

AN GHNÍOMHAIREACHT CHÚLTACA OLA NÁISIÚNTA THE NATIONAL OIL RESERVES AGENCY



THE BIOFUELS OBLIGATION SCHEME ANNUAL REPORT 2021

A report on how the scheme has been implemented to date and an assessment of the level of compliance by obligated parties with the BOS Act and designated fuel suppliers' compliance with SI 160 of 2017 during the 2021 obligation period.

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GLOSSARY OF TERMS

BÓC	Byrne Ó Cléirigh
BOS	Biofuel Obligation Scheme
BOS Act	Energy (Biofuels Obligations and Miscellaneous Provisions) Act 2010
BOS Team	Personnel from NORA, BÓC and S&W
BOSOS	BOS Online System
CBs	Certification Bodies
CNG	Compressed Natural Gas
DECC	Department of Environment, Climate and Communications
DoT	Department of Transport
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	Mega Joule
NORA	National Oil Reserves Agency
NORA Act	National Oil Reserves Agency Act (2007)
OLA	Online Levy Assessment (a reporting system for obligated parties)
PJ	Peta Joule
POME	Palm Oil Mill Effluent
RED	Renewable Energy Directive (2009/28/EC)
RED II	Recast Renewable Energy Directive (2018/2001)
RED III	Draft Directive with proposed amendments to RED II (COM(2021) 557)
RFNBO	Renewable Fuel of Non-biological Origin
S&W	Smith & Williamson
SBE	Spent Bleached Earth
SI	Statutory Instrument
UCO	Used Cooking Oil
UERs	Upstream Emission Reductions

EXECUTIVE SUMMARY

Overview

The Biofuel Obligation Scheme (BOS) was one of the measures introduced by the Irish Government to assist in complying 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 – this requirement was achieved. 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 Smith & Williamson to assist with its administration. A project team (the BOS Team) was subsequently 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 scheme, the oil companies and large 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 biofuel. For 2021, this amount was 11%, including double counting, by volume. They must also pay a levy of €0.001 per litre on their biofuel disposals and may then apply to NORA for one biofuel obligation certificate (BOS Cert) in respect of each litre. In the case of biofuel produced from wastes and residues, two BOS Certs per litre may be awarded (biofuel supplied to the market in gaseous form is converted to a litre equivalent value). 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 €0.45 per litre for 2021

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. 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 BOS also caters for administering the requirements of SI 160 by allowing applications for BOS Certs to be combined applications for Certs and carbon savings.

Companies that produce or supply biofuels and electricity suppliers may also open a BOS account and apply to NORA for BOS Certs and carbon savings. Account holders may also obtain BOS Certs and carbon savings by arranging with other account holders to have Certs/carbon savings transferred to their accounts from other account holders. At the start of 2021 there were a total of 19 BOS account holders (10 BOS obligated parties, 5 companies that produce or supply biofuels registered as BOS account holders, 3 additional companies designated as fuel suppliers under SI 160, and one electricity supply company). One company (Green Gas Generation, a biofuel producer and supplier) applied for and was granted a BOS account during 2021.

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BOS Compliance

In total for the 2021 obligation period, approximately 246m litres (7.6 PJ) of liquid biofuel and 618k Nm³ (0.2 PJ) of gaseous biofuel were placed on the market; approximately 476m Certs and 623kt 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. 55m), account holders were in possession of 531m BOS Certs; the 2021 biofuel obligation was 488m Certs.

Except for one obligated party, all the companies were in possession of sufficient BOS Certs to satisfy their respective biofuel obligations. In addition, one obligated party opted to pay the buy-out and, consequently, a total of 60m BOS Certs have been carried forward to the 2022 obligation period.

Companies can meet their biofuel obligations by placing sufficient sustainable biofuel on the market and claiming the BOS Certs, arranging to have sufficient BOS Certs transferred to their account, by paying the buy-out charge, or a combination of these options. While obligated parties have not previously opted to pay the buy-out when they have sufficient Certs on their account to meet the obligation, the economic and legislative circumstances made it a financially attractive option in 2021.

Practically all the biodiesel (including HVO and co-processed HVO) placed on the market was eligible for two BOS Certs per litre on account of it being produced from a waste or residue (this has been the case since 2016). All the bioCNG placed on the market was also eligible for double counting. Approximately 66% of the bioethanol and 25% of the bioLPG placed on the market was double counted. There were six different biofuel types and eighteen different biofuel feedstocks reported in the BOS Sustainability Statements.

Bioethanol	Biodiesel & CHVO	HVO	BioLPG	BioCNG
EC corn	Used cooking oil	Used cooking oil	Used cooking oil	Food waste
Barley	Category 1 tallow		Palm oil	Belly grass
Non-EC corn				Animal manure
Sugar beet				Brown grease
Sugar cane				
Wheat				
Whey permeate				
Starch slurry				

The feedstocks were reported to have originated from 60 different countries. The single largest source of biofuel feedstock was China (25%); approximately 18% of the feedstock originated from Ireland.

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Approximately 64% of all the biofuel placed on the market in Ireland was produced from used cooking oil (UCO) which was sourced from 58 different countries; China was the largest source (39%).

Almost all the biofuel placed on the Irish market was reported as being certified by a voluntary scheme. Two companies submitted applications for BOS Certs in the absence of voluntary scheme certification for a limited quantity of biofuel, in advance of becoming voluntary scheme certified. The GHG emission savings calculations for these quantities were reviewed by the BOS Team and BOS Certs and carbon savings were awarded when the companies achieved voluntary scheme certification during 2021.

A central requirement of the RED and the Sustainability Regulations (5) is that biofuels achieve at least a 50% reduction in carbon intensity (GHG emissions per unit of energy) in comparison to fossil fuels (increases to 60% for biofuel production plants coming into operation after October 2015). The average litre of biofuel placed on the market in Ireland in 2021 had a carbon intensity of 12.4 gCO_{2eq}/MJ, which is an 85% reduction in comparison to the fossil fuel comparator of the RED (83.8 gCO_{2eq}/MJ), and an 87% 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 3.1% in 2021. 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 2021. Compliance with SI 160 is, however, a fuel supplier requirement. Approximately 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 2021 target.

Auditing

The annual audit of BOS account holders was carried out during 2021. The programme included a plenary audit of all the Levy Returns' data, four on-site audits and several desk-based audits. In most cases, the BOS 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 BOS Certs. However, discrepancies were found; one gave rise to a Levy over-payment of c. €8k.

In addition, there were 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.

BOS Post-2020

The BOS has evolved since its inception in 2010. For example, it now includes for administering the obligations of the BOS Act and SI 160 of 2017, the obligation rate has increased steadily over the years to its current level of 13%, and the system has migrated online to the BOSOS. It will continue to change in the coming years with some important modifications and refinements planned.

In the short term, the obligation to reduce the carbon intensity of transport fuels will remain and, once transposed into Irish law, the new requirements of the recast Renewable Energy Directive (RED II) (6) will be integrated into the scheme. The BOS Team has already made some provision for RED II by categorising BOS Certs in accordance with their feedstocks. RED II will introduce, *inter alia*, an advanced biofuel sub-target, a 2 % limit on crop-based biofuels and a curtailment on high ILUC risk biofuels (i.e. palm oil).

In addition, as required by RED II, the EU Commission is developing a Union database to track and trace biofuels through the supply chain, and there will be a requirement on NORA to supervise the operation of certification bodies (CBs). In relation to the Union database, it is likely that there will be a requirement on BOS account holders to enter and/or extract information from this database. The BOS Team is preparing NORA's BOS systems and procedures for accommodating the Union database, and other additional RED II requirements, such as supervising CBs, in a timely and efficient manner.

The Renewable Fuels Policy Statement (7), published in November 2021, sets out a roadmap for the supply and use of renewable fuels in transport to meet the objectives of the Climate Action Plan 2021 and Ireland's European obligations. In addition to providing for the items contained in RED II, it also includes for examining the UCO and tallow supply chains; moving the BOS to an energy-based system; incentivising the transition to E10 and development fuels (e.g. green hydrogen, biomethane, HVO and RFNBOs); increasing the buy-out charge; and examining how renewable electricity could be included in the BOS.

While RED II has not yet been transposed into Irish law (the deadline was July 2021), it is in the process of being revised by the EU. The revised Directive (RED III) will have a significant impact on the BOS. Some of the notable changes include moving to a GHG intensity target rather than a blending obligation, introducing a new RFNBO sub-target, increasing the scope of the obligated transport sector beyond road and rail, and removing many of the multiple counting provisions.

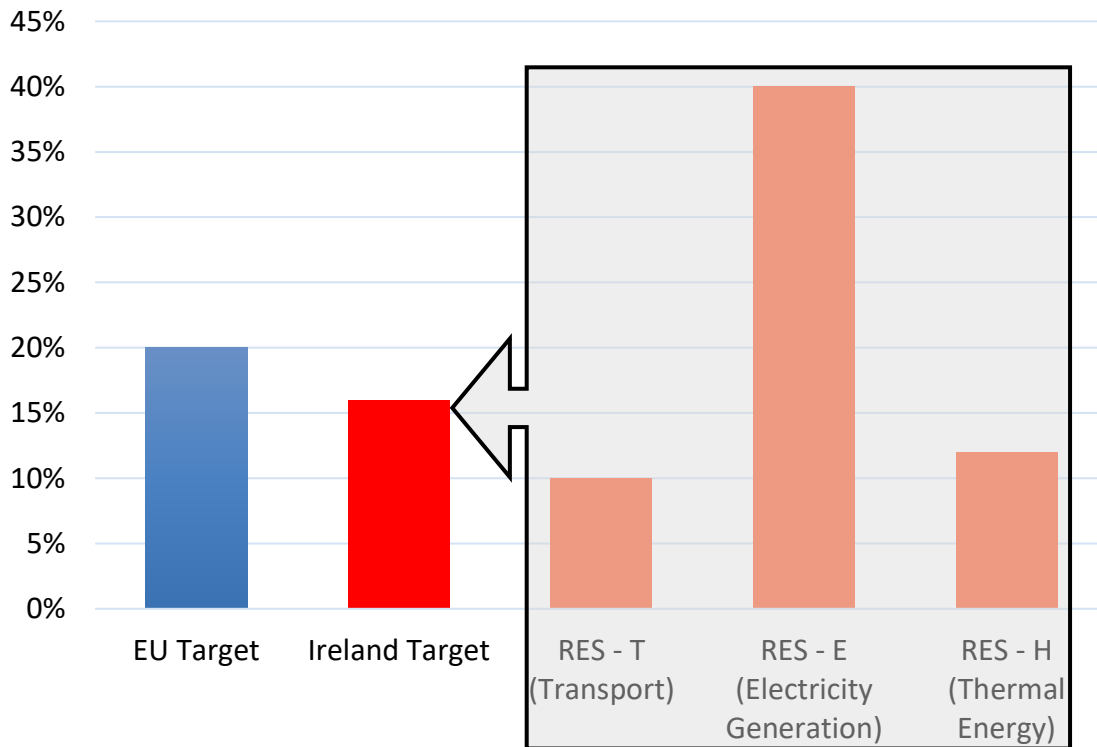
In the shorter term, the biggest change to the BOS is the increase in the biofuel obligation to 13% for the 2022 period. The policy statement also sets out an indicative obligation for 2023 (16%) and 2024 (19%).

