	ktCO ₂ eq	1494.30	1427.98	1361.72	1368.12	1349.65	1325.07	1301.18	1274.91	1247.65	1213.44	1142.57	1260.24
Transport	ktCO ₂ eq	10989.43	11845.10	11736.94	11615.42	11469.00	11406.26	11313.33	11195.27	11047.13	10869.95	7671.56	5323.78
Industrial Processes	ktCO ₂ eq	2476.58	2506.90	2538.03	2568.81	2596.70	2597.54	2598.72	2599.89	2601.07	2602.24	2613.54	2623.33
F-Gases	ktCO ₂ eq	766.24	757.58	746.60	746.75	710.58	680.33	670.35	648.89	641.53	647.07	841.84	1147.50
Agriculture	ktCO ₂ eq	23626.15	23367.75	22621.86	22575.08	22703.11	23012.24	22980.36	22942.17	22884.49	22751.96	22971.89	23409.16
Waste	ktCO ₂ eq	943.36	920.93	903.22	886.63	872.12	854.19	836.24	816.81	795.58	772.47	609.17	523.80

The GHG emissions projections prepared for the NECP take into account projected activity data provided by a number of key data providers including:

- Energy projections provided by the SEAI. Determination of anticipated progress in the implementation of energy related policies and measures was coordinated by EPA and SEAI in discussion with the relevant Government Departments;
- Agricultural projections provided by Teagasc (Agriculture and Food Development Authority) which are aligned with University of Missouri Food and Agricultural Policy Research Institute (FAPRI) Projections (September 2022) for medium-term developments in EU and World agricultural commodity markets. Teagasc assume that agricultural policy continues as currently implemented and the Trade and Cooperation (Brexit) Agreement (TCA) reached between the EU and the UK governs UK-EU trade for the period to 2030. Determination of anticipated progress in the implementation of Agriculture related policies and measures was determined by the EPA in discussion with the Department of Agriculture, Food and the Marine (DAFM) and Teagasc.

The emissions projections that have been prepared for the NECP are projecting from the final 2021 inventory baseline year. The Projections with existing policies and measures scenario assumes that no additional policies and measures, beyond those already in place by the end of 2021, are implemented.

In terms of sectors covered by the Effort Sharing Decision under this scenario Ireland is projected to cumulatively exceed its compliance obligations by approximately 13.4 Mt CO₂eq over the period 2013-2020.

In terms of the same sectors covered under the ESR the projections indicate that Ireland will exceed the carbon budget by approximately 32 Mt CO₂eq over the 2021-2030 period assuming both ETS and LULUCF flexibilities as set out in the ESR are fully utilised. If only the LULUCF flexibility were to be utilised that exceedance would increase to 50.8 Mt CO₂eq.

Looking at the projections in more detail by sector:

- Emissions from Energy Industries (corresponding to IPCC Sector 1.A.1.) are projected to decrease by 45.4% and 20.1% by 2030 and 2040 respectively compared to 2005 levels. Under the WEM scenario, emissions from the energy industries sector are projected to decrease by 50% from 10.3 to 5.2 Mt CO₂eq over the period 2021 to 2030. This scenario projects Ireland reaching 68% of renewable electricity share by 2030. Renewable electricity generation capacity is dominated by wind energy, with solar and hydro sources also contributing to the mix. In terms of inter-connection, the With Existing Measures scenario has the Greenlink 500 MW interconnector to the UK coming on stream in 2025 and the Celtic 700 MW interconnector to France coming on stream in 2027;
- Under the WEM scenario, emissions from the residential sector are projected to decrease by 36% between 2021 and 2030 from 6.9 to 4.5 Mt CO₂eq. The WEM scenario assumes heat pump uptakes based on grant rates funded by NDP 2021-2030 allocation (annual delivery in line with estimated funding allocation) and a ban on oil boilers (from 2022) and gas boilers (from 2025) in new dwellings. The WEM scenario also assumes implementation of a range of residential energy efficiency programmes, also in line with the NDP, and the impact of building regulations. These programmes provide funding for renewable heating systems, attic and wall insulation and other energy efficiency upgrades for private households and communities. This scenario includes the completion of two district heating schemes currently under development that could produce 0.07 TWh by 2030; Under the WEM scenario, transport emissions are projected to decrease by 1% over the period 2021-2030 from 10.9 to 10.8 Mt CO₂eq. The Biofuel Obligation Scheme places an obligation on fuel suppliers to blend an increasing percentage of biofuel with their fuel. For road transport in the WEM scenario a 10% blend for petrol and a 12% blend for diesel at

the pumps by 2030 is assumed. A statutory target of approximately 12% biofuel applies from 1 January 2020. In terms of the uptake of EVs, the WEM scenario assumes approximately 554,000 EVs on the road by 2030. This includes approximately 404,000 passenger battery EVs and 89,000 passenger plug-in hybrid EVs. The WEM scenario includes an additional 500,000 public transport and active travel journeys by 2035 and the impact of transport infrastructure projects such as the DART Expansion and BusConnects programmes;

- Total emissions from agriculture (including fuel used in agriculture, forestry and fishing) are projected to decrease by almost 4% over the period 2021-2030 from 23.6 to 22.8 Mt CO₂eq under the WEM scenario. The WEM scenario assumes that those measures for which there is legislative levers in place prior to the end of 2021 are included in the scenario;
- Under the WEM scenario, emissions from manufacturing combustion are projected to reduce by 6% between 2021 and 2030, from 4.6 to 4.4 Mt CO₂eq. This scenario assumes implementation of existing energy efficiency programmes such as SEAI's Large Industry Programme (to maintain strong energy management and environmental protection practices in industry), Accelerated Capital Allowances programme (aims to improve the energy efficiency of Irish companies by encouraging them to purchase energy saving technologies) and the Excellence in Energy Efficiency Design programme (EXEED), a process for energy efficiency design management in businesses;
- Under the WEM scenario, emissions from the commercial and public services sector are projected to decrease by 19% between 2021 and 2030 from 1.5 to 1.2 Mt CO₂eq (Figure 15). This scenario assumes implementation of a range of energy efficiency programmes including retrofit of public building stock, with a focus on decarbonisation through schemes such as the Support Scheme for Renewable Heat and Public Sector Pathfinder programme;
- Emissions from Industrial Processes include process emissions from mineral, chemical, metal industries, non-energy products and solvents. Emissions are projected to increase by 5% between 2021 and 2030 from 2.5 to 2.6 Mt CO₂eq. The majority of emissions come from the production of cement and lime and the projections are based on growth forecasts from the cement industry in Ireland;

- Waste sector emissions are projected to decrease by 18% between 2021 and 2030 from 0.9 to 0.8 Mt CO₂eq. The waste sector includes landfill, incineration and open burning of waste, mechanical and biological treatment and wastewater treatment. Emissions are primarily attributable to methane emissions from landfill which reduce over the projected period in line with the projected reduction in waste going to landfill and the age of the waste already there;
- Fluorinated-Gas (F-Gas) emissions are projected to decrease by 16% from 0.8 to 0.6 Mt CO₂eq between 2021 and 2030 under the WEM scenario. This is largely due to the move away from mobile air-conditioning systems in vehicles that contain F-Gases with a high global warming potential.

4.2.2 Renewable Energy

4.2.2.1 Current share of renewable energy in gross final energy consumption and in different sectors (heating and cooling, electricity, and transport) as well as per technology in each of these sectors

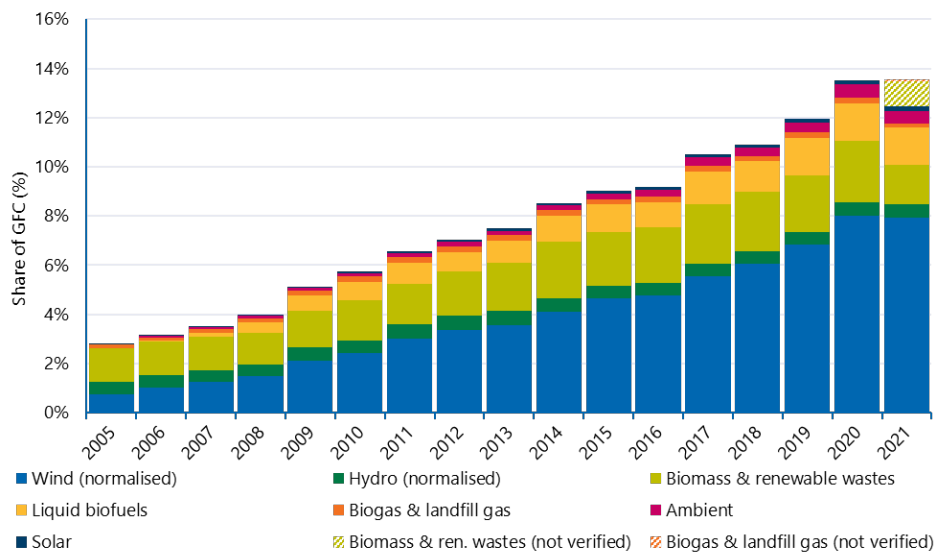


Figure 2: RES of gross final consumption by source SEAI Energy in Ireland 2022

Overall and Modal Shares of Renewable Energy

The renewable electricity target is commonly referred to as the RES-E target. The RES-E target was for 40% of gross electricity consumption to come from renewable sources in 2020. The actual RES-E achieved in 2020 was 39.1%, falling just short of the national target. Nevertheless, the development of renewable electricity was a major success in Ireland since 2005. Ireland's NECP 2021-2030 included a planned RES-E of 70% in 2030, which will

ensure that renewable electricity continues to form the backbone of our RE use for the coming decade and beyond. Ireland’s CAP 2021 includes a target to increase the share of electricity generated from renewable sources “up to 80% where achievable and cost effective, without compromising security of electricity supply”. This section will be updated in the final version of the NECP.

Table 19: Ireland's progress towards overall renewable share (RES) target

	2016	2017	2018	2019	2020	2021	2030 Target
RES-E (Normalised)	27.1%	30.3%	33.3%	36.5%	39.0%	36.4%	70%
RES-T (weighted)	5.2%	7.5%	7.2%	8.9%	10.1%	4.3%	14%
RES-H	6.2%	6.6%	6.4%	6.3%	6.3%	5.2%	24%
Overall RES	9.2%	10.5%	10.9%	12.0%	13.5%	12.5%	34.1%

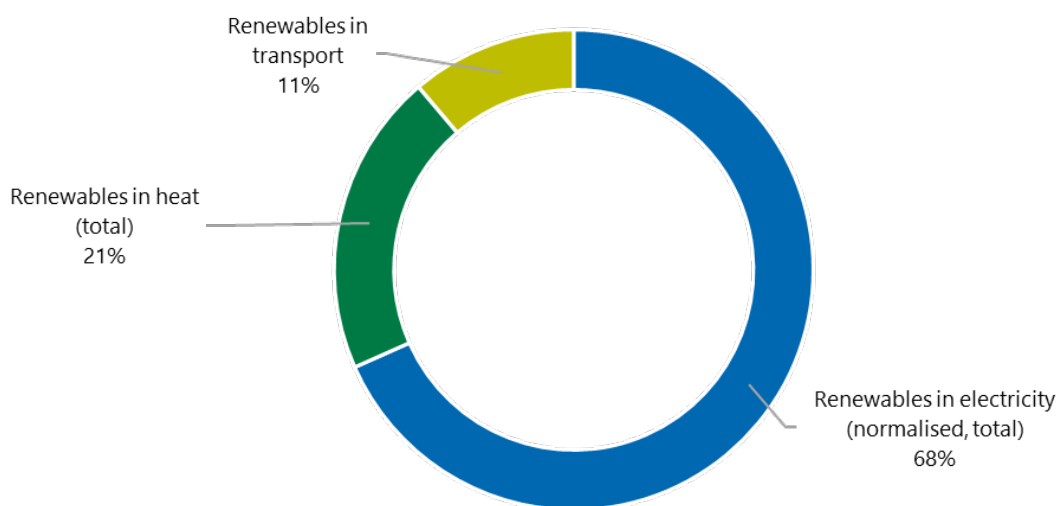


Figure 3: Current share of renewable energy (overall RES) by mode

Table 20: Renewable energy contribution to gross electricity consumption (normalised)

	2021		1-year Change 2020 to 2021		5-year Change 2016 to 2021		10-year Change 2011 to 2021		20-year Change 2001 to 2021	
	Quantity (GWh)	Share (%)	(GWh)	(%)	(GWh)	(%)	(GWh)	(%)	(GWh)	(%)
Hydro	762	6.0%	+1	+0.1%	+31	+4.3%	+10	+1.3%	-34	-4.2%
Wind	10,795	85.4%	+118	+1.1%	+4,222	+64.2%	+6,835	+172.6%	+10,477	+3,298%
Biomass	471	3.7%	+41	+9.5%	+75	+19.0%	+334	+245.4%	+471	-
Renewable Waste	352	2.8%	+26	+7.9%	+276	+364.4%	+352	-	+352	-
Landfill Gas	119	0.9%	+2	+1.4%	-45	-27.5%	-60	-33.4%	+22	+22.4%
Biogas	54	0.4%	+3	+6.5%	+10	+22.3%	+33	+152.4%	+54	-
Solar PV	93	0.7%	+31	+50.5%	+87	+1,423%	+92	+17,056%	+93	-
Total Normalised Renewables	12,645	100%	+221	+1.8%	+4,656	+58.3%	+7,597	+150%	+11,435	+945%

Renewable Heat

The RES-H target for 2020 was for 12% of energy used for heating and cooling to come from renewable sources. The actual RES-H achieved in 2020 was 6.3%, falling well short of the national target. The lack of progress in RES-H was the main reason for failing to meet the overall RES target in 2020. The NECP 2021 shows a planned RES-H of 24% in 2030.

