

AN GHNÍOMHAIREACHT CHÚLTACA OLA NÁISIÚNTA THE NATIONAL OIL RESERVES AGENCY



THE RENEWABLE TRANSPORT FUEL OBLIGATION ANNUAL REPORT 2023 (REV.2)

A report on how the RTFO has been implemented to date and an assessment of the level of compliance by obligated parties with the Energy Act and designated fuel suppliers' compliance with SI 160 of 2017 during the 2023 obligation period.

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The National Oil Reserves Agency



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Rev No.	Description
1	<ul style="list-style-type: none">• Correct Section 4.5 to reflect Table 3 data (carry forward of c. 2.1 billion RTFO Certs).• Amend the country-of-origin data in Table 4 and Figure 10, and associated text (revised data submitted).• Include weighted average data in Table 5.• Amend BioLPG & BioCNG (LWHEYYP) carbon intensity data, and BioCNG quantities, in Table 6.• Amend the quantity of diesel placed on the market during 2023 (revised data submitted). This changed several values in the report, e.g. the metrics in Table 3 and Table 7, and the advanced biofuel obligation.
2	<ul style="list-style-type: none">• Correct Section 4.6 to amend percentage of feedstock sourced from Europe.

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GLOSSARY OF TERMS

BÓC	Byrne Ó Cléirigh
BOS	Biofuel Obligation Scheme
CBs	Certification Bodies
CNG	Compressed Natural Gas
DECC	Department of Environment, Climate and Communications
DoT	Department of Transport
Energy Act	Energy (Biofuels Obligations and Miscellaneous Provisions) Act 2010
EV	Electric vehicle
FBS	Fuel Baseline Standard (94.1 gCO _{2eq} /MJ)
FQD	Fuel Quality Directive (2009/30/EC)
gCO _{2eq}	Grams of CO ₂ equivalent
GHG	Greenhouse gas
ILUC	Indirect Land Use Change
ISCC	International Sustainability and Carbon Certification (a voluntary scheme)
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MJ	Megajoule
NORA	National Oil Reserves Agency
NORA Act	National Oil Reserves Agency Act (2007)
OLA	Online Levy Assessment (a reporting system for obligated parties)
PJ	Petajoule
POME	Palm Oil Mill Effluent
RED	Renewable Energy Directive (2009/28/EC)
RED II	Recast Renewable Energy Directive (2018/2001)
RED III	Recast Renewable Energy Directive (2018/2001), as amended by Directive 2023/2413
RFNBO	Renewable Fuel of Non-biological Origin
RTFO	Renewable Transport Fuel Obligation
RTFO Team	Personnel from NORA, BÓC and Evelyn Partners
SBE	Spent Bleached Earth
SI	Statutory Instrument
UCO	Used Cooking Oil
UERs	Upstream Emission Reductions

EXECUTIVE SUMMARY

Overview

The Renewable Transport Fuel Obligation (RTFO), formerly the Biofuels Obligation Scheme, was one of the measures introduced by the Irish Government to assist it comply with the requirement imposed on all EU Member States by the Renewable Energy Directive (RED) (1) that by 2020 at least 10% of the final consumption of energy in transport was from renewable sources. In 2020, Ireland met this requirement. NORA was appointed under the Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 (2) to administer the scheme and the Agency appointed a consortium of Byrne Ó Cléirigh and Evelyn Partners to assist with its administration. A project team (the RTFO Team) was established with personnel from NORA and members of the consortium. This Team prepared and implemented a comprehensive set of systems and procedures for implementing and administering the scheme.

Under the RTFO, the oil companies and oil consumers that are obliged to pay the NORA Levy (the obligated parties) on disposals of diesel and gasoline are required to ensure that a specified amount of their total relevant disposal of road transport fuel is in the form of renewable fuel. For 2023, this amount was c. 14.5%, including multiple counting, by energy (16.985% when expressed as a percentage of fossil fuel). The obligated parties must also pay a levy of €0.001 per litre on their renewable fuel disposals and may then apply to NORA for one RTFO Certificate (Cert) in respect of each MJ. In the case of renewable fuel produced from feedstocks listed in Annex IX of RED II, two RTFO Certs per MJ may be awarded. Additional Certs may also be awarded for biodiesel produced from category 1 tallow, HVO, BioCNG, and renewable fuels supplied to the aviation and marine sectors. At the end of each obligation period (the calendar year) obligated parties are required to surrender to NORA sufficient Certs to match their obligation. Failure to surrender sufficient Certs incurs a liability to pay a buy-out charge which was set at €0.05 per MJ for 2023.

The advanced biofuel obligation also came into effect in 2023 and placed a requirement on obligated parties to achieve a 0.3% target. The advanced obligation is discharged by surrendering Green Certs, which are awarded for biofuels produced from the feedstocks listed in Annex IX Part A of RED II.

In 2017, SI 160 (3) transposed Article 7a of the Fuel Quality Directive (FQD) (4). It designates NORA as the administrator of fuel suppliers' compliance with a carbon intensity reduction target of at least 6% by 2020, and in the years thereafter. The requirements under SI 160 differ from the obligations under the RTFO in so far as it requires fuel suppliers to achieve at least a 6% reduction in the greenhouse gas (GHG) intensity of fuels used in road vehicles, non-road mobile machinery, agricultural and forestry tractors, and recreational craft relative to a fuel baseline standard (94.1 gCO_{2eq}/MJ). The RTFO also administers the requirements of SI 160 by allowing applications for RTFO Certs to be combined applications for Certs and carbon savings.

Companies that produce or supply renewable fuels, and electricity suppliers, may also open an RTFO account and apply to NORA for RTFO Certs and carbon savings. Account holders

may also obtain RTFO Certs and carbon savings by arranging with other account holders to have Certs/carbon savings transferred to their accounts from other accounts. At the start of 2023 there were a total of 20 RTFO account holders (10 obligated parties, 6 companies that produce or supply biofuels registered as RTFO account holders, 3 additional companies designated as fuel suppliers under SI 160, and 1 electricity supply company). Two additional biofuel suppliers opened RTFO accounts during 2023.

RTFO Compliance

In total for the 2023 obligation period, approximately 404m equivalent litres (12.5 PJ) of renewable fuel were placed on the market; approximately 26 billion Certs and 970kt of carbon savings were awarded in respect of those disposals. At the end of the period, including the Certs that were carried forward from previous periods (c. 1.3 billion), account holders were in possession of 27.3 billion RTFO Certs; the 2023 biofuel obligation was 25.3 billion Certs. All the obligated parties were in possession of sufficient RTFO Certs to satisfy their respective obligations.

Additional Certs, i.e. 2 or more, were awarded for all renewable fuel either blended with diesel or sold as a diesel replacement, because it was all produced from a feedstock listed in Annex IX and it was one of the fuel types designated for receipt of additional Certs under SI 142 of 2023.

Approximately 32% of the bioethanol and all the bioLPG placed on the market was double counted. All the BioCNG was awarded 3.4 Certs per MJ. In total, there were nine different biofuel types and seventeen different biofuel feedstocks reported in the RTFO Sustainability Statements.

Feedstock	Bioethanol	Biodiesel (road & rail)	CHVO	HVO (road & non-road)	BioLPG	BioCNG	Biogasoline
Animal manure						X	
Belly grass						X	
Brown grease		X				X	
Category 1 tallow		X					
Category 2 tallow		X					
Corn	X						
Crude glycerine						X	
Food waste (not fit for use as food or feed)		X	X			X	
Forest-based industrial waste and residue			X				
Liquid whey permeate	X					X	
Palm oil mill effluent		X		X			
Soapstock acid oil contaminated with sulphur		X					
Starch slurry	X						
Sugar cane	X						

Feedstock	Bioethanol	Biodiesel (road & rail)	CHVO	HVO (road & non-road)	BioLPG	BioCNG	Biogasoline
Used cooking oil		X	X	X	X		X
Waste pressings from vegetable and animal oil		X	X				
Wheat	X						

The feedstocks were reported to have originated from 60 different countries. The single largest source of feedstock for biofuel was China (18%, down from 28% in 2022); approximately 15% of the feedstock originated from Ireland.

Approximately 47% of all the biofuel placed on the market in Ireland was produced from used cooking oil (UCO) which was sourced from 45 different countries; China was the largest source (36%). All the biofuel placed on the Irish market was reported as being certified by a voluntary scheme.

A central requirement of RED, RED II and the Sustainability Regulations (5) is that biofuels achieve at least a 50% or 60%¹ reduction in carbon intensity (GHG emissions per unit of energy) in comparison to fossil fuels. The average carbon intensity of all the biofuel placed on the market in Ireland in 2023 was 14.7 gCO_{2eq}/MJ, which is an 84% reduction in comparison to the fossil fuel comparator of RED II (94 gCO_{2eq}/MJ).

SI 160 Compliance

In total, fuel suppliers achieved a carbon intensity reduction of 4.8% in 2023. This was achieved by placing biofuel, and fossil fuels with lower carbon intensities, on the market. There were no carbon savings from upstream emission reductions (UERs) or electricity supplied to EVs claimed during 2023.

Compliance with SI 160 is, however, a fuel supplier requirement. Less than half the fuel suppliers achieved the 6% carbon intensity reduction target. NORA has not applied to the High Court for compliance orders for fuel suppliers that did not achieve the 2023 target.

Auditing

The annual audit of RTFO account holders was carried out during 2023. The programme included a plenary audit of all the Levy Returns' data, four on-site audits and several desk-based audits. In general, RTFO account holders were well prepared for the audits and were able to substantiate the data contained in the Levy Return and in the applications for RTFO

¹ 60% for biofuel production plants coming into operation after October 2015.

Certs. Some account holders did not, however, engage efficiently with the audit process, which gave rise difficulties that required multiple follow-ups and additional resources.

While discrepancies were found during the audits, there were none identified that impacted on the Levy liability or compliance with the RTFO. There were, however, some findings that were of particular note relating to the operation of OLA, the maintenance of records by the oil companies to ensure marine gasoil refunds are being correctly substantiated, and accurate reporting of exchange partner transactions.

RTFO in 2024

The primary change to the RTFO for 2024 is the increased obligations. The RTFO and the advanced obligation have increased to 21% and 1%, respectively.

In relation to the Union Database (UDB), SI 350 of 2022 requires RTFO account holders to enter the information referred to in Article 28 (2) of RED II into the UDB, namely information on transactions made and the sustainability characteristics of the renewable fuels. Annex I of Implementing Regulation 996 of 2022 provides further details on what transactional and sustainability data shall be entered into the database. The UDB went live, i.e. it can be accessed and economic operators (EOs) can register as users, on the 15th of January 2024. However, there have been problems with its introduction across the entire supply chain so not all the transactional data (if any) is being recorded in the UDB and proofs of sustainability are not yet being produced in the UDB. To start relying on the UDB as the source of sustainability and transactional data, all the voluntary scheme certified companies need to register their 'initial stocks' in the UDB. There is currently no deadline set for registering initial stocks, so it is currently unclear when the UDB will be fully adopted by the supply chain. The RTFO Team will be engaging with the European Commission and its UDB Team during 2024 and will ensure that RTFO account holders are advised of progress and actions that may need to be taken.

The RTFO team will continue to support the Department of Transport with the transposition of RED III during 2024. The deadline for transposition is May 2025. Some of the highlights from RED III include:

1. Member States are required to set an obligation on fuel suppliers to ensure that the amount of renewables in transport leads to either a share of renewable energy of at least 29% by 2030 or to a greenhouse gas intensity reduction of at least 14.5% by 2030.
2. While blending targets/limits remain for advanced biofuels, high-ILUC risk biofuels and crop-based biofuels, a new RFNBO sub-target is introduced. To support this, two Implementing Regulations were published by the European Commission that define and set the sustainability criteria for RFNBOs:
 - Implementing Regulation 2023/1184 – sets out the detailed rules for the production of RFNBOs.

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- Implementing Regulation 2023/1185 – establishes a minimum threshold for GHG savings of recycled carbon fuels, and specifies a methodology for assessing GHG emissions savings from RFNBOs and recycled carbon fuels.

The European Commission has received several [applications for recognition](#) for voluntary schemes to extend their scope to cover RFNBOs (and RCFs), but there is currently no voluntary scheme approved for RFNBOs.

3. The scope of the Directive has been expanded to include for more than just road and rail. RED III includes all transport sectors (road, rail, navigation, aviation, etc.) and all fuels used in transport.
4. Electricity supplied via public recharging points shall be rewarded under the RTFO.
5. Article 7a of the Fuel Quality Directive is deleted. This will give rise to SI 160 of 2017 being repealed and the end of the requirement on fuel suppliers to achieve a 6% reduction in the carbon intensity of the transport fuels.