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1 BACKGROUND

Article 3 of the Renewable Energy Directive (1) sets 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%.

Figure 1: Renewable Energy Targets



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 Biofuels Obligation Scheme (BOS), 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, and the transport target was achieved, the BOS remains an integral part of Government’s strategy for increasing renewable energy and reducing GHG emissions in the transport sector. The BOS will act the mechanism for implementing some of the transport requirements of the recast Renewable Energy Directive (RED II), once it is transposed into Irish law, and Government policy of achieving E10 and B20 by 2030. Under RED II, Ireland has 14% target in the transport sector and must contribute to the EU’s overall 32% renewable energy target.

The Biofuels Obligation Scheme 2021

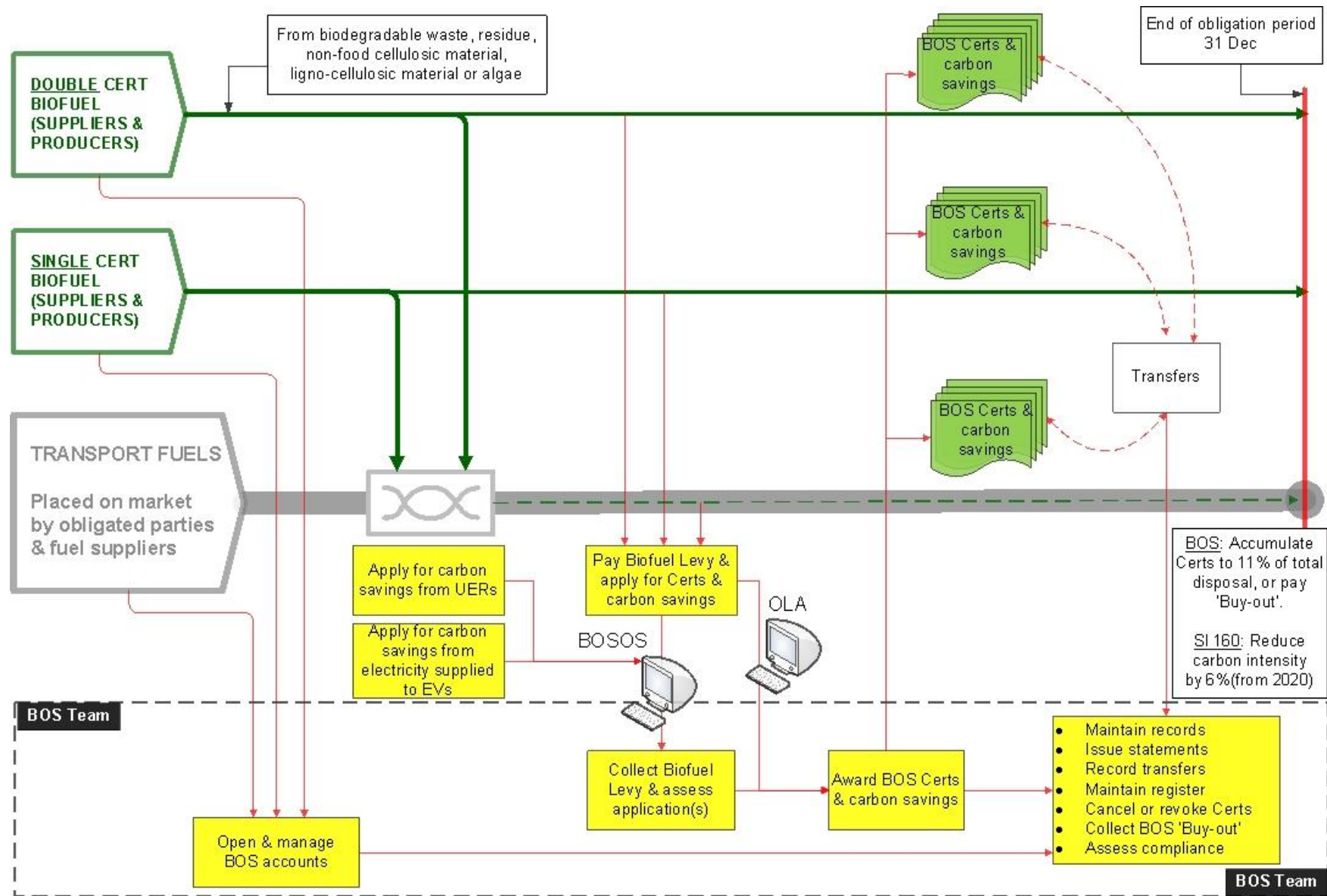
Under the BOS Act, the National Oil Reserves Agency (NORA) is the body charged with administering the BOS. In June 2010, following an open tendering process, a consortium of Byrne Ó Cléirigh and LHM Casey McGrath (now Smith & Williamson) (BÓC-SW) was appointed to assist NORA with implementing and administering the BOS. The consortium was re-appointed in 2015 and again in 2021, until 2026, following further open tendering processes. Throughout this report, the individuals from BÓC-SW and NORA who collaborate with implementing and administering the scheme are referred to as the BOS Team.

This document provides an overview of the BOS and describes how it was implemented throughout the 2021 obligation period. It also illustrates the extent to which the overall biofuel 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). It 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 2021 and will remain in effect thereafter, unless 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 BOS, if they are to be counted towards the 6% target. Thus, there is a significant overlap in what the BOS and SI 160 require, i.e. both require significant volumes of sustainable biofuel to be placed on the market.

The Biofuels Obligation Scheme 2021

Figure 2: Overview of Biofuel Obligation Scheme



2 AN OVERVIEW OF THE BIOFUELS OBLIGATION SCHEME

Figure 2 provides an overview of the BOS. The principal features are described below.

2.1 BOS ESSENTIALS

- The BOS 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 biofuel.
- The first obligation period was from July to December 2010, inclusive. The 2021 obligation period ran from January to December 2021, inclusive.
- The 2021 obligation was 11% by volume, which corresponds to 12.359% of the petroleum-based disposal; this will increase to 14.942% in 2022. Obligated parties meet their obligations by disposing of biofuel (which can be in liquid or gaseous form). They may also meet the obligation by purchasing BOS Certs from other BOS account holders or by paying the buy-out charge.
- Obligated parties are awarded biofuel obligation certificates (BOS Certs) at the rate of one for each litre of biofuel they place on the market. For certain biofuels – those produced from biodegradable waste, residue, non-food cellulosic material, ligno-cellulosic material or algae – two BOS Certs per litre may be claimed. For biofuels supplied in gaseous form, a gas-to-liquid conversion factor, which is dependent on the calorific value of the fuel, is applied.
- Obligated parties discharge their obligation by surrendering the appropriate number of BOS Certs to NORA at the end of the obligation period. BOS 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 biofuels. This levy is payable to NORA.
- An obligated party that has not collected sufficient BOS Certs to meet its obligation in a given obligation period is liable to pay a buy-out charge which was set at €0.45 per litre for the 2021 period. This charge is collected by NORA but is payable to the Exchequer. The buy-out has increased €1 per litre for the 2022 period.
- NORA is responsible for assessing applications for BOS Certs, for issuing Certs, for recording all transactions and for facilitating transfers of BOS Certs between account holders.
- All biofuel placed on the market must be sustainable. Sustainability is determined in accordance with the BOS Application and Sustainability Procedure (8).
- Under certain circumstances, BOS Certs may be cancelled or revoked.
- BOS 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 from BOS Certs that have been brought forward in this manner.

The Biofuels Obligation Scheme 2021

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

- 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 was maintained for the period 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 BOS Certs 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 BOS Certs.
- Monthly fossil fuel data is reported via OLA to DECC in monthly Levy Returns. The relevant data is then supplied to the BOSOS by OLA. Carbon emissions and savings from fossil fuels are calculated in the BOSOS. Fossil fuels with a carbon intensity lower than 94.1 gCO_{2eq}/MJ will generate carbon savings, e.g. 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 BOS account holders.
- Unlike the BOS, 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 BOS obligation period for 2021 commenced on the 1st of January and ended on the 31st of December.
- It is a legal requirement to submit quarterly applications for BOS Certs & carbon savings from biofuels on the following dates.

The Biofuels Obligation Scheme 2021

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 BOS account holders of the extent of their biofuel obligations for the previous obligation period and the number of BOS Certs held on their account in respect of that period is the 16th of March.
- The deadline date for transferring BOS Certs and carbon savings is 22nd March.
- The final date by which obligated parties must inform NORA of which BOS Certs are to be set off against their obligation 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.
- 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 BOS compliance.

2.3 BOS PARTICIPANTS

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

2.3.1 Obligated Parties

An obligated party is any oil company or oil consumer liable to pay the NORA Levy; the biofuel obligation 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.

The Biofuels Obligation Scheme 2021

At the start of the 2021 obligation period, the following companies were identified as obligated parties under the BOS:

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 Biofuel Producers and Suppliers

In addition to the ten obligated parties, there were five biofuel producers/suppliers at the start of 2021:

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

These companies previously applied for and were granted BOS accounts. Each company may report its disposals of biofuel to DECC via the OLA system¹, pay the Biofuel Levy and claim BOS Certs and carbon savings on those disposals². None of these account holders incur a biofuel obligation as they do not place diesel or gasoline on the road transport market.

Green Gas Generation applied for a BOS Account which was opened in May 2021.

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 biofuel producers listed in section 2.3.2, the following companies are designated as fuel suppliers and are also BOS account holders:

1. Flogas
2. Naturgy

¹ The Online Levy Application (OLA) reporting system is used by Obligated Parties to report monthly disposals of oil products to the DECC.

² Biofuel producers and suppliers have some discretion in how they participate in the BOS. A biofuel producer operating in Ireland can choose between paying the Biofuel Levy and claiming the BOS Certs and carbon savings or providing the sustainability information to the company to which it sold the biofuel and allowing it to pay the Biofuel Levy and claim the BOS 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 BOS Certs and carbon savings.

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3. Bord Gais

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

2.4 ENGAGEMENT WITH BOS PARTICIPANTS

Throughout the 2021 obligation period, and during the weeks following the end-of-period reconciliation, the BOS Team maintained regular contact with all BOS participants.

NORA's website is used to host all BOS documents (procedures, guidance notes, application forms, etc.) that are likely to be required by the BOS participants.

From the outset of the BOS, the Team has used dedicated email accounts for receiving and issuing all email communications with the BOS participants (bos@nora.ie & bosaccounts@nora.ie).

During 2021, audits were carried out on account holders by members of the BOS Team to determine the level of compliance with the requirements of the BOS Act. The audit process and the findings are discussed in more detail in Section 4.8 of this report.

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

1. Provide an update on BOS performance.
2. Highlight any recurring problems with BOS Cert and carbon savings applications or the data contained therein (the problems and data are anonymised).
3. Set out any planned changes to the BOS systems.
4. Identify and summarise new legislation that will impact on the BOS.
5. Provide an update on legislative changes (by DoT).