Although REDII does not specify a mandatory target for RES-H, the directive requires Ireland to “endeavour to increase” the RES-H by an indicative 1.1% as an annual average calculated for the periods 2021–2025 and 2026–2030. As part of the European Green Deal and REPowerEU, the EU’s plan to become independent of Russian fossil fuel, the European Parliament adopted the text of a proposed amendment to REDII in September 2022. The proposal includes various new measures to promote the uptake of RE and increases the EU wide RES target to 45% in 2030. It also includes a new target for the increase in renewable energy share in the industry sector and changes the basis of the transport sector target from RES to a reduction in GHG intensity. Between 2008 and 2014 there was a reduction in overall amount of energy used for heat, which contributed positively towards the RES-H target, as the share of renewable heat is measured against a smaller total. During this period the quantity of renewable heat energy increased by 38% but the share of renewable heat

energy increased by 81%. This trend reversed after 2014, when the total energy used for heat began increasing again following the return to economic growth and a reduction in international oil prices. Between 2014 and 2020 the quantity of renewable heat increased by 16%, but so did the overall amount of energy used for heat, meaning that the share of renewable heat remained virtually unchanged.

Following a decline in the contribution from renewables to thermal energy in the early 1990s (from 2.6% in 1990 to 2.1% in 1995), RES-H share grew between 2000 and 2014, from 2.4% to 6.3%, and fell in 2015 to 6.2%, increasing again in 2016 and 2017 to 6.7% before small decline in 2018 to 6.5%. This overall trend in growth from 2000 has been dominated by solid biomass, mostly due to the increased use of wood waste as an energy source in the wood products and food sub-sectors of industry. In addition, recent growth in RE use in the residential and services sectors can be attributed to the support of grant schemes and revisions to building regulations requiring a share of the energy demand in new dwellings to come from renewable sources.

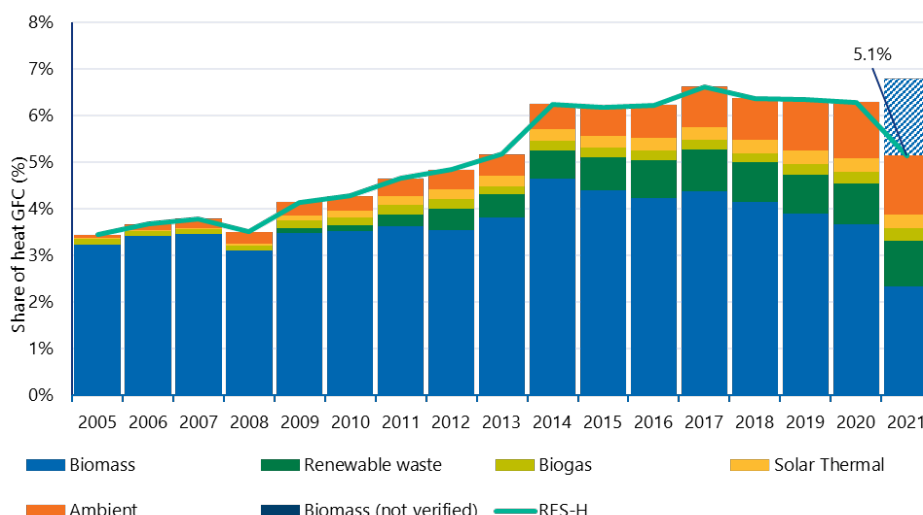


Figure 4: RES in heat (RES-H)

Renewable heat energy is dominated by the use of solid biomass and renewable wastes in industry. Using ambient energy (via ground-source and air-source heat pumps) has grown more than ten-fold between 2005 and 2020 and is now a significant source of renewable heat energy, accounting for approximately 19% of renewable heat energy in 2021. Recent growth in RE use for heat has been due to increased use of renewable wastes in industry and increased use of heat pumps delivering ambient energy in the residential and services sectors. The latter is mostly due to revisions to building regulations for new dwellings and the support of grant schemes.

Renewable Transport

REDI established a mandatory minimum target for the share of RE sources in transport (REST) by 2020: 10% of all petrol, diesel, biofuels and electricity consumed in road and rail transport. Ireland exceeded this target reaching 10.2% RES-T in 2020. REDII requires Ireland, along with all Member States, to set an obligation on fuel suppliers to ensure that the share of renewable energy within the final consumption of energy in transport is at least 14% by 2030.

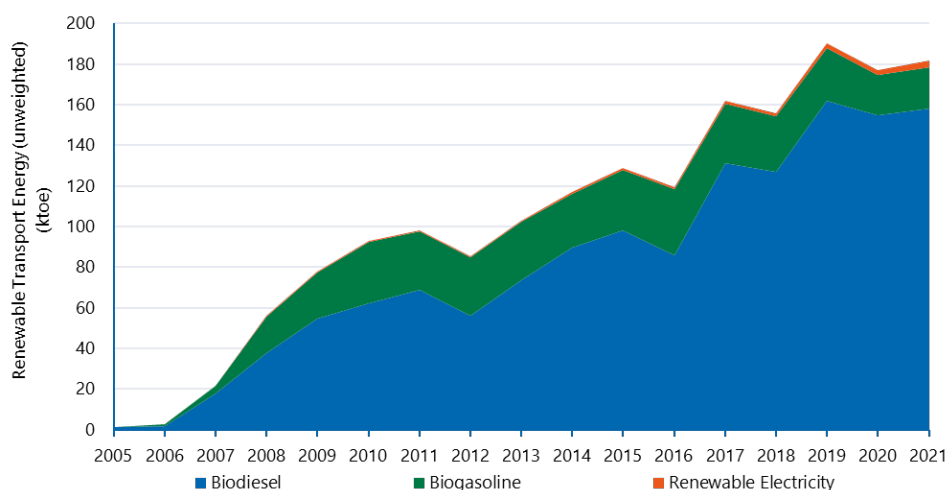


Figure 5: Renewable energy in transport by source

4.2.2 Indicative projections of development with existing policies for the year 2030 (with an outlook to the year 2050)

Overall renewable energy share in gross final consumption is anticipated to be in the order of 19.4% by 2025 in the WEM scenario. These projections do not include the anticipated impact of policies and measures announced after the end of 2021 (the end of the latest inventory year). Ireland is likely to achieve 81% of the required progress towards the 2025 target of 24% under the Renewable Energy Directive. Progress on renewable energy has been slower than anticipated in general across Europe and purchasing compliance will come at a higher cost to the Irish Exchequer particularly in a tight market supply.

In the context of 2030 renewable energy targets, Ireland is starting from a point below its expected baseline of 19% from 2022. For the WEM scenario, a slower rate of delivery of renewable electricity generation is assumed, leading to a RES-E share of 68% in 2030. Projected growth in data centre electricity demand is taken from the EirGrid's best estimate "Median" scenario. While the commitments in the Climate Action Plan will assist in

accelerating the deployment of renewable generation in the next decade, the renewable energy target is calculated as the proportion of energy consumed in the economy and electricity demand. Additional final energy demand has been added since the previous NECP submission, and where this demand increases ahead of the roll out of renewable generation capacity it results in a greater challenge to meeting the Renewable Energy Directive. Irish authorities are considering the available options under the Governance Regulation and recast Renewable Energy Directive to set a cost-effective pathway to meet the compliance milestones to 2030. The outlook to 2030 for the WEM (baseline) scenario suggests an outturn of 31.4% overall RES. As for 2030, this is a baseline scenario only and does not include the impact of more recently announced policies and measures beyond what has been implemented by end of 2021. These will be included in the WAM scenario in the final NECP submission.

4.3 Dimension Energy Efficiency

4.3.1 Current primary and final energy consumption in the economy and per sector (including industry, residential, service and transport)

Primary Energy Requirement

Total primary energy requirement (TPER) peaked in 2008 before the economic downturn and reached a low in 2014 before growing to a relatively stable level from 2016 to 2019. This was the result of several competing factors. Increasing population and economic growth was countered by general efficiency improvements, and additionally, generation of 1 ktoe of electricity requires approximately 1 ktoe wind power, 2 ktoe of gas, or 3 ktoe of coal, peat or oil, so an increasing share of renewable generation, decreases primary energy demand for the energy sector. A significant contraction to TPER occurred in 2020 due to the impacts of the COVID-19 pandemic; this contraction was mostly confined to oil products, caused by a downturn in transport demand. In absolute terms, Ireland's current TPER is comparable to that from 20 and 10 years ago, despite intervening periods of significant growth and decline. Nevertheless, the mix of fuels and energy types in primary energy has evolved significantly during this time. The broad trend has been the growth of renewables and natural gas displacing oil, coal, and peat. Despite the meaningful development of renewables, fossil fuels still dominate Ireland's primary energy supply. Energy use can be categorised by its mode of application: whether it is used for mobility (transport), power applications (electricity) or for thermal uses (space, water, or process heating), as shown in Figure 6. These modes also represent three distinct energy markets. Where thermal or transport energy is provided

by electricity (e.g. electric heaters and EVs) this energy is considered under electricity, and not under thermal or transport, so that double counting is avoided. In primary energy terms, all three modes have a broadly similar share. In particular, electricity makes up a far higher share of primary energy than it does of final energy. This is because primary energy includes the large amount of energy that is lost as waste heat in the electricity generation process.

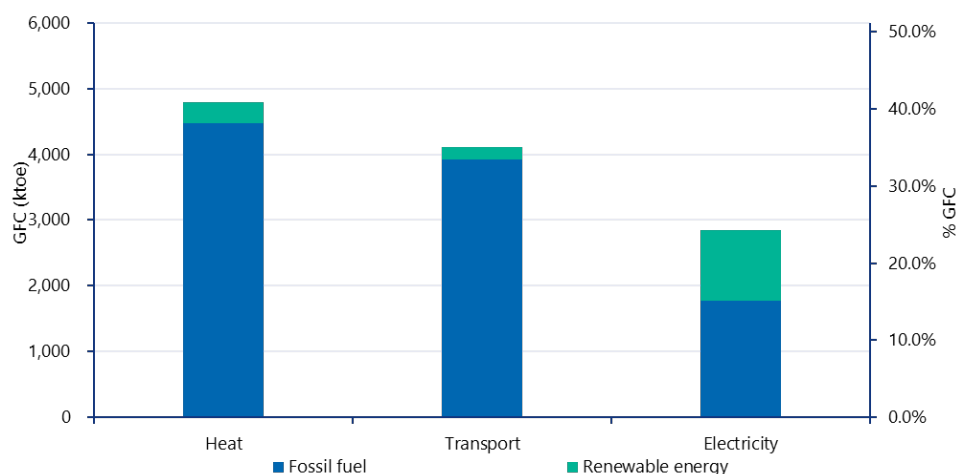


Figure 6: Renewable and fossil gross final energy consumption by mode

Final Energy Demand

The evolution of Ireland's final energy demand by sector is presented in Figure 7. The effect of the economic downturn is evident from 2008 to 2012. It is also evident from this figure that transport continues to dominate as the largest energy consuming sector (on a final energy basis) with a share of 42% in 2018. The shares of the industry and residential sectors have decreased since 1990. In 2018 industry accounted for 21% of final energy use and the residential sector for 23%.

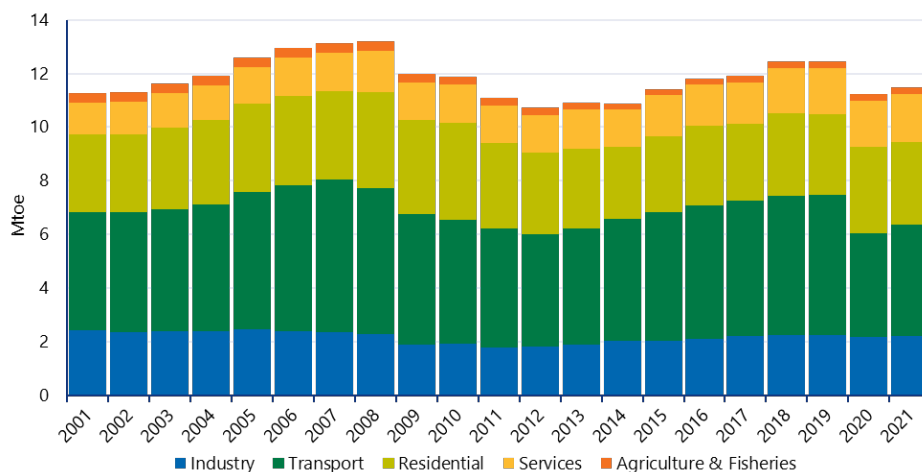


Figure 7: Annual Total Final Consumption by sector

EirGrid's All Island Generation Capacity Statement outlines that the demand forecast in Ireland is heavily influenced by the expected growth of large energy users, primarily data centres which can require the same amount of energy as a large town. EirGrid's analysis shows that demand from data centres could account for 31% of all demand by 2027 (in a median demand scenario). In June 2018, the Department of Business, Enterprise, and Innovation published a statement on The Role of Data Centres in Ireland's Enterprise Strategy. This statement acknowledges that, as large consumers of electricity, data centres pose particular challenges to the future planning and operation of a sustainable power system. The increased renewable electricity requirement linked to energy intensive investments will be mainly delivered by the development of the new Renewable Energy Support Scheme (RESS) which will also reflect falling costs across a range of renewable technologies and an ambition to increase community and citizen participation in RE projects.

4.3.2 Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling

The 2022 National Heat Study highlights the potential for up to 54% of heat in buildings to be supplied by district heating. The CAP includes an ambition to deliver up to 2.7 TWh of district heating by 2030.

4.3.3 Projections considering existing energy efficiency policies, measures and programmes as described in point 1.2.(ii) for primary and final energy consumption for each sector at least until 2040 (including for the year 2030)

- The results for energy savings from energy-efficiency policies and measures in the With Existing Measures (WEM) scenario are included in Table 26. Primary energy savings include the primary energy equivalent (PEE) of electricity savings in the end-use sectors. Autonomous savings are not accounted for in these tables;
- In the WEM scenario, most national energy-efficiency programmes are assumed to continue delivering level of savings commensurate with the programme supports in place as at the end of 2021. With few exceptions, such as domestic and non-domestic building regulations and EV deployment, which are included over entire forecast horizon, no further savings are included after 2030 in the WEM scenario;

- The energy-efficiency savings by policy and measure are (currently) modelled based on Government expenditure on energy-efficiency support programmes and the anticipated effect of regulations and tax incentives driving energy efficient investments. As energy demand varies with prices, different scenario input price assumptions would lead to different energy-efficiency savings estimates. For example, the energy price input assumption directly influences the savings quantified for policy measures such as carbon tax, smart meters and retrofit programmes incentivising switching from fossil fuel boilers to heat pumps.

