



Department  
for Transport

# Renewable Transport Fuel Obligation Annual Report 2020





# Renewable Transport Fuel Obligation Annual Report 2020

Presented to Parliament  
by the Secretary of State for Transport  
by Command of Her Majesty

March 2022

Department for Transport  
Great Minster House  
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# Executive summary

## Introduction

1. This report has been produced to ensure transparency in the financial reporting of the Renewable Transport Fuel Obligation (RTFO). It is not reported within the Department for Transport's Annual Report and Accounts as its inclusion would not be compliant with the Government's Financial Reporting Manual.
2. The RTFO is one of the Government's main policies for reducing greenhouse gas (GHG) emissions from road transport in the UK. It requires that a certain percentage of road transport fuel supplied is renewable and that it meets the sustainability criteria.

## Outturn for 2020

3. The total value of the RTFO for 2020 is **£1,600.2 million**. This is calculated as the difference between the cost of renewable fuels supplied and the fossil fuels they have replaced.

## Forecasts

4. The forecast total value of the RTFO for 2021 is **£1,423.8 million**. The RTFO outturn for 2022 is forecast at **£1,867.1 million**. The main driver for the slight decrease in 2021 compared to 2020 is a reduction in the volumes of fuels supplied while the increase for 2022 reflects increases in the obligation (see paragraph 1.16).

## Scheme outcomes

5. In 2020, the average GHG saving from the renewable fuels supplied under the RTFO was 82% compared to fossil fuels, representing a total saving of 5.24 million tonnes of CO<sub>2</sub> equivalent (eq.)<sup>1</sup>. This is equivalent to the annual emissions of approximately 2.5 million average cars<sup>2</sup>.

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<sup>1</sup> <https://www.gov.uk/government/statistics/renewable-fuel-statistics-2020-final-report>

<sup>2</sup> This figure is based on the average direct GHG emissions per car per year (2.06t CO<sub>2</sub>eq./year for the most recent available year, 2019) and is calculated by dividing the total direct territorial emissions associated with passenger cars (see [BEIS GHG inventory](#)) by the total number of cars in the UK (see [DfT Vehicles Statistics](#)).

6. The RTFO is meeting its objective of reducing GHG emissions from road transport. All the renewable fuels rewarded under the RTFO meet the mandatory sustainability criteria. The RTFO is designed and managed to ensure a high level of compliance with its requirements.

## **Signature and assurance review**

7. This report is signed by the Second Permanent Secretary, Department for Transport. The outturn figure for 2020 has been subjected to an assurance review by the National Audit Office (NAO) on behalf of the Comptroller and Auditor General, in line with the Direction issued by HM Treasury.

# 1. Introduction

## Purpose of this report

- 1.1 This report has been produced to ensure transparency in the financial reporting of the Renewable Transport Fuel Obligation (RTFO). The transactions generated by the RTFO are not income or expenditure attributable to the Department for Transport and the RTFO is not reported within the Department's Annual Report and Accounts as its inclusion would not be compliant with the Government's Financial Reporting Manual.
- 1.2 This report gives an outturn figure for the value of the RTFO for the 2020 Obligation year (January to December) alongside the outcomes for the scheme. Forecasts are also given for the 2021 and 2022 RTFO years. The National Audit Office (NAO) on behalf of the Comptroller and Auditor General has subjected the 2020 outturn data within this report to an assurance review: the assurance report is included on page 12.
- 1.3 This report also provides an estimate for the value of the GHG Reporting Regulations for 2020. 2020 is the final year of the GHG mechanism under the GHG Reporting Regulations.

## The RTFO

- 1.4 The RTFO is one of the Government's main policies for reducing greenhouse gas (GHG) emissions from transport in the UK, supporting the Government's Transport Decarbonisation Plan<sup>3</sup> and wider Net Zero Strategy<sup>4</sup>.
- 1.5 The RTFO requires that a certain percentage of fuel is renewable and provides a valuable incentive for the renewable transport fuel industry which contributes towards meeting this obligation. The scheme started in 2008 and has been amended over the years to strengthen sustainability provisions, increase targets and introduce greater incentives for certain feedstocks and fuel types.

