An Coimisiún um Rialáil Fóntas
Commission for Regulation of Utilities

Fuel Mix Disclosure and CO2 Emissions 2024

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CRU Strategic Plan 2022 – 2025

Our Mission

- Protecting the public interest in water, energy, and energy safety.

Our Vision

- Safe, secure, and sustainable supplies of energy and water, for the benefit of customer now and in the future.

Our Strategic Priorities

- Ensure Security of Supply
- Drive a Low Carbon Future
- Empower and Protect Customers
- Enable our People and Organisational Capacity

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Executive Summary

The fuel mix and carbon dioxide (CO2) emissions disclosure for 2024 provides information on overall fuel mix and CO2 emissions of electricity generation (after carbon emission offsets have been taken into account) in the Single Electricity Market (SEM). The carbon trading products used by suppliers for offsetting their emissions are electronic certificates called Guarantee of Origin Certificates (GOs) in Ireland and Renewable Energy Guarantee of Origin Certificates (REGOs) in Northern Ireland. Each type of certificate counts as 1 MWh of electricity generated from renewable sources which can be bought by electricity suppliers and then be used to offset against non-renewable fuel source electricity.

It must be noted that the fuel mix is calculated after accounting for these certificates and thus, not an indication of the actual amount of electricity produced from each fuel type. This is because electricity suppliers are allowed to use carbon trading products to offset emissions and assign these certificates to different fuels based on their consumption. The main fuel types listed in the annual report are gas and renewables.

The fuel mix and CO2 figures, as published in this paper, are for a supplier's total customer base rather than on an individual customer basis. As such, they represent a supplier's average fuel mix and not that of a specific product that the supplier is selling. The renewable generation supported by the supplier can be from anywhere in the European Economic Area (EEA) Member States[1] and not just generated in Ireland.

The publication of the fuel mix of Irish suppliers and the provision of information regarding the environmental impact of electricity produced from that fuel mix is required by Article 3(9) of Directive 2009/72/EC. It is the role of Single Electricity Market Operator (SEMO) to administer and calculate the fuel mix figures from the information provided by suppliers licenced in Ireland. The supplier fuel mix and associated environmental impact information (emissions intensity) is calculated by SEMO in accordance with the SEM Committee's methodology, found in "*Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper"* (SEM/11/095). Suppliers must make a submission to SEMO in order to have their own specific fuel mix calculated. If they choose not to make a declaration, they will be allocated[2] the residual fuel mix. The residual fuel mix is the fuel mix which is left over from the All-Island fuel mix after individual supplier's fuel mixes have been calculated.

[1] The European Economic Area (EEA) is made up of the Member States in the EU and additionally Norway, Lichtenstein, and Iceland.
[2] In Ireland suppliers are allocated the residual mix less any PSO adjustment that they are entitled to.

It should be noted that the fuel mix of each electricity supplier (outlined in this paper) does not necessarily represent metered generation in Ireland, as suppliers may include the green attributes, i.e., Guarantees of Origin (GOs) certificates[3], which are imported from other EEA Member States. Irish suppliers are permitted to purchase green attributes, i.e., GOs, and use them to offset CO2 emissions, and confirm to their final customers in Ireland that the share or quantity of electricity they used came from renewable generators across the EEA Member States.[4] In 2024, 20,259,452 GO certificates were imported to Ireland from other EEA Member States, an 11.74% increase from the previous year (18,130,181). This means that the fuel mix and CO2 emissions presented on a bill by an Irish supply company may display a higher percentage share of electricity derived from renewable sources than would otherwise be displayed if it was solely based on the actual generated-in-Ireland renewable share of the supplied electricity. It is to be kept in mind that imported GO certificates do not necessarily mean used in the FMD calculations.

There is a responsibility (see Section 5 for details) on suppliers to explain the fuel mix and CO2 emissions of its individual products to customers as well as providing clear marketing information. For those suppliers operating in Ireland who offer specific "Green Source Products", but whose overall average fuel mix, to include all offered electricity products, is not 100% renewable, the CRU has a verification process[5] to ensure the accuracy of the green claims. The results for 2024 of this process are published in a separate "Green Source Product Verification Report".

Public Impact Statement

The fuel mix disclosure and CO2 emissions report provides a measure of the environmental impact and fuel mix of electrical generation in the SEM, after accounting for Guarantee of Origin Certificates in Ireland, and Renewable Energy Guarantee of Origin Certificates in Northern Ireland used to offset carbon emissions of suppliers in the SEM. It does not represent the metered figures for fuel mix or carbon dioxide emissions.

[3] The CRU notes that the existence of GOs, and their application across the European Union (EU), is a long-established system, which has supported the addition of renewable generation across the EU.
[4] Where a supplier tariff refers to 100% green electricity, this relates to contractual support for renewables; in other words, over the year, for every unit of electricity supplied, that supplier has given contractual support for a corresponding unit of electricity. It is worth noting that in any given moment that electricity supplied may or may not come from renewable sources (e.g., low wind and no solar at night), nevertheless as above the 100% green electricity is supported over the year.
[5] Regulation of Green Source Products in the Electricity Retail Market: CER/15/205

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Glossary of Abbreviations and Terms

Abbreviation or term	Definition or meaning
AIB	Association of Issuing Bodies
CRU	Commission for Regulation of Utilities
CO2	Carbon dioxide
DfE	Department for the Economy
EEA	European Economic Area
EECS	European Energy Certificate System
EPA	Environmental Protection Agency
EU	European Union
FMD	Fuel Mix Disclosure
GB	Great Britain
GO	Guarantee of Origin
gCO2/kWh	Grams of carbon dioxide per kilowatt hour
GSPV	Green Source Product Verification
kWh	Kilowatt hour
MWh	Megawatt hour
NI	Northern Ireland
NIRO	The Northern Ireland Renewables Obligation
PSO	Public Service Obligation
IE	Ireland
SEM	Single Electricity Market
SEMO	Single Electricity Market Operator
UK	United Kingdom
UR	Utility Regulator

1. Introduction

1.1 Commission for Regulation of Utilities

This section summarises the relevant context and background for the Commission for Regulation of Utilities (CRU) responsibilities with regards to fuel mix and CO2 emissions information on all bills and promotional materials issued by Irish electricity suppliers to their electricity customers.

This information paper presents the recent fuel mix information and environmental impact of the electricity that Irish customers buy, compared to the All-island average.