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1 BACKGROUND

Article 3 of the Renewable Energy Directive (1) set out mandatory national overall targets and measures for the use of energy from renewable sources for all EU Member States. Ireland's target for the share of its gross final consumption of energy to come from renewable sources, by 2020, was 16%.

Although Member States could set individual targets for heat (RES-H) and electricity (RES-E), item 4 of Article 3 placed the following obligation on all Member States:

Each Member State shall ensure that the share of energy from renewable sources in all forms of transport in 2020 is at least 10 % of the final consumption of energy in transport in that Member State.

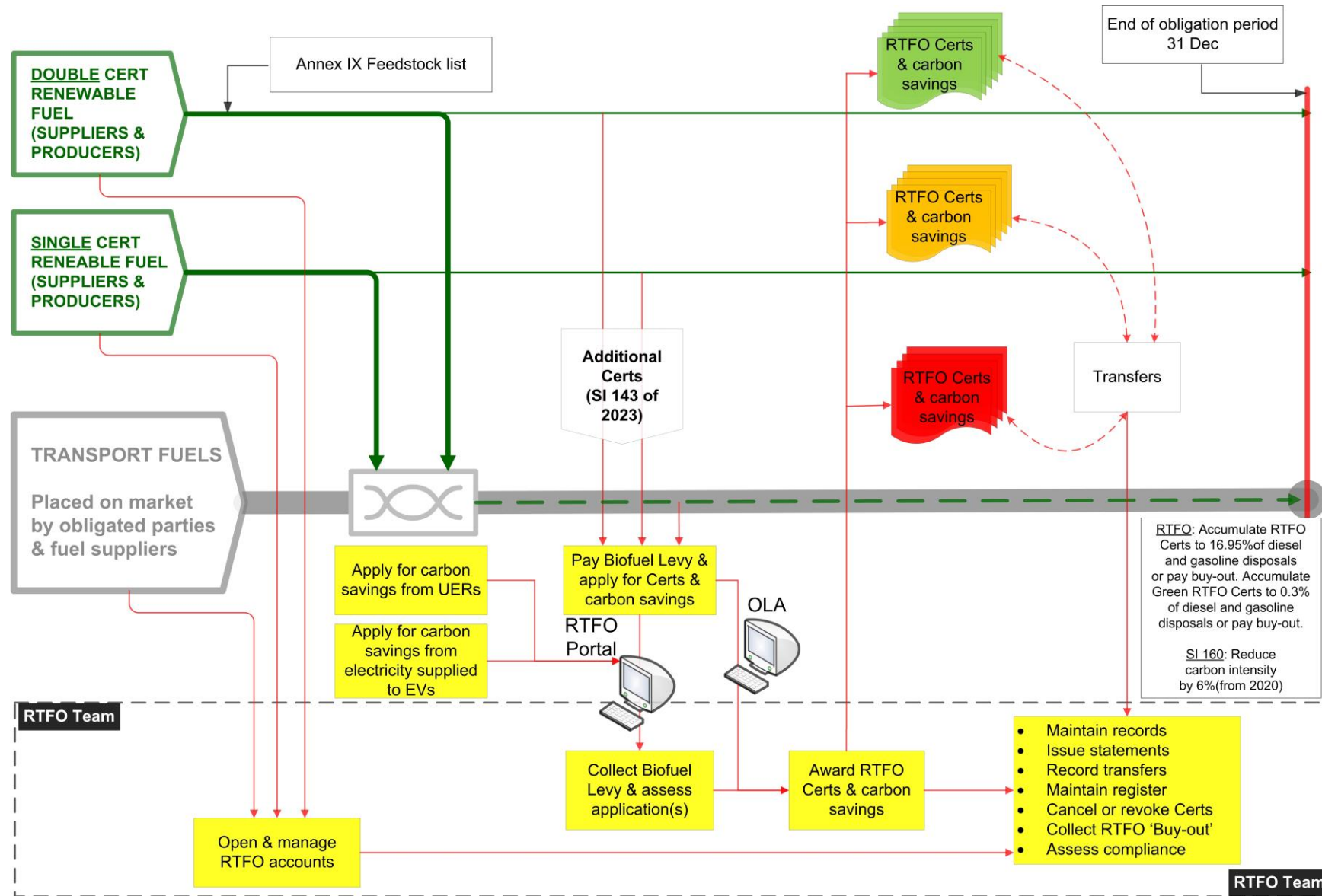
It is in the context of this obligation that Ireland implemented the Renewable Transport Fuel Obligation (RTFO), which was given effect in law by the Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010 (2). While the RED compliance date of 2020 has passed, the RTFO remains an integral part of Government's plan of achieving E10 and B20 by 2030, reducing GHG emissions in the transport sector, and meeting compliance with the recast Renewable Energy Directive (RED II). Under RED II, Ireland has a 14% renewable energy target in the transport sector and must contribute to the EU's overall 32% renewables target.

Under the Energy Act, the National Oil Reserves Agency (NORA) is the body charged with administering the RTFO. In 2021, following an open tendering process, a consortium of Byrne Ó Cléirigh and Evelyn Partners was appointed to assist NORA with implementing and administering the RTFO until 2026. Throughout this report, the individuals from the consortium and NORA who collaborate with implementing and administering the scheme are referred to as the RTFO Team.

This report provides an overview of the RTFO and describes how it was implemented throughout the 2023 obligation period. It also illustrates the extent to which the overall obligation was met and how each individual obligated party performed.

In 2017, SI 160 (3) transposed Article 7a of the Fuel Quality Directive (FQD) (4). SI 160 designates NORA as the administrator of fuel suppliers' compliance with a carbon intensity reduction target of 6% by 2020 – this target remained in effect for 2023 and will continue to remain in effect until the legalisation is amended. It requires fuel suppliers to achieve a 6% reduction in the carbon intensity of fuels used in road vehicles, non-road mobile machinery, agricultural and forestry tractors, and recreational craft relative to a Fuel Baseline Standard (FBS) of 94.1 gCO_{2eq}/MJ. The Regulations require biofuels to satisfy the same sustainability criteria as the RTFO, if they are to be counted towards the 6% target. Thus, there is a significant overlap in what the RTFO and SI 160 require: significant volumes of sustainable biofuel to be placed on the market.

Figure 1: Overview of RTFO



2 AN OVERVIEW OF THE RTFO

Figure 1 provides an overview of the RTFO. The principal features are described below.

2.1 RTFO ESSENTIALS

- The RTFO obliges all oil companies and oil consumers (obligated parties) that make relevant disposals of road transport fuels to ensure that a specific percentage of their total disposals, in each obligation period, is renewable fuel.
- The first obligation period was from July to December 2010, inclusive. For each subsequent year, including 2023, the obligation period ran from January to December, inclusive.
- Obligated parties are awarded RTFO Certificates at the rate of one Certificate for each MJ of renewable fuel they place on the market. For certain renewable fuels – those produced from feedstocks listed on Annex IX of RED II – two RTFO Certs per MJ may be claimed.
- From April 2023 onwards, additional Certs were also awarded for certain renewable fuels (in accordance with SI 143 of 2023).

Table 1: Additional Certs

Fuel Type	End use	Feedstock	No. of Additional Certificates per MJ	Total no. of Certificates per MJ
BioCNG	Road, rail & NRMM	Any Annex IX	1.4	3.4
		Not Annex IX	0.7	1.7
HVO & CHVO	Road, rail & NRMM	Any Annex IX	0.5	2.5
		Not Annex IX	0.25	1.25
Biodiesel (FAME)	Road, rail & NRMM	Category 1 tallow	0.5	2.5
Any	Aviation	Any Annex IX	0.4	2.4
		Not Annex IX	0.2	1.2
Any	Marine	Annex IX	0.4	2.4
		Not Annex IX	0.2	1.2
RFNBO	Road, rail & NRMM	Any	3	4

- The 2023 obligation was 16.985% of the petroleum-based disposal. Obligated parties meet their obligations by disposing of renewable fuel (which can be in liquid

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or gaseous form). They may also meet the obligation by purchasing RTFO Certs from other RTFO account holders or by paying the buy-out charge.

- There was a 2% limit on the quantity of crop-based fuel that can be discharged against an obligated party's obligation.
- There was a 0.3% sub-target for advanced biofuels (i.e. those produced from the feedstocks listed in Annex IX Part A of RED II).
- Obligated parties discharge their obligation by surrendering the appropriate number of RTFO Certs to NORA at the end of the obligation period. RTFO Certs may be transferred between parties – NORA has no role in negotiating transfers.
- A Biofuel Levy (currently €0.001 per litre) is payable on all disposals of renewable fuels. This levy is payable to NORA.
- An obligated party that has not collected sufficient RTFO Certs to meet its obligation in a given obligation period is liable to pay a buy-out charge, which was set at €0.05 per MJ for the 2023 period – the advanced biofuel buy-out charge was set at €0.08 per MJ. These charges are collected by NORA but are payable to the Exchequer.
- NORA is responsible for assessing applications for RTFO Certs, for issuing Certs, for recording all transactions, and for facilitating transfers of RTFO Certs between account holders.
- All renewable fuel placed on the market must be sustainable. Sustainability is determined in accordance with the RTFO Application and Sustainability Procedure (6).
- Under certain circumstances, RTFO Certs may be cancelled or revoked.
- RTFO Certs may be carried forward for a period of two years from the end of the obligation period in which they were initially issued. However, no more than 15% of a party's obligation in each obligation period may be met using RTFO Certs carried forward from previous periods.

Administering the requirements of SI 160 of 2017 has been integrated into the RTFO. The following describes the essential features of SI 160 and how NORA has incorporated them into the RTFO.

- Fuel suppliers are required to reduce the life-cycle greenhouse gas emissions per unit of energy (i.e. the carbon intensity) from fuel and energy supplied by 6% relative to a Fuel Baseline Standard (FBS) of 94.1 gCO_{2eq}/MJ by 2020. This requirement has been maintained for each year thereafter.
- The carbon intensity reduction requirement applies to fuels used to propel road vehicles, non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, recreational craft when not at sea and electricity for road vehicles.
- An application for RTFO Certificates is also an application for carbon savings. The carbon savings are calculated using data supplied in the Sustainability Statement submitted with an application.
- The same sustainability criteria and verification requirements apply for claiming carbon savings as for claiming RTFO Certificates.
- Monthly fossil and renewable fuel data is reported via OLA to DECC in monthly Levy Returns. The relevant data is then supplied to the RTFO Portal by OLA. Carbon emissions and savings from fossil fuels are calculated in the Portal. Fossil fuels with a carbon intensity lower than 94.1 gCO_{2eq}/MJ will generate carbon savings, e.g.

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gasoline has a carbon intensity of 93.3 gCO_{2eq}/MJ and thus generates a carbon intensity saving of 0.85%.

- Carbon savings can be transferred between RTFO account holders.
- Unlike the RTFO, there is no provision for suppliers to buy-out of the requirements of SI 160 and there is no carry-over of carbon savings from previous years.
- In addition to placing biofuels and lower carbon intensity fossil fuels on the market, carbon savings can also be generated by applying for carbon savings from electricity consumed in EVs and from upstream emission reductions (UERS).

2.2 IMPORTANT DATES

The following important dates are specified in legislation and by NORA.

- The RTFO obligation period for 2023 commenced on the 1st of January and ended on the 31st of December.
- It is a legal requirement to submit quarterly applications for RTFO Certs & carbon savings from renewable fuels on the following dates.

Reporting Period	Closing Date
1 January to 31 March	15 May
1 April to 30 June	14 August
1 July to 30 September	14 November
1 October to 31 December	14 February

- The date by which NORA is obliged to inform RTFO account holders of the extent of their biofuel obligations for the previous obligation period and the number of RTFO Certs held on their account in respect of that period is the 16th of March.
- The deadline date for transferring RTFO Certs and carbon savings is 22nd March.
- The final date by which obligated parties must inform NORA of which RTFO Certs are to be set off against their obligations is the 20th of April.
- The 4th of May is the date by which NORA is obliged to raise invoices for any buy-out charges that may be payable by an obligated party. They may be raised sooner, if desired.
- The buy-out charge must be paid within 28 days from the date of the invoice.

The following dates are specific for administering compliance with SI 160.

- The deadline for submitting applications for carbon savings from electricity consumed in road vehicles is the 14th February.

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- The deadline for submitting applications for carbon savings from Upstream Emission Reductions (UERs) is the 14th February.

Compliance with SI 160 is assessed in tandem with RTFO compliance.

2.3 RTFO PARTICIPANTS

Entities participating in the RTFO can be obligated parties or producers/suppliers of biofuels that have applied to NORA for a RTFO account. Participants may also be companies designated by NORA as fuel suppliers under SI 160 of 2017. In most cases, fuel suppliers are either obligated parties or renewable fuel producers.