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<sup>3</sup> <https://www.gov.uk/government/publications/transport-decarbonisation-plan>

<sup>4</sup> <https://www.gov.uk/government/publications/net-zero-strategy>



- 1.6 For the 2020 obligation year, fossil and renewable fuels used in road transport and non-road mobile machinery were covered by the RTFO, as well renewable fuels used in aircraft.
- 1.7 The RTFO operates with tradable certificates. These are called Renewable Transport Fuel Certificates (RTFCs) and are awarded to suppliers of renewable transport fuel that meet the sustainability requirements. To be awarded, suppliers must provide evidence to the RTFO Administrator that demonstrates that their fuel is sustainable. This information must be independently verified.
- 1.8 Obligated fuel suppliers to the UK market<sup>5</sup> are required to demonstrate that renewable transport fuel has been supplied for a set proportion of their total obligated fuel supply. For the 2020 obligation year, fuel suppliers were required demonstrate this by redeeming RTFCs equivalent to 10.637% of the volume of fossil and unsustainable renewable fuel supplied. Suppliers could meet this obligation by redeeming certificates that were received for their own renewable transport fuel supply, or by redeeming certificates that were bought from other suppliers of renewable transport fuel.
- 1.9 In 2018 the RTFO was amended to introduce a crop cap from 15 April 2018, and to introduce a target, from 2019 onwards, for a specific sub-set of advanced fuels termed 'development fuels' which are awarded separate development fuel RTFCs (dRTFCs).
- 1.10 The development fuel target takes into account the fuel type, production pathway and feedstock, and aims to incentivise those fuel pathways which need greater support and fit the UK's long-term strategic needs. Eligible fuels include aviation fuel, drop in fuels, hydrogen and synthetic natural gas. It was introduced on 1 January 2019 and requires that obligated suppliers provide a proportion of their total obligated fuel supply as development fuels. For 2020 this proportion was 0.166%.
- 1.11 Suppliers also have the option to buy-out of their obligation, paying 30 pence per litre of renewable transport fuel for which they have not redeemed an RTFC. This protects consumers from excessive increases in fuel prices by setting a maximum value for RTFCs. For fuel supplied from 1 January 2021, the RTFC buy-out price increased to 50 pence per litre (see paragraph 1.15). There is also a separate buy-out price of 80 pence per litre for the development fuel target. Any receipts from suppliers that buy-out are surrendered by the Department to the Exchequer, in line with HM Treasury rules.
- 1.12 Fuel suppliers can meet up to 25% of their obligation with certificates issued in the previous year. This reduces the impact of unexpected events and provides some protection against year to year volatility of fuel prices. An exception to this was in 2020, when there was no carry over from 2019 to 2020. This is because the renewable energy target for 2020 had to be met by fuel that was provided in 2020. Any RTFCs issued in 2019 may be carried over into the year 2021.

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<sup>5</sup> Those supplying at least 450,000 litres per year.

- 1.13 The RTFO guidance<sup>6</sup> sets out information on complying, reporting and verifying with the RTFO process for renewable and fossil fuel suppliers as well as independent verifiers.
- 1.14 The RTFO scheme process also undergoes an internal advisory report. The last report was completed in December 2020 and looked at the scheme's supervisory role in the context of certifying bodies. Prior to that, another internal audit took place in 2018 that looked at the scheme's approach to risks and risk scoring, the recommendations of which have been subsequently addressed.