The sessions are relatively informal and provide a forum for open discussion, which is welcomed and encouraged (the sessions were held online, due to covid restrictions).

3 BIOFUEL OBLIGATION ACCOUNTS

This section explains how NORA met the principal obligations and responsibilities that were placed on the Agency to implement and administer the BOS, and the requirements of SI 160, over the 2021 obligation period.

3.1 ACCOUNT SET UP & CLOSURE

A BOS account was set up for one company during 2021, Green Gas Generation (GGG). It produces bioCNG at its anaerobic digestion plant in Nurney, Co. Kildare.

3.2 MANAGING BIOFUEL OBLIGATION ACCOUNTS

All the account files maintained for BOS 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 (9) and the BOS Online System (BOSOS) record all BOS transactions. Data on disposals of petroleum-based transport fuels and biofuels are transferred to the C&R and BOSOS from the monthly returns made by BOS account holders³. The BOSOS is a web-based platform through which account holders submit applications for BOS Certs & carbon savings, and transfer Certs & carbon savings between accounts. As part of the application process, the BOSOS accepts and stores the sustainability statements and independent verification reports. Sustainability statements are submitted in csv format⁴ and are stored in a database. The system also provides account holders with data on their BOS and SI 160 obligations, the number of BOS 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 BOS 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 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 BIOFUEL OBLIGATION CERTIFICATES AND CARBON SAVINGS

There is a standard procedure in place for issuing BOS Certs and carbon savings (8). There is also a comprehensive guidance document to accompany the procedure (10). A standard

³ Returns made to DECC via the OLA system.

⁴ CSV: Comma-separated Value. It is a common file type which can be opened by many different programmes.

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

Under Section 44G of the legislation, NORA is required to issue “... 2 Certificates in the case of such biofuels as the Agency may from time to time determine, in accordance with this section, are so eligible having satisfied itself that the material used to produce the biofuels concerned can be considered to be a biodegradable waste, residue, non-food cellulosic material, ligno-cellulosic material or algae ... and one Certificate in the case of all other biofuels”. The BOS Team maintain a further set of procedures and guidance documents in order to meet this requirement.

Details of the number of applications for BOS 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 2021, applications for two BOS Certs per litre were received in respect of eight feedstocks: used cooking oil (UCO), category 1 tallow, whey permeate, waste starch slurry, food waste not fit for use in the food or feed chain, belly grass, brown grease and animal manure. Determinations were made in previous years for four of the feedstocks (UCO, cat 1 tallow, whey permeate, and waste starch slurry). Determinations were completed and approved during 2021 for food waste not fit for use in the food or feed chain, belly grass, brown grease, and animal manure.

3.4 CANCELLING BIOFUEL OBLIGATION CERTIFICATES

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

During 2021 we received one application for the cancellation of Certs. In July 2021, levy-paid biofuel was exported from Ireland for which orange BOS certificates were awarded during 2020.

3.5 REVOKING BIOFUEL OBLIGATION CERTIFICATES

Section 44M allows for NORA to revoke a BOS Cert in certain circumstances. No BOS Certs were revoked during the 2021 period.

3.6 OUT OF DATE CERTIFICATES

In total, 8,853,569 BOS Certs from 2019 were carried forward to the 2021 period. All these Certs were discharged against the 2021 obligation, with the exception of 811,958 Certs. Because these Certs were not discharged, they exceeded their period of validity (2 years) and consequently are no longer valid.

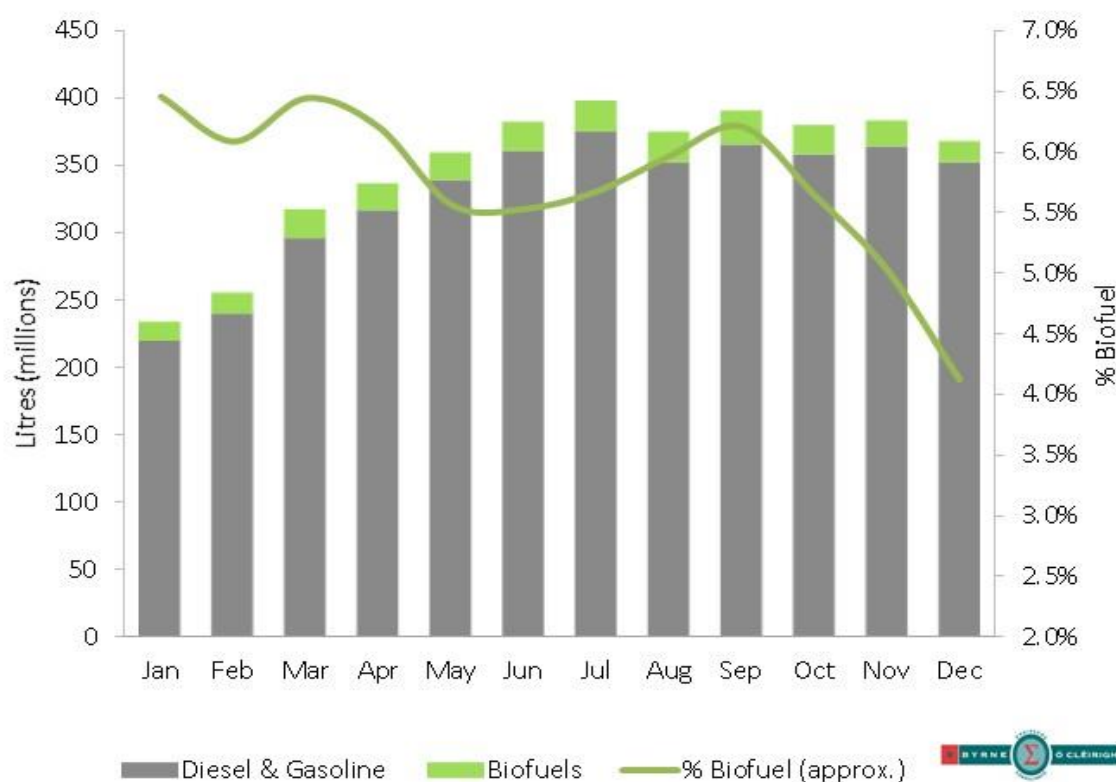
4 COMPLIANCE WITH BOS OBLIGATION

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 2021 obligation period. In some instances, we report data in both volume and energy units. This is because bioCNG is a compressed gas and the units of volumetric reporting are in normal m³ versus standard litres for liquids. Reporting the amount of energy supplied provides for a more transparent analysis, in some instances.

4.1 RELEVANT DISPOSALS

According to the returns made by obligated parties throughout the obligation period – January to December 2021 – approximately c. 3.9 billion litres (139 PJ) of diesel and gasoline, c. 246m litres (7.6 PJ) of liquid biofuel and c. 618k Nm³ (0.02 PJ) of gaseous biofuel were placed on the market (the distribution of these disposals over the period is illustrated in Figure 3). The biofuel obligation amounted to 488m Certs.

Figure 3: Monthly Disposals of Road Transport Fuel

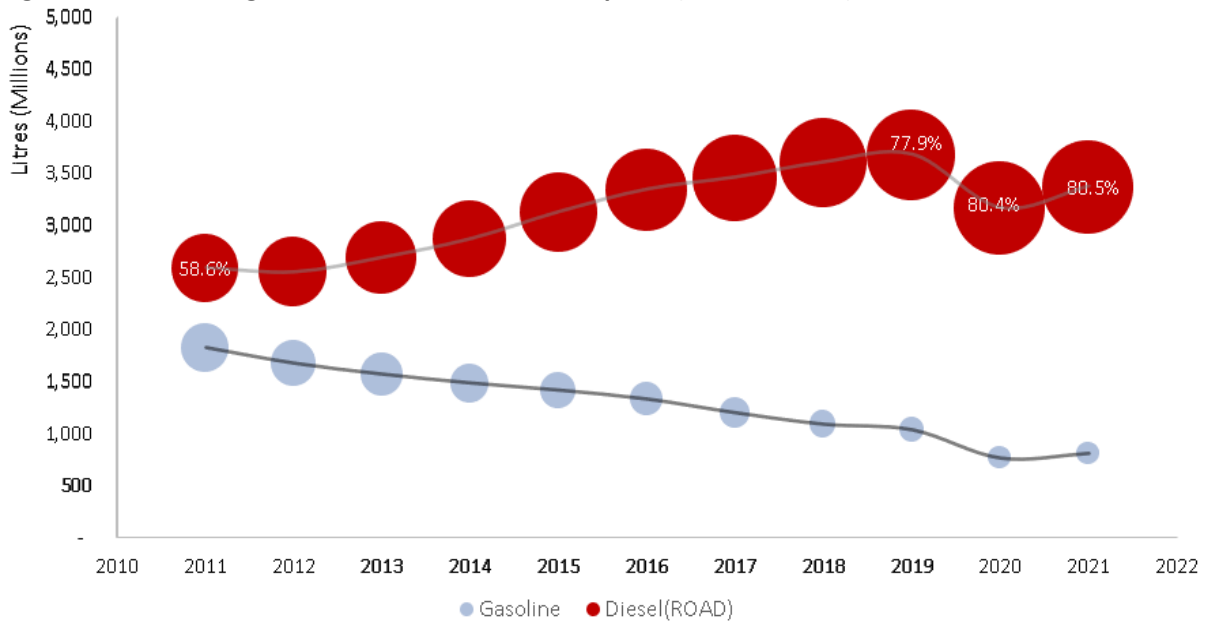


Average monthly sales of road transport fuels for the 2021 period were approximately 350m litres. This was an increase of 3.4% in comparison to average monthly sales during 2020. It can be seen from Figure 3 that monthly sales in the first half of the year increased steadily as a consequence of the gradual easing of Covid-19 restrictions.

Figure 4 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).