Table 21: Energy efficiency savings in PEE and final energy consumption by sector (WEM)

Primary Energy Savings (GWhJ)	2018	2020	2030	2040
Household	6,981	7,739	11,784	12,701
Services	6,259	7,623	15,927	18,119
Industry	3,083	3,300	3,629	3,629
Transport	1,596	1,961	5,161	14,174
Cross-Sectoral	1,501	1,836	6,673	6,673
Total	19,420	22,460	43,173	55,295
Total Primary Energy Consumption (GWhJ)	2018	2020	2030	2040
Total	172,996	156,470	177,113	187,476
Total Final Energy Demand (GWh)	2018	2020	2030	2040
Household	35,103	36,766	29,936	31,264
Services	19,452	20,047	28,615	35,655
Industry	26,305	25,247	28,675	33,651
Transport	60,408	45,118	59,479	52,721
Other	2,916	2,917	3,447	3,625
Total	144,189	130,093	150,155	156,912

Note: Ireland is committed to meeting its obligations under the recast Energy Efficiency Directive. As noted elsewhere in this document, Ireland’s draft NECP 2023-2030 is based on one scenario - the With Existing Measures (WEM) scenario. The above table also captures the WEM only scenario and does not represent a lowering of commitment. Article 4(5) of the Energy Efficiency Directive indicates that the Commission will provide an updated 2020 EU Reference Scenario to Member States. Ireland intends to provide an updated indicative

national energy efficiency contribution to the Commission early in 2024 following receipt of this updated scenario. Ireland will also include the updated contribution in the final NECP.

4.3.4 Cost-optimal levels of minimum energy performance requirements resulting from national calculations, in accordance with Article 5 of Directive 2010/31/EU

A 2019 report has been completed by the Department of Housing, Planning and Local Government on the Development of Cost Optimal Calculations and Gap Analysis for Non-residential Buildings in Ireland under Directive 2010/31/EU on the Energy Performance of Buildings (recast).

4.4 Dimension Energy Security

4.4.1. Current energy mix, domestic energy resources, import dependency, including relevant risks

Current Energy Mix

Ireland's current energy mix is illustrated below in terms of primary energy requirement by fuel. Primary energy consumption in Ireland in 2021 was 13,852 ktoe, a 3.6% increase on the previous year. Over the period 2001 – 2021 Ireland's annual TPER fell in absolute terms by 5.1%.

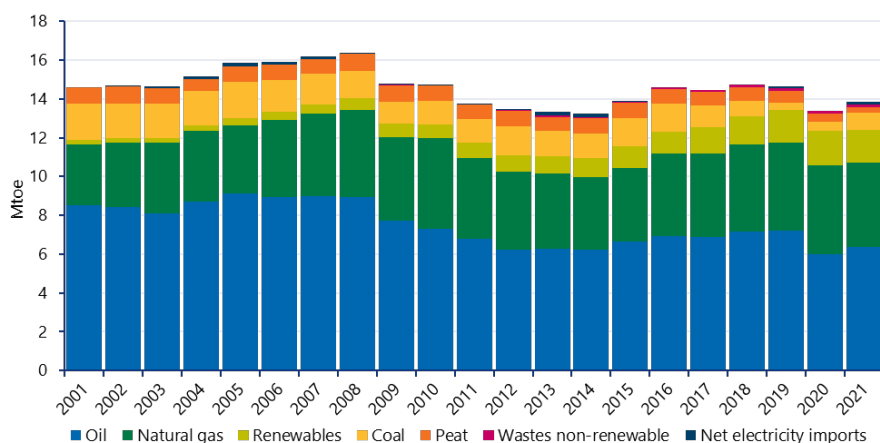


Figure 8: Current Energy Mix

The following are the main trends in the national fuel share:

- Overall primary energy use grew by 3.6% in 2021;
- Fossil fuels accounted for 87% of all the energy used in Ireland in 2018. Demand for fossil fuels increased by 476ktoe, to 12,065 ktoe, but was 2,321 ktoe lower than in 2001;
- Coal use increased by 104% in 2021 and its share of TPER increased to 6.6%, this was primarily driven by an extended outage of two large gas fired generation plant requiring increased running of coal plant. However, since 2001, coal demand has fallen by 51%;
- Peat use fell by 36.5% in 2021 and its share of overall energy use was 1.9%;
- Oil continues to be the dominant energy source and maintained a 46% share of TPER in 2021. The share of oil in overall energy use peaked in 1999 at 60%. Consumption of oil, in absolute terms, increased by 5.8% in 2021, to 6,359 ktoe, but compared with 2001, oil demand in 2021 was 25% lower;
- Natural gas use decreased in 2021 by 4%, to 4,384 ktoe, with its share of TPER being 31.6%. Natural gas use was 39.7% higher than in 2001;
- Total renewable energy increased by 11.9% during 2021, to 1,650 ktoe. The overall share of renewables in primary energy stood at 11.9% in 2021;
- Energy from non-renewable wastes decreased by 2.7% in 2018, to 143 ktoe, and accounted for 1% of primary energy;
- Ireland was a net importer of electricity in 2018, importing 137 ktoe.

Table 22: Primary energy by fuel type compared with previous years

	2021		1-year change (2020–2021)		5-year change (2016–2021)		10-year change (2011–2021)		20-year change (2001–2021)	
	Quantity (ktoe)	Share (%)	(ktoe)	(%)	(ktoe)	(%)	(ktoe)	(%)	(ktoe)	(%)
Oil	6,359	45.9%	+347	+5.8%	-587	-8.4%	-426	-6.3%	-2,147	-25.2%
Gas	4,384	31.6%	-180	-4.0%	+133	+3.1%	+237	+5.7%	+1,245	+39.7%
Renewables	1,650	11.9%	-144	-8.0%	+515	+45.3%	+824	+99.7%	+1,417	+605.7%
Coal	914	6.6%	+466	+104.3%	-536	-37.0%	-310	-25.3%	-964	-51.3%
Peat	265	1.9%	-153	-36.5%	-469	-63.9%	-459	-63.4%	-598	-69.3%
Wastes non-renewable	143	1.0%	-4	-2.7%	+76	+114.3%	+129	+907.1%	+143	-
Net electricity imports	137	1.0%	+150	-	+198	-	+94	+223.9%	+158	-
Total	13,852	100.0%	+482	+3.6%	-671	-4.6%	+89	+0.6%	-746	-5.1%

Source: SEAI

Domestic Energy Resources

Figure 9 shows the indigenous energy fuel mix for Ireland over the period. The reduction in indigenous supply of natural gas (until 2016) is evident from Figure 15 as is the switch away from peat. Production of indigenous gas decreased by 94% over the period between 1990 and 2015 to 106 ktoe but then increased dramatically in 2016 to 2,493 ktoe. It increased again in 2017 to 2,854 ktoe. This is the highest natural gas production level ever recorded in Ireland. Production from the Corrib field is expected to cease by 2030 with the high level of production expected to taper off significantly in the next couple of years. This has already started and is evident in 2021, with a reduction in production to 1,258 ktoe.

Indigenous RE production increased by 258% between 2005 and 2018 to 1,326 ktoe.

Indigenous production of all energy in Ireland reached the highest level ever with a new peak in 2018 of 5,040 ktoe, up from the previous peak in 2017 at 4,884 ktoe, however this has fallen since with the reduction in Corrib gas production.

Peat production is markedly down since 2013 following significant production during that summer which provided favourable harvesting conditions for peat. In 2021 peat production was in line with the previous year at 128ktoe.

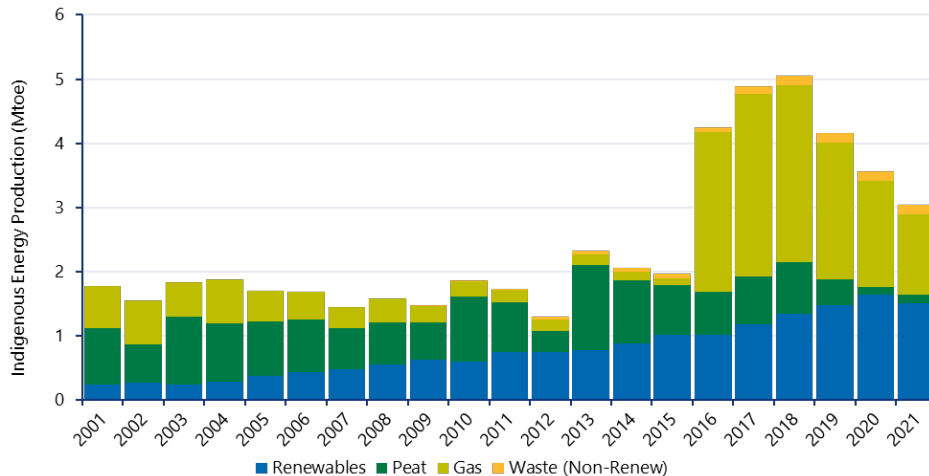


Figure 9: Indigenous Energy Production

Import Dependency

Ireland imports most of its energy. The breakdown of our 2021 primary energy across indigenous production, imports, and exports. Oil and natural gas are by far our largest energy imports, but we also import significant quantities of coal, and some RE, in the form of biomass, biodiesel and bioethanol. Our electricity interconnectors help us to balance the all-island grid loads, through near continuous importing and exporting of electricity to and from Northern Ireland. When averaged over the full year of 2021, we imported three times as much electricity as we exported. The step-change increase in 2016 was due to the connection of the Corrib field to the gas grid. This more than doubled our indigenous energy production from a baseline of about 20,000 GWh during 2000–2015 to a maximum of 50,000 GWh in 2018. Even around this peak, indigenous production only accounted for about 34% of total energy supply. Since then, we have seen three trends – a decline in indigenous production from the Corrib gas field, a decline in using peat for energy, and an increase in indigenous RE. 2021 was the first year since 2016, in which our indigenous production of energy from renewables (17,500 GWh) exceeded that of indigenous gas (14,600 GWh). As output from the Corrib gas field continues to decline, we will need to add more and more RE capacity to maintain and then grow our indigenous supply of energy. Besides the commitments to 5.5 GW of solar and 7 GW of off-shore wind mentioned previously, the Government has committed resources for 2 GW of green hydrogen and up to 5.7 TWh of biomethane from agro-forestry and AD by 2030.

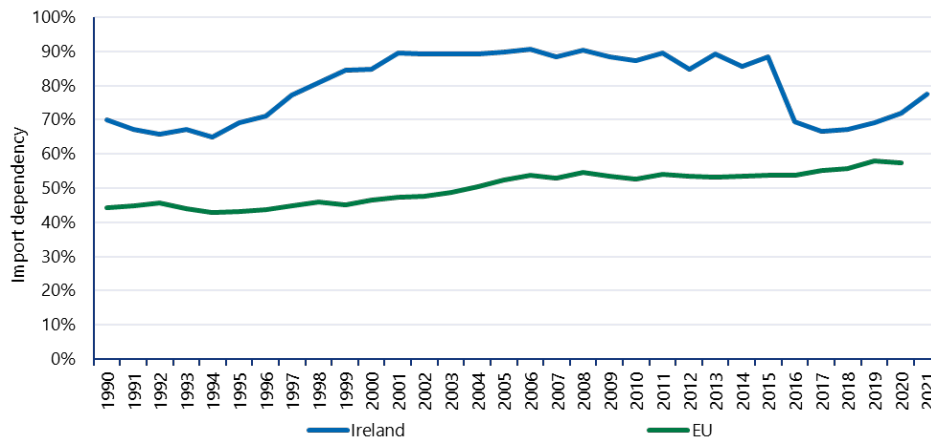


Figure 10: EU and Ireland import dependency

Figure 11 shows the trend for net fuel imports (imports minus exports) over the period.

The dependence on oil, due largely to energy use in transport, is the most striking feature. Between 2008 and 2021 net imports of oil have fallen 26.5%. In 2021 total net fuel imports increased by 12.4% due to a post-Covid lockdown bounce back in the economy and travel but were still 18% below 2001 levels while oil imports were 24% below 2001. In 2021 gas imports increased by 7.4% to compensate for lower indigenous output.

Coal imports increased by 387% in 2021 because of the extended outage of two large gas plants requiring extended running of Moneypoint coal fired station. In 2021, oil, gas and coal accounted for 60%, 28% and 8.6% of net imports respectively. Contributions to the increase in import dependency in 2021 were:

- Natural gas imports were up 7.4% to 3,126 ktoe;
- Net oil imports were up 2.8% to 6,780 ktoe (2021);
- Coal imports were up 387% to 969ktoe.

Countering these was:

- An 16.9% decrease in renewable energy imports (biomass and biofuels) to 142 ktoe.

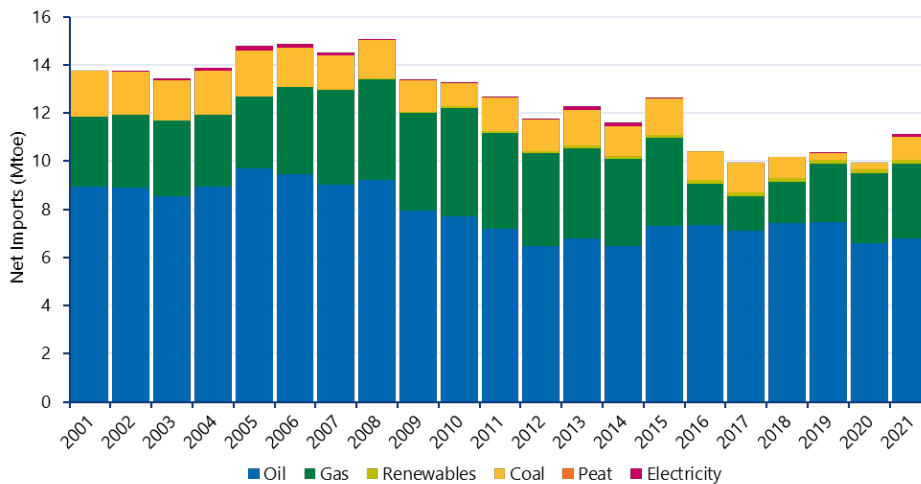


Figure 11: Imported energy by fuel

Relevant Risks – Petroleum Product Availability

Petroleum products will remain part of Ireland’s energy mix in the medium-term. Ireland, given its import dependency and its geographical position is vulnerable to both domestic supply constraints (for example, caused by severe weather) and international oil emergencies (caused by geopolitical or other factors). These risks are mitigated by the State’s stockholding of 90 days of petroleum product and by the Oil Emergency Response Plan (OERP) and associated Oil Emergency Allocation Scheme (OEAS), which may be utilised in the event of a prolonged supply constraint.