2.3.1 Obligated Parties

An obligated party is any oil company or oil consumer liable to pay the NORA Levy; the RTFO applies to its relevant disposals of road transport fuel (i.e. diesel and gasoline) in the obligation period. It applies whether the NORA Levy was paid or not, and, in the case of an oil consumer, whether or not the oil consumer is exempt from or has claimed an exemption from the NORA Levy.

At the start of the 2023 obligation period, the following companies were identified as obligated parties under the RTFO:

1. Valero Energy (Ireland) Ltd
2. Irving Oil Whitegate Refinery Ltd
3. Inver Energy Ltd
4. Irish Rail
5. John Kelly Fuels (Ireland)
6. Lissan Coal Company Ltd (LCC)
7. Maxol Ltd
8. Nicholl (Fuel Oils)
9. Tedcastle Oil Products (TOP)
10. Circle K

2.3.2 Renewable Fuel Producers and Suppliers

In addition to the ten obligated parties, there were six renewable fuel producers /suppliers that held RTFO accounts at the start of 2023:

1. Green Biofuels Ireland (GBI)
2. Agri Energy
3. Calor Teoranta
4. Carbery Food Ingredients
5. College Biofuels
6. Green Gas Generation

Two additional companies, Green D Project Ireland and ElectroRoute Energy Trading, opened RTFO accounts during the 2023 obligation period.

Each company may report its disposals of renewable fuels to DECC via the OLA system², pay the Biofuel Levy and claim RTFO Certs and carbon savings on those disposals³. None of these account holders incur an obligation as they do not place diesel or gasoline on the road transport market.

2.3.3 Fuel Suppliers

NORA wrote to all fuel suppliers at the end of 2019 to inform them of their responsibilities under SI 160 and their designation as fuel suppliers. In addition to the obligated parties listed in section 2.3.1 and the renewable fuel producers listed in section 2.3.2, the following companies are designated as fuel suppliers under SI 160 and are also RTFO account holders:

1. Flogas
2. Naturgy (now Flogas Enterprise)
3. Bord Gais

In 2020, an RTFO account was also opened for Brookfield Renewables (an electricity supplier), for whom participation in the scheme is optional.

2.4 ENGAGEMENT WITH RTFO PARTICIPANTS

Throughout the 2023 obligation period, and during the weeks following the end-of-period reconciliation, the RTFO Team maintained regular contact with all RTFO participants.

From the outset of the RTFO, the Team has used dedicated email accounts for receiving and issuing all email communications with the RTFO participants (bos@nora.ie & bosaccounts@nora.ie). NORA's website is also used to host all RTFO documents (procedures, guidance notes, application forms, etc.) that are likely to be required by the participants.

The RTFO Team held two briefing sessions during the year. The first was held in March and the second in October. The sessions were attended by nearly all account holders and followed a similar agenda:

1. Provide an update on RTFO performance.
2. Highlight any recurring problems with RTFO Cert and carbon savings applications or the data contained therein (the problems and data are anonymised).
3. Set out any planned changes to the RTFO systems.

² The Online Levy Application (OLA) reporting system is used by Obligated Parties to report monthly disposals of oil products to DECC.

³ Renewable fuel producers and suppliers have some discretion in how they participate in the RTFO. A producer operating in Ireland can choose between paying the Biofuel Levy and claiming the RTFO Certs and carbon savings or providing the sustainability information to the company to which it sold the renewable fuel and allowing it to pay the Biofuel Levy and claim the RTFO Certs and carbon savings. While there is some flexibility in the supply chain with respect to the entity that pays the Biofuel Levy, it is a requirement that a Biofuel Levy is paid and the company that pays it is the only company that can apply for the RTFO Certs and carbon savings.

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4. Identify and summarise new legislation that will impact on the RTFO.
5. Provide an update on legislative changes (by the Department of Transport).

The sessions are relatively informal and provide a forum for open discussion, which is welcomed and encouraged. The session held in October was a joint session with the DoT, which was also holding a stakeholder workshop on implementing the RED III revisions.

In addition, audits were carried out on account holders by members of the RTFO Team to determine the level of compliance with the requirements of the Energy Act. The audit process and the findings are discussed in more detail in Section 4.9 of this report.

3 RTFO ACCOUNTS

This section explains how NORA met the principal obligations and responsibilities that were placed on the Agency to implement and administer the RTFO, and the requirements of SI 160, over the 2023 obligation period.

3.1 ACCOUNT SET UP & CLOSURE

Two new RTFO accounts were set up during 2023:

1. Green D Project Ireland (a HVO supplier);
2. Electrорoute Energy Trading (a biomethane supplier).

3.2 MANAGING RTFO ACCOUNTS

All the account files maintained for RTFO account holders employ a standard work-breakdown-structure (WBS) so that any of the matters referred to in Section 44E(2) of the legislation can be properly recorded. Account files are held electronically on Byrne Ó Cléirigh's server. Encrypted back-up copies are made daily to a secure off-site data centre.

The Control and Reconciliation (C&R) spreadsheet (7) and the RTFO Portal record all RTFO transactions. Data on disposals of petroleum-based transport fuels and biofuels are transferred to the C&R and the Portal from the monthly returns made by RTFO account holders⁴. The Portal is a web-based platform through which account holders submit applications for RTFO Certs & carbon savings, and transfer Certs & carbon savings between accounts. As part of the application process, the Portal accepts and stores the sustainability statements and independent verification reports. Sustainability statements are submitted in csv format⁵ and are stored in a database. The system also provides account holders with data on their RTFO and SI 160 obligations, the number of RTFO Certs held in their respective account, and progress towards the 6% carbon intensity reduction target. It also enables them to view interim and final statements of account, as required under the Energy Act.

Unlike other transport fuels, there is no clear existing means of determining the proportion of gasoil supplied to the market that is intended for use in mobile vehicles (i.e. as a transport fuel). SI 160 only applies to gasoil supplied for transport purposes and not that supplied for generators or boilers, i.e. stationary machinery. NORA requires 10 ppm gasoil suppliers to report 80% of the total volume of gasoil as 'gasoil for transport'.

3.3 ISSUING RTFO CERTIFICATES AND CARBON SAVINGS

There is a standard procedure in place for issuing RTFO Certs and carbon savings (6). There is also a comprehensive guidance document to accompany the procedure (8). A standard

⁴ Returns made to DECC via the OLA system.

⁵ CSV: Comma-separated Value. It is a common file type which can be opened by many different programmes.

template is used by the RTFO Team when checking all applications for RTFO Certs and carbon savings, and for recording NORA's authorisation or refusal.

Under Section 44G of the legislation, as amended by SI 350 of 2022, NORA was required to issue "... 2 Certificates in the case of such renewable transport fuel listed in Annex IX of the Directive, or whereby the Agency may from time to time determine in accordance with this section are so eligible... and one certificate in the case of all other renewable transport fuel, and such additional certificates as the Minister may provide for by regulations...". The RTFO Team maintain a further set of procedures and guidance documents to meet this requirement.

SI 350 of 2022 amended Section 44G and its introduction required 'revised determinations' to be carried out on feedstocks which were previously determined eligible for 2 Certificates per litre and were not explicitly listed in Annex IX. Revised determinations were required for:

- Spent bleached earth;
- Whey permeate;
- Waste starch slurry;
- Brewer's spent yeast;
- Brown grease;
- Belly grass;
- Food waste not fit for use in the food or feed chain.

The only feedstock found not to meet any of the descriptors in Annex IX was 'Brewer's Spent Yeast' – it is now eligible for 1 Orange Cert per MJ. The revised determination also altered the description of 'Whey Permeate' to 'Liquid Whey Permeate'.

Details of the number of applications for RTFO Certs and carbon savings received by NORA and of the number of Certs issued and transferred are provided in Section 4. Section 5 reports on compliance with SI 160.

In 2023, applications for multiple RTFO Certs per MJ were received in respect of twelve feedstocks, which are set out in Section 4.6.

3.4 CANCELLING RTFO CERTIFICATES

Section 44L of the Energy Act places an obligation on any RTFO account holder to whom a RTFO Cert was issued in respect of a specific MJ of renewable fuel to make an application to NORA to cancel such Certs, if the fuel is subsequently exported from the State. This obligation remains even if the renewable fuel has been sold to another party and/or the RTFO Cert has been transferred to another obligated party.

During 2023 no applications to cancel Certs were received.

3.5 REVOKING RTFO CERTIFICATES

Section 44M allows for NORA to revoke a RTFO Cert in certain circumstances. No RTFO Certs were revoked during the 2023 period.

3.6 OUT OF DATE CERTIFICATES

In total, 49,102,206 RTFO Certs from 2021 were carried forward to the 2023 period. All these Certs were discharged against the 2023 obligation. There were also 1,248,090,024 RTFO Certs from the 2022 period carried forward – 1,247,761,836 were discharged and 328,188 were carried forward to the 2024 obligation period.

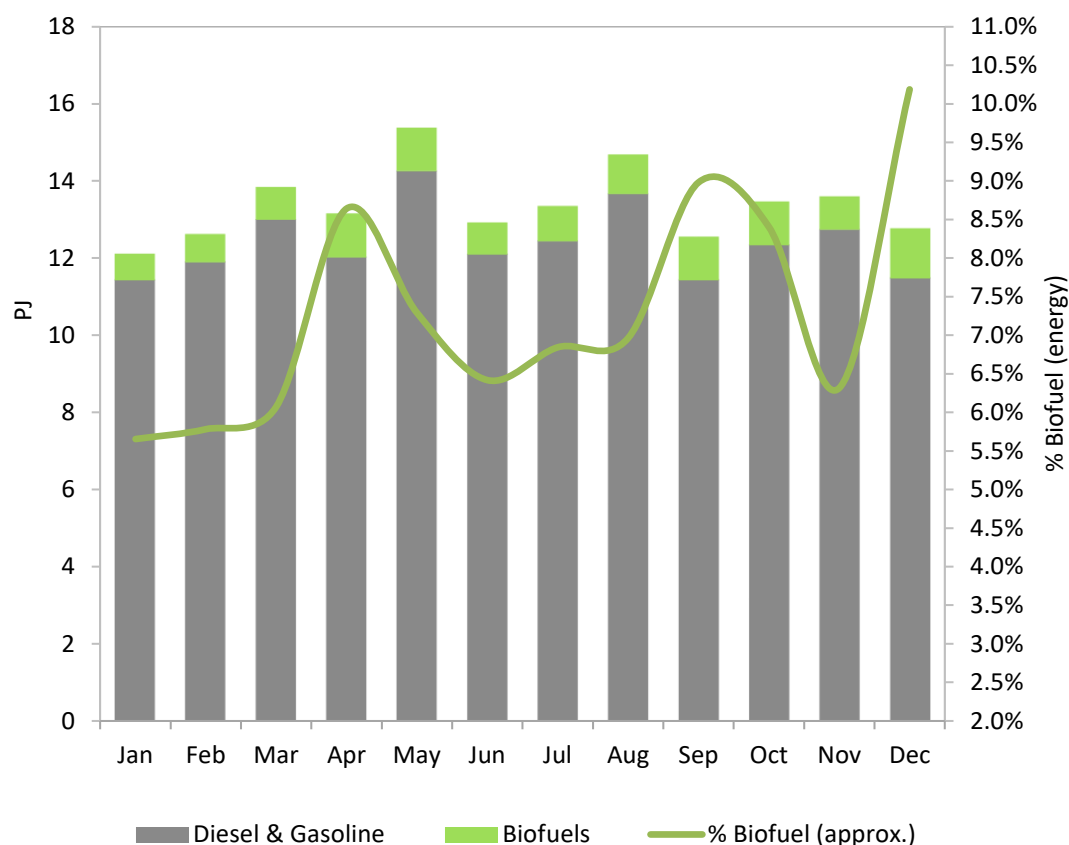
4 COMPLIANCE WITH THE RTFO

This section of the report analyses the magnitude of the obligation and the level of compliance that was achieved by the obligated parties in respect of the 2023 obligation period.

4.1 RELEVANT DISPOSALS

According to the returns made by obligated parties throughout the obligation period – January to December 2023 – approximately 4.2 billion litres (149 PJ) of diesel and gasoline, and 404m equivalent litres (12.5 PJ) of renewable fuel were placed on the market (the distribution of these disposals over the period is illustrated in Figure 2). The 2023 obligation amounted to 25.3 billion Certs. The advanced biofuel obligation was 446m Certs.