## Recent Updates to the RTFO

- 1.15 Following a public consultation, the price for a supplier to buy-out from their obligation has been raised from 30p to 50p per RTFC. This has been implemented for the 2021 obligation year onwards. The buy-out price has increased due to recent increases in the cost of biofuels relative to petrol and diesel which mean that there is a risk that suppliers will 'buy-out' of their obligations to supply renewable transport fuel. The increase in the buy-out price therefore provides a greater certainty of delivering continued GHG savings from the RTFO scheme.
- 1.16 Further updates to the RTFO were introduced from January 2022. This included a 5% increase in the main obligation between 2021 and 2032 with an immediate 1.5% increase in 2022. The land criteria were strengthened to protect highly biodiverse wooded land and new criteria were established to address the impacts of biofuels made from forest biomass and to manage soil carbon impacts associated with using agricultural residues in biofuel production. The amendments also expanded the eligible transport modes from January 2022 so that renewable fuels of non-biological origin used in maritime as well as in fuel cell powered trains and other alternatively powered non-road vehicles are eligible for support in the form of RTFCs.
- 1.17 E10 petrol, which contains between 5.5 and 10% bioethanol, was introduced in UK forecourts from September 2021, replacing E5 as the standard blend of petrol. This change will enable greater quantities of bioethanol to be used in transport helping suppliers to meet increased obligations and increasing overall GHG savings.

## The GHG Reporting Regulations

- 1.18 Another policy that ran parallel with the RTFO was the Motor Fuel (Road Vehicle and Mobile Machinery) Greenhouse Gas Emissions Reporting Regulations 2012 as amended ('the GHG Reporting Regulations'), which came into effect on 15 April 2012. The GHG Reporting Regulations were a key measure for reducing GHG emissions from the fuel supplied for use in transport. They required that suppliers of fuels for use in road transport and non-road mobile machinery to achieve at least a 4% and 6% reduction in life cycle GHG emissions in 2019 and 2020, respectively, relative to a fossil fuel baseline set in 2010. From 2021 onwards there is no longer a GHG reduction target, although the reporting requirements continue.

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<sup>6</sup> <https://www.gov.uk/government/publications/renewable-transport-fuel-obligation-rtfo-compliance-reporting-and-verification>

- 1.19 Like the RTFO, the GHG Reporting Regulations ran by a tradable credit scheme. Eligible fuels that had a GHG intensity below the GHG target level for the relevant year were awarded GHG credits for each kg of CO<sub>2</sub> eq. saved. The majority of this target was met through the RTFO, although there were some other ways suppliers could generate credits such as supplying fossil gases or electricity for use in transport. They could also raise credits through upstream emission reductions (UERs), which are projects that reduce GHG emissions from upstream processes related to crude or gas extraction and other processes before the fossil raw material for transport fuel is refined.
- 1.20 As most of the GHG Reporting Regulations target was met by the RTFO, it is not included in the outturn for 2020. Instead, an estimate of the potential additional costs is provided in Chapter 6, which is an additional chapter compared to pre-2019 versions of the RTFO Annual Report.

## 2. Sign-off of report

- 2.1 As Accounting Officer for the Department for Transport I am responsible for ensuring that there is a high standard of financial management, including a sound system of internal control and effective financial systems. This responsibility includes the Renewable Transport Fuel Obligation (RTFO). I am content that appropriate financial controls over the RTFO are in place and that sufficient checks and reviews have been made to produce accurate and reliable financial data within this report. The assurance review by the National Audit Office, on behalf of the Comptroller and Auditor General, relates to the 2020 outturn. I have taken all reasonable steps to be aware of and provide necessary information to the auditors and I am not aware of any additional relevant information.



**Gareth Davies**

**08/03/2022**

Second Permanent Secretary  
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## 3. Assurance report

### **Renewable Transport Fuel Obligation Order (2007) Annual Report - Assurance Report 2020**

ASSURANCE REPORT TO THE SECRETARY OF STATE FOR TRANSPORT IN RELATION TO THE DISCLOSURE OF THE ADDITIONAL COST OF RENEWABLE TRANSPORT FUEL SUPPLIED UNDER THE RENEWABLE TRANSPORT FUEL OBLIGATION

I have evaluated through a reasonable assurance engagement the disclosure of the outturn related to the additional cost of renewable transport fuel supplied under the Renewable Transport Fuel Obligation (RTFO) included as section 4 in the Renewable Transport Fuel Obligation Scheme Annual Report for the year ended 31 December 2020.