4.4.2. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

- Increase in RE in line with scenarios in the final NECP. Potential development of ocean energy technologies, depending on technology developments;
- Further electricity interconnection to France and Britain in line with scenarios in the draft NECP;
- Commercial peat harvesting to end 2028 with generation from peat to end by 2030 and expected well in advance of this;
- 100% oil import dependency unless there is a commercial oil find. Corrib gas field – expected lifetime of 15 years to 2030. Declining production from the Corrib gas field as per Table 23.

Table 23: Ireland’s gas production outlook (maximum daily supply)

Max Daily Supply (GWh/d)	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Corrib	40.6	34.0	30.3	26.6	23.3	20.0	18.2	15.9	15.6	12.3

The anticipated decline in domestic gas production implies Ireland’s dependence on imports for gas in the medium term will increase.

4.5 Dimension Internal Energy Market

4.5.1 Electricity Interconnectivity

4.5.1.1. Current interconnection level and main interconnectors

- EWIC – Ireland to GB – 500 MW.
- North South – Ireland to Northern Ireland – 300 MW (part of all island Market).

Table 24: Estimated levels of interconnection (WEM)

Electricity Interconnectivity	Unit	2018	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040	2050
Ireland -France	MW	0	0	0	0	0	0	0	0	700	700	700	700	1400	1400
Ireland-Great Britain	MW	500	500	500	500	500	500	1000	1000	1000	1000	1000	1000	1500	2000
Ireland- Northern Ireland	MW	450	450	450	450	450	450	450	1500	1500	1500	1500	1500	1500	1500

4.5.2 Energy Transmission Infrastructure

4.5.2.1 Key characteristics of the existing transmission infrastructure for electricity and Gas Transmission System

GNI operates both the transmission (2,427 km) and distribution networks (11,527 km) in Ireland. The transmission network transports gas from the entry points at Moffat, Inch and Bellanaboy to the distribution networks and connected loads (e.g. gas-fired power generators).

The Moffat entry point connects GNI’s network to the National Grid gas network in the UK and allows for gas imports to Ireland via two subsea interconnectors (IC1 and IC2). The existing interconnectors do not allow Ireland to export gas to the UK as they are unidirectional. The landfall installations for the interconnectors entering Ireland are located

close to Loughshinny for IC1 and Gormanston for IC2 in the East of Ireland. The Inch entry point connects Kinsale and Seven Heads gas fields to the onshore GNI network; the Bellanaboy entry point connects the Corrib gas field to the onshore GNI network. The Northern Ireland gas network connects to GNI's network at Twynholm in Scotland and delivers gas to Northern Ireland via the Scotland-Northern Ireland Pipeline (SNIP). The South North Pipeline (SNP) is an onshore gas transmission pipeline from Gormanston to Northern Ireland.

The distribution network currently delivers gas to circa 700,000 customers across Ireland and the network.

Table 25: Major gas network infrastructure in Ireland

Infrastructure	Function	Capacity
Moffat Entry Point (Scotland, UK)	Entry point to GNI system serving Ireland via the onshore system in Scotland and sub-sea interconnectors, IC1 & IC2. It also serves Northern Ireland via Twynholm installation and SNIP pipeline. Physically unidirectional.	385 GWh/d
South North CSEP (Ireland)	Exit point to Northern Ireland, supplied from IC2	66.3 GWh/d
Corrib Gas Field (Ireland)	Domestic production facility that began commercial operation in December 2015	60GWh/d

Electricity Transmission

The transmission system comprises approximately 6,400 km of high voltage (HV) overhead lines and underground cables and over 200 substations. Electricity generated in power plants is transformed to higher voltage levels – 110 kV, 220 kV, 275 kV and 400 kV, and fed into the transmission system. The Dublin area is an exception as the 100kV lines and cables and some of the 220/110kV transformer stations belong to the distribution system. Ireland's geographical location brings challenges in terms of interconnection with neighbouring countries. Ireland is currently exclusively connected to the UK through two electricity interconnectors: The 300 MW North-South interconnector, linking the electricity systems of Ireland and Northern Ireland, and the 500 MW East-West Interconnector connecting Ireland and Wales (UK). EirGrid owns and operates both interconnectors. Ireland is currently not meeting the indicative EU electricity interconnection target of at least 10% of installed

capacity by 2020; its current level of interconnection is 0% due to the departure of the UK from the EU. Direct connection to the EU will be restored with the construction and connection of the Celtic interconnector with France, to be grid integrated by 2027 (as assumed in WAM).

4.5.2.2 Key characteristics of the existing transmission infrastructure for electricity and Gas Transmission System

Gas

There are currently no major plans for gas network expansion in Ireland. Gas Network Ireland submits a 10 Year Network Development Plan to the Irish Regulator, the Commission for the Regulation of Utilities.

Electricity

Table 26: Proposed Interconnector Projects

Proposed Infrastructure	Capacity (MW)	Countries	Project Promoter	Expected Start Date
Second North-South interconnector	1500	Connecting Ireland and the UK (Northern Ireland)	Eirgrid	2023 (planning permission received)
Greenlink interconnector (EU PCI)	500	Connecting Ireland and the UK (Wales)	Greenlink	2024
Celtic interconnector (EU PCI)	700	Connecting Ireland and France	EirGrid and RTE	2026
MaresConnect	750	Connecting Ireland and the UK (Wales)	MaresConnect	By 2030

Electricity Interconnector Projects

Ireland is pursuing three new projects for interconnectors; a second North-South interconnector, the Greenlink interconnector and the Celtic interconnector. All three projects are on the fourth list of EU Projects of Common Interest (PCI). Only the Celtic Interconnector would, however, ensure continuous market coupling with the European Union as the United Kingdom has exited the EU. The existing North-South interconnector is running at full

capacity and creates a market bottleneck. The construction of a new 400 kV AC 1500 MW overhead line, the North-South interconnector, is currently planned to improve the security of electricity supply across the island of Ireland and improve the capacity and reliability of both grids. The increased capacity will also facilitate the connection of additional renewable capacity to the grid and help reduce curtailment. The Celtic Interconnector, between Ireland and France has begun construction and, on current progress, will be due for completion in 2026. Celtic will bring many benefits for Ireland, France, and the EU. It will allow for 700 MW of electricity, using High Voltage Alternative Current technology, to move between the countries. (This is equal to supplying power to around 450,000 homes.). This interconnector will make the supply of electricity more secure as it would provide Ireland's only direct energy connection to an EU member state (following the UK's departure from the EU), while also lowering the price of electricity. The Greenlink Interconnector, between Wexford and Wales which is expected to be commissioned by the end of 2024. Greenlink is a subsea and underground electricity interconnector cable (with two associated converter stations) linking the existing electricity grids in Ireland and GB and has a nominal capacity of 500 MW with flow in both directions. It has the potential to power 380,000 homes; it will increase energy security and will have strategic importance by doubling the interconnection capacity between Ireland and GB. It will provide greater market integration and competition to benefit consumers in Ireland, GB, and continental Europe.

The MaresConnect project, a point-to-point interconnector project from Ireland to GB is well-progressed and is currently in development phase. It has just recently progressed under the new round of the TYNDP 2024 application process. This 750 MW electricity interconnector linking the Irish and GB electricity transmission networks could enable bi-directional flow of power, responding to the varying supply and demand dynamics between the two nations. MaresConnect is the only Ireland-Great Britain project in Window 3 of the Ofgem process and is therefore the project with the most realistic prospect of delivery by 2030.

CRU is also closely liaising with the regulator for gas and electricity markets in GB to explore the potential for a final project assessment process. EirGrid's all-island generation capacity statement 2019-2028 provides further data on potential demand increases which will have network implications. EirGrid assumes that due to the expected growth in demand from large energy users, the electricity demand in Ireland could grow by up to 52.6% in the next 10 years in a high demand forecast. To be prudent, in the generation capacity statement, there is also a scenario where this growth is much lower, at 27.8% in a low demand forecast.

4.5.3 Electricity and Gas Markets, Energy Prices

4.5.3.1 Current situation of electricity and gas markets, including energy prices

Consistent with the evolution of EU energy policy, the regulation of retail market prices for electricity in Ireland ended in 2011 and for gas in 2014. Price setting is wholly a commercial and operational matter for electricity suppliers with no regulatory approval involved. Accordingly, Government policy on energy costs is focused on the competitive market and the provision of supports for energy efficiency. In this regard, Government policy has supported competition to drive down prices, with data from approved price comparison sites also consistently highlighting that consumers can make significant savings by switching energy suppliers in the competitive market.

The most recent market monitoring report of the Commission for the Regulation of Utilities indicates that the total number of switches completed in the electricity market in 2022 was 418,595 which represents an increase of 16.83% from 2021, when 358,267 customers switched. The total number of switches completed in the gas market in 2022 was 128,304, representing an increase of 4.7% from 2021, when 122,526 customers switched. Despite this, there are several factors that have historically placed, and will likely continue to place, upward pressure on costs and consumer prices relative to many other EU member states. Prices in Ireland are influenced by several factors making Ireland more vulnerable to changes in international energy markets than other EU member states. These factors include, a lack of natural resources, as well as Ireland's peripheral geographical location, small market size, and dispersed, thinly spread population, which have served to place upward pressure on network costs. The SEAI, acting on behalf of EU statistics agency, Eurostat, is responsible for collecting and evaluating statistics on Irish electricity and gas prices, on which it publishes a regular six-monthly report, including analysis of recent trends and a comparison between Ireland with EU and Euro Area averages. The most recent SEAI report covered the period January - June 2023.

Business Electricity

The weighted average price of electricity to business consumers in Ireland has been above both Europe and Euro Area averages since the second half of 2011. In the most recent semester (January to June 2023) the weighted average price in Ireland increased by 2% and was 7% and 8% above the EU and Euro Area average respectively.

Table 27: Electricity consumption bands for business - January to June 2023

Band	Band Share	Ireland c/kWh	Ireland Relative to:		Ranking* in:		Semester Price Change:		
			EU	Euro Area	EU	Euro Area	Ireland	EU	Euro Area
IA (<0.02)	6.7%	37.1	124%	121%	6	4	+23%	+15%	+14%
IB (0.02 - 0.5)	23.5%	35.6	147%	147%	2	1	+51%	+19%	+18%
IC (0.5 - 2.0)	10.6%	28.3	135%	135%	4	1	+30%	+14%	+12%
ID (2.0 - 20)	21.4%	24.0	122%	122%	7	5	+24%	+12%	+11%
IE (20 - 70)	7.8%	22.9	130%	130%	7	5	+22%	+6%	+2%
IF (70 - 150)	4.5%	24	151%	150%	2	1	+19%	-4%	-10%
IG (>150)	25.5%	21.3	149%	149%	5	4	-8%	-15%	-20%
Weighted Avg.	-	27.3	135%	135%	-	-	33%	23%	5%

*A ranking of 1 means most expensive

Source: Eurostat and SEAI

Table 27 summarises the key changes for the electricity consumption bands for business in Ireland for the period January to June 2023 and compares with the changes across the EU and Euro Area. Since July to December 2022, consumption bands IA to IF experienced increases in the price of electricity to business in Ireland ranging from an increase of 19% in band IF to 51% in band IB. Price fell only in band IG in Ireland by 8%. Price increased in all consumption bands in both the EU and the Euro Area with the exception of bands IF and IG in the Euro Area where it fell by 4% and 10%, and 15% and 20% respectively. Ireland's ranking in the EU varied from seventh most expensive for bands ID and IE to most expensive for bands IB and IC.

Business Gas

Since S2 2016, the weighted average price of gas to business consumers in Ireland has been above the EU and Euro Area average until S1 2019 when it dipped below the Euro Area average. In the current semester it decreased by 11.5% and was 2% above the EU average and 4% below Euro Area average.

Table 28: Gas consumption bands for business - January to June 2023

Band	Band Share	Ireland c/kWh	Ireland Relative to:		Ranking in:		Semester Price Change:		
			EU	Euro Area	EU	Euro Area	Ireland	EU	Euro Area
I1 (<0.28}	12.4%	12.9	122%	122%	5	3	+70%	+36%	+37%
I2 (0.28 - 2.8)	19.8%	9.7	99%	99%	11	7	+32%	+39%	+41%
I3 (2.8 - 28)	21.7%	7.6	93%	95%	18	11	+14%	+27%	+27%
I4 (28 - 280)	38.2%	6.3	86%	87%	18	11	+18%	+13%	+14%
I5 (280 - 1,100)	7.9%	5.5	84%	88%	12	16	-25%	-13%	-16%
Weighted Avg.	-	8	99%	95%	-	-	+22%	25%	27%
*A ranking of 1 means most expensive							Source: Eurostat and SEAI		

Table 28 summarises the key changes for the consumption bands in Ireland for the period January to June 2023 and compares with the changes across the Europe and EU Area. Prices rose in all consumption bands in Ireland, ranging from 84% in band I5 to 122% in band I1. Prices increased in all bands in the EU and Euro Area. Ireland's highest ranking in the EU was third most expensive in band I1 and the lowest was in band I5 at 16th most expensive.

Household Electricity

The weighted price of electricity to household consumers in Ireland was above the EU over the period January 2020 to June 2023, except in January to June of 2022 and the same period in 2023 when it was slightly lower, approximately 3% lower than the Euro Area and EU27 average.