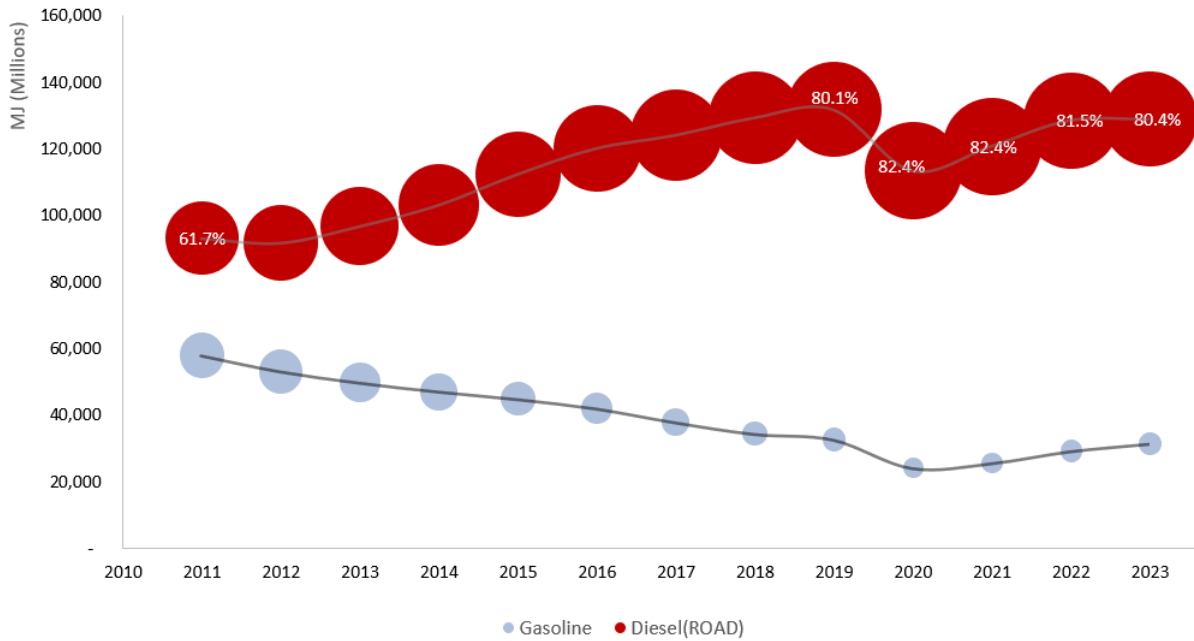
Figure 2: Monthly Disposals of Road Transport Fuel



Average monthly sales of road transport fuels for the 2023 period were approximately 387m litres. This was an increase of 2% in comparison to average monthly sales during 2022.

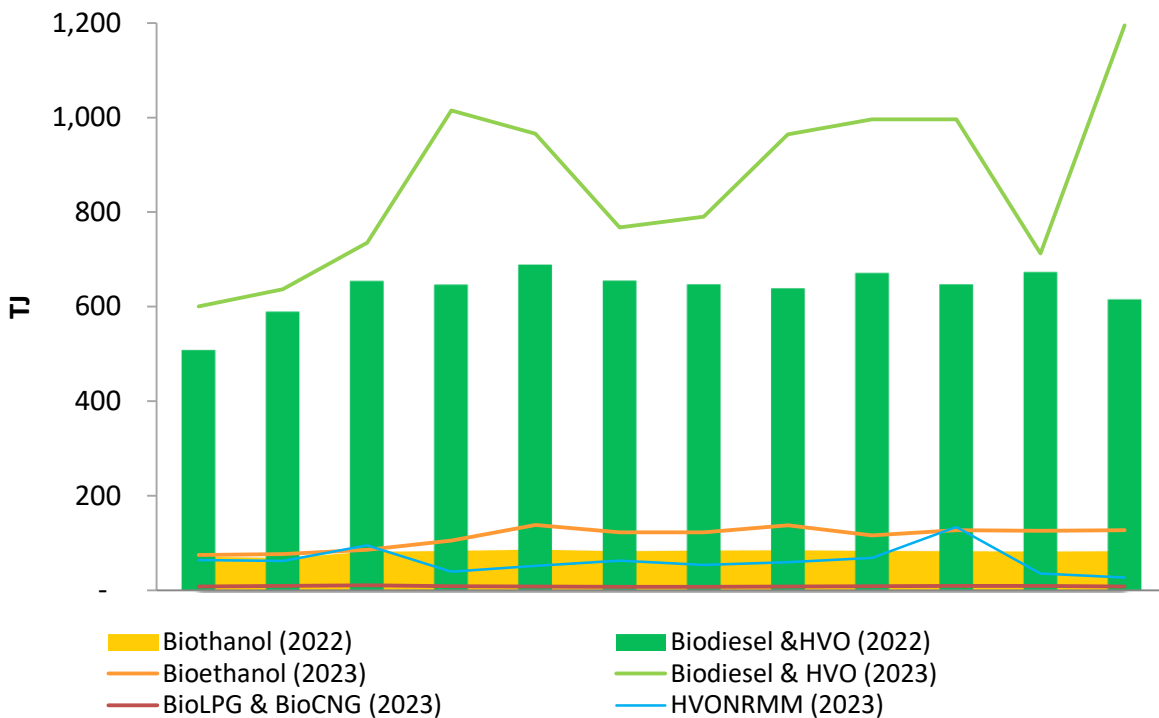
Figure 3 illustrates the trend in gasoline and diesel vehicle consumption since 2011 and the increasing share of diesel consumption (illustrated by the size of the circle).

Figure 3: Diesel and gasoline road vehicle consumption (fossil and bio)



In total, approximately 12.6 PJ of renewable fuels were placed on the market in 2023, which was an increase of 29% in comparison to 2022. The following plot illustrates the breakdown between the monthly disposals of biodiesel (including HVO/CHVO), bioethanol, bioLPG, bioCNG, and HVO for non-road mobile machinery for the 2022 and 2023 periods.

Figure 4: Monthly disposals of renewable fuels, by energy



On average over the 2023 period, by energy, biodiesel and HVO/CHVO accounted for 89% of the total biofuel market, bioethanol 11%, and bioLPG and bioCNG less than 1%. By volume, biodiesel and HVO/CHVO accounted for 83%, bioethanol 16%, and bioLPG and bioCNG for the remaining 1%. (Five litres of biogasoline was also placed on the market in 2023.)

There were some fluctuations in biofuel blending in diesel during the year. By volume, it ranged from a maximum of 12.3% in December to a minimum of 6.6% in January. Over the year, the average blend rate was 8.6%⁶. The equivalent figure was 7% for the 2022 period.

Bioethanol blending in gasoline has been increasing since April when SI 142 of 2023 came into force. By volume, bioethanol blending has increased from 4.9% in March to 7.3% in December. Notably, for 2023, there were significant volumes of biofuel blended with gasoil. By volume, it ranged from 2% to 7% over the year. There was, however, a sizable portion of HVO blended with gasoil for which RTFO Certs were not issued because no application was submitted or the application was rejected.

The trend over time for renewable fuel disposals is shown in Figure 5.

Figure 5: Renewable Fuel Disposals

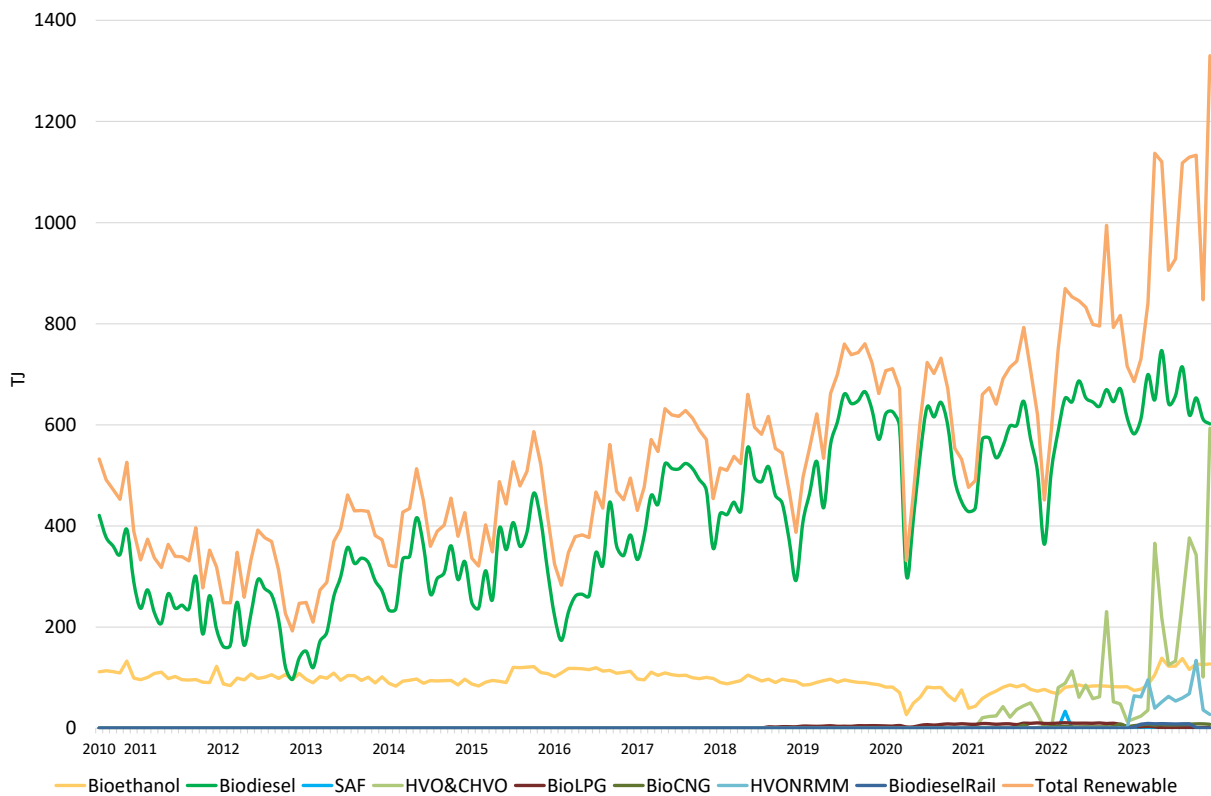


Table 2 provides the data on which Figure 3, Figure 4 and Figure 5 are based.

⁶ As a percentage of the total volume of diesel, and biodiesel, CHVO and HVO blended with diesel or sold as a diesel replacement.

Table 2: Breakdown of disposals, by energy

Year	% Road Fossil		% Renewable Fuel					% road fossil and all renewable fuel			
	Diesel	Gasoline	Biodiesel & HVO/CHVO in diesel	Bio-ethanol & biogasoline	BioLPG & BioCNG	SAF	Biodiesel rail & HVO/CHVO in gasoil	Diesel & biofuel in Diesel	Gasoline & bioethanol & biogasoline	BioLPG, BioCNG & SAF	Biodiesel rail & HVO/CHVO in gasoil
2011	61	39	70	30	-	-	-	62	38	-	-
2012	63	37	67	33	-	-	-	63	37	-	-
2013	66	34	72	28	-	-	-	66	34	-	-
2014	68	32	77	23	-	-	-	69	31	-	-
2015	71	29	77	23	-	-	-	72	29	-	-
2016	74	26	73	27	-	-	-	74	26	-	-
2017	76	24	82	18	-	-	-	77	23	-	-
2018	78.8	21.2	82.4	17.4	0.2	-	-	79.0	21.0	0	-
2019	79.8	20.2	85.7	13.7	0.6	-	-	80.1	19.9	0	-
2020	82.0	18.0	88.2	10.9	0.9	-	-	82.4	17.6	0	-
2021	82.1	17.9	87.4	11.0	1.5	-	-	82.4	17.6	<0.1	-
2022	80.9	19.1	88.1	10.0	1.5	0.3	-	81.5	18.5	<0.1	-
2023	79.7	20.3	82.4	10.8	0.8	-	6.6	80.4	19.6	<0.1	0.5%

Since 2011, the first full year of the RTFO, the quantity of biofuel blended in diesel has increased by 261% and the quantity of diesel has increased by 32%; the quantity of bioethanol placed on the market has increased by 13% whereas the quantity of gasoline has decreased by 47%.

4.2 RENEWABLE TRANSPORT FUEL OBLIGATION CERTIFICATES

During the 2023 obligation period, approximately 26 billion Certs were awarded in respect of disposals of 404m equivalent litres of renewable fuels. The majority of the renewable fuel was blended in diesel with approximately 311m litres of biodiesel (including HVO/CHVO) placed on the market. Approximately 181m litres was produced from UCO, 74m litres from category 1 tallow, 51m litres from POME and the remainder (5m litres) from other wastes and residues.

Additional Certs were awarded for all renewable fuel either blended with diesel or sold as a diesel replacement. The number of additional Certs awarded in Q1 2023 differed from that awarded thereafter. In Q1, two RTFO Certs were awarded for all renewable fuels produced from feedstocks listed in Annex IX of RED II – for the remainder of the year, the number of Certs awarded per MJ are set out in Table 1, e.g. HVO produced from Annex IX feedstocks

RTFO 2023

was awarded 2.5 Certs per MJ, as was biodiesel produced from category 1 tallow, and bioCNG produced from Annex IX feedstock was awarded 3.4 Certs per MJ.