#### **Subject matter, applicable criteria and limitations**

- 3.1 The Secretary of State for Transport is required by HM Treasury direction, as an imputed tax and spend measure, to prepare an annual report in respect of the RTFO scheme established under the Renewable Transport Fuel Obligation Order 2007 (as amended). Included within this report, at section 4, is a disclosure of the outturn related to the additional cost of renewable transport fuel supplied under the RTFO scheme for the period 1 January 2020 to 31 December 2020. This disclosure is derived from a model designed by the Department for Transport, with observable inputs.
- 3.2 I have reviewed the output of the model and considered the adequacy with which the model derives a figure for the additional cost of renewable transport fuel supplied under the RTFO scheme. I have not considered alternative measurement or evaluation methods. I have considered whether the disclosure has been properly prepared in accordance with HM Treasury direction.
- 3.3 My review extended only to providing assurance on the disclosures made for the period 1 January 2020 to 31 December 2020. My historic evaluation is not relevant to future periods due to the risk that the model may become inadequate because of changes in conditions.

### **Specific purpose of this assurance report**

- 3.4 This report has been prepared to provide the Secretary of State with reasonable assurance over whether section 4, the outturn related to the additional cost of renewable transport fuel supplied under RTFO, in all material respects, gives a true and fair view for the period 1 January 2020 to 31 December 2020.

### **Management responsibilities**

- 3.5 The Permanent Secretary on behalf of the appointed administrator, the Secretary of State for Transport, is responsible for preparing section 4, the outturn related to the additional cost of renewable transport fuel supplied under RTFO, and for being satisfied that this note is, in all material respects, true and fairly stated.

### **Auditor responsibilities for the assurance review**

- 3.6 My responsibility is to gather appropriate and sufficient evidence to support an opinion on section 4, the outturn related to the additional cost of renewable transport fuel supplied under RTFO, in accordance with International Standards on Assurance Engagements (UK) 3000, Assurance Engagements Other than Audits or Reviews of Historical Financial Information.

### **Performance of the engagement in accordance with International Standards on Assurance Engagements (UK) 3000, Assurance Engagements Other than Audits or Reviews of Historical Financial Information**

- 3.7 I performed a reasonable assurance engagement in accordance with the principles of International Standards on Assurance Engagements (UK) 3000, Assurance Engagements Other than Audits or Reviews of Historical Financial Information issued by the International Auditing and Assurance Standards Board. The objective of a reasonable assurance engagement is to perform such procedures as to obtain information and explanations which I consider necessary in order to provide me with sufficient appropriate evidence to express a positive conclusion on the disclosure of outturn related to additional cost of renewable transport fuel supplied under RTFO in section 4 of the report. No other section of the annual report has been evaluated under this engagement.

### **Quality control and compliance with ethical standards**

- 3.8 I apply International Standard on Quality Control (UK) 1, Quality Control for Firms that perform audits and reviews of Financial Statements, and other Assurance and Related Service Engagements. Accordingly, I maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.
- 3.9 I have complied with the Financial Reporting Council's Revised Ethical Standard 2019. I have also elected to apply the ethical standards relevant to listed entities. I

am independent of the Department for Transport in accordance with the ethical requirements that are relevant to my assurance review. My staff and I have fulfilled our other ethical responsibilities in accordance with these requirements.

### **Summary of work performed**

3.10 The additional cost of renewable transport fuel is estimated using a cost model. My assurance work included an examination of this cost model, to confirm that this is consistent with its intended function and that its inputs are consistent with the underlying source data. I also made enquiries with management as to the controls surrounding the collection of data where it was from internal sources.