Table 29: Electricity consumption bands for households - January to June 2023

Band	Band Share	Ireland c/kWh	Ireland Relative to:		Ranking in:		Semester Price Change:		
			EU	Euro Area	EU	Euro Area	Ireland	EU	Euro Area
DA (<1.0)	2.7%	8.5	16%	16%	28	18	-62%	+8%	+8%
DB (1.0 - 2.5)	10.3%	15.2	40%	40%	29	19	-32%	+15%	+16%
DC (2.5 - 5.0)	34.4%	24.8	72%	73%	22	15	+7%	+14%	+15%
DD (5.0 - 15)	43.7%	28.5	88%	89%	14	9	+25%	+14%	+15%
DE (>15)	8.3%	29.1	94%	95%	16	10	+34%	+15%	+15%
Weighted Avg.	-	25.2	75.6%	76.5%	-	-	+11%	+13%	+15%
*A ranking of 1 means most expensive							Source: Eurostat and SEAI		

Table 29 summarises the key changes for the electricity consumption bands for households in Ireland for the period January to June 2023 and compares with the changes across the

EU and EU Area. The price rose in all bands in Ireland, ranging from 16% in band DA to 94% in band DE. Price increased in all bands in Europe and the Euro Area. Ireland was 75.6% and 76.5% above the EU average in DC and DD respectively and was fourth and seventh most expensive respectively in the EU in these bands.

Household Gas

The weighted price of gas to household consumers in Ireland was below the Euro Area average over the whole period and below the EU average between S1 2010 and S1 2013. It was 5% above the EU average and 7% below the Euro Area average.

Table 30: Gas consumption bands for households - January to June 2023

Band	Band Share	Ireland c/kWh	Ireland Relative to:		Ranking in:		Semester Price Change:		
			EU	Euro Area	EU	Euro Area	Ireland	EU	Euro Area
D1 (<5.6)	7.3%	15.9	93%	92%	14	10	+67%	+24%	+25%
D2 (5.6 - 56)	91.1%	14.7	103%	105%	12	10	+73%	+38%	+38%
D3 (>56)	1.7%	11.5	80%	83%	17	11	+46%	+39%	+38%
Weighted Avg.		14.7	101.2%	103.7%	-	-	+73%	+37%	+37%
*A ranking of 1 means most expensive							Source: Eurostat and SEAI		

Table 30 summarises the key changes for the consumption bands in Ireland for the period January to June 2023 and compares with the changes across the EU and EU Area.

In the main gas band, D2, the price rose in Ireland at a higher rate than the EU and the Euro Area. Ireland ranked as 12th most expensive in the EU and 10th most expensive in the Euro Area in band D2.

Table 31: Key electricity and gas price data

Business Electricity Prices - 1st Semester 2023					
Business Electricity Prices (ex VAT) Weighted Average Across All Suppliers	c/kWh S1 2023	Change Since S1 2022	Relative to EU average S1 2023	Relative to EU average S1 2022	Band Share of Market
Band IA Consumption < 20 MWh	37.1	23%	124%	116%	6.70%
Band IB 20 MWh < Consumption < 500 MWh	35.6	51%	147%	116%	23.50%
Band IC 500 MWh < Consumption < 2,000 MWh	28.3	30%	135%	119%	10.60%
Band ID 2,000 MWh < Consumption < 20,000 MWh	24.1	24%	122%	111%	21.40%
Band IE 20,000 MWh < Consumption < 70,000 MWh	22.9	22%	130%	114%	7.80%
Band IF 70,000 MWh < Consumption < 150,000 MWh	24	19%	151%	121%	4.50%
Band IG > 150,000 MWh	21.3	-8%	149%	138%	25.50%
Weighted Average	27.31	22%	138%	121%	-

Business Gas Prices - 1st Semester 2023					
Business Gas Prices (ex VAT) Weighted Average Across All Suppliers	c/kWh S1 2023	Change Since S1 2022	Relative to EU average S1 2023	Relative to EU average S1 2022	Band Share of Market
Band I1 Consumption < 1,000 GJ	12.9	70%	122%	98%	12.40%
Band I2 1,000 GJ < Consumption < 10,000 GJ	9.7	32%	99%	105%	19.80%
Band I3 10,000 GJ < Consumption < 100,000 GJ	7.7	14%	93%	103%	21.70%
Band I4 100,000 GJ < Consumption < 1,000,000 GJ	6.3	18%	86%	82%	38.20%
Band I5 1,000,000 GJ < Consumption < 4,000,000 GJ	5.5	-25%	84%	98%	7.90%
Weighted Average	8.0	23%	94%	94%	

Residential Electricity Prices - 1st Semester 2023					
Household Electricity Prices (All Taxes Included) Weighted Average Across All Suppliers	c/kWh S1 2023	Change Since S1 2022	Relative to EU average S1 2023	Relative to EU average S1 2022	Band Share of Market
Band DA Consumption < 1,000 kWh	8.5	-62%	20%	56%	3.3%
Band DB 1,000 kWh < Consumption < 2,500 kWh	15.2	-32%	48%	80%	10.3%
Band DC 2,500 kWh < Consumption < 5,000 kWh	24.8	+7%	86%	92%	34.4%
Band DD 5,000 kWh < Consumption < 15,000 kWh	28.5	+25%	106%	97%	43.7%
Band DE Consumption > 15,000 kWh	29.1	+34%	113%	98%	8.3%
Weighted Average	25.25	10.8%	90.9%	92.3%	-

Residential Gas Prices - 1st Semester 2023					
Household Gas Prices (All Taxes Included) Weighted Average Across All Suppliers	c/kWh S1 2023	Change Since S1 2022	Relative to EU average S1 2023	Relative to EU average S1 2022	Band Share of Market
Band D1 Consumption < 20 GJ	15.9	67%	111%	82%	7.20%
Band D2 20 GJ < Consumption < 200 GJ	14.7	73%	123%	98%	91.10%
Band D3 Consumption > 200 GJ	11.5	46%	97%	93%	1.70%
Weighted Average	14.732	72%	122%	97%	-

Bands mentioned in Table 31 refer to consumption bands defined in the Transparency of Gas and Electricity Prices Regulation. Regarding price developments in the Irish energy retail markets, the CRU publishes regular quarterly and annual market monitoring reports, which include analysis of recent and long- term price trends. The latest [CRU Market Monitoring annual report](#) is for 2022. In addition to the aforementioned SEAI and CRU publications covering prices in the Irish energy retail markets, the SEMC Market Monitoring Unit publishes a monthly report analysing, inter alia, price trends within the all-island wholesale market. The latest such report covering the period September 2023 can be located on the SEMC website.

4.5.3.2 Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

Design of energy wholesale and retail markets will continue to evolve in line with EU and national policy objectives to facilitate increased levels of energy system decarbonisation, consistent with security of supply and price competitiveness.

4.5.3.3 Breakdown of current price elements that make up the main three price components (energy, network, taxes/levies)

The tables below provide details on the electricity and gas price components for household and non-household consumers for 2022 based on data from the Eurostat databank. Price components are broken down into those associated with energy & supply; network costs; taxes, fees, levies & charges; value added tax (VAT); renewable taxes; capacity taxes; environmental taxes; nuclear taxes and other costs. In the second semester of 2022 household electricity prices in Ireland increased by 39%, while household gas prices increased by 66%.

Electricity Price to Business

Table 32 shows the disaggregation of electricity prices to business (non-household) weighted across all consumption bands for 2022.

- The energy and supply component in Ireland was 21.16 c/kWh or 82% of the total price. This was the fourth highest in Europe after Greece, Bulgaria and Romania;
- Network costs accounted for 14% of the price or 3.68 c/kWh in absolute terms. This was the third highest in Europe after Czechia and Slovakia;
- RE taxes accounted for 2% of the price or 0.48 c/kWh. This was the 14th highest in Europe.

Table 32: Electricity price breakdown to business in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Renewable Taxes	Capacity Charges	Environment Taxes	Other
21.16	3.68	0.48	0.04	0.02	0.56

Electricity Price to Households

Table 33 shows the disaggregation of electricity prices to household weighted across all consumption bands for 2022.

- The energy and supply component in Ireland was 22 c/kWh or 76% of the total price. This was the 7th highest in Europe;

- Network costs accounted for 34% of the price or 9.8 c/kWh in absolute terms. This was the highest in Europe;
- VAT accounted for 11% of the price or 3.1 c/kWh. This was the 16th highest in Europe;
- Renewable supports taxes accounted for 3% of the electricity price to households in Ireland and ranked 14th highest in Europe.

Table 33: Electricity price breakdown to households in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Value-added Tax	Renewable Taxes	Capacity Charges	Other
22	9.8	3.1	1	0.2	-7.3

Gas Price to Business

Table 34 shows the disaggregation of gas prices to business (non-household) weighted across all consumption bands for 2022.

- The energy and supply component in Ireland was 5.47c/kWh or 77% of the total price. This was the lowest;
- Network costs accounted for 17% of the price or 1.22 c/kWh in absolute terms. This was the highest in Europe;
- Environment taxes accounted for 6% of the electricity price to business in Ireland and ranked 9th highest in Europe

Table 34: Gas price breakdown to business in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Renewable Taxes	Capacity Charges	Environment Taxes	Other
5.47	1.22	0	0	0.42	0

Gas Price to Households

Table 35 shows the disaggregation of gas prices to households weighted across all consumption bands for 2018.

- The energy and supply component in Ireland was 6.17 c/kWh or 58% of the total price. This was the 15th highest in Europe;

- Network costs accounted for 27% of the price or 2.87c/kWh in absolute terms. This was the second highest in Europe;
- Value added tax accounted for 9% of the price or 0.99 c/kWh. This was ranked 18th in Europe;
- Environment taxes accounted for 6% of the gas price to households in Ireland and ranked 7th highest in Europe.

Table 35: Gas price breakdown to households in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Value-Added Tax	Renewable Taxes	Capacity Charges	Environment Taxes	Other
6.17	2.87	0.99	0	0	0.65	0

4.6 Dimension Research, Innovation and Competitiveness

The SEAI Research and Technology Department provides energy/low carbon technology sector market support and technology-related policy support to DECC. It covers areas such as wind and electricity, heat and bioenergy, offshore energy, and international research. The group develops technology roadmaps (informed by SEAI modelling), promotes the growth of relevant supply chains, represents Ireland in technology fora, develops guidance relevant to technology sub-sectors for suppliers, installers, manufacturers and consumers, and supports critical supply chain development, often in collaboration with partner state agencies such as the IDA Ireland and Enterprise Ireland.

SEAI, in partnership with Irish enterprise state agencies the IDA Ireland and Enterprise Ireland, performed an analysis of Ireland’s Energy Supply Chain Opportunity in 2014. The analysis estimated that the total average annual investment required in sustainable energy technologies and services in Ireland up to 2020 in Ireland would be between €2.2bn and €2.9bn. Between €1bn and €1.2bn of total annual expenditure was expected to be in the energy efficiency construction sector, €865m to €1.2bn in RE technologies and €335m to €420m in development of the electricity grid infrastructure. The analysis found that over 70% of the total anticipated expenditure in the energy supply chain up to 2020 was estimated to be within areas of the supply chain where Irish organisations are very well positioned to capture investment in goods and services markets. The existing Irish supply chains in these areas did not foresee any significant barriers to expanding their business as the market grows. However, the report found that some support may be needed to help them maintain competitive advantage; for example, continued RD&D supports, financial supports, investment in training, and support for export market development.

SEAI conducted a technology mapping exercise in 2019, mapping the current position of energy/low carbon technologies against a selected number of EU comparator countries. The following countries were chosen for the comparison: Austria, Belgium, Czech Republic, Denmark, Finland, Netherlands, Portugal, Slovakia and UK. The rationale for choosing these comparator countries was as follows:

8 potential comparator countries selected for indicator collection after excluding countries with the following characteristics:

- $\leq 20\%$ or $\geq 500\%$ the size of Ireland in terms of population, area, and GDP;
- Forecast % increase in Renewables between 2017 and 2030 $\leq 5\%$;
- GDP per capita $\leq 15,000$ Euros in 2017;
- The UK was included as an additional comparator country as it is Ireland's nearest neighbouring country and has a similar legislative landscape.

At EU level, Ireland is ranked 20th by population numbers but second on a GDP per population basis, signalling that Ireland's economy focuses on high valued goods and services. However, from an environmental and energy analysis Ireland is ranked 26th in the EU for emissions per capita and 15th for renewables penetration. Four of the eight comparator countries reduced their GHG emissions below the 2017 interim target, whilst four did not. Three of these countries need to make the largest percentage reduction in GHG emissions by 2030.

Table 36 shows the percentage RE achieved by each country by 2017 and calculated by the ESR Formula for 2030. It also shows the GHG reductions targeted and achieved by 2017 and targeted in 2030.

Table 36: Country Comparison of RES and GHG

Member State	Percentage Renewable Energy		Percentage GHG Emissions Reduction		
	%RE in 2017* (Achieved)	%RE in 2030 (ESR Formula)	%GHG Emission in 2017 (Interim Target)	%GHG Emission in 2017 (Achieved)	%GHG Emission Target in 2030 (ESR)
Austria	32.6	46	-13	-10	-36
Belgium	9.1	25	-10	-10	-35
Czech Rep	14.8	23	-6	4	-14
Denmark	35.8	46	-19	13	-39
Finland	41	51	-11	-9	-39
Ireland	10.7	31	-13	-6	-30
Netherlands	6.6	26	-11	-21	-36
Portugal	28.1	42	-1	-14	-17
Slovakia	11.5	24	-9	-14	-12
United Kingdom	10.2	27	-14	-21	-37

The annual European Innovation Scoreboard (EIS) provides a comparative assessment of the research and innovation performance of EU Member States and selected third countries, and the relative strengths and weaknesses of their research and innovation systems. According to the European Innovation Scoreboard 2023, Ireland is considered a strong innovator, above the EU average index. Compared to other Strong Innovators (Austria, Cyprus, France, Luxembourg, Germany) Ireland places 9th, ahead of Cyprus and France, and is performing at 115.8% of the EU average.