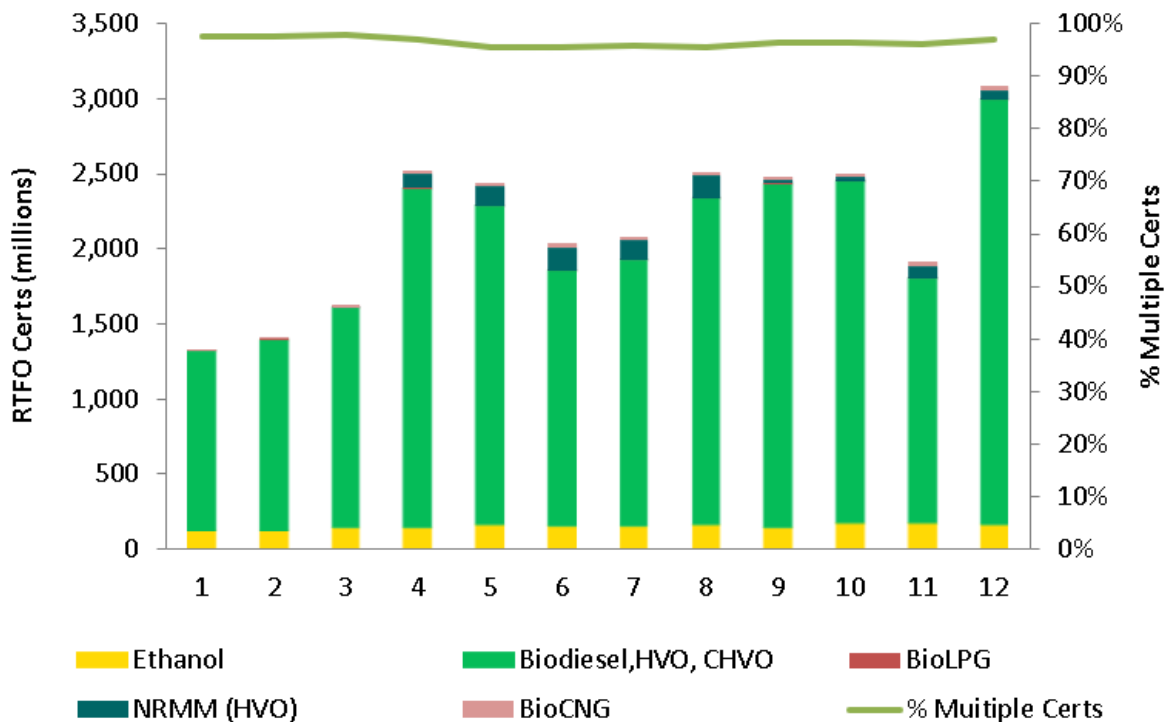
There was approximately 65m litres of bioethanol placed on the market and 21m litres of it was awarded two RTFO Certs per MJ. All double-counted bioethanol was produced from either liquid whey permeate or waste starch slurry.

There was a significant volume of HVO supplied to the non-road sector, approximately 22m litres. However, approximately half of it was not awarded RTFO Certs either because an application was not submitted, or the application was incomplete. The HVO that was awarded RTFO Certs was produced from either UCO or POME, so it was all awarded 2.5 RTFO Certs per MJ.

There was over 3m equivalent litres of bioCNG placed on the market; all of it was awarded 3.4 RTFO Certs per MJ because it was produced from either food waste, brown grease, animal manure, crude glycerine, liquid whey permeate or belly grass (all listed, or determined to be listed, on Annex IX Part A).

There was less than 1m litres of bioLPG placed on the market; it was all produced from UCO and awarded two RTFO Certs per MJ. The number of RTFO Certs awarded each month is illustrated in Figure 6.

Figure 6: No. of RTFO Certs awarded

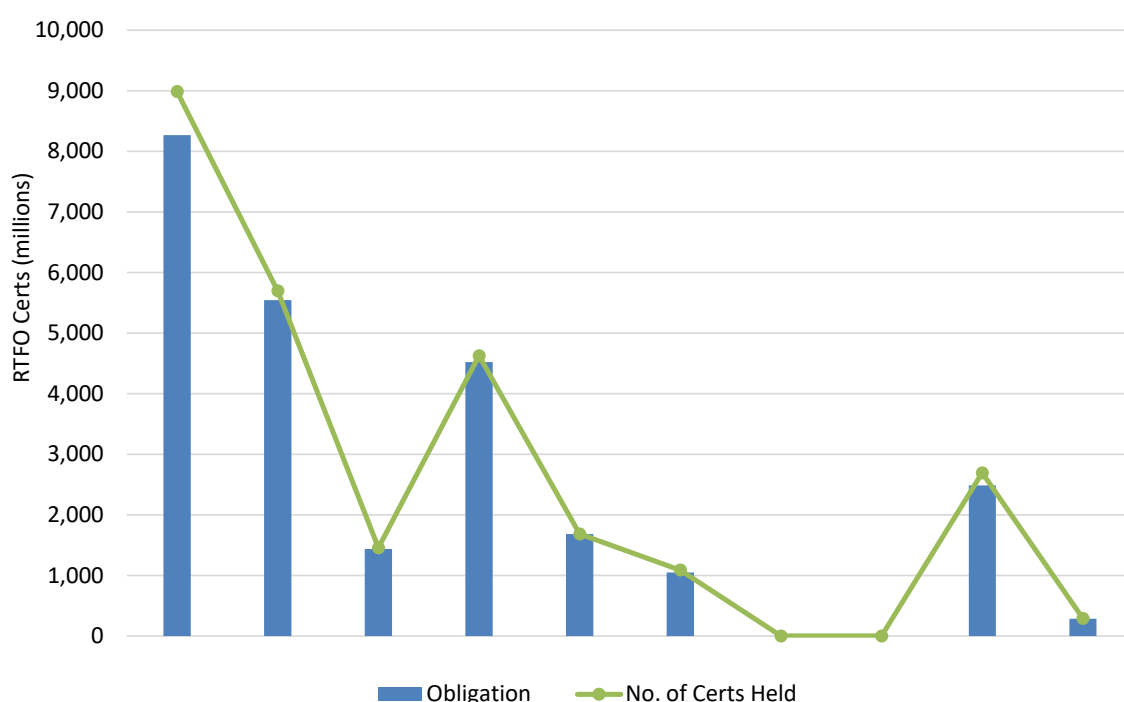


4.3 RTFO ACCOUNT HOLDER POSITION

There were twenty open RTFO accounts at the start of 2023: ten were held by obligated parties, six by biofuel producers/suppliers, three by designated fuel suppliers (under SI 160 of 2017) and one by an electricity supplier (opted to participate, under SI 160 of 2017). Two additional companies, Green D Project Ireland and ElectroRoute Energy Trading, opened RTFO accounts during the 2023 obligation period.

The number of RTFO Certs held by each obligated party at the time of discharge and their respective obligations are illustrated in Figure 7.

Figure 7: 2023 Obligation



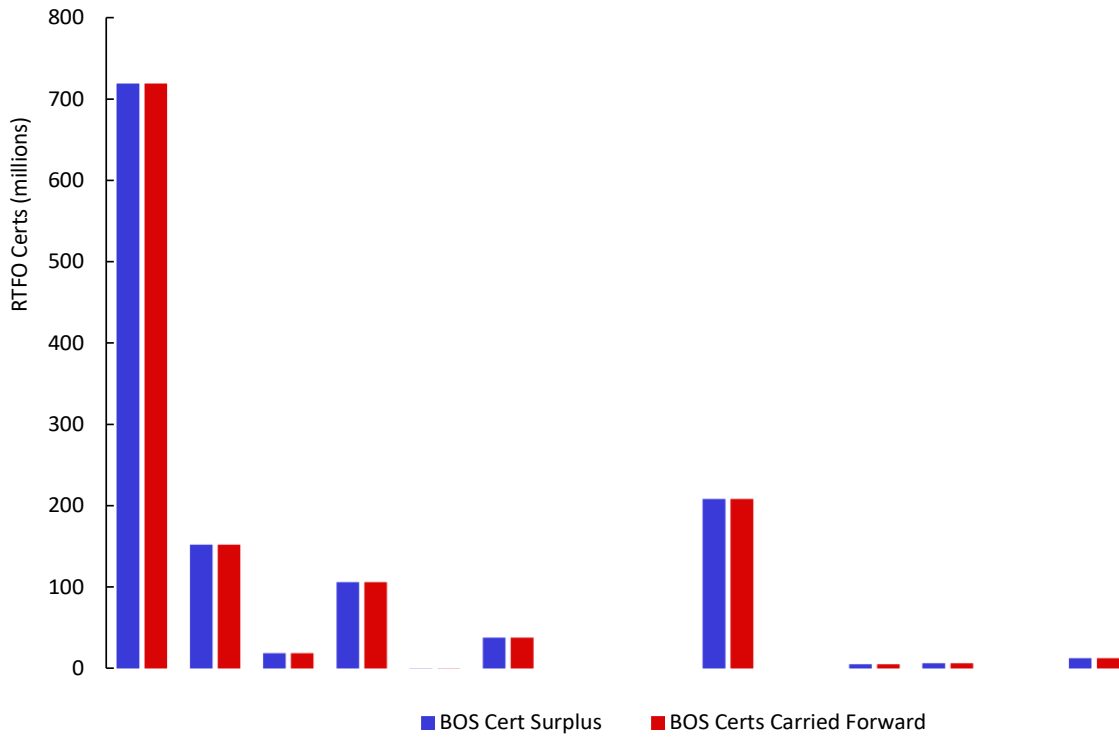
Companies that choose to participate in the RTFO because they are producers or suppliers of renewable fuels do not have a renewable fuel obligation as they are not liable for the NORA Levy on fossil fuel disposals. If they wish to claim the RTFO Certs in their own name, they must pay the Biofuel Levy. Between them, the six biofuel producers / suppliers paid the Levy on approximately 35m equivalent litres and were awarded 1.9 billion Certs, which accounted for 7% of the RTFO Certs awarded during 2023.

There were approximately 1.3 billion Certs carried forward to the 2023 obligation period, of which 1.2 billion were from the 2022 period and 50m from the 2021 period. These Certs from previous periods represented 5% of all Certs held at the end of the 2023 period.

Figure 8 shows the surplus/deficit positions for all active account holders and the number of RTFO Certs that have been carried forward to the 2024 obligation period. The surplus represents the Certs held in excess of the obligation less those Certs that could not be discharged because of the 15% limit – the Certs carried forward includes those Certs held in

excess of the 15% limit. No company held enough Certs from previous periods to exceed the 15% limit, so the Cert surpluses match the number of RTFO Certs carried forward in all cases.

Figure 8: RTFO Cert surpluses & carried forward



No obligated party was in a deficit position at end of the obligation period.

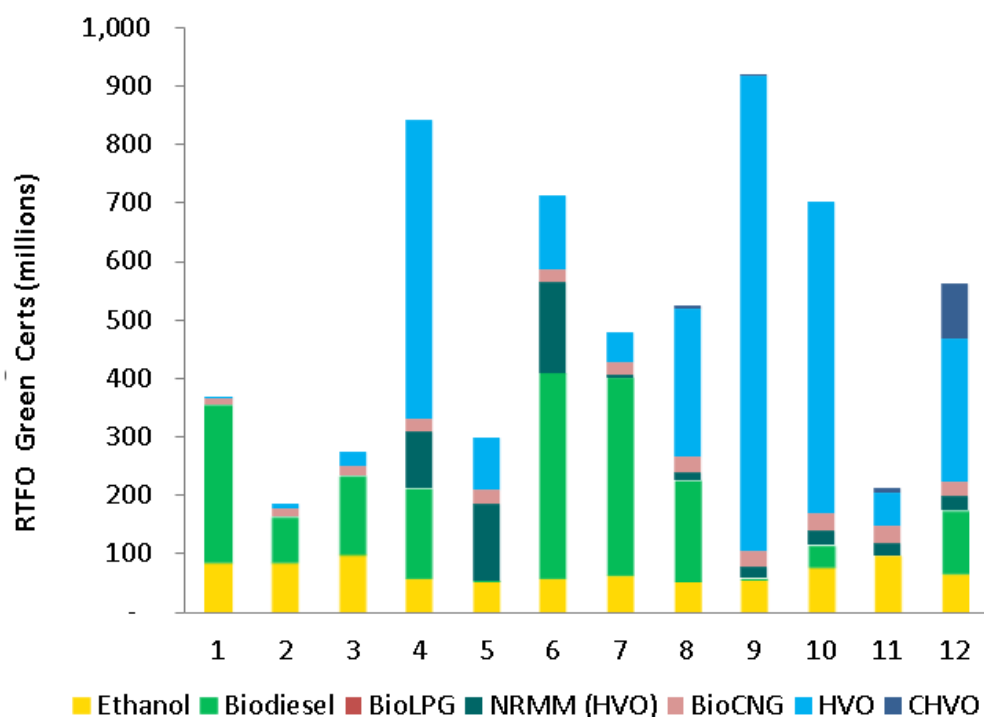
4.4 ADVANCED BIOFUEL OBLIGATION CERTIFICATES

During the 2023 obligation period, approximately 6 billion Green Certs were awarded in respect of disposals of 84m equivalent litres of renewable fuel produced from the feedstocks listed in Annex IX, Part A of RED II, and those determined to satisfy the feedstock descriptions contained therein. Green Certs accounted for 23% of RTFO Certs awarded during 2023.