1.2 Background:

1.3 What is Fuel Mix Disclosure?

The purpose of Fuel Mix Disclosure (FMD) is to provide electricity consumers with the information necessary to distinguish between electricity supply companies based on their individual fuel mix and their emissions data and to compare with the All-Island average, after allowing for the inclusion of Guarantees of Origin (GOs). It is the annual publication of the mix of fuels involved in electricity production on a per-supplier basis, following an All-Island process (SEM/11/095).

Electricity suppliers licenced in Ireland with retail customers have to submit a fuel mix declaration to Single Electricity Market Operator (SEMO) so that a representative fuel mix can be calculated and disclosed. Additionally, non-retail self-suppliers[6] can also choose to make a declaration in order to have their individual fuel mix calculated if they wish.

FMD calculations are carried out on a calendar year basis by SEMO on behalf of the CRU. In addition, the CRU publishes CO2 emissions intensity data for each supplier, as calculated by SEMO. The verification of the data which forms the basis of each supplier's FMD is carried out independently, so consumers can be confident about the validity of the published FMD figures for each individual supply company.

The FMD calculation is the only way of independently verifying the source of electricity that suppliers claim to provide to their consumers, consequently enabling consumers to choose a

[6] A self-supplier is a supply company which supplies electricity only to its own site and which does not compete to supply energy to any third party.

company which is supplying low carbon-intensive energy or even zero emissions (which may include renewable Guarantees of Origin (GO) certificates being taken into account).

All suppliers (with retail customers) are obliged to present FMD data on their bills and promotional materials even if they did not declare fuel mix data to SEMO for FMD calculation. Suppliers that do not submit declarations to SEMO, in accordance with SEMO's process, have to disclose, or reflect on their bills, the residual fuel mix, less any Public Service Obligation (PSO) adjustment to which they are entitled, i.e., what is left over after all the individual supplier fuel mixes are calculated.

1.4 All-Island Mix

The All-Island fuel mix is the mix of fuels used to generate the electricity supplied to customers on the island of Ireland as a whole, to include both jurisdictions: Ireland (IE) and Northern Ireland (NI).

In accordance with SEM/11/095, the fuel mix figure for each supplier has been calculated on the basis of a combination of:

- non-renewable generation attributes;
- Guarantees of Origin (GOs);
- renewable generation attributes assigned to a supplier that are not included in the GO scheme; and
- the Residual Mix[7] or European Union (EU) Residual Mix.

1.5 Residual Mix

The Residual Mix is calculated for IE, for NI, and on an All-Island basis. In simple terms, it is the mix of all unclaimed electricity in the system. It is calculated as the sum of:

- Any generation attributes not assigned to, and submitted by, a supplier.
- Surplus GOs declared by suppliers.

[7] The Residual Mix is the mix of all unclaimed electricity in the system. It is measured by taking the total metered generation both In-SEM and Out-of-SEM, and deducting from this the four categories of energy that can be claimed by a supplier, in the following order: Public Service Obligation (PSO) energy; Guarantees of Origin (GOs); Renewable Energy Guarantees of Origin (REGOs); Generator Attributes – total amount of non-renewable generation from a fossil-fuelled unit registered by a supplier to be tracked by the calculating body.

- Unused (deemed cancelled) certificates which expired in the relevant Disclosure Period[8].

A residual mix is also calculated at the European level. The European Residual Mix is a combination of the residual fuel mixes from all the EEA Member States, but again, these mixes do not need to follow the physical flow of electricity.

If the All-Island demand including exports is greater than the sum of all the suppliers' declarations plus the local Residual Mix, the European Residual Mix is applied to the remaining demand and included in the All-Island Residual Mix. In the case that demand is less than the sum of all the suppliers' declarations, the surplus of claimed generation attributes will be included in the European Residual Mix.

1.6 Fuel Sources

The electricity that is provided to homes and businesses to meet demand uses a number of different fuel sources. It is these different fuel sources that make up the fuel mix.

The main fuel sources for electricity generation in Ireland are:

- Natural Gas (34.72%)
- Renewables (62.35%)
- Coal, Oil, Waste (2.93% combined total)

In the case of electricity generated from waste, the renewable portion (as is derived from the biomass content of the waste) is included under the "*Renewables*" fuel mix category. The non-renewable portion of electricity generated from burning municipal waste is categorised as "Non-Biodegradable Fraction of Waste". Peat is no longer used to generate electricity in the SEM.

Fuels categorised as "*Renewables*" are all those that comply with the list of fuels defined under the term "Energy from Renewable Sources" in S.I. no.147 of 2011. These consist of:

- wind;
- solar;
- aerothermal;
- geothermal;
- hydrothermal and ocean energy;

[8] See Section 1.2.5 entitled "GOs" for details.

- hydropower;
- biomass;
- landfill gas;
- sewage treatment plant gas; and
- biogases.

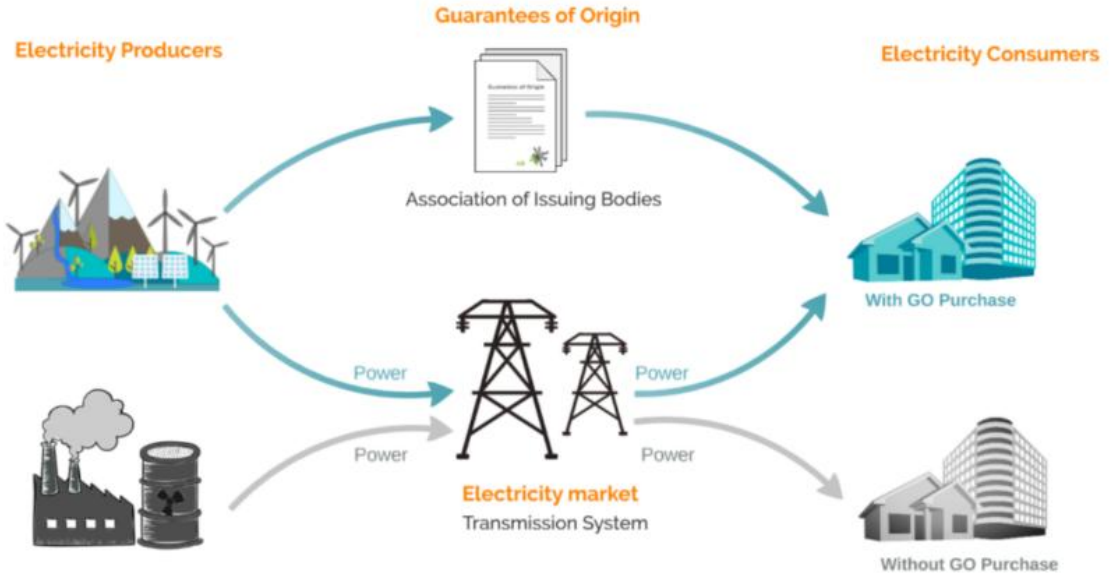
1.7 Guarantees of Origin (GOs)

As part of the fuel mix, suppliers may include the green attributes of renewable electricity generated outside of Ireland through electronic certificates known as Guarantees of Origin (GOs), which may be imported from other EEA Member States. The Association of Issuing Bodies (AIB)[9] operates a hub which tracks certificates traded between countries. AIB also ensures that electricity tracking does not lead to double counting. The hub allows suppliers to purchase (or sell) the renewable benefit of certain generators across Europe and include it in their total fuel mix. GOs are both exported from SEM and imported to SEM, to and from the rest of Europe.