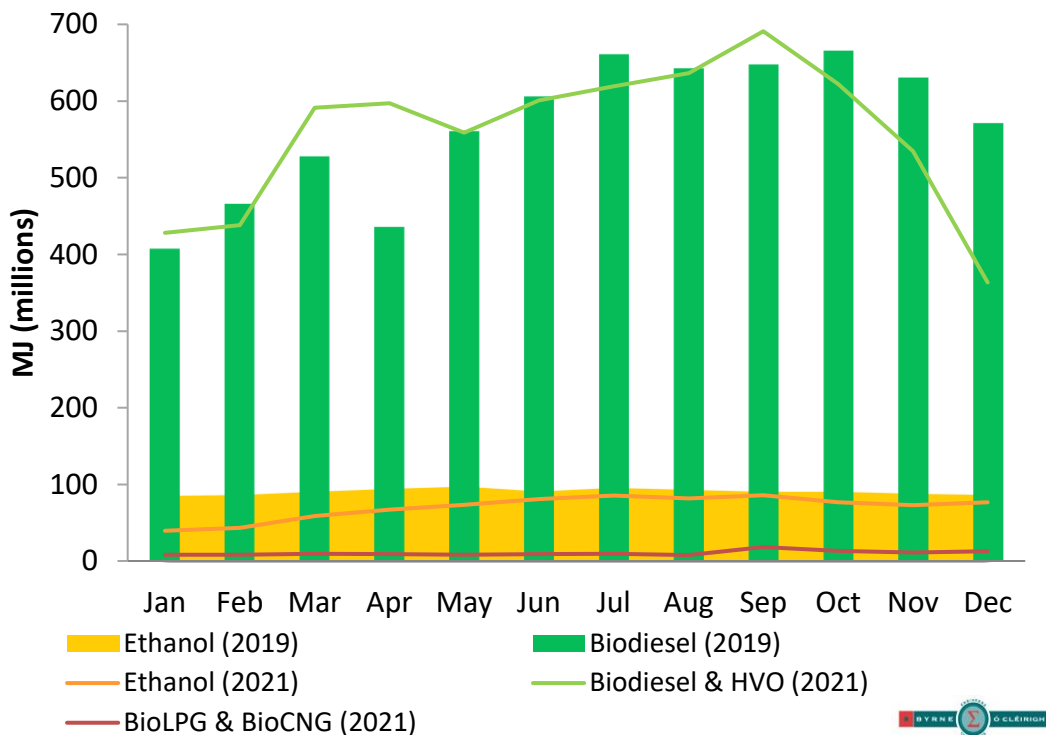
The Biofuels Obligation Scheme 2021

Figure 4: Diesel and gasoline road vehicle consumption (fossil and bio)



In total, 7.6 PJ of biofuel (247m equivalent litres) were placed on the market in 2021, which was an increase of 3% in comparison to 2020, but a 5% drop compared to 2019. The following plot illustrates the breakdown between the monthly disposals of biodiesel (including HVO/CHVO), bioethanol, bioLPG and bioCNG for the 2019 and 2021 periods⁵.

Figure 5: Monthly disposals of biofuel, by energy



⁵ The 2019 data is used for comparison as it was not impacted by Covid 19 restrictions.

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On average over the 2021 period, by energy, biodiesel and HVO/CHVO accounted for 87% of the total biofuel market, bioethanol 11%, bioLPG 1% and bioCNG less than 1%. By volume, biodiesel and HVO/CHVO accounted for 83%, bioethanol 16% (it was 79% biodiesel and 20% bioethanol in 2019) – bioLPG accounted for 2% and bioCNG less than 1%.

There were some fluctuations in biofuel blending in diesel during the year. By volume, it ranged from a maximum of 6.8% in March to a minimum of 3.8% in December. The variation in the blending rate is a consequence of changing biofuel and fossil fuel prices, and the number of BOS Certs individual account holders carry forward from previous periods. Over the year, the average blend rate was 6%⁶. The equivalent figure was 5.6% for the 2019 period and 6.3% for 2020.

The trend over time for bioethanol, biodiesel and HVO/CHVO disposals, and their relative share of the biofuel market (illustrated by the size of the circles), is shown in Figure 6.

Figure 6: Bioethanol, biodiesel and HVO/CHVO disposals

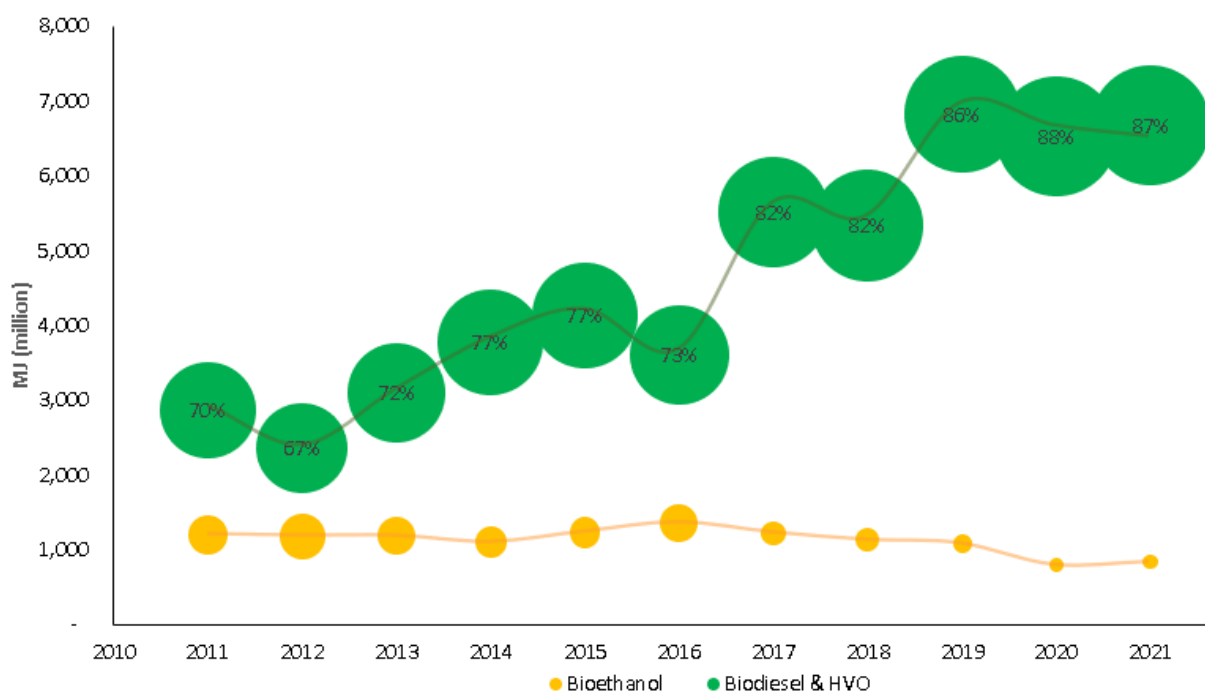


Table 1 provides the data on which Figure 4, Figure 5 and Figure 6 are based.

⁶ As a percentage of the total volume of diesel, biodiesel and HVO/CHVO placed on the market.

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Table 1: Breakdown of disposals, by energy

Year	% Road Fossil*		% Biofuel			% road fossil and all biofuel		
	Diesel	Gasoline	Biodiesel & HVO/CHVO	Bioethanol	BioLPG & BioCNG	Diesel & biofuel in Diesel	Gasoline & bioethanol	BioLPG & BioCNG
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

* Only road diesel and gasoline are obligated under the BOS whereas biofuel supplied to any form of transport may be awarded Certs and counted towards the obligation.

Since 2011, the first full year of the BOS, the quantity of biofuel blended in diesel has increased by 132% and diesel by 27%. Given that 2020 and 2021 were not typical years with travel restrictions in place, the magnitude of the increase in demand for biodiesel and diesel is likely to be understated (between 2011 and 2019, the increase was 137% for biodiesel and 39% for diesel).

The quantity of bioethanol placed on the market has decreased by 30% and gasoline by 56%. Again, given that 2020 and 2021 were not typical years with travel restrictions in place, the magnitude of the decrease in demand for bioethanol and gasoline is likely to be overstated (between 2011 and 2019, the decrease was 10% for bioethanol and 44% for gasoline)

4.2 BIOFUEL OBLIGATION CERTIFICATES

During the 2021 obligation period, approximately 476m Certs were awarded in respect of disposals of 247m equivalent litres of biofuels. Approximately 202m litres of biodiesel (including HVO/CHVO) were placed on the market and practically all of it was awarded two Certs per litre because the feedstock was categorised as a waste or residue.

Of the biodiesel (including HVO/CHVO) that was double counted, c. 157m litres was produced from UCO and 45m litres from Category 1 Tallow.

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Biodiesel and HVO/CHVO accounted for 82% of the biofuel supplied to the market with bioethanol accounting for 16%, and bioLPG and BioCNG 2% – in 2019, which was a more ‘typical year’, the market split was 79% biodiesel, 21% bioethanol and <1% bioLPG. As a consequence of all the biodiesel being awarded two BOS Certs per litre, 85% of BOS Certs awarded in 2021 were in respect of biodiesel disposals.

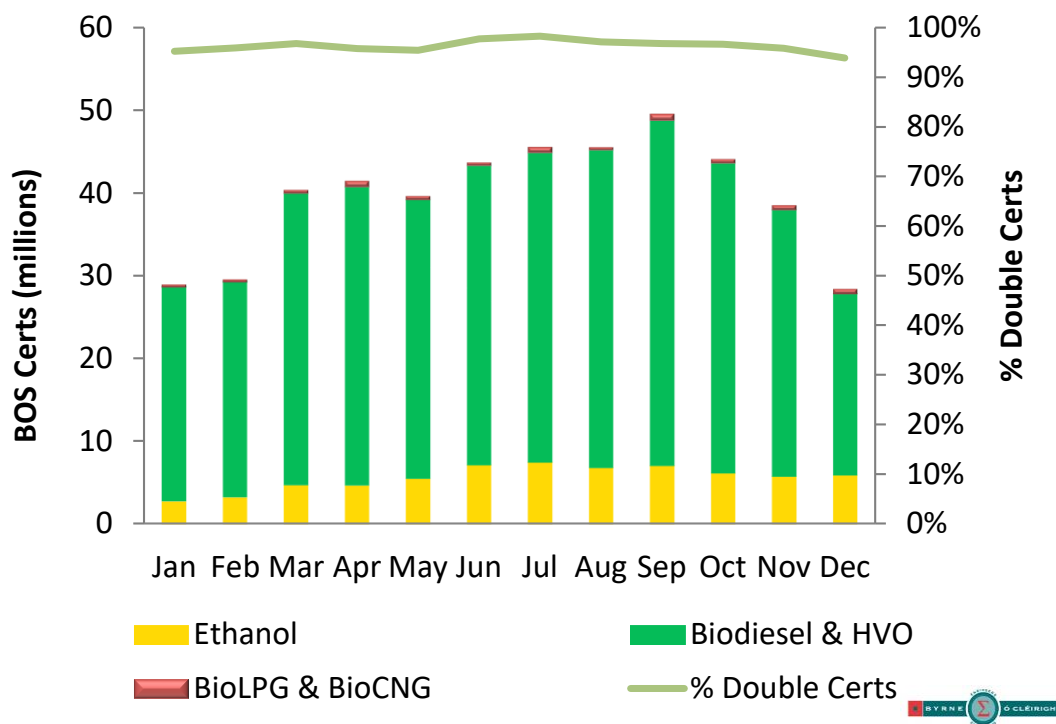
There was approximately 40m litres of bioethanol placed on the market and 26m litres of it was awarded two BOS Certs per litre. All double-counted bioethanol was produced from either whey permeate or waste starch slurry.

There was approximately 4m litres of bioLPG placed on the market; approximately 25% was awarded two BOS Cert per litre as it was produced from UCO. The remainder was single counted and was produced from palm oil.

There was less than 1m equivalent litres of bioCNG placed on the market; all of it was awarded two BOS Cert per litre equivalent because it was produced from food waste, brown grease, animal manure and belly grass (all wastes).

The number of BOS Certs awarded each month is illustrated in Figure 7.