All advanced biofuels are awarded two Green Certs per MJ, as a consequence of being produced from the feedstocks listed in Annex IX, Part A of RED II. Under the RTFO, additional Green Certs are also awarded, depending on type of advanced biofuel and its end use. The number of additional Certs awarded in Q1 2023 differed from that awarded thereafter. In Q1, two RTFO Certs were awarded for all renewable fuels produced from feedstocks listed in Annex IX of RED II – for the remainder of the year, the number of Certs awarded per MJ are set out in Table 1, e.g. HVO produced from Annex IX feedstocks was awarded 2.5 Certs per MJ, as was biodiesel produced from category 1 tallow, and bioCNG produced from Annex IX feedstock was awarded 3.4 Certs per MJ.

The number of Green Certs awarded each month are illustrated in Figure 9.

Figure 9: Green Certs Awarded



4.5 OVERALL PERFORMANCE AGAINST OBLIGATION AND ADVANCED OBLIGATION

Table 3 provides a breakdown of the key RTFO metrics.

Table 3: RTFO Metrics

Description	Volume (litre equivalent)	Energy (MJ)
Disposal of petroleum-based, road transport fuel*	4,234,284,183	148,663,977,140
<i>Gasoline</i>	942,563,362	30,162,027,584
<i>Diesel</i>	3,291,720,821	118,501,949,556
Disposal of renewable fuel**		12,659,610,656
<i>bioethanol</i>	64,740,533	1,359,551,193
<i>biodiesel</i>	236,075,642	7,790,496,186
<i>biodiesel (rail)</i>	2,165,569	71,463,777
<i>HVO</i>	55,445,368	1,885,142,512
<i>HVO (NRMM)</i>	22,155,391	753,283,294
<i>CHVO</i>	19,414,049	698,905,764
<i>biogasoline</i>	5	80
<i>bioLPG</i>	653,194	15,676,656
<i>bioCNG</i>	3,565,274	85,091,194
RTFO Certs required to meet obligation		25,250,576,517
RTFO Certs issued during 2023		26,094,622,985
RTFO Certs carried forward from previous period		1,297,192,230
Surplus/deficit of RTFO Certs & Certs carried forward		2,141,238,698
Energy not applied for		434,023,804
Liability for RTFO Buy-out Charge		€0
Advanced obligation (Green Certs)		445,991,931
No. of Green Certs issued during 2023		6,079,558,275
Green Certs carried forward from previous period		335,382,477
Surplus/deficit of Green Certs		5,968,948,821
* This is the quantity that was liable for the NORA Levy.		
** This is the quantity on which the Biofuel Levy was paid.		

The volume of renewable fuel produced from Annex IX feedstocks represented 92% of the biofuel supplied to the market during the 2023 period. When the renewable fuel produced from Annex IX feedstocks is multiple counted, the total amount of renewable fuel placed on the market as a percentage of gasoline and diesel for road transport was 17.5%. When the RTFO Certs carried forward from the 2021 and 2022 periods are included, this value increases to 18.4%.

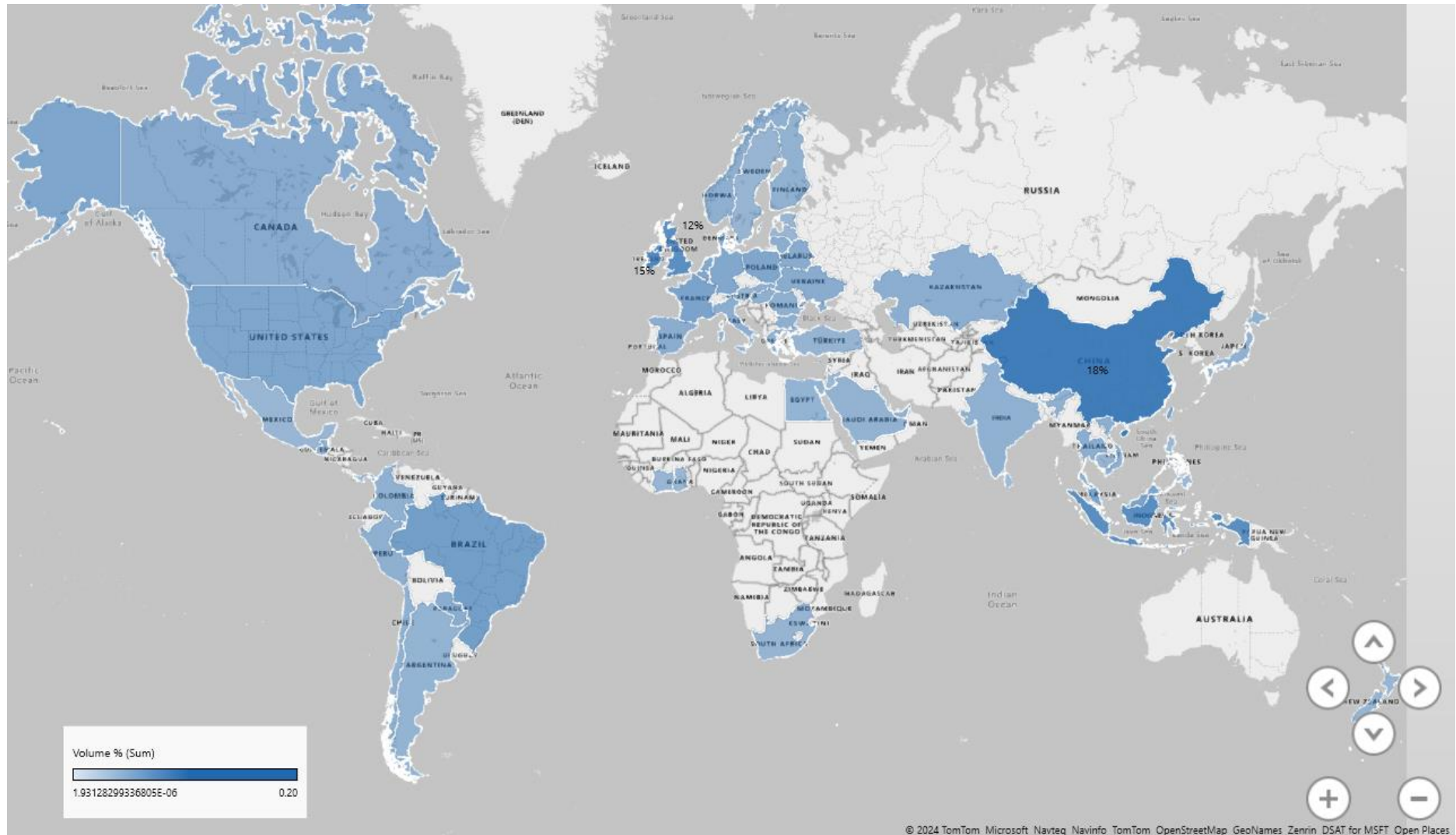
Each obligated party discharged its obligation using RTFO Certificates (the buy-out charge was not paid by any company). In total, approximately 2.1 billion RTFO Certs have been carried forward to the 2024 period.

4.6 BIOFUEL FEEDSTOCK

Table 4 overleaf provides a breakdown of all the renewable fuel feedstocks reported in the sustainability statements, and their country of origin. Most of the feedstocks were sourced from Europe (44%). The country that supplied the greatest quantity of feedstocks for biofuels placed on the Irish market was China (18%, down from 28% in 2022); 15% was sourced from Ireland. It is also worth noting that 47% of all the biofuel placed on the market in Ireland was produced from UCO. This is a notable reduction in comparison to 2022 when 62% of all the biofuel placed on the market was produced from UCO. The UCO was replaced by category 1 tallow and POME. The share of renewable fuels produced from category 1 tallow increase from 14% in 2022 to 19% in 2023 and the share of renewables produced from POME increased from c. 1% to 14.5%. The majority of the HVO placed on the market in Ireland was produced from POME (see Table 4 and Table 6).

Figure 10 on page 23 illustrates the locations from which the biofuel feedstocks are sourced and the proportion that comes from those locations.

Figure 10: Sources of Biofuel Feedstocks



4.7 VOLUNTARY SCHEMES

There are 15 EU approved Voluntary Schemes in operation. However, renewable fuel from just two was reported in RTFO Sustainability Statements: ISCC (International Sustainability and Carbon Certification), and REDCert. All the renewable fuel that was placed on the market in Ireland and awarded Certs was certified by a voluntary scheme.

4.8 GHG SAVINGS

4.8.1 Overview

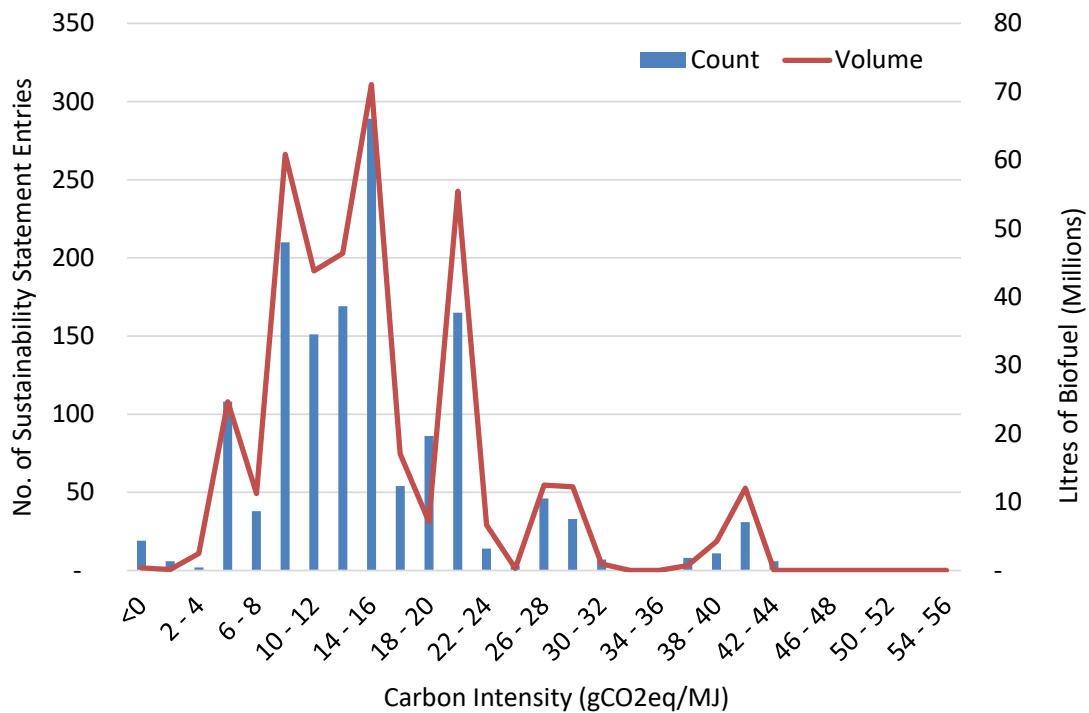
A central requirement of the Renewable Energy Directive and the Sustainability Regulations is that biofuels achieve a 50% or 60% reduction in carbon intensity (GHG emissions) in comparison to fossil fuels⁷. A fossil fuel comparator of 83.8 gCO_{2eq}/MJ for petrol and diesel was specified in Annex V of the RED. The RED was revised in 2018 and transposed into Irish law in July 2022, via SI 350 of 2022. The revised RED (RED II) changed the comparator from 83.8 gCO_{2eq}/MJ to 94 gCO_{2eq}/MJ, but it maintained the GHG saving thresholds at 50% for biofuel produced in installations that came into operation before October 2015 and 60% for installations that came into operation between October 2015 and December 2021. It also introduced a new threshold of 65% for installations that started operating from January 2021.