A Guarantee of Origin (GO) is an energy electronic certificate defined in the European Directive 2018/2001/EC (and its predecessors 2009/28/EC and 2001/77/EC). GOs can be freely traded between the European Economic Area (EEA) Member States[10], as accepted by the EU law. Guarantees of Origin aim is to show to a final energy customer that a given share or quantity of energy was produced from renewable sources, including promoting the generation of electricity from renewable sources in the EEA Member States.

[9] The AIB promotes the use of a standardised system, known as the European Energy Certificate System (EECS) which is based on harmonised environment, structures, and procedures in order to ensure the reliable operation of international energy certificate systems.
[10] The European Economic Area (EEA) is made up of the Member States in the EU and additionally Norway, Lichtenstein, and Iceland.

Figure 1: GO role in electricity market.



Each GO unit represents one Megawatt hour (MWh) of renewable energy produced and is issued once a month at the request of the producer for each MWh of electricity fed into the network. When renewable power plants in the EEA Member States produce 1 MWh of renewable energy, a GO certificate can be issued for that produced unit of renewable energy.[11] The certificate states how, where and when that unit of green energy was produced. Issued GOs have the following information:

- Source of the energy;
- Dates when it was produced;
- Identity, location, type, and capacity of the production facility;
- Whether the GO relates to electricity or heating or cooling;
- Whether and to what extent the installation has benefited from support;
- Date when the installation became operational;
- Date and country of issue; and
- Unique identification number.

[11] A GO is only allowed to be used once and cannot be duplicated or copied.

GO certificates automatically expire 12 months from the end of the month of production of electricity. Suppliers have to use GO certificates before they expire and declare what disclosure year the certificates are going to be used for. GO certificates can only be used for FMD for the year they were issued or the following disclosure year, i.e., GOs corresponding to production in January 2022 could have been used for the 2022 or 2023 FMD. Once a GO has been declared for a disclosure year, it is terminated and cannot be used again.

GOs do not directly impact the sale of electricity, nor does it affect the flow in the Irish electricity grid, as they are not tied to the physical delivery of electricity. By purchasing GO certificates from the EEA Member States, Irish suppliers can demonstrate that the electricity they sold to their final customers comes from a renewable source. There could be cases where Irish electricity suppliers sell renewable electricity without directly procuring or generating renewable energy kilowatt hour (kWh) in Ireland. As such, GO certificates can allow electricity suppliers and large energy users to reduce their carbon footprint and meet renewable energy targets, i.e., to ensure that their entire electricity sold or consumed comes solely from renewable sources. In this case, often the calculated overall FMD for Ireland may have a higher percentage share of the renewable fuel source category than the share which would otherwise be indicated by the actual physical generation of renewable electricity in it.

20,259,452 GO certificates were imported to Ireland in 2024, an 11.74% increase from the previous year (see Appendix 3 for details).

1.8 Statutory Requirement

Fuel Mix Disclosure (FMD) is required by Article 3(9) of Directive 2009/72/EC. The requirements in this Article is now repealed and is now recast as Directive (EU) 2019/944.

The publication of the fuel mix of suppliers and the provision of information regarding the environmental impact of electricity produced from that fuel mix is required by Article 18(6) and point 5 of Annex I of Directive (EU) 2019/944.

The transposing legislation in Ireland, S.I. number 60 of 2005, requires the CRU to guarantee that electricity suppliers provide reliable fuel mix information on all bills and promotional materials issued to Irish electricity customers.

The SEM Committee Decision Paper (SEM/11/095) sets out the methodology for calculation of the fuel mix. Electricity suppliers publish their own fuel mix information, as well as the All-Island information, on all bills no later than two months from the publication of the SEM FMD and CO2 Emissions Information Paper. This provides electricity consumers of Ireland with information on the recent environmental impact of electricity from their supplier compared with the All-Island average.

1.9 Purpose of Paper

This Information Paper sets out the electricity fuel mix and carbon dioxide (CO2) emissions figures for 2024 on an All-Island (Ireland (IE) and Northern Ireland (NI)) basis as well as by electricity supplier licensed in IE and operating during 2024 in the All-Island Single Electricity Market (SEM). The fuel mix and CO2 emissions data are taken from data provided to the CRU by the Single Electricity Market Operator (SEMO).