Figure 7: No. of BOS Certs Awarded



4.3 BOS ACCOUNT HOLDER POSITION

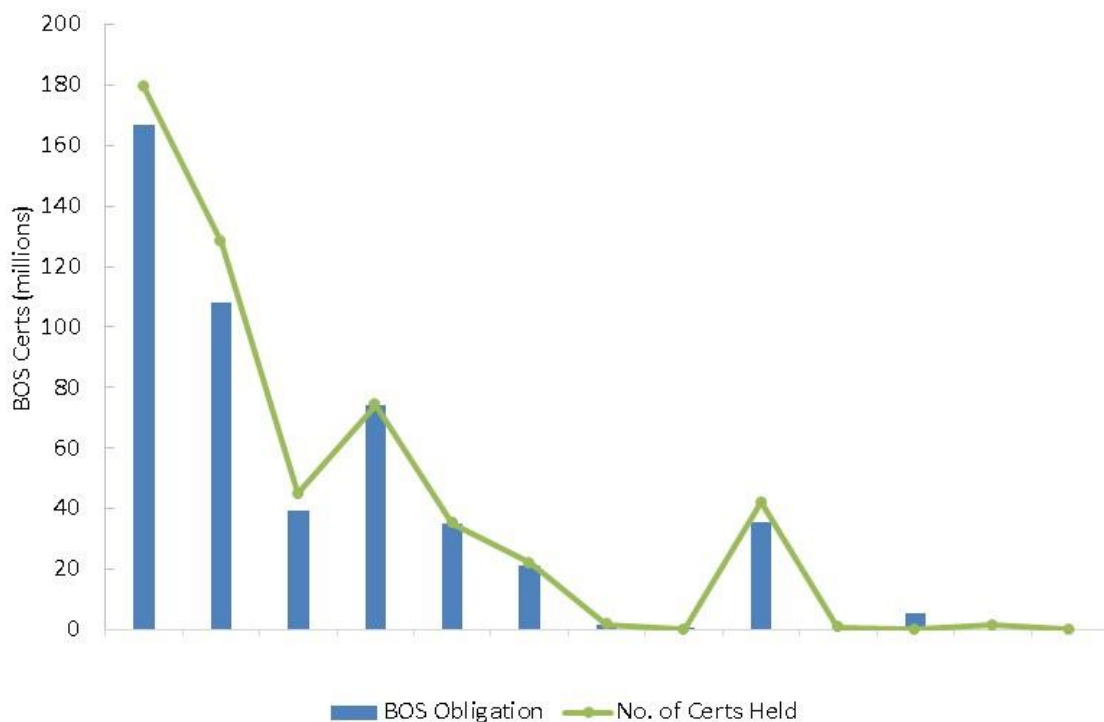
There were nineteen open BOS accounts at the start of 2021: ten were held by obligated parties and five by biofuel producers/suppliers. GGG (a bioCNG producer) also opened a

The Biofuels Obligation Scheme 2021

BOS account during 2021. There were three additional BOS account holders that had no biofuel obligation and did not place any biofuel on the market but were required to participate in the BOS as they were deemed to be designated fuel suppliers under SI 160 of 2017 (one further account holder opted to participate under SI 160 of 2017).

The number of BOS Certs held by each account holder at the time of discharge and their respective obligations are illustrated in Figure 8. Companies that chose to participate in the BOS because they are producers or suppliers of biofuels do not have a biofuel obligation as they are not liable for the NORA Levy on fossil fuel disposals. If they wish to claim the BOS Certs in their own name, they must pay the Biofuel Levy. Between them, the six biofuel producers / suppliers paid the Levy on approximately 15m equivalent litres of biofuel and were awarded 26.4m Certs; this represents 6% of BOS Certs awarded in 2021.

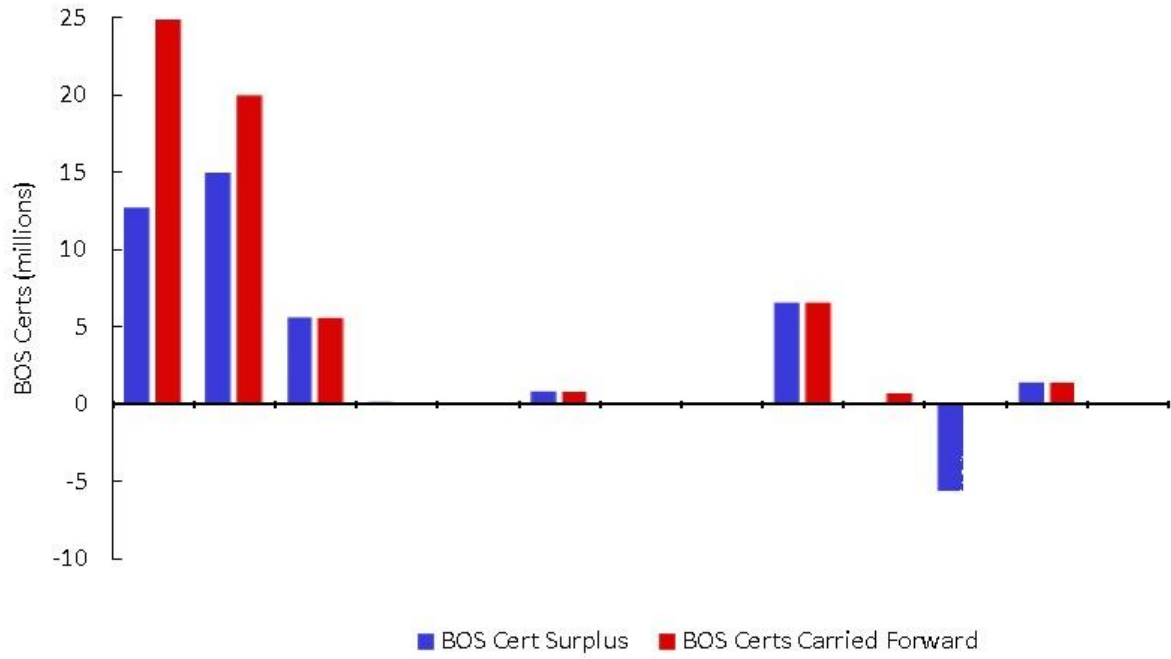
Figure 8: 2021 Biofuel Obligation



There were approximately 55m Certs carried forward to the 2021 obligation period, of which 9m were from the 2019 period and 46m from the 2020 period. This represented 10% of all Certs held at the end of the 2021 period.

Figure 9 shows the surplus/deficit positions for each account holder and the number of BOS Certs that have been carried forward to the 2022 obligation period. The surplus represents the Certs held in excess of the biofuel 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 and those which were carried forward by obligated parties opting to pay the buy-out. One account holder was in a BOS Cert deficit position at the end of the obligation period and became liable for the buy-out charge.

Figure 9: BOS Cert surplus & carried forward



4.4 OVERALL PERFORMANCE AGAINST OBLIGATION

Table 2 provides a breakdown of the key BOS metrics.

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Table 2: BOS Metrics

Description	Volume (litre equivalent)	Energy (MJ)
Disposal of petroleum-based, road transport fuel*	3,948,977,817	138,912,587,780
<i>Gasoline</i>	776,877,022	24,860,064,704
<i>Diesel</i>	3,168,125,642	114,052,523,076
Disposal of biofuel**	246,818,339	7,643,045,531
<i>bioethanol</i>	40,144,577	843,036,117
<i>biodiesel (inc. HVO/CHVO)</i>	201,739,516	6,681,724,680
<i>bioLPG</i>	4,248,456	101,962,944
<i>bioCNG</i>	685,785	16,367,402
Biofuel for which one BOS Cert per litre was issued	16,902,083	364,455,429
Biofuel for which two BOS Certs per litre were issued	229,448,234	7,263,191,108
Biofuel for which BOS Certs were rejected	0	0
BOS Certs revoked	0	0
Biofuel (levy-paid) for which BOS Certs went unclaimed	468,018	15,444,594
BOS Certs required to meet obligation		487,562,879
BOS Certs issued during 2021		475,798,547
BOS Certs carried forward from previous period		54,862,692
Surplus/deficit of BOS Certs***		37,290,760
Surplus/deficit based on reconciliation instructions		(17,595,868)
Liability for Buy-out Charge		€7,877,641
BOS Certs no longer valid		811,958
BOS Certs carried forward to 2022 period		59,792,270
<p>* This is the quantity on which the NORA Levy was paid.</p> <p>** This is the quantity on which the Biofuel Levy was paid.</p> <p>*** This omits those Certs that could not be discharged because an account holder exceeded the 15% limit.</p>		

The volume of biofuel produced from biodegradable waste, residue, non-food cellulosic material, ligno-cellulosic material or algae, i.e. wastes and residues, represented 93% of the biofuel supplied to the market during the 2021 period. When the biofuel produced from wastes and residues is counted twice, the amount of biofuel placed on the market as a percentage of petroleum-based road transport fuels was 12.06%. When the BOS Certs carried forward from the 2019 and 2020 periods are included, this value increases to 13.45%. Against this, the obligation was 12.36%, so, overall, the biofuel obligation for 2021 was met. Notwithstanding the overall market position, a buy-out was charged in respect of a BOS deficit of c.17.6 m litres and 0.8 m Certs were rendered invalid as they were 2 years old and were not discharged against an obligation.

In total, approximately 59.8 m BOS Certs have been carried forward to the 2022 period.