The average lifecycle carbon intensity of all the biofuel placed on the market in Ireland in 2023 was c. 14.7 gCO_{2eq}/MJ, which represents an 82% reduction in comparison to the fossil fuel comparator of the RED (83.8 gCO_{2eq}/MJ), and an 84% reduction in comparison to the fossil fuel comparator of RED II (94 gCO_{2eq}/MJ).

There were approximately 1,500 individual consignments (entries) reported in the sustainability statements. The volume reported in each entry ranged from of a single litre of biofuel to over 5 million litres. The following plot illustrates the range of carbon intensity values reported and how those in the 8 to 16 gCO_{2eq}/MJ range dominate. (The bar chart represents the number of entries; the line represents the volume of biofuel.)

⁷ 60% for biofuel production plants coming into operation after October 2015 and 50% for plants in operation before then.

Figure 11: Profile of Carbon Intensities



There is no methodology provided in the RED for calculating the national GHG savings. In previous Annual Reports, the RTFO Team’s approach has been to calculate the GHG emissions from the biofuels placed on the road transport market and to compare that to the total GHG emissions that would have been emitted from the road transport sector⁸ had there been no biofuels consumed. Taking into account the lower calorific content of biofuel in comparison to fossil fuel⁹, approximately 334m litres of fossil fuel were displaced by biofuel as a consequence of placing 379m equivalent litres of biofuel on the road market¹⁰. Based on an average biofuel carbon intensity of 14.9 gCO₂eq/MJ and using the RED II fossil fuel comparator (94 gCO₂eq/MJ), substituting road transport fossil fuel with biofuel resulted in a reduction of around 939kt of CO₂eq emissions. (Further emission savings were achieved by blending biodiesel in rail diesel, and HVO in gasoil, for use in non-road mobile machinery.)

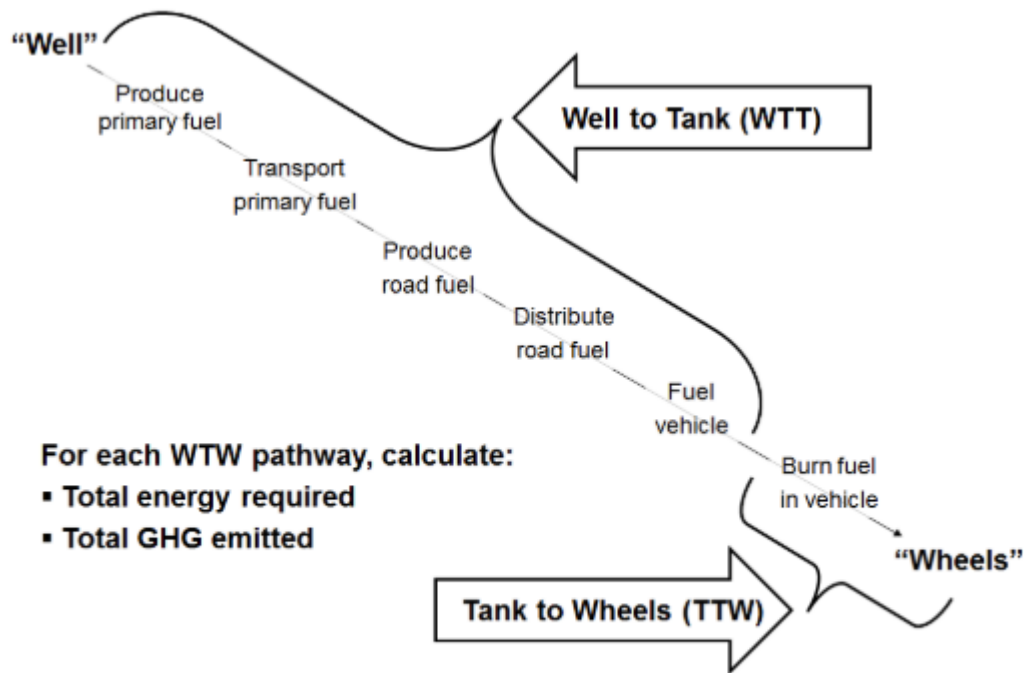
This equates to an overall saving of approximately 6.2% in lifecycle GHG emissions from the road transport sector as a consequence of achieving a physical biofuel penetration rate of 8.1%, by volume (7.3% by energy). It is worth noting that these emission savings are over the lifecycle of the fuel, which includes, *inter alia*, feedstock extraction and cultivation, fuel production, transportation and consumption (the calculation methodology is set out in Annex V of the RED/RED II). For biofuels, the emissions from using the fuel, i.e. tank-to-wheel emissions, are assumed to be zero. The concept is illustrated in Figure 12 and is different from tailpipe, or tank-to-wheel, emissions.

⁸ While RED II requires energy consumed in road and rail to be taken into account, the RTFO only applies to road transport.

⁹ 32 & 36 MJ/l for gasoline and diesel versus 21 & 33 MJ/l for bioethanol and biodiesel, respectively. The calorific value of bioLPG is 24 MJ/l, BioCNG 35.8 MJ/Nm³, HVO 34 MJ/l, and CHVO 36 MJ/l.

¹⁰ Assumes no change in engine efficiency as a consequence of consuming a fossil/biofuel blend. There was also biofuel supplied to rail and to non-road mobile machinery, which is not included in this calculation.

Figure 12: Well-to-wheel (WTW) illustration



Graphic representation of Well-to-Wheels Analysis

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Article 7a of the Fuel Quality Directive (FQD) (4), which was transposed into Irish law by SI 160 of 2017 and also applies to road transport fuel, requires a 6% reduction in carbon intensity by 2020. Compliance with SI 160 is described further in Section 0.

4.8.2 Analysis of Sustainability Statements

The following tables illustrate the range of carbon intensities of the fuel types (Table 5) and the feedstocks (Table 6) that were reported in the sustainability statements in 2023.

Table 5: Range of carbon intensity reported in sustainability statements, by fuel type

Fuel Type	Description	Carbon Intensity (gCO _{2eq} /MJ)			
		Min	Avg	Weighted Avg	Max
ME	Methyl Ester ¹¹ (Biodiesel)	6.8	13.7	13.5	21.3
ME-Rail	Methyl Ester ¹¹ (Biodiesel for rail use)	7.1	10.2	10.5	14.9
EtOH	Bioethanol	7.8	26.2	27.7	42.3
BioLPG	LPG produced from biomass	4.7	4.7	4.7	4.7
BioCNG	Biomethane produced from biomass	-95.7	-3.8	8.9	30.1
HVO	Hydrogenated vegetable oil	4.4	13.6	14.1	21.7
HVO-NRMM	Hydrogenated vegetable oil for non-road mobile machinery use	4.7	12.7	12.5	21.3
CHVO	Co-processed hydrogenated vegetable oil	2.0	9.4	7.6	24.5

Article 29 of RED II specifies that a biofuel must achieve:

1. a 50% reduction in carbon intensity for biofuel produced in installations that were in operation on or before the 5th of October 2015, which equates to a maximum carbon intensity value of 47 gCO_{2eq}/MJ;
2. a 60% reduction in carbon intensity for biofuel produced in installations that were in operation on from the 6th of October 2015 until 31st December 2021, which equates to a maximum carbon intensity value of 37.6 gCO_{2eq}/MJ;
3. a 65% reduction in carbon intensity for biofuel produced in installations that started operations from the 1st of January 2021, which equates to a maximum carbon intensity value of 32.9 gCO_{2eq}/MJ.

¹¹ Also known as Fatty Acid Methyl Ester, or FAME

Table 6: Range of carbon intensity reported in sustainability statements, by feedstock

Fuel Type	Feed stock	Description	Carbon Intensity (gCO _{2eq} /MJ)			Default Values (gCO _{2eq} /MJ)	Quantity (equivalent litres)
			Min	Avg*	Max		
Bioethanol	ECCORN	Corn	23.0	23.0	23.0	30 to 68	763,502
	NECCOR	Corn – Non EC	19.3	34.7	42.3	30 to 68	19,556,132
	SCANE	Sugar cane	20.7	29.3	41.3	28	21,303,974
	WHEAT	Wheat	12.6	15.4	31.7	31 to 71	2,503,140
	LWHEYP	Liquid Whey permeate	10.0	25.7	30.1	-	13,369,382
	STSL	Starch slurry	7.8	12.6	22.1	-	7,244,404
Biodiesel	UCO	Used cooking oil	6.8	11.9	21.3	15	138,584,308
	TALL1	Tallow – category 1	9.1	16.1	20.8	21	73,647,241
	BRGR	Brown Grease	11.3	12.1	12.6	-	4,974,263
	POME	Palm oil mill effluent	11.7	15.5	20.7	-	17,874,242
	FW	Food waste (not fit for use as food or feed)	10.7	13.3	16.7	-	825,804
	TALL2	Tallow – category 2	20.8	20.8	20.8	-	169,786
	WPVAO	Waste pressings from vegetable and animal oil	11.2	11.2	11.2	-	1
	SAOCS	Soapstock acid oil contaminated with sulphur	17.9	17.9	17.9	-	1
Biodiesel Rail	UCO	Used cooking oil	7.1	10.5	14.9	-	2,165,569
BioLPG	UCO	Used cooking oil	4.7	4.7	4.7	-	653,194
Biogasoline	UCO	Used cooking oil	4.0	4.0	4.0	-	5
HVO	UCO	Used cooking oil	4.4	9.9	16.6	16	22,710,371
	POME	Palm oil mill effluent	8.2	17.1	21.7	-	31,988,886
CHVO	UCO	Used cooking oil	2.0	7.8	24.5	-	18,214,853
	FW	Food waste (not fit for use as food or feed)	4.6	4.8	5.3	-	1,090,543
	FBIWR	Forest-based industrial waste and residue	6.4	6.4	6.4	-	57,201
	WPVAO	Waste pressings from vegetable and animal oil	6.4	6.4	6.4	-	51,449
BioCNG	BRGR	Brown grease	18.2	18.2	18.2	-	3,774
	BLGR	Belly grass	18.2	18.2	18.2	-	197,484
	WMANU	Wet manure	-95.7	-45.6	-26.4	- 96 to 26	565,812
	FW	Food waste (not fit for use as food or feed)	18.2	18.2	18.2	-	2,233,209
	CGL	Crude glycerine	18.2	18.2	18.2	-	320,510
	LWHEYP	Liquid whey permeate	30.1	30.1	30.1	-	244,484
HVO-Other	UCO	Used cooking oil	4.7	6.6	16.6	16	4,310,826
	POME	Palm oil mill effluent	9.9	16.8	21.3	-	5,825,272

* Weighted average

Where actual carbon intensity values were provided, a Voluntary Scheme was also reported. This is significant because under Article 18 (7) of the RED, and Article 30 (9) of RED II, once an account holder provides proof that the data submitted in a Sustainability Statement is covered under a Voluntary Scheme, the Member State is not entitled to further investigate the sustainability of the biofuel¹².

4.9 AUDITING COMPLIANCE WITH THE ENERGY ACT

Auditing of compliance by oil companies, oil consumers and biofuel producers with the renewable fuel obligations under the Energy Act 2010 was carried out during 2023.

The Summary Audit Report (ref. 457-23X085) describes the findings from the plenary, desk-based audit and the on-site audits, and contains recommendations on what actions could be undertaken to rectify any errors found. It also makes recommendations on what improvements could be made to the systems and procedures for submitting and processing the Levy Returns and applications for RTFO Certs and carbon savings.

In general, the RTFO account holders were well prepared for the audits and were able to substantiate the data contained in the Levy Returns and in the applications for RTFO Certs. While discrepancies were found, there were none identified that impacted on the Levy liability or compliance with the RTFO. There were, however, some findings that were of particular note.

1. There are several examples of companies not retaining Revenue's 1132 form to substantiate all marine gasoil refunds, as required by DECC's '*NORA Levy Returns Guidelines and Online Levy Application (OLA) User Manual*'. Companies have retained 1132 forms in some instances, but also other forms of documentation. DECC may need to update the OLA Manual to ensure it reflects Revenue's requirements as set out in its '*Commercial Sea Navigation Relief Guide*' and engage with companies to ensure they understand the requirements.
2. The rationale for distinguishing between 'blended' and 'unblended' fuels should be reviewed to understand if these descriptors could be removed and the number of fuel categories reduced – it is a common error that companies are misreporting 'blended' and 'unblended' fuels in OLA.
3. Account holders need to engage efficiently with the audit process by providing timely access to data (preferably electronically).
4. Account holders should check with their exchange partners in advance of submitting its OLA Return to ensure that corresponding purchases and sales data match.

Auditing RTFO account holders is an annual task carried out by the RTFO Team. The 2023 data will be audited during 2024.

¹² RED and RED II expressly **prohibits** Member States from requiring economic operators (account holders) to provide further evidence of compliance with the sustainability criteria, if the economic operator can provide proof that the biofuel is covered by a Voluntary Scheme approved by the Commission.