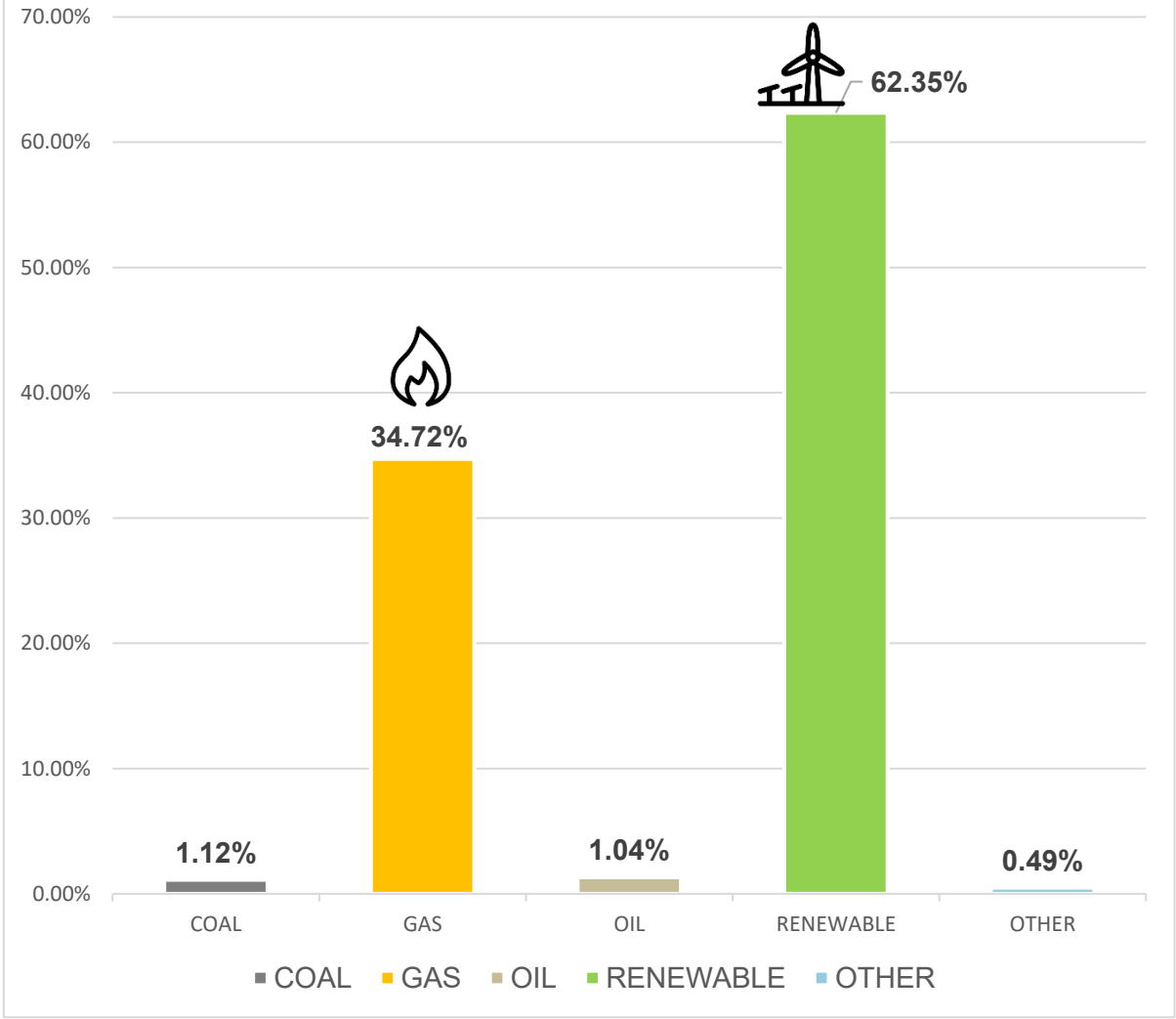
1.10 Related Documents

- CER/15/205: Regulation of Green Source Products in the Electricity Retail Market.
- SEM/11/095: Decision paper on the Fuel Mix Disclosure in the Single Electricity Market.
- CER/11/824: Decision on Supervisory Framework for Administration of Guarantees of Origin.
- SEM-25-060: All-Island Fuel Mix Disclosure and CO2 Emissions 2024.

2. All-Island Mix

This section sets out the 2024 and year-on-year fuel mix (inclusive of green attributes) for the All-island SEM, i.e., on average across the island.

Figure 2: All-Island Fuel Mix 2024 (inclusive of green attributes, i.e., GOs).



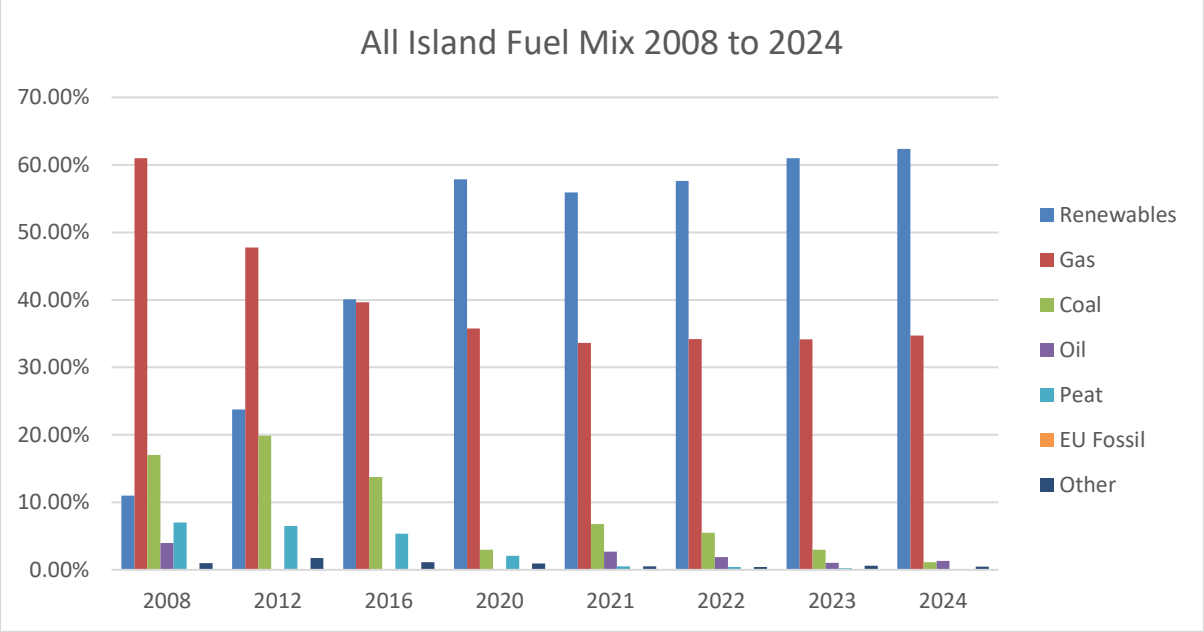
Fuel Mix Disclosure in 2024				
Coal	Gas	Oil	Renewable	Other
1.12%	34.72%	1.32%	62.35%	0.49%
Fuel Mix Disclosure in 2023 (for comparison)				
2.98%	34.13%	1.04%	61.01%	0.84%

The SEM Committee decision paper SEM/11/095 outlines the calculation methodology and assumptions that have been used to calculate the fuel mix and CO2 emissions for 2023. It

should be noted that all figures presented in this information paper include GOs, along with Irish metered generation.[12]

For 2024, the predominant fuels in the final fuel mix were gas and renewables. The proportion of renewables for 2024 has increased by 2.20% from 2023, bringing it to 62.35%. It should be noted that a proportion of these renewables were made up by using GO certificates from the EEA Member States. The EU Renewables Directive and Irish legislation allow the use of GOs for annual fuel mix for the purposes of demonstrating to final customers the share or quantity of energy from renewable sources in an electricity supplier's energy mix and in the electricity supplied to consumers. In 2023, 18,130,181 GO certificates were imported to Ireland, which increased to 20,259,452 in 2024 resulting in an 11.74 % increase. It is to be kept in mind that imported GO certificates do not necessarily mean used in the FMD calculations.