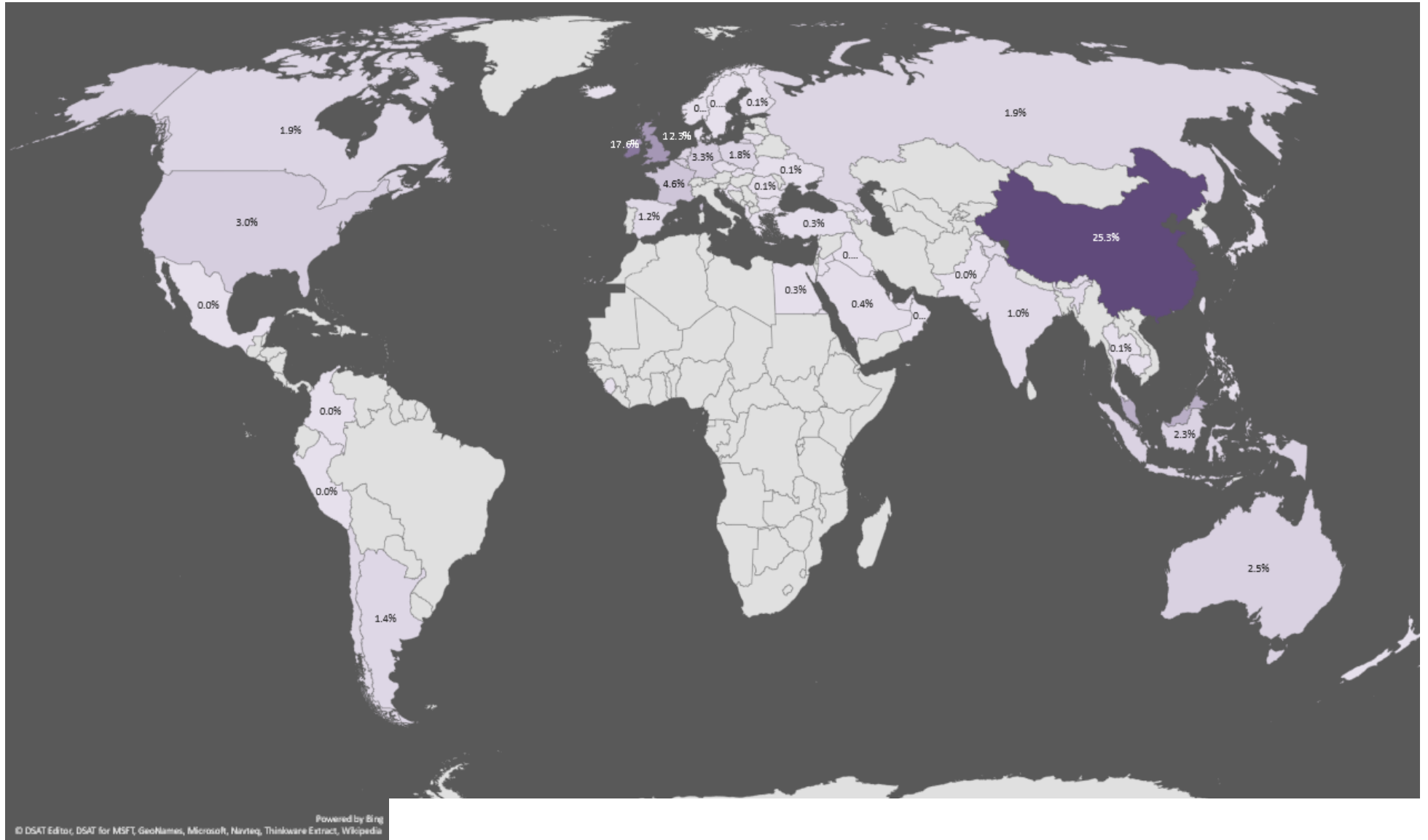
4.5 BIOFUEL FEEDSTOCK

Table 3 overleaf provides a breakdown of all the biofuel feedstocks reported in the sustainability statements and their country of origin. Most of the feedstocks were sourced from Europe (47%). The country to supply the greatest quantity of feedstocks for biofuels placed on the Irish market was China (25%); 18% was sourced from Ireland. It is also worth noting that 64% of all the biofuel placed on the market in Ireland is produced from UCO.

Figure 10 on page 21 illustrates the locations from which the biofuel feedstocks are sourced and the proportion that comes from those locations.

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Figure 10: Sources of Biofuel Feedstocks



4.6 VOLUNTARY SCHEMES

For the 2021 period, there were 14 EU approved Voluntary Schemes in operation. However, biofuel from just three Voluntary Scheme was reported in BOS Sustainability Statements: ISCC (International Sustainability and Carbon Certification), REDcert and 2BSVS. ISCC accounted for the majority (>99%).

Approximately 98% of the biofuel placed on the market in Ireland was certified by a voluntary scheme. For the remaining 2%, a contingency procedure was put in place which required the BOS Team to assess the GHG calculations and the mass balance arrangements⁷. Following the BOS Team's review, the Certs and carbon savings were awarded during the year, but they were awarded contingent upon the companies that placed the biofuel on the market achieving voluntary scheme certification within the 2021 period.

4.7 GHG SAVINGS

4.7.1 Overview

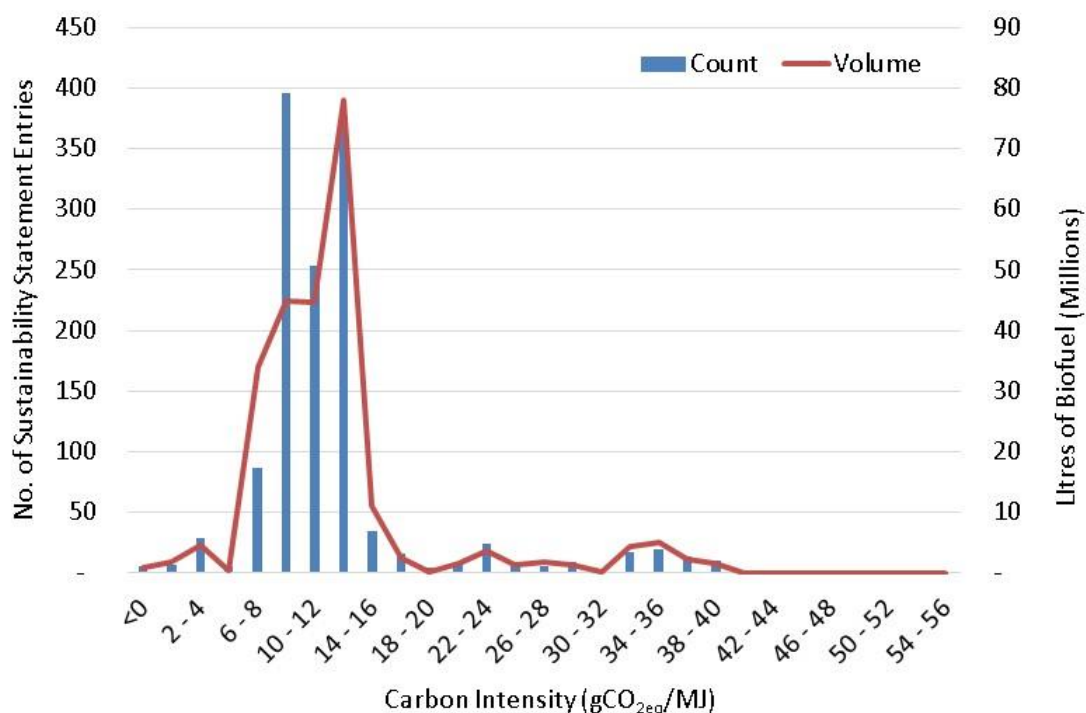
A central requirement of the RED and the Sustainability Regulations is that biofuels achieve a 50% reduction in carbon intensity (GHG emissions) in comparison to fossil fuels⁸ (increases to 60% for biofuel production plants coming into operation after October 2015). The average litre of biofuel placed on the market in Ireland in 2021 had a lifecycle carbon intensity of c. 12.4 gCO_{2eq}/MJ, which represents an 85% reduction in comparison to the fossil fuel comparator of the RED (83.8 gCO_{2eq}/MJ), and an 87% reduction in comparison to the fossil fuel comparator of RED II (94 gCO_{2eq}/MJ).

There were approximately 1,300 individual consignments (entries) reported in the sustainability statements. The volume reported in each entry ranged from of a single litre of biofuel to over 4 million litres. The following plot illustrates the range of carbon intensity values reported and how those in the 8 to 14 gCO_{2eq}/MJ range dominate. (The bar chart represents the number of entries; the line represents the volume of biofuel.)

⁷ The BOS Act empowers NORA to establish the processes and procedures for assessing applications for BOS Certs.

⁸ A baseline carbon intensity of 83.8 gCO_{2eq}/MJ for petrol and diesel is specified in Annex V of the RED. The GHG savings requirement was increased to 50% in 2018.

Figure 11: Profile of Carbon Intensities



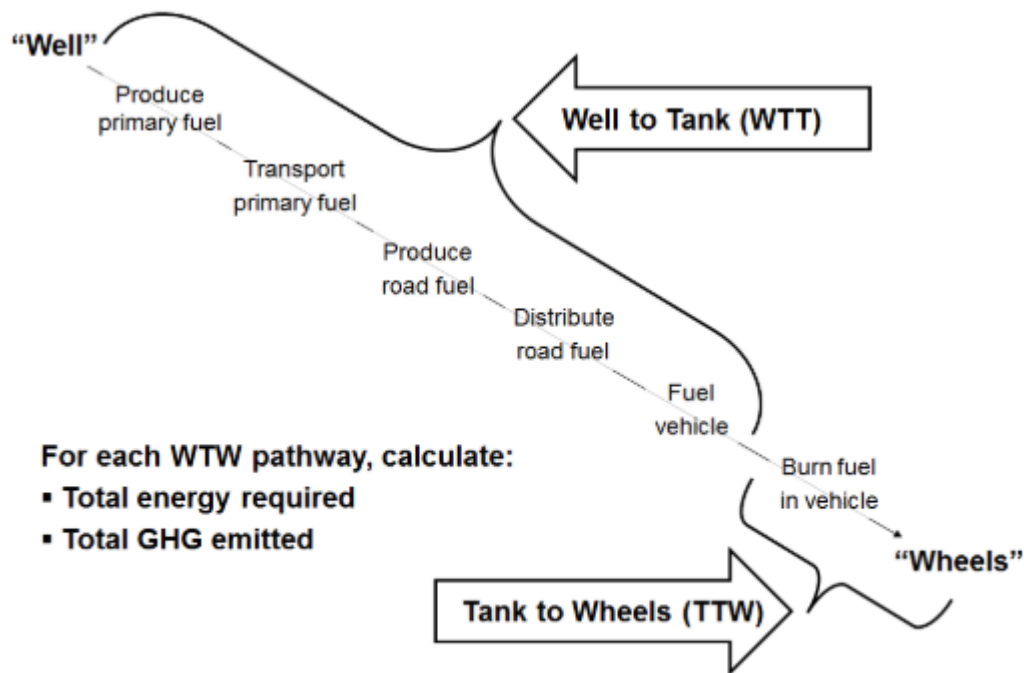
There is no methodology provided in the RED for calculating the national GHG savings. In previous Annual Reports, the BOS Team’s approach has been to calculate the GHG emissions from the biofuels placed on the market and to compare that to the total GHG emissions that would have been emitted from the road transport sector⁹ had there been no biofuels consumed. Taking into account the lower calorific content of biofuel in comparison to fossil fuel¹⁰, approximately 209m litres of fossil fuel were displaced by biofuel as a consequence of placing 239m litres of biofuel on the market. Based on an average biofuel carbon intensity of 12.4 gCO_{2eq}/MJ and using the fossil fuel comparator provided in Annex V of the RED (83.8 gCO_{2eq}/MJ), substituting fossil fuel with biofuel resulted in a reduction of approximately 520kt of CO_{2eq} emissions.

This equates to an overall saving of approximately 4.5% in lifecycle GHG emissions from the road transport sector as a consequence of achieving a biofuel penetration rate of 6.3%, by volume (5.5% 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). 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.

⁹ While the RED requires energy consumed in road and rail to be taken into account, the BOS only applies to road transport.

¹⁰ 32 & 36 MJ/litre for gasoline and diesel versus 21 & 33 MJ/litre for bioethanol and biodiesel, respectively. The calorific value of bioLPG is 24 MJ/litre and BioCNG 35.8 MJ/Nm³.

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



Graphic representation of Well-to-Wheels Analysis

©EU, 2016

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 5.