4.10 CROP CAP

The RED limited the contribution from biofuels produced from *'cereal and other starch-rich crops, sugars and oil crops and from crops grown as main crops primarily for energy purposes on agricultural land'* to 7% of final energy consumption in transport. This limit was transposed into Irish law by SI 169 of 2018. In previous obligation periods the limit was not, however, imposed on fuel suppliers, i.e. fuel suppliers could take into account all sustainable crop-based biofuels placed on the market to meet their RTFO obligations. With the transposition of RED II via SI 350 of 2022, for the 2023 obligation period, the contribution of crop-based biofuels was reduced to 2% and the limit was imposed on all obligated parties.

Under RED II, where the crop-based contribution was less than 1% in a Member State in 2020, the country is required to limit the contribution to 2%. There is a mechanism in RED II (and RED III) which allows Member States that have crop-based limits of less than 7% to reduce the transport target by a corresponding amount. For example, for Ireland with a crop-based limit of 2%, it could reduce the 14% transport target by 5 percentage points to 9%, where the 5 percentage points are the difference between 7% and 2%.

Total energy consumption (fossil & renewable) in road transport in 2023 was approximately 161 PJ – in addition, 0.4 PJ of renewable fuel that was rewarded Certs under the RTFO was supplied to non-road transport sector. Of the total 12 PJ of renewable fuels awarded Certs, there were approximately 0.9 PJ (44m litres) of crop-based renewable fuels placed on the market in 2023. Thus, crop-based biofuels contributed approximately 0.6% towards final energy consumption in road transport – if the energy consumed in rail was also included, the contribution of crop-based biofuels would reduce marginally.

There is also a limit on high indirect land-use change (ILUC) risk biofuels to the amount consumed in 2019, and only those companies that placed it on the market in 2019 may do so. Currently, the only high ILUC-risk feedstock identified by the EU Commission is palm oil. In 2019, approximately 2m litres (0.05 PJ) of palm oil derived biofuel was placed on the market; in 2023, no biofuel produced from palm oil was placed on the market in Ireland.

5 COMPLIANCE WITH SI 160

5.1 OVERVIEW

Article 7a of the FQD was transposed into Irish law in April 2017 by SI 160¹³. It requires fuel suppliers to achieve at least a 6% reduction in the carbon intensity of fuels used in road vehicles, non-road mobile machinery, agricultural and forestry tractors, and recreational craft, by 2020. Compliance with SI 160 is administered via the RTFO.

The fuel suppliers responsible for complying with SI 160 of 2017 are, in general, the same companies responsible for complying with the RTFO and applications for RTFO Certs are combined RTFO Cert and carbon savings applications. The RTFO portal also accepts applications for carbon savings from electricity used in electric vehicles (EVs) and upstream emission reductions (UERs¹⁴).

The carbon intensity reduction target for each fuel supplier is 6% by 2020. As is the case with the RTFO where Certs can be transferred between account holders, fuel suppliers can trade carbon savings to assist with meeting the 6% target. However, unlike the RTFO, there are no double counting provisions contained in SI 160 for complying with the 6% target, there is no mechanism for buying-out of an obligation, and there is no carry over of carbon savings between compliance periods in the event of exceeding the target.

The scope of SI 160 is broader than the RTFO, which only includes for diesel and gasoline used for road transport purposes. In addition to these fuels, SI 160 includes the following fossil fuels currently used for transport purposes in Ireland: rail diesel, gasoil, CNG, and LPG.

5.2 COMPLIANCE WITH TARGET

While the 6% target is an individual fuel supplier target, the following table sets out the important compliance metrics, when considering the fuel suppliers in aggregate.

¹³ SI 160 of 2017 was amended by SI 670 of 2020 to make it clear the requirement to achieve the 6% carbon intensity reduction target applied not only in 2020, but every year thereafter.

¹⁴ Upstream emissions are all GHG emissions occurring at any facility or infrastructure in the supply chain prior to the facility at which the finished transport fuel is produced. NORA understands that a typical UER project is one that reduces flaring or venting of associated petroleum gases produced during oil extraction.

Table 7: SI 160 Metrics

Description	Energy (PJ)	Carbon Savings (ktonnes CO _{2eq})
Total disposal of petroleum-based transport fuel	174.9	-118.9
<i>Gasoline</i>	30.2	24.1
<i>Diesel</i>	118.5	-118.5
<i>Gasoil</i>	24.7	-24.7
<i>Rail Diesel</i>	1.6	-1.6
<i>LPG</i>	0.06	1.3
<i>CNG</i>	0.01	0.3
Total disposal of renewable fuel	12.2	970.2
<i>Bioethanol & biogasoline (in gasoline)</i>	1.4	90.3
<i>Biodiesel, HVO & CHVO (in diesel)</i>	10.3	837.1
<i>Biodiesel (in rail diesel)</i>	0.07	6.0
<i>HVO (in gasoil)*</i>	0.3	28.1
<i>BioLPG & CNG</i>	0.1	8.7
Applications in respect of electricity consumed in EVs	0	0
Applications in respect of UERs		0
Carbon savings revoked		0
Total	0	851
% savings achieved	4.8%	
* Only that awarded Certs and carbon savings		

If all the fuel suppliers are considered as one, a carbon intensity reduction of approximately 4.8% was achieved in 2023. No carbon savings from electricity supplied to road vehicles or UERs were claimed in 2023.

Less than half the of fuel suppliers achieved the 6% carbon intensity reduction target. NORA has not applied to the High Court for compliance orders for fuel suppliers that did not achieve the 2023 target.

6 CHANGES IN 2024 AND THEREAFTER

6.1 UNION DATABASE

RED II requires the Commission to develop a Union database (UDB) to track and trace biofuels through the supply chain. The database is partially operational, so we understand that it is not being used by the majority of economic operators. Under Regulation 7F of SI 33 of 2012, RTFO account holders are required to enter sustainability and GHG savings information, and transactional data, into the UDB.

According to Annex I of Commission Implementing Regulation 2022/996, the sustainability and GHG savings information to be entered in the UDB includes the following:

- (a) name of the voluntary or national scheme;
- (b) proof of sustainability (PoS) number;
- (c) sustainability and GHG emission savings characteristics, including:
 - (i) a statement on whether the raw material or fuel complies with the sustainability criteria;
 - (ii) the GHG emission data;
 - (iii) a description of when the installation started operation (for fuels only).
- (d) The feedstock;
- (e) waste or animal by-product permit number (if applicable);
- (f) fuel type (for fuels only);
- (g) country of origin of feedstock;
- (h) country of fuel production;
- (i) statement on whether the feedstock or fuel complies with the criteria set out for low indirect land-use change-risk biofuels;
- (j) information on whether support has been provided for the production of that consignment, and if so, the type of support scheme.

The transactional data that needs to be entered in the UDB includes the following:

- (a) supplier company name and address;
- (b) buyer company name and address;
- (c) date of (physical) loading;
- (d) place of (physical) loading or logistical facility or distribution infrastructure entry point;
- (e) place of (physical) delivery or logistical facility or distribution infrastructure exit point;
- (f) volume (for fuels, the energy quantity of the fuel must also be included).

There have been problems with introducing the UDB across the entire supply chain so not all the transactional data (if any) is being recorded in the UDB; thus, proofs of sustainability are not yet being produced in the UDB. To start relying on the UDB as the source of sustainability and transactional data, all the voluntary scheme certified companies need to register their 'initial stocks' in the UDB. There is currently no deadline set for registering initial stocks, so it is currently unclear when the UDB will be adopted by the supply chain.

The UDB team in the European Commission is working on expanding the UDB to include renewable gaseous fuels, and to incorporate compliance with the ReFuelEU Aviation Directive.

6.2 SUPERVISION OF CERTIFICATION BODIES

There is a RED II requirement on Member States to supervise the operation of certification bodies (CBs) that are carrying out audits to certify economic operators to voluntary schemes standards. This requirement was elaborated on in an Implementing Regulation (EU 2022/996) adopted in March 2022. The Implementing Regulation places obligations on Member States to establish a formal cooperation framework for supervising CBs and to appoint one Member State as a *lead audit supervisor* for each CB, where CBs carry out certification activities in more than one Member State. The requirements were transposed by Regulation 7G (1) of SI 33 of 2012 and it made NORA responsible for supervising CBs.

There has been some uncertainty among Member States on interpreting and applying the RED II and Implementing Regulation requirements. Consequently, a CA-RES¹⁵ task force was established to examine how the supervision requirements of RED II and the Implementing Regulation could be implemented in practice. NORA has been participating in the task force. It is expected that additional European legislation will be required to ensure requirements are implemented by all Member States in a fair and efficient manner.

Notwithstanding this, it is NORA's intention to supervise CBs operating in Ireland, albeit the extent of the supervision activities has not been established. It is worth noting that NORA's supervision of CBs will be focused on the activities carried out by Certification Bodies – it will not be an audit of RTFO account holders.

6.3 RED III

RED III was published in the Official Journal (OJ) on the 31st October 2023 ([link](#)). The deadline for transposition is the 21st May 2025. Along with proposals for a revised RED II, several related proposals, including regulations (and amendments to regulations) on land use, forestry and agriculture, energy efficiency, stronger CO₂ emissions standards for cars and vans, and revised alternative fuels infrastructure regulation were also published.

In addition, the [ReFuelEU Aviation Regulation](#) (2023/2405) obliges fuel suppliers to blend increasing amounts of sustainable aviation fuels in jet fuel supplied at EU airports. Similarly, the [FuelEU Maritime Regulation](#) (2023/1805), published in September 2023, proposes to stimulate the uptake of sustainable maritime fuels and zero-emission technologies by setting a maximum limit on the greenhouse gas content of energy used by ships calling at European ports.

¹⁵ Concerted Action – Renewable Energy Sources Directive

Some of the highlights from RED III include:

1. Member States are required to set an obligation on fuel suppliers to ensure that the amount of renewables in transport leads to either a share of renewable energy of at least 29% by 2030 or to a greenhouse gas intensity reduction of at least 14.5% by 2030. *'Each Member State shall set an obligation on fuel suppliers to ensure that: (a) the amount of renewable fuels and renewable electricity supplied in the transport sector leads: (i) to a share of renewable energy within the final consumption of energy in the transport sector of at least 29 % by 2030; or (ii) to a greenhouse gas intensity reduction of at least 14,5 % by 2030, compared to the baseline set out in Article 27(1), point (b), in accordance with an indicative trajectory set by the Member State.'*
2. While blending targets/limits remain for advanced biofuels, high-ILUC risk biofuels and crop-based biofuels, and a new RFNBO sub-target is also introduced. *'the combined share of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX and of renewable fuels of non-biological origin in the energy supplied to the transport sector is at least 1 % in 2025 and 5,5 % in 2030, of which a share of at least 1 percentage point renewable fuels of non-biological origin in 2030.'*

The draft Directive also notes: *'Member States are encouraged to set differentiated targets for biofuels and biogas produced from the feedstock listed in Part A of Annex IX and renewable fuels of non-biological origin at national level in order to fulfil the obligation... in a way that the development of both fuels is incentivised and expanded.'*

Two Implementing Regulations were published by the European Commission that define and set the sustainability criteria for RFNBOs:

- Implementing Regulation 2023/1184 – sets out the detailed rules for the production of RFNBOs.
- Implementing Regulation 2023/1185 – establishes a minimum threshold for GHG savings of recycled carbon fuels, and specifies a methodology for assessing GHG emissions savings from RFNBOs, and from recycled carbon fuels.

These Regulations provide the basis for assessing the sustainability for RFNBOs. The European Commission has received several [applications for recognition](#) for voluntary schemes to extend their scope to cover RFNBOs (and RCFs), but there is currently no voluntary scheme approved for RFNBOs.

3. The scope of the Directive has been expanded to include for more than just road and rail. RED III includes all transport sectors (road, rail, navigation, aviation, etc.) and all fuels used in transport.
4. Under Article 25 (4), *'economic operators that supply renewable electricity to electric vehicles through public recharging points shall receive credits,..., and may sell those credits to fuel suppliers... Member States may include private recharging points in*

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that mechanism provided it can be demonstrated that renewable electricity supplied to those private recharging points is provided solely to electric vehicles.’ The RTFO team is preparing for inclusion of electricity supplied via public recharging points in the RTFO.

5. The provision to limit the share of renewable fuel produced from Annex IX, Part B feedstocks to 1.7% is retained. This limit is not currently incorporated into the RTFO and the most recent DoT renewable transport fuel policy statement (2023-2025) does not plan for its inclusion.
6. Article 7a of the Fuel Quality Directive is deleted. This will give rise to SI 160 of 2017 being repealed and the end of the requirement on fuel suppliers to achieve a 6% reduction in the carbon intensity of the transport fuels.

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