Figure 3: All-Island Fuel Mix 2008-2024 (inclusive of green attributes, i.e., GOs).



In accordance with SEM/11/095, the "Other" category consists of the aggregate of all fuels in a given year that individually represent less than 1% of the final overall generation. For this report in 2023, waste to energy (0.49%) meets the criteria for inclusion in the "Other" category.

The category labelled *EU Fossil* is related to the European Residual Mix. The EU Residual Mix is calculated based on the electricity that is generated within the EU but has not been claimed by suppliers or used to meet demand within a member state. It includes the categories of *EU fossil*, *Nuclear* and *Renewable*. The EU Residual Mix is used in the Fuel Mix Disclosure

for those particular years where the electricity demand on the island of Ireland has not been met by the combination of supplier claims (i.e., green attributes, i.e., GOs/REGOs, and PSO-supported generation) and indigenous generation. 2011 was the last time that the EU Residual Mix was required to meet demand in the All-Island Fuel Mix. In 2024 there was no deficit hence the EU Residual Mix was not required for the All-Island Fuel Mix in 2024.

As a result of Brexit, Renewable Energy Guarantees of Origin (REGOs) from the United Kingdom (UK) are not acceptable as renewable certificates within European Union (EU) Member States since 1 January 2021.[13]

In the previous All-Island FMD, SEMO, in conjunction with both RAs, provided an update on GOs and REGOs arrangements in the EU and UK. The latest arrangements on GOs and REGOs in the EU and UK are summarised as follows:

- **For Suppliers licensed in Northern Ireland**: The UK Government announced in July 2022 its intention to cease the recognition of EU GOs from April 2023. EU GOs were eligible for the 2022 reporting period. The Government will ensure Ofgem will continue to issue REGOs to allow electricity suppliers in NI to comply with their FMD obligations.[14]

  It should be noted that the NI Government has not made a decision to disallow the use of EU GOs in NI. However, market participants should monitor communications or agreements from either the EU, NI or UK authorities with regards to this position.

- **For Suppliers licensed in Ireland**: From 1 January 2021, UK REGOs are not accepted for import or cancellation for FMD in Ireland.

Insofar that the CRU is made aware, should subsequent communications or agreements from either the EU or UK authorities indicate a change in this position, both RAs in conjunction with SEMO, will provide SEM market participants with an update on any changes to any future FMD processes or the policy.

The methodology for fuel mix disclosure may soon be reviewed and updated. SEMO are also reviewing their data gathering and methodology. We understand that SEMO have sought to

[13] Notification from the European Commission, issued on 7 March 2018.
[14] https://www.ofgem.gov.uk/environmental-and-social-schemes/renewable-energy-guarantees-origin-rego/renewable-energy-guarantees-origin-rego-electricity-suppliers-and-generators/guarantees-origin-goos.

automate much of the fuel-mix process as it is currently a considerable administrative task each year.

3. CO2 Emissions

Emissions data for each generator in Ireland is supplied annually to SEMO by the Environmental Protection Agency (EPA).

The emission figures are grouped according to fuel type and divided by metered generation to give specific emission factors for each fuel. These values are then used in the calculation of the average All-Island CO2 emissions intensity and in each individual supplier's CO2 emissions intensity which consider both indigenous generation in the SEM and supplier claims (green attributes i.e., GO and REGO certificates, and PSO-supported generation).

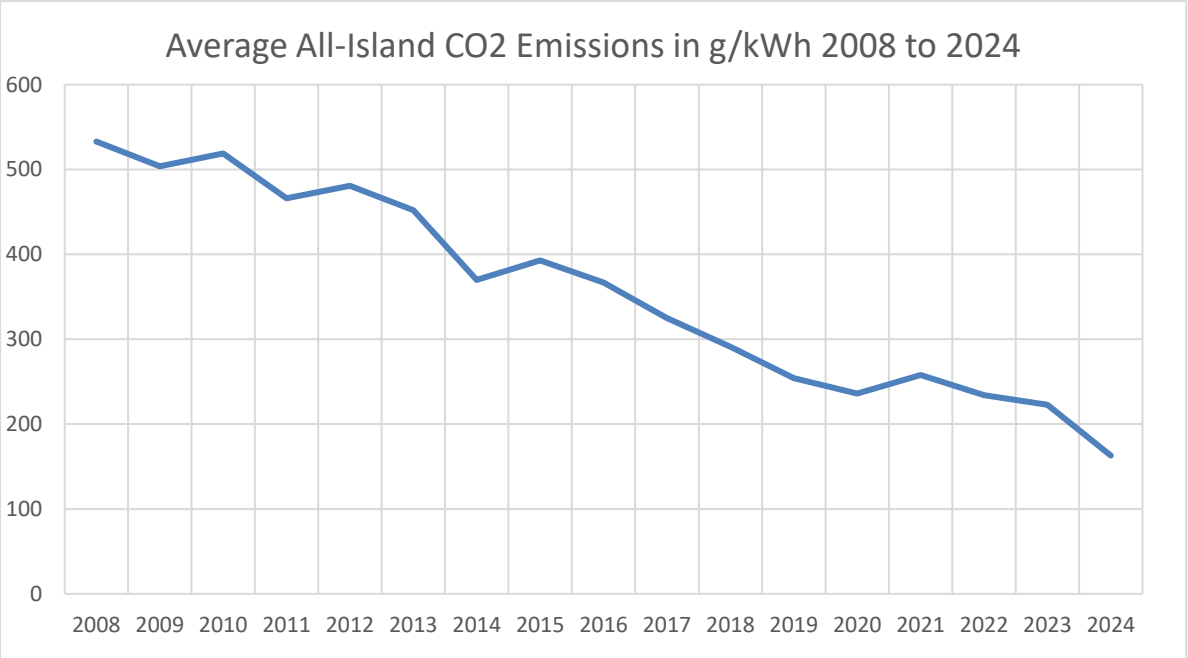
Note that the unit of measure for emissions intensity in this information paper is gCO2/kWh. The use of gCO2/kWh is consistent with the reporting of emissions intensity by other authorities, and the unit Kilowatt hour (kWh) is the unit used on customers' bills. To calculate the emissions (measured in grams of CO2), multiply the emissions intensity (in gCO2/kWh) by the electricity supplied (in kWh).[15]

It should be noted that CO2 intensity in this FMD does not reflect the CO2 intensity of the Irish electricity sector in practice. As noted above, the EU Renewables Directive and Irish legislation permit electricity suppliers licenced in Ireland to use green attributes, i.e., GO certificates, for their annual fuel mix and allow balance the emissions from the electricity their customers consume.