4.7.2 Analysis of Sustainability Statements

Article 17 of the RED specifies that a biofuel must achieve a 50% reduction in carbon intensity, which equates to a maximum carbon intensity value of 41.9 gCO_{2eq}/MJ¹¹. The following tables illustrate the range of carbon intensities of the fuel types (Table 4) and the feedstocks (Table 5) that were reported in the sustainability statements in 2021.

¹¹ This will change to 47 gCO_{2eq}/MJ once RED II is transposed as the RED II fossil fuel comparator increases to 94 gCO_{2eq}/MJ.

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Table 4: Range of carbon intensity reported in sustainability statements, by fuel type

Fuel Type	Description	Carbon Intensity (gCO _{2eq} /MJ)			Default Values ¹²
		Min	Avg	Max	
ME	Methyl Ester ¹³ (Biodiesel)	4.5	11.3	14.9	14.2 ¹⁴
EtOH	Bioethanol	-0.7 ¹⁵	26.1	39.8	-
BioLPG	LPG produced from biomass	5.6	17.9	26.2	-
BioCNG	Biomethane produced from biomass	-38.4	5.1	26.5	-
HVO	Hydrogenated vegetable oil	7.6	7.6	7.6	
CHVO	Co-processed hydrogenated vegetable oil	8.5	8.8	22.5	

¹² The Default Values from Annex V of the RED are reported where available.

¹³ Also known as Fatty Acid Methyl Ester, or FAME

¹⁴ The default value from Annex V of the RED is 14.2 gCO_{2eq} / MJ (17% of fossil fuel comparator (83.8 gCO_{2eq} / MJ)). The UK & Ireland carbon calculator default value for waste animal or vegetable oil (i.e.UCO or Tallow) is 14 gCO_{2eq} / MJ.

¹⁵ Bioethanol produced from waste starch slurry where the production plant claimed carbon savings from carbon capture and replacement, and carbon savings from excess electricity from cogeneration.

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

Fuel Type	Feedstock	Description	Carbon Intensity (gCO _{2eq} /MJ)			RED Default Values	RED II Default Values
			Min	Avg	Max		
Bioethanol	ECCORN	Corn – EC	22.5	24.4	25.4	42.7	30.1 to 67.7
	BARL	Barley	19.1	19.1	20.2	-	31 to 71.4
	NECCOR	Corn – Non EC	23.4	33.1	39.8	-	30.1 to 67.7
	WHEAT	Wheat	20.3	31.1	37.8	26 to 70.4	31 to 71.4
	WHEY	Whey permeate	10.9	13.6	27.2	-	-
	STSL	Starch slurry	-0.7	15.9	35.9	-	-
Bio diesel	UCO	Used cooking oil	4.5	10.6	14.9	14.2	15
	TALL1	Tallow – category 1	11.0	14.0	14.0	14.2	20.7
Bio LPG	PALM	Palm oil	14.3	21.0	26.2	-	-
	UCO	Used cooking oil	5.6	8.9	22.5	-	-
HVO	UCO	Used cooking oil	7.6	7.6	7.6	-	16
CHVO	UCO	Used cooking oil	8.5	8.7	22.5	-	-
	TALL1	Tallow – category 1	22.5	22.5	22.5	-	-
BioCNG	BRGR	Brown grease	6.6	13.3	24.9	-	-
	BLGR	Belly grass	6.6	9.6	21.6	-	-
	WMANU	Wet manure	-38.4	-16.1	26.5	15.8	- 96 to 26
	FW	Food waste (not fit for use as food or feed)	6.6	9.4	19.8	-	-

The following table lists those biofuel feedstocks for which *actual* carbon intensity values were reported for the entire fuel supply chain or the cultivation step, as opposed to reporting the default values from Annex V of the RED.

The Biofuels Obligation Scheme 2021

Table 6: Actual values reported, by feedstock

Fuel Type	Feedstock	Description	Total Volume (l)	Volume Reported as Actual Values* (l)	Volume Reported as Actual Values (%)
Bioethanol	ECCORN	Corn – EC	2,305,573	2,305,573	100
	BARL	Barley	261,541	261,541	100
	NECCOR	Corn – Non EC	7,205,890	7,205,890	100
	WHEAT	Wheat	3,958,517	3,958,517	100
	WHEY	Whey permeate	7,541,293	7,541,293	100
	STSL	Starch slurry	18,871,762	18,871,762	100
Biodiesel, HVO & CHVO	UCO	Used cooking oil	156,731,191	111,599,267	71
	TALL1	Tallow – category 1	44,500,958	809,599	2
	TALL3	Tallow – category 3	39,348	0	0
BioLPG & BioCNG	PALM	Palm oil	3,170,562	3,170,562	100
	UCO	Used cooking oil	1,077,895	1,077,895	100
	BLGR	Belly grass	39,008**	39,008**	100
	BRGR	Brown grease	2,544**	2,544**	100
	WMANU	Animal manure	528,957**	528,957**	100
	FW	Food waste	115,277**	115,277**	100
*Actual values were used for the entire fuel chain or for the cultivation step.					
** Litre equivalent values, calculated using gas-to-liquid conversion factors.					

In the majority of cases where actual carbon intensity values were reported, a Voluntary Scheme was also reported. This is significant because under Article 18 (7) of the RED, 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 biofuel¹⁶.

4.8 AUDITING COMPLIANCE WITH THE BOS ACT

Auditing of compliance by oil companies, oil consumers and biofuel producers with the biofuel obligations under the BOS Act 2010 was carried out during 2021.

The Summary Audit Report (ref. 457-22X0208) 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

¹⁶ The RED 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.

The Biofuels Obligation Scheme 2021

improvements could be made to the systems and procedures for submitting and processing the Levy Returns and applications for BOS Certs and carbon savings.

In most cases, the BOS 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 BOS Certs. However, discrepancies were found, albeit relatively small. One discrepancy gave rise to a Levy over-payment of c. €8k.

In addition, there were 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.

Auditing BOS account holders is an annual task carried out by the BOS Team. The 2021 data will be audited during 2022.

4.9 CROP CAP

The RED limits 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. The limit is not, however, imposed on fuel suppliers, i.e. fuel suppliers may take into account all sustainable crop-based biofuels placed on the market to meet their BOS obligations.

Total energy consumption in road transport in 2021 was approximately 140 PJ. There were approximately 0.4 PJ (17m litres) of crop-based biofuels placed on the market in 2021 (shown in Table 6). Thus, crop-based biofuels contributed <1% 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.

Once transposed, the recast Renewable Energy Directive (RED II) will limit the contribution of crop-based biofuels to 2% towards the renewable target in transport, because the contribution in 2020 was less than 1% (see RED II, Article 26 (1) for details).

Article 26 (2) of RED II will also introduce a limit on high indirect land-use change (ILUC) risk biofuels to that amount consumed in 2019. 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 2021, approximately 3.2m litres (0.08 PJ) of palm oil was placed on the market.

4.10 ADVANCED BIOFUEL TARGET

The ILUC Directive set a target of 0.5% for Member States for biofuels produced from Annex IX Part A feedstocks – the so-called ‘advanced biofuel target’. SI 169 of 2018 transposed this requirement, but set a lower national target of 0.25%, which is facilitated by the Directive under certain circumstances. As is the case with the crop cap, the advanced biofuel target is currently not imposed on fuel suppliers, i.e. fuel suppliers are not required to place biofuels produced from Annex IX Part A feedstocks on the market in order to meet a 0.25% target.

Total energy consumption in road transport in 2021 was 140 PJ. There was approximately 0.02 PJ (0.7m litres) of advanced biofuels placed on the market in 2021, namely bioCNG produced from belly grass, brown grease, food waste not fit for use in the food or feed chain, and animal manure, as shown in Table 6. We did not count bioethanol produced from whey permeate nor waste starch slurry as an advanced biofuel because it could not be demonstrated that either feedstock ‘*is not fit for use in the food or feed chain*’. Annex IX, Part A does not list whey permeate nor waste starch slurry as eligible feedstock – it does however include the following:

Biomass fraction of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in part B of this Annex

Based on the feedstocks considered by the BOS Team to be included in Annex IX, Part A, advanced biofuels contributed approximately 0.02% towards final energy consumption in road transport in 2021 – if the energy consumed in rail was also included, the contribution of advanced biofuels would be marginally lower.

In the SHARES Eurostat data¹⁷ reported for Ireland for 2020 (the 2021 data is not yet available), bioethanol produced from waste starch slurry and whey permeate were included as Annex IX Part A feedstocks (n.b. NORA does not report any data directly to Eurostat). If NORA counted these two feedstocks as advanced in this Annual Report, then an advanced biofuel penetration rate of approximately 0.74% in road transport would have been achieved in 2021. This highlights the significant contribution both feedstocks could make to meeting the advanced biofuel target, if it was agreed that whey permeate and waste starch slurry could be counted as Annex IX, Part A feedstocks. This difference in the treatment of these feedstocks may be resolved with the transposition of RED II.

RED II sets an advanced biofuel target of 0.2% in 2022, 1% in 2025 and 3.5% in 2030. The Renewable Fuels for Transport Policy Statement (see section 6.1.5) provides for an advanced target of 0.3% in 2023.

¹⁷ <https://ec.europa.eu/eurostat/web/energy/data/shares>

5 COMPLIANCE WITH SI 160

5.1 OVERVIEW

Article 7a of the FQD was transposed into Irish law in April 2017 by SI 160¹⁸. 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 BOS.

The fuel suppliers responsible for complying with SI 160 of 2017 are, in general, the same companies responsible for complying with the BOS and applications for BOS Certs are combined BOS Cert and carbon savings applications. The BOSOS also accepts applications for carbon savings from electricity used in electric vehicles (EVs) and upstream emission reductions (UERs¹⁹).

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

¹⁸ Amended by SI 670 of 2020 to make it clear the requirement to achieve the 6% carbon intensity reduction target applies not only in 2020, but every year thereafter.

¹⁹ 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.

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Table 7: SI 160 Metrics

Description	Energy (PJ)	Carbon Savings (ktonnes CO _{2eq})
Total disposal of petroleum-based transport fuel	166.9	-119.78
<i>Gasoline</i>	24.86	19.9
<i>Diesel</i>	114.05	-114.1
<i>Gasoil</i>	26.48	-26.5
<i>Rail Diesel</i>	1.40	-1.4
<i>LPG</i>	0.03	0.5
<i>CNG</i>	0.07	1.8
Total disposal of biofuel	7.63	623.4
<i>Bioethanol</i>	0.84	62.0
<i>Biodiesel, HVO & CHVO</i>	6.68	553.5
<i>BioLPG & CNG</i>	0.12	9.2
Applications in respect of electricity consumed in EVs	0	0
Applications in respect of UERs		0
Carbon savings revoked		0
Total	0	504.1
% savings achieved	3.07%	

If all the fuel suppliers are considered as one, a carbon intensity reduction of approximately 3.1% was achieved in 2021. No carbon savings from electricity supplied to road vehicles or UERs were claimed in 2021.

Approximately, 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 2021 target.