Ireland is the strongest in Impacts Area which looks at employment impacts and sales impacts of innovation. Impacts captures the effects of firms' innovation activities. Employment impacts measures the impact on employment and includes two indicators measuring employment in knowledge-intensive activities and employment in fast-growing firms in innovative sectors. Ireland currently sits second in the EU for the Employment Impacts indicator. Sales impacts measures the economic impact of innovation and includes three indicators measuring exports of medium and high-tech products, exports of knowledge-intensive services and sales due to innovation activities. Ireland ranks first in the EU under the Sales Impacts indicator.

Ireland's ranking mid-range in the Framework Conditions section which is comprised of three indicators. The Human Resources dimension includes three indicators and measures the availability of a high-skilled and educated workforce. Attractive research systems include

three indicators and measures the international competitiveness of the research base by focusing on international scientific co-publications, most-cited publications, and foreign doctorate students. Innovation-friendly environment captures the environment in which enterprises operate and includes two indicators, broadband penetration among enterprises and opportunity-driven entrepreneurship, measuring the degree to which individuals pursue entrepreneurial activities as they see new opportunities. Ireland has the highest level of completed third-level education in the EU. Whilst the data indicates that the ratio of doctorate graduates to third-level graduates is somewhat lower, it is still relatively high in the EU context and when compared to the selected comparator countries. Ireland has a highly-skilled and educated workforce, complementing the focus on high-value products and service seen above in the impact area.

Investments captures investments made in both the public and business sector and differentiates between two innovation dimensions: Finance and support includes two indicators and measures the availability of finance for innovation projects by venture capital expenditures (Capex), and the support of Government for research and innovation activities by R&D expenditures in universities and Government research organisations. Firm investments include three indicators of both R&D and non-R&D investments that firms make to generate innovations and the efforts enterprises make to upgrade the ICT skills of their personnel. Ireland scored below the EU average on the Firm investments indicator and is ranked 4th amongst the Strong Innovator countries, signifying a below average level of investment in RD&D.

Innovation activities captures different aspects of innovation in the business sector and differentiates between three dimensions: Innovators includes three indicators measuring the share of firms that have introduced innovations onto the market or within their organisations, covering both product and process innovators, marketing and organisational innovators, and SMEs that innovate in-house. Linkages includes three indicators measuring innovation capabilities by looking at collaboration efforts between innovating firms, research collaboration between the private and public sector, and the extent to which the private sector finances public R&D activities. Intellectual assets capture different forms of Intellectual Property Rights (IPR) generated in the innovation process, including Patent Cooperation Treaty (PCT) patent applications, trademark applications and design applications. Ireland scored relatively high for innovators, high for linkages but low for intellectual assets, again reinforcing the point of having a high-skilled, highly educated workforce that do go on to pursue research activities but are less innovative out in the field and supply chains as compared to recent years.

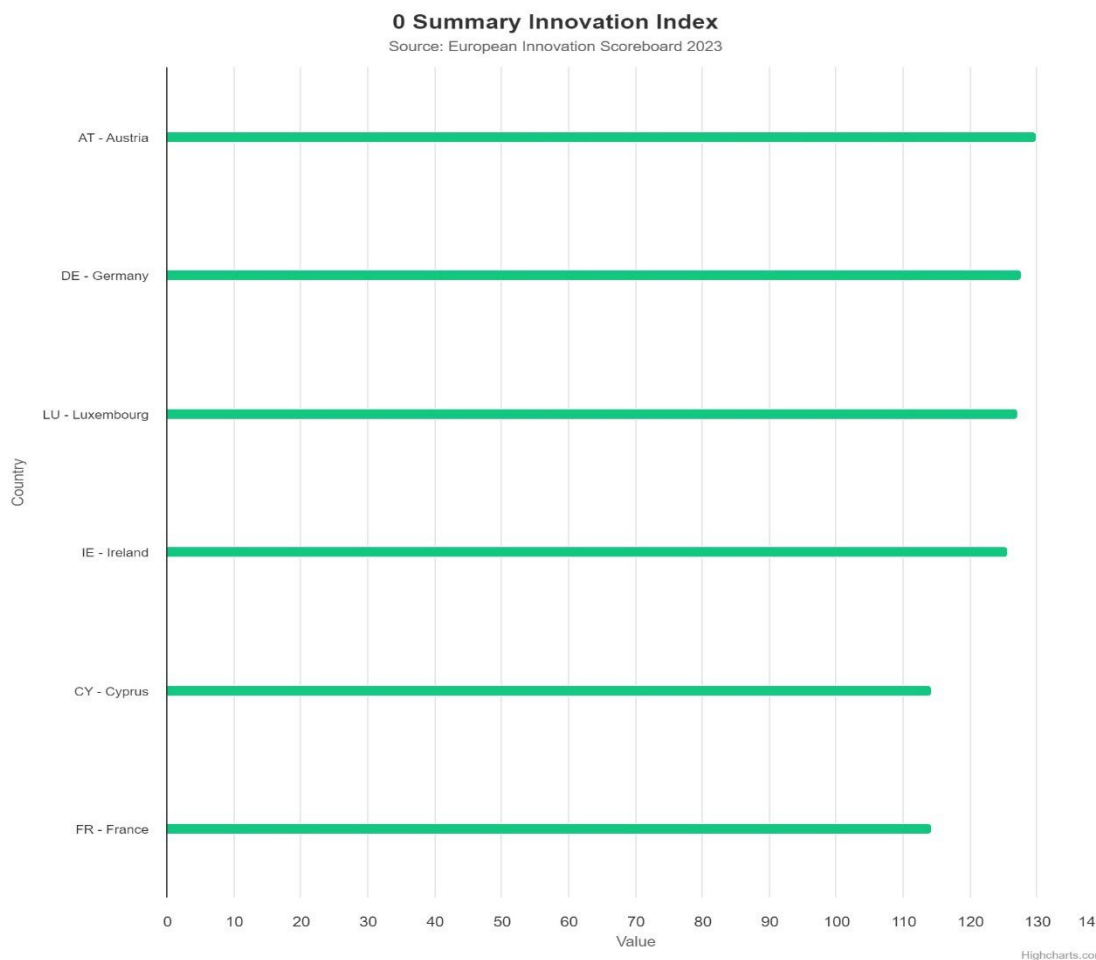


Figure 12: Summary Innovation Index (obtained by taking an unweighted average of the 27 indicators) for the countries deemed as ‘Strong Innovators.’

The analytical approach used to benchmark the position of low carbon technologies in Ireland, in the context of the selected comparator countries was to evaluate and map the low-carbon technology focus areas within the Research, Innovation & Competitiveness dimension of the 2019 NECP of each of the comparator countries and benchmark this against Ireland’s NECP. This analysis evaluated the following areas: RE technologies, energy efficiency technologies, sustainable transport technologies and energy infrastructure focus areas of the NECPs, SETPlan, IEA Technology Collaboration Programmes (TCP) and Mission innovation participation.

Current level of public and, where available, private research and innovation spending on low-carbon-technologies, current number of patents, and current number of researchers

A key metric for the assessment of innovative activity is R&D intensity (R&D expenditure as a percentage of GNP) which reflects the extent of research and innovation activities undertaken in a country in terms of resources input. Ireland's estimated intensity rate in 2021 was 2.00% of GNI* and 1.45% of GNP. The Europe 2020 strategy (a 10-year strategy developed by the European Commission in 2010) sets a 3% objective for R&D intensity. The Irish Government has adopted an R&D intensity target for Ireland of 2.5% of GNI* as part of its aims within Impact 2030.

- Research & Development (R&D) expenditure in 2021 (€3.88bn) was 19% higher when compared with 2019 (€3.26 bn);
- Current expenditure, comprising of labour costs and other current costs, accounted for 89% (€3.44bn) of all R&D expenditure in 2021;
- Capex accounted for the remaining 11% or €440.1m of total R&D expenditure.
- Irish-owned enterprises reported a 22% increase in R&D spend between 2019 and 2021, up from €963.0m to €1.18bn;
- Enterprises estimated an R&D spend of €3.89bn for 2022, consisting of 90% current expenditure and 10% capex.

Table 37: Business Expenditure on Research and Development, 2017 and 2019-2022

Business Expenditure on Research and Development, 2017 and 2019-2022 (€, million)					
	2017	2019	2022	2021	2022
Current Expenditure	2,492,17	2,700,588	2,536,714	3,438,954	3,506,390
Capital Expenditure	278,041	555,707	854,451	440,053	380,762
Total Expenditure	858,849	962,985	977,845	1,177,296	1,143,697
Of which Irish	1,911,365	2,293,309	2,413,320	2,701,711	2,743,455
Foreign Spend					

A three-year average (2020 to 2022), equal to approximately €23M, reflects Ireland's approximate level of annual public investment in energy RD&D. There is a shared vision of

continuing to develop the Irish energy research, development & demonstration community to one which is considered to be world class.

In 2020, there were an estimated 25,786 researchers (full-time equivalents) working across all sectors in Ireland. This was an increase of 9.6% from 2019.

Ireland has one of the lowest levels of general R&D expenditure relative to selected comparator countries on the basis of public expenditure on R&D as a percentage of GDP as shown in the Table 38. The table also shows the level of R&D expenditure which countries targeted by 2020.

Table 38: R&D Expenditure as % GDP³

Member State	All R&D Expenditure as % GDP	
	2018	2020
-		
Austria	3.14	3.19
Denmark	3.02	2.97
Finland	2.76	2.91
Belgium	2.67	3.46
Netherlands	2.14	2.3
Czech Rep	1.90	1.99
Portugal	1.35	1.61
Ireland	0.99	1.23
Slovakia	0.84	0.9
EU-27	2.18	2.31

State aid for environmental protection per GDP unit basis is an indicator of the amount of support provided to the uptake of environmental protection. For example, the support scheme for renewable heat (SSRH) funded by DECC and administered by SEAI and other similar schemes provide market support activation to assist the deployment of technologies within a particular sector. The table below shows that Ireland ranks 7th out of the 9 selected comparator countries for State Aid for environmental protection as a percentage of GDP.

³ https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?name_desc=false

Table 39: State Aid for Environmental Protection by Member State

Member State	State Aid for Environmental Protection (including Energy Saving) in 2021 (millions €)	State Aid for Environmental Protection (Percentage of GDP)
Denmark	829.10	0.25
Czechia	1915.07	0.33
Finland	1560.31	0.62
Austria	925.03	0.23
Netherlands	4057.83	0.47
Ireland	678.55	0.16
Slovakia	96.22	0.10
Belgium	1972.36	0.39
Portugal	11.91	0.01

Breakdown of current price elements that make up the main three price components (energy, network, taxes/levies)

The tables below provide details on the electricity and gas price components for household and non-household consumers for 2022 based on data from the Eurostat databank. Price components are broken down into those associated with energy & supply; network costs; taxes, fees, levies & charges; VAT; renewable taxes; capacity taxes; environmental taxes; nuclear taxes and other costs. In the second semester of 2022 household electricity prices in Ireland increased by 39%, while household gas prices increased by 66%

Electricity Price to Business

Table 40 shows the disaggregation of electricity prices to business (non-household) weighted across all consumption bands for 2022. The energy and supply component in Ireland was 21.16 c/kWh or 82% of the total price. This was the fourth highest in Europe after Greece, Bulgaria, and Romania. Network costs accounted for 14% of the price or 3.68 c/kWh in absolute terms. This was the third highest in Europe after Czechia and Slovakia. Renewable energy taxes accounted for 2% of the price or 0.48 c/kWh. This was the 14th highest in Europe.

Table 40: Electricity price breakdown to business in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Renewable Taxes	Capacity Charges	Environment Taxes	Other
21.16	3.68	0.48	0.04	0.02	0.56

Electricity Price to Households

Table 41 shows the disaggregation of electricity prices to household weighted across all consumption bands for 2022.

- The energy and supply component in Ireland was 22 c/kWh or 76% of the total price. This was the 7th highest in Europe;
- Network costs accounted for 34% of the price or 9.8 c/kWh in absolute terms. This was the highest in Europe;
- Value added tax (VAT) accounted for 11% of the price or 3.1 c/kWh. This was the 16th highest in Europe;
- Renewable supports taxes accounted for 3% of the electricity price to households in Ireland and ranked 14th highest in Europe.

Table 41: Electricity price breakdown to households in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Value-added Tax	Renewable Taxes	Capacity Charges	Other
22	9.8	3.1	1	0.2	-7.3

Gas Price to Business

Table 42 shows the disaggregation of gas prices to business (non-household) weighted across all consumption bands for 2022.

- The energy and supply component in Ireland was 5.47c/kWh or 77% of the total price. This was the lowest in Europe;
- Network costs accounted for 17% of the price or 1.22 c/kWh in absolute terms. This was the highest in Europe;

- Environment taxes accounted for 6% of the electricity price to business in Ireland and ranked 9th highest in Europe.

Table 42: Gas price breakdown to business in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Renewable Taxes	Capacity Charges	Environment Taxes	Other
5.47	1.22	0	0	0.42	0

Gas Price to Households

Table 43 shows the disaggregation of gas prices to household weighted across all consumption bands for 2018.

- The energy and supply component in Ireland was 6.17 c/kWh or 58% of the total price. This was the 15th highest in Europe;
- Network costs accounted for 27% of the price or 2.87c/kWh in absolute terms. This was the 2nd highest in Europe;
- Accounted for 9% of the price or 0.99 c/kWh. This was ranked 18th in Europe;
- Environment taxes accounted for 6% of the gas price to households in Ireland and ranked 7th highest in Europe.

Table 43: Gas price breakdown to households in Ireland in 2022 (c/kWh)

Energy & Supply	Network Costs	Value-Added Tax	Renewable Taxes	Capacity Charges	Environment Taxes	Other
6.17	2.87	0.99	0	0	0.65	0

Description of energy subsidies, including for fossil fuels

The Public Service Obligation (PSO) levy has been in place since 2001 and is a vital policy support for the development of renewable electricity and to enable Ireland to reach our national and EU renewable energy and climate targets.