The average All-Island CO2 emissions per kWh of electricity, inclusive of GOs and REGOs, has decreased by 4.7% between 2023 and 2024, from 223 gCO2/kWh in 2023 to 163 gCO2/kWh in 2024. This decrease is predominantly driven by an increase in the FMD figures for renewable generation, electricity imported on interconnectors, reduced coal and no peat generation in 2024.

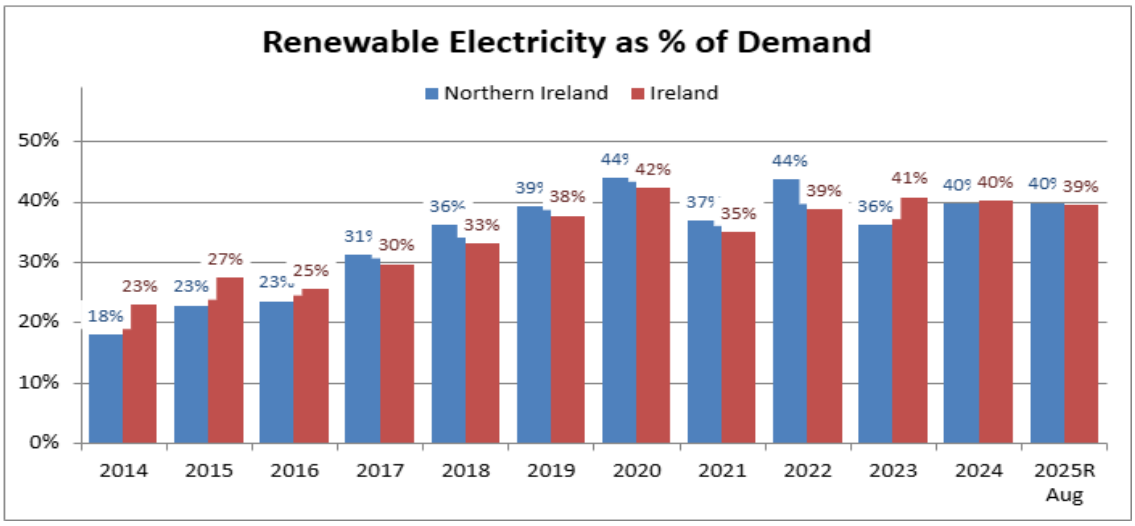
[15] This is also the Unit shown the table "Default Presentation of Information" in Appendix 1.

Figure 4: Average All-Island CO2 Emissions (inclusive of green attributes, i.e., GOs).



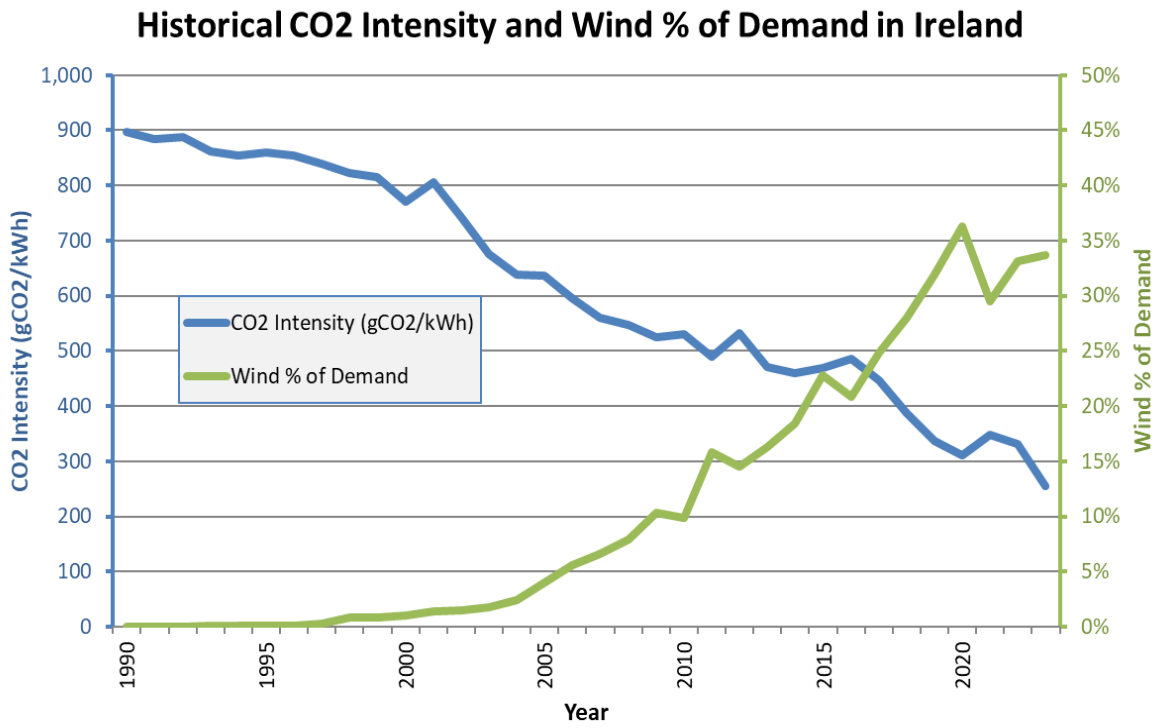
For comparison purposes, according to the EPA, the CO2 intensity per unit of electricity generated not including GOs in Ireland for 2024 is 226g CO2/kWh, compared to last year's figure of 255g CO2/kWh[16]. This is due to a greater proportion of imports and low-carbon fuels used for electricity generation in 2024. The corresponding figure in 2015 was 470g CO2/kWh. This decrease reflects improved modern gas-fired plants (lower CO2 intensity) replacing coal and peat generation and the increased share of renewables and interconnectivity. Figures 5 and 6 below illustrate the growing share of renewables in total generation.

Figure 5: Renewable Electricity as a % of Demand and Source: EirGrid System and Renewable Data Summary Report, November 2024.