6 OBSERVATIONS ON OPERATING BOS

Overall, the BOS functioned as designed during 2021: almost all applications for BOS Certs and carbon savings were submitted on time on a quarterly basis; the majority of account holders achieved their BOS obligations; and changes to the systems were implemented in accordance with the legislation, to facilitate new fuels coming on the market and in anticipation of changes arising from the transposition of RED II (see section 6.1.3) and the implementation of the Renewable Fuels Policy Statement (see section 6.1.5).

6.1 CHANGES IN 2022 AND THEREAFTER

6.1.1 Biofuel Obligate Rate Change

The biofuel obligation was 11% for 2021 (the legislative requirement was 12.359%, i.e. for every 89 litres of fossil fuel that was placed on the road transport market, an obligated party must have 11 certificates). The obligation has increased to 13% (14.942%) for 2022. Further increases for the periods thereafter have been set out in the Department of Transport's Policy Statement.

6.1.2 Increase in the buy-out charge

The buy-out charge has been €0.45 per litre since the inception of the BOS. It was increased to €1.00 per litre for the 2022 period and thereafter. We anticipate that this will be converted to an energy-based buy-out charge, once the BOS moves to an energy-based obligation, as set out the Policy Statement.

6.1.3 RED II

The recast Renewable Energy Directive (RED II) was published in December 2018. RED II builds upon the approach and the concepts contained in the RED; ultimately its objective is to put in place measures to assist the EU with reducing greenhouse gas emissions, in compliance with the Union's commitment under the 2015 Paris Agreement on Climate Change and the Union 2030 energy and climate framework. More recently, the 'fit for 55 package' of legislative proposals was published as part of the European Green Deal²⁰ – it contains proposals for a RED III, which is discussed further in section 6.1.6.

RED II sets a 14% target for renewable energy in transport by 2030. There are various sub-targets and constraints that are designed to transition the biofuel market away crop-based biofuels to advanced biofuels (i.e. those predominately produced from wastes and residues) and to limit UCO and tallow derived biofuels. From an administrative perspective, RED II will impact the operation of the BOS and it will require changes to its systems and procedures.

The BOS Team has already made some provision for RED II by categorising BOS Certs in accordance with their feedstocks. For example, biofuels produced from Annex IX, Part A

²⁰ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

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feedstocks are currently awarded Green Certs – once the advanced biofuel target is introduced, Green Certs will be used to measure compliance with this target.

RED II also requires the Commission to develop a Union database to track and trace biofuels through the supply chain. The database is currently being developed, so it is not clear the level of interaction obligated parties and biofuel producers in Ireland will have with the Union database. It is likely, however, that there will be a requirement to enter and/or extract data from it. The BOS Team is engaging with the Commission to ensure the development of the database takes into account any specific needs of Irish obligated parties and biofuel producers, and is preparing NORA's BOS systems and procedures for accommodating the Union database in a timely and efficient manner.

There is also a RED II requirement on Member States to supervise the operation of certification bodies (CBs). This requirement will be elaborated on in an Implementing Act that was recently (March 2022) adopted by the Committee on the Sustainability of Biofuel, Bioliqids and Biomass Fuels²¹. The Implementing Act includes for obligations to be placed on Member States to establish a formal cooperation framework for supervising CBs and appointing one Member State as a *lead audit supervisor*, where CBs carry out certification in more than one Member State.

RED II was due to be transposed into Irish law by July 2021, but it has been delayed. We anticipate that it will be transposed during 2022.

6.1.4 FQD

In addition to RED II, Article 7a of the FQD, which was transposed into Irish law by SI 160 of 2017, underwent a formal review. One of the objectives of the review was to evaluate *Art.7A of Directive 98/70/EC relating to the quality of petrol and diesel fuels, so-called Fuel Quality Directive (FQD Art.7A)* (11). In summary, while the outcome of the review is not conclusive, in general it was found that while Article 7a is relevant, it was neither effective nor efficient, primarily because of the overlap between the FQD and RED: *implementation of both FQD Art.7A and RED are strongly intertwined, and their interactions are considered, by a vast majority of stakeholders, to have negative impacts.*

This, coupled with a proposal contained in the draft RED III to remove Article 7a of the FQD along with a move to a GHG intensity target in transport, indicates that Article 7a will be removed in the coming years.

6.1.5 Ireland's Biofuel Policy

The DoT published a [Renewable Fuels for Transport Policy Statement](#) in November 2021 (12). The Statement sets out a roadmap for the supply and use of renewable fuels in transport to meet the objectives of the Climate Action Plan 2021 and Ireland's European obligations. The statement is summarised in Table 8.

²¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12723-Sustainable-biofuels-bioliqids-and-biomass-fuels-voluntary-schemes-implementing-rules_en

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Table 8: Summary of Policy Statement Actions

No.	Action	Summary	Due date
1	Increase the level of evaluation, analysis and enforcement of robust sustainability limits to underpin renewable fuels in Ireland	There is a concern about ILUC and fraud (particularly for UCO), so DoT plan to carry out an analysis of the biofuel supply chain, to assess its integrity.	Late 2021 / early 2022
2	Increase in the level of renewables relating to petrol and diesel	To meet the Climate Action Plan 2021, the level of renewable fuel in transport will need to continue to increase. There will be a focus on biofuel blending to support this. The DoT will set the biofuel obligation at a level to enable E10 and B12 by 2025.	Relevant to Climate Action Plan
3	Examine availability of used cooking oil and certain animal fats with a view to seeking a higher limit for biofuels made from these feedstocks	Biofuels produced from UCO and Cat 1 & 2 tallow currently make a large contribution to renewable energy in transport in Ireland. DoT will examine whether Ireland should apply to the European Commission to change the 1.7% limit on UCO and tallow-derived biofuel.	2022
4	Limits on certain biofuels	From 2023, obligated parties will be limited to 2% contribution from crop-based biofuels, and only parties that placed high ILUC risk biofuels on the market in 2019 can claim BOS Certs for such biofuel in the future.	January 2023
5	Operate the BOS on an energy basis	The targets and limits provided in RED II are on an energy basis. The legislation will be changed to reflect this, so BOS Certs will be awarded per MJ rather than per litre.	January 2023
6	Increase the biofuel obligation	The obligation will increase from 11% to 13%, by volume, in 2022, and in subsequent years to 16%, 19%, and 23% respectively over the next three years. This could potentially lead to an obligation of 38% by 2030.	January 2022 annually to 2030
7	Incentivise the transition to E10	DoT will review options to further incentivise E10 (e.g. by a legal mandate or by increasing the buy-out charge).	2023
8	Enforcement of carbon intensity requirements	Article 7a of the FQD requires fuel suppliers to achieve 6% carbon intensity reduction. In 2020, less than half of fuel suppliers met the target. DoT will review the current framework and penalties while accounting for GHG targets and EU Fit for 55 objectives.	Review in 2022 with possible introduction in 2023/2024

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No.	Action	Summary	Due date
9	Introduce an advanced biofuel obligation	Obligated parties will be required to comply with the Annex IX Part A targets of RED II. In 2023, the advanced biofuel target will be 0.3%. The rates thereafter will be subject to consultation. Advanced biofuels will be awarded two BOS Certs per MJ (or more, if used in certain sectors).	January 2023
10	Expand the biofuel obligation to rail	From 2024 onwards, fossil fuels supplied to the rail sector will be included in the biofuel obligation.	2024
11	Treatment of alternative fuels	Due to difficulties in electrifying the transport sector, it is Government policy to also support alternative fuels. However, obligating non-renewable alternative fuels may act as a barrier to further development – how to treat these fuels under the BOS will be reviewed. Notwithstanding this, renewable alternative fuels (e.g. bioCNG, bioLNG, bioLPG and green hydrogen) will be eligible for BOS Certs.	2022
12	Inclusion of Renewable Fuels of Non-Biological Origin (RFNBOs)	RFNBOs will become eligible for Certs in 2023.	2023
13	Treatment of development renewable fuels	An additional multiplier will be provided to incentivise ‘development fuels’, which include green hydrogen, biomethane, HVO, and RFNBOs.	2023
14	Treatment of renewable electricity used in transport	Electricity supplied to road and rail transport currently does not qualify for BOS Certs; however, this will be reviewed along with examining an appropriate system to accommodate reporting, monitoring, and assessing sustainability.	Review in 2022 with a view to inclusion in 2023
15	Multiple counting based on Annex IX of RED II	Annex IX of RED II provides a list of feedstocks eligible for multiple counting. The BOS will be changed to rely upon this list of feedstocks.	January 2023
16	New buy-out charge	The current buy-out charge will be amended for the 2022 obligation period, and further amended for the 2023 period to reflect a move to an energy-based obligation.	2022
17	Use of emergency supplies	From 1 January 2023, petrol or diesel released by NORA from emergency stocks may be exempt from the BOS, if it cannot be blended with biofuels or would cause an unacceptable supply delay.	2023
18	Review and consultation on the next policy statement	A public consultation will be undertaken in 2022 to seek views on what the focus of the next policy statement should be, including: scope and biofuel obligation rates from 2023; phasing out high ILUC feedstocks; assessing potential for a resource availability target framework; potential for innovation in renewable energy; treatment of development renewable fuels; and proposals set out in the EU’s Fit for 55 package.	2022

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Implementing the actions set out above will impact considerably on the operation of the BOS.

6.1.6 RED III

While it is acknowledged in the Policy Statement that cognisance will need to be given to the outcome of revisions to RED II (RED III), the implications of implementing the proposed changes are considerable. In summary, the EU is in the process of revising RED II with the aim of aligning the contribution of renewable energy with the greenhouse gas emissions reduction target set in the 2030 Climate Target Plan, and to achieve a 38% to 40% share of renewable energy by 2030 in a cost-effective and sustainable manner.

A public consultation was launched in November 2020 to gather the views from the public. It lasted for 12 weeks and closed in February 2021. Stakeholder workshops were also held. Thereafter, proposals for a revised RED II (RED III) were published on the 14th July 2021 (13), along with 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](#). In addition, the [ReFuelEU Aviation initiative](#) proposes to oblige fuel suppliers to blend increasing amounts of sustainable aviation fuels in jet fuel supplied at EU airports. Similarly, the [FuelEU Maritime Initiative](#) 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.

Some of the highlights from the Commission's proposed amendments to RED II include:

1. The headline target for transport will move to a GHG intensity target, similar to that currently contained in the FQD. *'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 to a greenhouse gas intensity reduction of at least 13% by 2030, compared to the baseline set out in Article 27(1)(b).'*
2. While blending targets/limits remain for advanced biofuels, high-ILUC risk biofuels and crop-based biofuels, and a new RFNBO target is also introduced. *'The share of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX in the energy supplied to the transport sector, other than the maritime sector, shall be at least 0,2 % in 2022, 0,5% in 2025 and 2,2 % in 2030, and the share of renewable fuels of non-biological origin shall be at least 2,6% in 2030'.*
3. The scope of the Directive is being expanded to include for more than just road and rail. It appears that RED III will include all transport sectors (road, rail, NRMM, navigation, aviation, etc.).
4. While the double counting provisions are removed, the following is added: *the shares of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX and of renewable fuels of non-biological origin supplied in the aviation and maritime modes shall be considered to be 1,2 times their energy content.*

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