The CRU calculates the PSO levy based on the estimated generation required for the PSO Year and the estimated wholesale electricity market prices for the period. If the PSO levy calculated is positive, then a charge is placed on all final electricity customers. If the PSO levy calculated as negative, then the PSO is collected from those renewable electricity

generators who are members of a two-way feed-in-tariff support scheme (namely RESS). In such cases the CRU may direct that final electricity customers be credited with a benefit, if deemed appropriate. Regulations made under the Electricity Regulation Act 1999 (as amended) provide the legal basis for the levy. The levy applies to all electricity customers and is reviewed annually.

The Scheme will provide for a renewable electricity (RES-E) ambition of up to a maximum of 55% by 2030 subject to determining the cost-effective level. RESS auctions will be designed in line with trajectory targets identified in Ireland's NECP. In addition, the first RESS auction will deliver 'shovel ready' projects, reducing the gap to 2020 targets and assisting in the early delivery for Ireland's trajectory towards 2030 targets. Applications for the first RESS auction qualification were accepted in March 2020, with the auction bidding process to commencing in Summer 2020. Ireland's recently launched Support Scheme for Renewable Heat (SSRH) is a Government-funded initiative designed to increase the energy generated from renewable sources in the heat sector. The scheme is open to commercial, industrial, agricultural, district heating, public sector, and other non-domestic heat users.

The primary objective of the support scheme for renewable heat is to increase the level of RE in the heat sector. This will contribute to meeting Ireland's RE targets whilst also reducing GHG emissions. The Government-funded scheme will support the adoption of renewable heating systems by commercial, industrial, agricultural, district heating, public sector and other non-domestic heat users not covered by the ETS. The scheme aims to bridge the gap between the installation and operating costs of renewable heating systems and the conventional fossil fuel alternatives; and incentivise the development and supply of renewable heat. The scheme opened for applications relating to installation grants for air source heat pumps, ground source heat pumps and water source heat pumps in September 2018. The operational support component of the scheme opened in June 2019, including support for biomass boiler/biomass HE CHP heating systems and biogas (anaerobic digestion).

Fossil fuel subsidies were estimated at €2.9bn in 2021. In 2000 - the first year of the series - total fossil fuel subsidies were estimated at €1.5bn in value. This increased to €3.1bn in 2008. Between 2009 and 2016 the value was estimated as between €2.7bn and €2.9bn. Total fossil fuel subsidies increased in value in 2017 and 2018, reaching the highest value of the series at €3.3bn in current prices in 2018. In 2020 fossil fuel subsidies fell to €2.5bn, with the reduction in transport fossil fuel consumption due to the COVID-19 pandemic accounting for the decrease. The 2021 figure was a 16% increase on 2020.

Direct fossil fuel subsidies accounted for 10% of total fossil fuel subsidies in 2021 while indirect subsidies arising from tax expenditures, price supports, and other Government revenue forgone accounted for 90%. Table 44 shows the value of direct and indirect fossil fuel subsidies from 2021. Environmental protection activities were subsidised to a value of €524m, or 59% of the total, while €371m, or 41%, was used to support resource management activities. In 2016, 31% of environmental transfers went to RE production, 26% to wastewater management, 23% to biodiversity protection and 9% to heat and energy saving measures.

Other activities, such as waste management and protection of air and climate, accounted for the remaining 10%. The largest subsidy to RE generation in 2017 was worth €278m and came from funds collected through the PSO (Public Service Obligation) Levy on electricity consumers. In the previous 2016 statistical release by the CSO referred to above, provisional data was provided on Potentially Environmentally Damaging Subsidies (PEDS) or other Government support measures that have social or economic objectives which may also incentivise behaviour that could be damaging to the environment. For example, transport fuel tax rebates encourage the consumption of fossil fuels. Table 44 provides details of the Potentially Environmentally Damaging Subsidies provided by the Irish Government in 2021.

The data indicate that 75% of environmental subsidies provided in Ireland are directed to Potentially Environmentally Damaging Subsidies.

Table 44: Direct Fossil Fuel Subsidies, 2021

Programme	€ Million
Direct Fossil Fuel Subsidies	248
PSO Levy: electricity generation from peat	7.7
Fuel allowance	126
Electricity allowance	115
Gas allowance	22.1
Other supplements (including heating and diet)	4.1
Petroleum Infrastructure Support Group	0.9
Total Potentially Environmentally Damaging Subsidies (2021)	525.8

Agricultural Product Subsidies: Agricultural subsidies on products are paid per unit of a good produced, e.g. per head of cattle. Many agricultural product subsidies have been phased out and have been replaced by direct payments to farmers such as the Single Payment Scheme.

PSO (Public Service Obligation) Levy: The PSO Levy is calculated on an at least annual basis by the CRU and when positive is charged to all final electricity consumers in Ireland and when negative collected from renewable electricity generators who are members of a two-way feed-in-tariff support scheme (namely RESS). The PSO is used to support renewable electricity generators who are members of applicable support schemes.

Fuel Allowance: The Fuel Allowance Scheme was introduced in 1988. The aim of the scheme is to assist qualified households in receipt of certain social welfare payments with their heating costs. The allowance represents a contribution towards a person's normal heating expenses. It is not intended to meet those costs in full.

Electricity Allowance: The electricity allowance is part of the Household Benefits Package which is available to all householders over 70 years of age and to householders under 70 in certain circumstances.

Gas Allowance: The gas allowance is part of the Household Benefits Package which is available to all householders over 70 years of age and to householders under 70 in certain circumstances.

Other supplements (including Heating and Diet): This is a supplement paid by the Department of Social Protection and the Social Insurance Fund as an income support measure. The statistical release includes 50% of the amount of funding as an estimate of the proportion that went to heating rather than food support.

Petroleum Infrastructure Support Group: Annual contributions to this fund were made by companies holding Frontier Exploration Licences for hydrocarbon exploration offshore Ireland. The fund is administered by DECC, and its aims were to enhance understanding of the relatively underexplored Irish offshore area through funding of new research and data collection activities. As Ireland transitions to a low carbon economy, focus is increasingly shifting towards research and development of renewable energy sources, rather than fossil fuel-based studies. Against this backdrop, the Department has decided that there is no longer a requirement for it to support the continuation of research programmes that support hydrocarbon exploration and development activities. Accordingly, the orderly wind down of

the Petroleum Infrastructure Programme is underway, and contributions to the Programme for periods commencing 1 July 2021 have not been sought.

Haulier's Diesel Rebate Scheme: This is a repayment to road transport operators of part of the tax that they pay on diesel purchased for use in the course of business. As a first step in relation to plans to phase-out energy subsidies, the CAP commits to model the impacts, both in terms of the economy and in terms of emissions, of removing fossil fuel subsidies.

5. Impact Assessment of Planned Policies and Measures

5.1 Impacts of planned policies and measures described in section 3 on energy system and GHG emissions and removals, including comparison to projections with existing policies and measures (as described in section 4)

The draft NECP is based on one scenario – WEM. Analysis is ongoing in relation to Ireland's new European targets and the policies and measures that will bridge the gap to these new ambitious targets. The final version submitted next year will include both WEM and WAM. This section has been left largely unfilled as the WAM is required to illustrate comparison between two sets of policies.

With Existing Measures (WEM) – Includes policies implemented and adopted by the end of 2021. This scenario includes a varying carbon tax that increases by €7.50 per annum and reaches €100 per tonne by 2030. Post 2030 the carbon tax remains constant at €100 per tonne to 2050. This scenario includes a varying Emissions Trading Scheme (ETS) price that increases annually to €80 per tonne by 2030 and €160 per tonne by 2050.

5.2 Macroeconomic and, to the extent feasible, the health, environmental, employment and education, skills and social impacts including just transition aspects (in terms of costs and benefits as well as cost-effectiveness) of the planned policies and measures described in section 3 at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

The macroeconomic assumptions that underpin the NECP are developed by the Economic & Social Research Institute (ESRI) with their I3E model. The final version of the NECP will include more detail in relation to the modelling and the macroeconomic data. Enhanced analytical capacity is being developed by the Department of Public Expenditure, NDP Delivery and Reform, and the Department of Finance, in collaboration with the ESRI to better assess and model the required investments and macroeconomic implications of Ireland's enhanced climate governance framework. This section will be expanded upon and updated in the final version.

The Irish economy has successfully absorbed large back-to-back shocks, mostly external in origin, in recent years. As these have faded, economic activity has rebounded strongly, yielding positive returns in the labour market, where the number in employment has expanded to record highs. The speed of the post-pandemic recovery was tempered only in part by the energy price shock.

Price pressures had been building up from the second half of 2022 reflecting rising geopolitical tensions and pandemic-related supply-chain problems. These price pressures intensified following the outbreak of war in Ukraine, which triggered very large price increases for many commodity prices, especially fossil fuels. As a result, consumer price inflation was running at its highest rate since the 1980s, a situation mirrored elsewhere. As Ireland is a net importer of energy products, higher prices mean a transfer of purchasing power abroad.

Broader Impacts of the Plan

In addition to the contribution of the policies and measures contained in this Plan to achieve our climate and energy targets, many of the changes that are required will have positive economic and societal co-benefits, including cleaner air, warmer homes, and a more sustainable economy for the long term. In line with the UN Sustainable Development Goals, climate action must be seen as complementary to other important policy objectives, such as promoting sustainable economic development pathways, improving energy security, and addressing air pollution impacts on human health. For example, a significant shift away from internal combustion engine vehicles in the transport sector, and the retrofitting of existing buildings with electricity-powered heat pump systems, are expected to result in significant improvements in local air quality metrics and health outcomes.

Rising to this challenge is important not just for Ireland's long-term economic and societal interests, but also in relation to the attractiveness of Ireland as a location for Foreign Direct Investment (FDI), as a tourism destination, and as a source of safe, high-quality agricultural and food products. In addition, our increased climate ambition will help to secure our international reputation, which in turn will underpin our ability to promote international policy objectives. This includes the priorities set out in Ireland's new international development policy, A Better World, which explicitly places climate action as a core policy priority for Ireland's global partnerships, in recognition of the adverse and dangerous impacts that it poses to the realisation of the SDGs.

Health

IEA analysis suggests energy efficiency retrofits in buildings create conditions that support improved occupant health and well-being. In terms of distribution, such benefits are particularly prevalent among vulnerable groups such as children, the elderly and those with pre-existing illnesses. Benefits include improved physical health such as reduced symptoms of respiratory and cardiovascular conditions, rheumatism, arthritis and allergies, as well as fewer injuries. In quantifying these benefits, studies have found benefit to cost ratios of up to

4:1 when health and well-being impacts were included, with health benefits representing up to 75% of overall benefits. Improved mental health (reduced chronic stress and depression) has, in some cases, been seen to represent as much as half of total health benefits. Realised health improvements generate downstream social and economic impacts, including lower public health spending.

These health and well-being benefits are being validated in an Irish context under the Warmth and Wellbeing Scheme. The scheme aims to objectively measure and validate the health and wellbeing impacts of improving the living conditions of vulnerable people living in energy poverty with chronic respiratory conditions. The scheme was a collaboration between DECC and the Department of Health and was jointly administered by the Health Service Executive and the Sustainable Energy Authority of Ireland. Since 2016, almost 1,500 homes received free upgrades to their homes, including attic and wall insulation, window and door replacement and heating system upgrades where needed.

The London School of Hygiene and Tropical Medicine (LSHTM) were engaged to carry out, in collaboration with the HSE, an independent analysis of the health impacts of improved energy efficiency among the participants in the research element of this scheme. A report has been submitted to the Department and is now subject to final reviews and comments for the project team. The report will be published in full shortly when it is finalised.

The report shows positive results for the participants resulting from the energy efficiency upgrades carried out in their homes. These included:

- warmer, more comfortable homes, with heating systems that are easier to control;
- improved physical health including reduced pain;
- improved mental health and wellbeing including reduced feelings of anxiety and depression;
- reduced visits to GP and A&E and fewer incidences requiring hospitalisation;
- reduced prescription drug usage for their respiratory conditions;
- being more comfortable inviting other to their homes.

Decarbonisation of heat and transport may also lead to health gains where levels of fine particulate matter (PM2.5) air pollution are reduced. Biomass combustion for renewable heat can increase levels of air pollution so careful consideration of this potential negative health impact is required when assessing renewable heat policy. The WHO guidelines recognise that “no threshold has been identified below which there is no damage to health. Therefore,

the WHO recommend aiming for the lowest concentrations of particulate matter possible.” Therefore, reduced adverse health impacts from reduced air pollution in Ireland can be a significant co-benefit of the decarbonisation of power generation, heat and transport where climate and clean air policy objectives are fully aligned.

Recent research shows that air pollution has greater impacts on human health at lower levels than was previously understood. The impacts of air pollution (in particular, nitrogen pollution) on biodiversity and habitats are an area of growing concern. This increased understanding of the importance of air pollution has led to a requirement for strengthening policy responses on air quality for which DECC has primary responsibility. The impact of sectoral policies on the quality of the air we breathe, such as energy, transport and agriculture, is becoming clearer. Initiatives to tackle GHG emissions over the last decade have led to the incentivisation of biomass for heating and diesel for motoring while in the agricultural sector increased livestock numbers has highlighted the impacts of, and challenges in, reducing ammonia emissions as well as greenhouse gases such as methane.

These unintended consequences illustrate the need for a means to integrate air quality concerns into broader policy making. They also demonstrate the need to align air quality, climate and energy policy to ensure positive outcomes for human health and the environment.

Citizen involvement is a key pillar of our CAP. To underpin this aspect of the green transition the CAP sets out specific strategies including:

- Engagement Capacity Building and empowering Local Community Action;
- Realising the new economic opportunities in communities and regions;
- Just Transition for those facing particular challenges in adjusting through reskilling, energy poverty schemes and community participation;
- Empowering the new generation to have their voices heard and get access to the relevant information and science and the opportunity to lead change. Investment in the low carbon economy has the potential to create quality jobs and support local communities and workers in regions most strongly impacted by the on-going transformation to a decarbonised society. Fully realising the economic opportunities in the low carbon economy is vital to ensuring a ‘Just Transition’.