[16] EPA, Retrieved from: https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/energy-/

Figure 6: CO2 Intensity and Wind as a % of Demand (exclusive of green attributes ie GOs)



4. Individual Supplier's Fuel Mix

This section sets out the fuel mix and CO2 emissions for each electricity supply company to meet demand in Ireland. These are divided into three groups:

1. Supply companies which made a declaration[17] of the data needed for the calculation of fuel mix.
2. Supply companies which did not make a declaration by March 2025 for the 2024 fuel mix disclosure period.
3. Self-suppliers who chose to make declarations for the purposes of fuel mix disclosure.

The fuel mix calculation is carried out on an individual supplier licence basis. This paper is only displaying the Fuel Mix Disclosures for suppliers licenced in IE.[18] Those which are below the All-Island Emissions Factor are highlighted in **Green**. Suppliers with an Emissions Factor above the All-Island Emissions Factor are highlighted in **Red**. The average All-Island fuel mix, as declared by the supply companies, is also provided for reference.

The Residual Mix CO2 Emissions Factor has decreased from 0.485 in 2022 to 0.461 in 2023. This decrease in the Emissions factor is consistent with the decreased volumes of fossil fuel-types contributing to the Residual Mix over these same periods. It should be noted that suppliers who did not submit a fuel mix declaration to SEMO for this FMD have been assigned the Residual Mix and are highlighted as such in Figure 8.

Two self-suppliers[19] made a declaration for the purposes of fuel mix disclosure. Their associated fuel mixes have been included in Figure 9 below.[20] Submissions received from self-suppliers have been included in this report due to the low volumes of such submissions received for the 2024 disclosure period.[21]

[17] Declarations were required to be submitted to SEMO by March 2022 for the 2021 disclosure period.
[18] The Fuel Mix Disclosure information for suppliers operating in Northern Ireland is published separately and can be found in the Utility Regulator's report "*All Island Fuel Mix and CO_2 Emissions 2021*".
[19] A self-supplier is a supply company which supplies electricity only to its own site and which does not compete to supply energy to any third party.
[20] It should be noted that the purpose of this paper is to provide information to customers on the fuel mix and CO2 emissions of their electricity supply. **Only suppliers serving electricity customers are required to disclose their assigned fuel mix.**
[21] Note that if the number of these increase in subsequent reports, then their inclusion may be reviewed as it is considered that they may not be best placed for inclusion in this report.

Figure 7: Fuel Mix Disclosures for suppliers licenced in IE (inclusive of green attributes, i.e., GOs).

Suppliers making declarations	Coal	Gas	Oil	Renewable	Other	Total	gCO_2 /kWh
All-Island Fuel Mix	1.12%	34.72%	1.32%	62.35%	0.49%	100%	163[22]
Bord Gais Energy	0.00%	0.00%	0.00%	100.0%	0.00%	100%	0
Electric Ireland[23]	0.80%	31%	0.90%	67%	0.30%	100%	137
Energia	0.78%	22.47%	0.93%	75.48%	0.34%	100%	108
Go Power[24]	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Panda Power	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
SSE Airtricity	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Pinergy	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Flogas Natural Gas	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Arden Energy	2.22%	63.85%	2.63%	30.32%	0.98%	100%	306
Orsted Ireland Green Energy[25]	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Captured Carbon	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Cenergise Trading	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Ecopower	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Flogas Enterprise Solutions[26]	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Community Power	1.79%	51.55%	2.12%	43.74%	0.79%	100%	247

[22] (inclusive of green attributes, i.e., GOs).
[23] ESB Customer Supply and ESB IE Independent Energy combined.
[24] LCC IE is branded as GO Power.
[25] BRI Green Energy was bought by Orsted and now go by the name Orsted Ireland Green Energy.
[26] Naturgy has rebranded as Flogas Enterprise Solutions. This is different again from Flogas Natural Gas Limited.

ElectroRoute Energy Supply	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
Edenderry Supply Company	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0
PrePay Power	2.23%	64.18%	2.64%	29.96%	0.98%	100%	308
Axpo UK	0.00%	0.00%	0.00%	100.00%	0.00%	100%	0

Figure 8: Suppliers assigned the Residual Mix in 2023 (inclusive of green attributes, i.e., GOs).

Suppliers not making declarations	Coal	Gas	Oil	Renewable	Other	Total	gCO_2 /kWh
Waterpower Engineering	2.33%	67.00%	2.76%	26.88%	1.03%	100%	321[27]

Figure 9: Self-Suppliers' Fuel Mix by Fuel Type in 2023 (inclusive of green attributes, i.e., GOs).

Self-Supplier	Coal	Gas	Peat	Renewable	Other	Total	gCO_2 /kWh
Dublin Waste to Energy Supply	0.0%	0.0%	0.0%	100.0%	0.0%	100%	0
Statkraft Markets GmbH	0.0%	0.0%	0.0%	100.0%	0.0%	100%	0

[27] WaterPower Engineering Limited had no claims and were assigned the residual mix emissions factor with the renewable PSO adjustment figure assigned to them factored in.

5. Disclosure of Fuel Mix

A supplier's fuel mix information must be presented on bills in accordance with SEM/11/095 (see Appendix 1 for details). This must observe the following points:

- Where fuel mix information is presented on the back of a consumer bill, reference must be made to it on the front of the bill.
- Radioactive waste information is required by Directive 2009/72/EC and S.I. No. 60 of 2005. This figure is 0.000 g/kWh for all suppliers in 2024 and therefore need not be included with the 2024 fuel mix disclosure information on bills (See Appendix 1).
- To ensure consistency across suppliers, percentages should be rounded to one decimal place.
- CO2 information should be given in the units of grams of CO2 per kWh (g/kWh).
- In addition to the fuel mix disclosure requirements, section 3.5.3 of the CRU's decision paper on the Regulation of Green Source Products in the Electricity Retail Market, CER/15/205, governs the display of fuel mix information for suppliers who offer green source products.

  In relation to advertising and promotion of products, suppliers should also follow the *Code of Practice on Marketing and Advertising* from the Supplier Handbook and General Clarifications as may be published from time to time by the CRU, including the following:

  - CRU20083 – General Clarification on the Advertisement of Green Products;
  - CRU19071 - General Clarification on the Code of Practice on Marketing and Advertising; and
  - SEMO's internal business process for Interim GSPV[28].

The 2024 fuel mix information must be presented on all customer bills within two months of the publication of this paper.