Skills and Jobs

SOLAS's Green Skills for the FET Roadmap 2021-2030 is guiding the response of the further education and training (FET) sector to the future skills requirements of the green economy, including the development of specific and transversal green skills. Continuous pre-emptive workforce development is required to maximise opportunities in the transition. Ireland's higher and further education systems are providing in-demand training to respond to the decarbonisation of the economy by adapting existing provision, and putting in place additional, training spaces where needed. Our further education model is centred on apprenticeships, transferrable skills, and lifelong learning, to keep pace with future changes. Ireland's skills architecture will minimise skills mismatches and ensure our approach to skills development is routed towards the green transition and broader areas of opportunity and growth.

The Expert Group on Future Skills Needs report, *Skills for Zero Carbon – The Demand for RE, Residential Retrofit and EV Deployment Skills to 2030*, sets out the demand for, and nature of, the skills required to deliver on key elements of Ireland's CAP ambitions to 2030. It identifies the nature and scale of the skills needs of enterprises supporting the transition to a low carbon economy and includes a suite of recommendations that can be drawn upon to ensure that these future skills needs are fully addressed. Regional Skills Fora continue to play an important role in identifying future skills needs emerging from a greener economy, feeding directly into the regional skills development pipelines through the Education and Training Boards.

An upcoming challenge for training providers will be to identify which jobs are at risk and which are in demand, requiring monitoring of new types of jobs emerging and continually reviewing the skills needs of these new employment opportunities. Ongoing horizon scanning, including building on the Regional Enterprise Plans and Regional Skills Fora, is required to identify employment opportunities from the green transition, and mapping these to current training provision, setting out where new training and education courses are needed.

Renewable energy (RE) targets also have the potential to create significant economic and employment opportunities. Greentech Skillnet is an enterprise-led workforce development network, funded by Skillnet Ireland, the Irish Government's national business support agency. In collaboration with the Irish Government's Offshore Wind Delivery Taskforce, Greentech Skillnet recently commissioned a skills analysis report which considers the skills requirements and opportunities emerging from the Government's target of 5 GW of offshore

wind energy by 2030. The report notes that there are significant opportunities for Ireland to grow the domestic labour force and local content across the various offshore wind supply chain categories, from development and project management, to manufacturing, installation, operations, and maintenance. In its initial draft findings, the report presents two scenarios: 'business as usual' (BAU), which assumes that current capability will grow organically; and an 'intervention' scenario in which action is taken to maximise Irish content by addressing skills gaps and investing in infrastructure and new facilities. Job opportunities are significant, with the cumulative projected FTE years in Ireland to 2040 ranging from almost 140,000 in the BAU scenario, to almost 190,000 in the intervention scenario. The draft report makes several recommendations on how to best capture these opportunities. This report is at advanced draft stage, and the final version will be referenced in the final version of the NECP.

5.3 Overview of investment needs

Ireland strongly supports the transition to a low-carbon, more resource-efficient and sustainable economy. To deliver on climate, environmental and social sustainability goals, major private and public investments will be needed. The scale of the challenge is significant, and the investment required to deliver the green transition is substantial. Europe needs to invest €700bn annually to meet its energy transition goals to combat climate change (2023 Strategic Foresight Report). It is not possible to give a complete assessment of the investments required or the macroeconomic implications at this point. Enhanced analytical capacity is being developed by the Department of Public Expenditure, NDP Delivery and Reform and the Department of Finance in collaboration with the ESRI. It is planned that this additional data will be included in the final NECP. To partially address this analytical gap, DECC sought preliminary analysis from externally procured expertise in relation to the investment implications of the green transition. The low-carbon transition will require significant private investment alongside Exchequer expenditure on a sustained basis over several decades. Through the commercial State sector and other public bodies, we will seek to leverage the significant volumes of private sector capital that is available for well-structured projects, including wind and solar electricity generation, interconnection, and major transport infrastructure. This preliminary analysis suggested a total of €119bn incremental and redirected capital investment in low-carbon technologies and infrastructure will be required in the period 2022 to 2030. Investment required this decade is expected to be driven by transport (€42bn), electricity (€36bn) and buildings (€31bn). The analysis

suggests that the most significant share of capital could flow into EV passenger cars, renewables, and transmission and distribution related upgrades.

Project Ireland 2040 is the Government's long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. The strategy ensures the alignment of investment plans with the stated National Strategic Objectives for 2040 in a considered, cohesive, and defined manner. This represents a shift from the approach of the past, which saw funding spread thinly across sectors and public investment decisions. Alongside the development of physical infrastructure, Project Ireland 2040 supports business and communities across all of Ireland in realising their potential. The National Planning Framework (NPF) (2019) and the National Development Plan (NDP) 2021-2030 (2021) combine to form Project Ireland 2040. The NPF sets the vision and strategy for the development of our country to 2040 and the NDP provides the enabling investment to implement that strategy. The NPF stipulates that Ireland's planning system provide an established means through which to implement and integrate climate change objectives, including adaptation, at regional and local level and the transition to a low carbon and climate resilient society. The NPF specifically includes the following objectives:

- **National Policy Objective 53** – Support the circular and bioeconomy including through greater efficiency in land management, greater use of renewable resources and by reducing the rate of land use change from urban sprawl and new development;
- **National Planning Objective 54** – Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for GHG emissions reductions;
- **National Policy Objective 55** – Promote RE use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.

These national policy objectives also directly inform regional and local decision-making. Underneath the NPF sit the three Regional Spatial and Economic Strategies for each Regional Assembly.

The National Development Plan 2021-2030 (NDP) is the largest delivered in the history of the State, investing €165bn on priority solutions to strengthen housing, climate ambitions, transport, healthcare, jobs growth in every region and economic renewal for the decade.

This will bring public investment to 5% of GNI, well above the EU average of 3% of GDP. This is a cross-departmental plan with linkages between sectors to meet National Strategic Outcomes (NSOs). An example of this is a transport-led housing development approach which will allow for the emergence of sustainable and well-connected communities where active travel is feasible. Along with allocations in the NDP supporting the realisation of Housing for All with investment to deliver an average of 6,000 affordable homes each year, significant investment is prioritised to meet ambitious climate targets.

The NDP has been designed to ensure that it supports the Government's climate ambitions. For the first time in Ireland, climate and environmental assessment of the NDP measures was undertaken, along with an assessment of the alignment of the NDP as a whole with the principle of a green recovery. In 2023 the Department of Public Expenditure and Reform changed its name to the Department of Public Expenditure, NDP Delivery and Reform, highlighting the Government's commitment to delivering on its 2030 targets. Enhanced analytical capacity is being developed by the Department of Public Expenditure, NDP Delivery and Reform and the Department of Finance in collaboration with the ESRI to better assess and model the required investments and macroeconomic implications of Ireland's enhanced climate governance framework.

The NECP includes two planned electricity interconnectors. The Greenlink interconnector to Wales is a proposed €400m project. While the project is proposed as a private (merchant) investment, the promoters have been granted a "Cap and Floor" regulatory treatment for the interconnector from the Irish and UK regulators. Under such a regulatory arrangement, if revenue from the interconnector operations were to fall below the "floor" price, then the Irish and British consumers would fund the difference. The Celtic interconnector, proposed by the Irish and French TSOs, is a €930m investment that will be funded in part by a CEF grant of €530m and in part by electricity consumers in Ireland and France. For both interconnectors the consumer portion of the cost would be "socialised" – the costs will be included in the costs of distribution networks in the same way as all other electricity infrastructure investments are paid for.

5.3.1 Carbon Tax

As per Sections 27, 28 and 29 of the Finance Act 2020, the carbon tax will increase by €7.50 a tonne. The increase on transport fuels is effective from 11th October 2023, while the increase on home heating fuels will not take place until 1st May 2024, after the winter heating season.

Table 45: Carbon Tax by Fuel Type

Fuel Type	Typical Fuel Bundle	2023 (€48.50)	2024 (€56.00)	Impact of +€7.50
Petrol	60 litre fill	8.28	9.56	+1.28
Auto Diesel	60 litre fill	9.58	11.06	+1.48
Kerosene	900 litre tank	125.47	144.87	+19.40
Peat	12.5kg bale	1.26	1.46	+0.20
Coal	40 kg bag	5.80	6.70	+0.90
Gas	11,000 kWh	109.49	126.47	+16.98

The Programme for Government commits to spending of €9.5bn using revenues raised by the planned increases in the carbon tax to 2030. As per the commitment in the Programme for Government, the revenue that will be raised by these increases in carbon tax will be used to:

- Ensure that the increases in the carbon tax are progressive by spending €3bn on targeted social welfare and other initiatives to prevent fuel poverty and ensure a just transition;
- Provide €5bn to part fund a socially progressive national retrofitting programme;
- Allocate €1.5bn of additional funding to encourage and incentivise farmers to farm in a greener and more sustainable way.

In line with these commitments, €788m is being allocated as part of Budget 2024 to climate action measures and to ensure the most vulnerable are protected from unintended impacts of the tax increase. This represents an increase of €165m on the amount funded from the Carbon Tax increases in 2023. These measures, the implementing Departments, and the proportional division is outlined in Table 46.

Table 46: Climate Action Measures by Department

Department	Measures Funded	2024 Allocation (€m)	2024 Additional (€m)	2023 Allocation (€m)
DECC	Residential & Community Energy Efficiency Green Climate Fund Just Transition Fund	388	+89	299
DSP	Targeted Social Protection Interventions	262	+44	218
DAFM	Incentivising Green & Sustainable Farming Green Agricultural Pilots	113	+32	81
D/Transport	Greenways/Urban Cycling EV charging infrastructure Providing Grants for EVs	20	-	20
DHLGH	Peatlands Rehabilitation	5	-	5
Total		788	+165	623

Table 47: Budget 2024 Carbon Tax Allocations & Measures Funded

Department	Measures Funded	2024 Allocation (€m)
DSP	Fuel Allowance	21
DECC	Energy Poverty Efficiency Upgrades	13
DHLGH	Aggregated Housing Upgrade Scheme*	0
DECC	Just Transition	6
DHLGH	Peatlands Rehabilitation	5
D/Transport	Greenways/Urban Cycling	9
D/Transport	Providing Grants for EVs	8
D/Transport	EV charging infrastructure	3
DECC	ODA – Green Climate Fund	2
DAFM	Green Agricultural Pilots	3
Total		70

5.3.2 Sector or market risk factors

Public funding is, as in all jurisdictions, dependent on the pace of economic growth and planned tax takes being available to fund planned policies and measures. The ability to harness increased amounts of electricity generated from renewable sources on a relatively isolated grid system such as Ireland’s depends on innovation and technical solutions being brought forward and delivered on. Delays arising because of legislative appeals under the spatial planning system are also a risk to the delivery on time of planned infrastructure

projects. It is assumed that EU regulation over the period will ensure that industry can deliver products meeting higher environmental standards. The exit of the UK from the EU presents Ireland with challenges. Ireland will be the EU Member State most affected by the UK's decision to leave the European Union. Decarbonising the transport sector will require a transition away from conventional fuel use to alternative fuels and new technologies. This transition must have the capacity to cater for increasing travel demand, consequently, it is imperative that investment decisions avoid inflexible 'lock-ins' that would inhibit or delay growth of the transport network. Major operational and infrastructural changes are costly and take time; therefore, an initial transition must not preclude any subsequent transitions between technologies as this will create undesirable and expensive delays in providing for transport expansion. Alternatively fuelled vehicles are currently still more expensive than conventionally fuelled options. It is also important to note that alternatively fuelled right hand drive vehicles are less readily available; this is a particular risk factor in the bus sector where the number of models available is severely limited. Generally, as greater market availability of low and zero- emission vehicles become more pronounced their economic viability should improve in the longer term. Transitioning to alternatively fuelled vehicles potentially requires a significant change in infrastructural and fuel supply requirements. Impact assessments of the capacity and availability of renewable power and gas supplies will be required as more vehicles convert to alternatively fuelled models.

5.3.3 Analysis of additional public finance support or resources to fill gaps identified under point 2

Further analysis is being undertaken with a view to updating in the final NECP.

5.4 Impacts of planned policies and measures described in section 3 on other Member States and regional co-operation at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures

5.4.1 Impacts on the energy system in neighbouring and other Member States in the region to the extent possible

In light of the UK's exit from the EU, Ireland has been left in a position where planned policies and measures have little or no impact on other Member States.

5.4.2 Impacts on energy prices, utilities, and energy market integration

The planned Celtic Interconnector is likely to drive down electricity prices for the consumer through increased competition. An additional benefit will be Ireland's inclusion in the European IEM, where we can maintain higher levels of wind and renewable energy. The UK remains a vital electricity partner for Ireland and further interconnection is being progressed. The planned Celtic Interconnector will connect Ireland's electricity network to France via an underwater connection. Once built, its 700 megawatts capacity will power 450,000 households, and help Ireland achieve its climate and energy goals. As well as the clear benefits in terms of improved security and diversification of electricity supply, the Celtic Interconnector will also facilitate the further development of RE, helping Ireland to meet its 80% target. By providing a direct electricity link with mainland Europe, Ireland will be connected to the EU's IEM after the UK's exit.

The Celtic Interconnector will help to lower electricity prices, reduce GHG emissions and provide greater energy security. To achieve its climate and energy goals, Europe needs to further develop cross-border electricity interconnections. The Celtic Interconnector project will help to meet these targets for interconnection which are key to the achievement of Europe's energy transition. Through facilitating more renewable energy to come onto the network, interconnection will also help to reduce GHG emissions associated with power generation in Europe. In addition, interconnection will increase the availability of renewable energy for European consumers as well as supporting European solidarity on energy, particularly in the case of unexpected energy events.

5.4.3 Where relevant, impacts on regional co-operation

Progress to date on the Celtic Interconnector is enabling Ireland and France to develop closer links and cooperate further in our efforts to achieve the ambitions of the Energy Union including actively exploring the feasibility of a second Ireland-France interconnector post-2030. Two interconnectors with France would establish strong energy links between the two States.

Connection to more than a single member state (and the UK) would significantly enhance security of supply and IEM integration. As envisaged in the 2023 National Policy Statement on Electricity Interconnection, Ireland is now turning its attention to exploring the feasibility of interconnection with other Member States in the context of its particular geographic circumstances. Additional energy links would open the possibility of Union maximisation of Ireland's offshore renewable energy potential.