[28] For information refer to Interim Process on SEMO's GSPV webpage: https://www.sem-o.com/markets/green-source-product-veri/

Appendix 1: Presentation of Information on Bills

Default Presentation of Information[29]:

The fuel mix information should be presented on electricity bills in accordance with SEM/11/095. For this purpose, a template from this decision paper is reproduced below.[30]

SUPPLIER Z Fuel Mix Disclosure **Applicable Period: January 2023 to December 2023**		
Electricity supplied has been sourced from the following fuels:	**% of total**	
	Electricity Supplied by SUPPLIER Z	**Average for All-Island Market (for comparison)**
Renewable	X %	X %
Natural Gas	X %	X %
Peat	X %	X %
Coal	X %	X %
Oil	X %	X %
Nuclear	X %	X %
EU Fossil	X %	X %
Other	X %	X %
Total	100 %	100 %
Environmental Impact		
CO_2 Emissions	X g/kWh	X g/kWh
Your specific fuel mix may differ to the fuel mix shown because SUPPLIER Z offers green source products. For information on your fuel mix and on the environmental impact of your electricity supply visit www.SUPPLIERZ.ie or, for further details call 00XXX X XXX XXXXX [31]		

[29] For the purpose of illustration, the supply company is given the name "SUPPLIER Z"
[30] Please refer to Section 1.7 of SEM/11/095 for further details.
[31] Suppliers who offer green source products in Ireland should refer to Section 3.5.3 of the CRU's Decision paper, CER/15/205, on the "*Regulation of Green Source Products in the Electricity Retail Market*".

Appendix 2: All-Island Fuel Mix 2006 - 2024

Fuel Mix 2007-2024 (Percentage share of total)

	2007	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*2023*	*2024*
Coal %	18.00	17.00	14.24	15.98	14.44	19.89	18.42	15.71	16.02	13.76	9.83	6.77	2.63	2.98	6.80	5.50	2.98	1.12
EU Fossil %	0.00	0.00	0.00	0.00	3.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gas %	55.00	61.00	61.85	64.06	56.16	47.74	44.09	41.6	36.36	39.66	39.96	38.51	37.86	35.75	33.60	34.20	34.13	34.72
Oil %	6.00	4.00	2.53	1.59	0.00	0.00	0.00	1.06	0.00	0.00	0.00	0.00	0.00	0.00	2.70	1.90	1.04	1.32
Renewables %	11.00	11.00	14.23	12.11	17.21	23.74	30.24	34.46	41.06	40.09	44.47	48.95	54.04	57.86	55.90	57.60	61.01	62.35
Peat %	6.00	7.00	6.70	5.78	5.88	6.86	6.49	6.95	5.90	5.35	4.86	4.63	4.25	2.07	0.50	0.40	0.22	0.00
Other %	4.00	1.00	0.45	0.48	3.18	1.77	0.75	0.17	0.17	0.15	0.28	0.55	0.56	0.94	0.50	0.40	0.62	0.49

Note:

- Figures for 2007 relate to Ireland-only and calculations are based on a pre-SEM methodology.
- Figures for 2008, 2009 and 2010 relate to Ireland and Northern Ireland and are based on the Interim Arrangements Methodology (SEM/09/081).

- Figures for 2011 onwards relate to Ireland and Northern Ireland and are based on the SEM Committee Decision Paper Fuel Mix Disclosure in the Single Electricity Market: Calculation Methodology Decision Paper (SEM/11/095), referenced in the Related Documents section of this paper.
- The threshold for a fuel-types inclusion in the “Other” category is <1% of Final All-Island Mix. The “Other” category consists of Non-Biodegradable Fraction of Waste (NBDFW) and EU Fossil (only for 2011).

Appendix 3: GOs Imported/Exported

It should be noted that each GO unit corresponds to one MWh of electricity generated from a renewable source.

GO imports to Ireland by country of origin (2017-2024) information supplied by SEMO.

Country	2017	2018	2019	2020	2021	2022	2023	2024
UK	7,209,276	6,499,980	4,590,300	3,059,134	-	-	-	-
Norway	300,681	2,702,943	1,802,970	12,703,498	10,521,464	10,304,805	12,826,418	17,209,361
Italy	109,778	15,000	1,637,040	-	-	-	-	43,738
Spain	200,000	-	907,181	-	-	-	-	
Belgium	-	-	-	203,912	322,822	293,500	156,748	202,788
Greece	-	-	-	200,000	-	-	-	
Sweden	-	-	-	-	797,112	2,238,029	548,976	611,549
Finland	-	-	-	-	552,042	210,372	1,197,171	30,753
France	-	-	-	-	1,724,700	2,061,291	1,873,165	1,433,966
Austria	-	-	-	-	429,309	300,000	-	-
Portugal	-	-	-	-	664,549	15,100	501,408	185,404
Slovakia	-	-	-	-	-	-	-	150,000
Netherlands	-	-	-	-	-	26,970	82,120	14,045

Denmark	-	-	-	-	-	699,733	608,573	402,732
Germany	-	-	-	-	-	115,000	19,000	63,357
Hungary	-	-	-	-	-	-	3,590	
Switzerland	-	-	-	-	-	-	310,460	34,759
Iceland	-	-	-	-	-	-	2,552	27,000
Other[32]	454,688	307,001	1,533,201	226,651	266,492	2	-	-
TOTAL IMPORTS	**8,274,423**	**9,524,924**	**10,470,692**	**16,393,195**	**15,278,490**	**16,264,803**	**18,130,181**	**20,259,452**

GO exports from Ireland by country of destination (2017-2024)

Country	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Norway	493,606	612,401	349,018	1,303,951	457,076	752,537	555,392	850,799
Belgium	-	9,140	-	3,912	18,761	216,497	10,448	6,765
Netherlands	-	13,115	-	47,123	88,626	7,000	5,394	5,473

[32] Sum of imported GOs where import from a country is less than 200,000.

UK	-	-	-	244,779	1,596	-	-	-
Austria	-	-	-	-	9	-	-	-
Finland	-	-	-	-	5,000	-	109,928	12,834
Denmark	-	-	-	-	-	5	-	-
Sweden	-	-	-	-	-	-	-	126,033
France	-	-	-	-	-	20,923	36,706	57,679
Iceland	-	-	-	-	-	4,418	112	-
Latvia	-	-	-	-	-	1	-	-
Portugal	-	-	-	-	-	-	7,327	-
Hungary	-	-	-	-	-	-	3,590	-
TOTAL EXPORTS	**493,606**	**634,656**	**349,018**	**1,599,765**	**571,068**	**1,001,381**	**728,897**	**1,059,583**