### **Conclusion**

3.11 In my opinion, section 4 of the RTFO annual report, showing the outturn related to the additional cost of renewable transport fuel supplied under the RTFO scheme for the period 1 January 2020 to 31 December 2020, is, in all material respects, both fairly stated and properly prepared in accordance with HM Treasury direction.



**Matthew Kay**

**15/03/2022**

Director

National Audit Office

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SW1W 9SP

## 4. Outturn for 2020 (subjected to an assurance review)

| RTFO outturn          |                  |
|-----------------------|------------------|
| RTFO outturn for 2020 | £1,600.2 million |

**Table 1** RTFO outturn 2020

### Cost estimation methodology and data sources

- 4.1 The RTFO requires road transport fuel suppliers to blend a certain volume of renewable fuels into fossil fuels. The most significant renewable fuels deployed through this mechanism are bioethanol (22.2% of renewable fuel supply in 2020), which is blended into fossil petrol and biodiesel (66.7% of renewable fuel supply in 2020, when including biodiesel ME and off-road biodiesel), which is blended into fossil diesel.
- 4.2 Renewable fuels have historically been more expensive than fossil fuels. Fuel suppliers/retailers are likely to pass some of these additional costs onto the final consumer. Renewable fuels also have lower energy content per litre, so the use of renewable fuels increases the cost of motoring.
- 4.3 This price difference between fossil fuels and renewable fuels can be observed in the market. The Department receives renewable fuels market price data that is produced weekly by 'Argus Media', a leading global provider of market data<sup>7</sup>.
- 4.4 We have estimated the cost imposed by the RTFO using monthly volumes of renewable fuels as reported through the RTFO statistics<sup>8</sup> and price differentials as reported through Argus Media's market reports. To take account of the lower energy content of renewable fuels, we compare fuel costs in terms of £/MJ and not £/litre,

<sup>7</sup> <https://www.argusmedia.com/en>

<sup>8</sup> <https://www.gov.uk/government/collections/renewable-fuels-statistics>



based on energy density factors quoted in the RTFO Standard Data<sup>9</sup>. The outturn also includes the cost of buy-outs required to meet the main and development fuel obligation.

- 4.5 Since the biodiesel price varies depending on the feedstock, we have generated separate estimates for biodiesel from different feedstocks. For bioethanol, there is just one market price and no distinction between feedstocks. For the remaining renewable fuels that are not bioethanol or biodiesel, pricing information is not readily available. We have used proxies for these small-volume fuels, based on their closest substitute fuels.
- 4.6 The outturn for 2020 (£1,600.2 million) is significantly larger than the outturn for 2019 (£998.7 million). One factor driving this is the increase in the price differential, as the price of renewable fuels has increased.
- 4.7 The 2020 report has been conducted on an annual basis, in line with the 2019 report but differing from the 2018 RTFO reporting year which ran from 15<sup>th</sup> April 2018 to 31<sup>st</sup> December 2018.

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<sup>9</sup> <https://www.gov.uk/government/publications/renewable-transport-fuel-obligation-rtfo-compliance-reporting-and-verification>

## 5. Forecasts

| Future RTFO value      |                  |
|------------------------|------------------|
| RTFO forecast for 2021 | £1,423.8 million |
| RTFO forecast for 2022 | £1,867.1 million |

Table 2 Future RTFO value forecasts

### Cost estimation methodology and data sources

#### RTFO Forecast for 2021

5.1 The forecast for 2021 (£1,423.8 million) has been modelled using the same methodology and data sources as the outturn for 2020, with the following exceptions:

- Data was extracted in September 2021, at which point fuel supply volumes were available from January to August. At this point, RTFCs had been issued to 42% of the renewable fuel so far supplied. Detailed feedstock information is unavailable until RTFCs have been awarded. To increase the reliability of the data for January to August 2021, we have estimated what the fuel supply looks like by mapping actual fuel supplied volumes onto the 42% of fuels already certified, assuming most of the fuel already supplied will eventually become certified. The supply for the remaining months of the year was assumed to be an average of fuel supplied from March to August 2021 – the amount of fuel supplied prior to mid-March 2021 was considered to be unrepresentative due to subdued fuel demand as a result of lockdown.
- Actual price data, extracted from Argus, was available from January to October 2021. For the two remaining months, the October price was rolled over.
- The forecast for 2021 includes the cost of buy-outs required to meet the development fuel obligation for forecasted fossil fuel supply, whilst assuming that enough certificates will be carried over to cover the main obligation.

5.2 The main driver for the slight decrease from 2020 is a reduction in the volumes of fuels supplied.

## RTFO Forecast for 2022

5.3 The forecast for 2022 (£1,867.1 million) has been modelled using the same methodology and data sources as the forecast for 2021, with the following exceptions:

- Fuel supply volumes for 2022 have been forecast using an average of actual fuel supply volumes for 2020 and estimated supplies for 2021, and then adjusted for the increase in the obligation. The average of the two years' supply was used to smooth fluctuations in fuel supply as a result of COVID-19 lockdowns.
- The 2021 forecast price data has been adjusted for inflation and used for the 2022 forecast.
- The forecast for 2022 includes the cost of buy-outs that will be required to meet the development fuel obligation for forecasted fossil fuel supply, whilst assuming that enough certificates will be carried over to cover the main obligation.

## 6. Greenhouse Gas Reporting Regulations

### Estimated value for the GHG Reporting Regulations

|  |                       |
|--|-----------------------|
| <b>GHG Reporting Regulations estimate for 2020</b> | <b>£22.70 million</b> |
|--|-----------------------|

**Table 3** Estimated value for the GHG Reporting Regulations

### GHG Reporting Regulation Estimate for 2020

- 6.1 The GHG Reporting Regulations ran alongside the RTFO. The requirement for suppliers to meet a given GHG reduction target began on 1 January 2019 and ended on 31 December 2020.
- 6.2 The GHG Reporting Regulations placed a mandatory requirement for suppliers of fuels for use in road transport and non-road mobile machinery to achieve at least a 4% and 6% reduction in life cycle GHG emissions in 2019 and 2020, respectively, relative to a fossil fuel baseline set in 2010. Suppliers could meet this GHG saving target by redeeming GHG credits towards their GHG saving target. One GHG credit was awarded to each kg of CO<sub>2</sub> eq. saved.
- 6.3 In 2020, suppliers surpassed the 6% GHG emission saving target, reaching an overall saving of 6.2%. This was predominantly met (63.1%) by the renewable fuel supplied under the RTFO, although a smaller proportion was met by upstream emission reductions (UERs, 36.3%), fossil gases (0.6%), and electricity supplied to vehicles (0.1%).
- 6.4 Price data is not available for UERs so the potential additional value of the GHG Reporting Regulations is estimated using data on the price of GHG Credits. This has been done by using:
- actual weekly price data on GHG credits from Energy Census from first trading to the close of the 2020 RTFO year (September 2021)
  - actual data on dates and volumes of GHG credit trades between suppliers and traders, as recorded on the GHG Reporting Regulations Operating System
- 6.5 The total demand for additional GHG credits needed to meet the GHG Reporting Regulation target was calculated by deducting the number of GHG credits awarded

to renewable fuels, that were supplied and valued under the RTFO, from the total number of GHG credits redeemed by suppliers under the scheme.

- 6.6 Following this, the estimated value of the GHG Reporting Regulations, that is additional to the RTFO is £22.70 million. This is considerably smaller than the maximum cost estimate for 2020 that was published in the 2019 RTFO Annual Report (£228 million). This maximum cost estimate was calculated based on the GHG Reporting Regulation buy-out price (£74/t CO<sub>2</sub>eq.) whereas the target was actually met by real GHG emissions reductions (see paragraph 6.3).

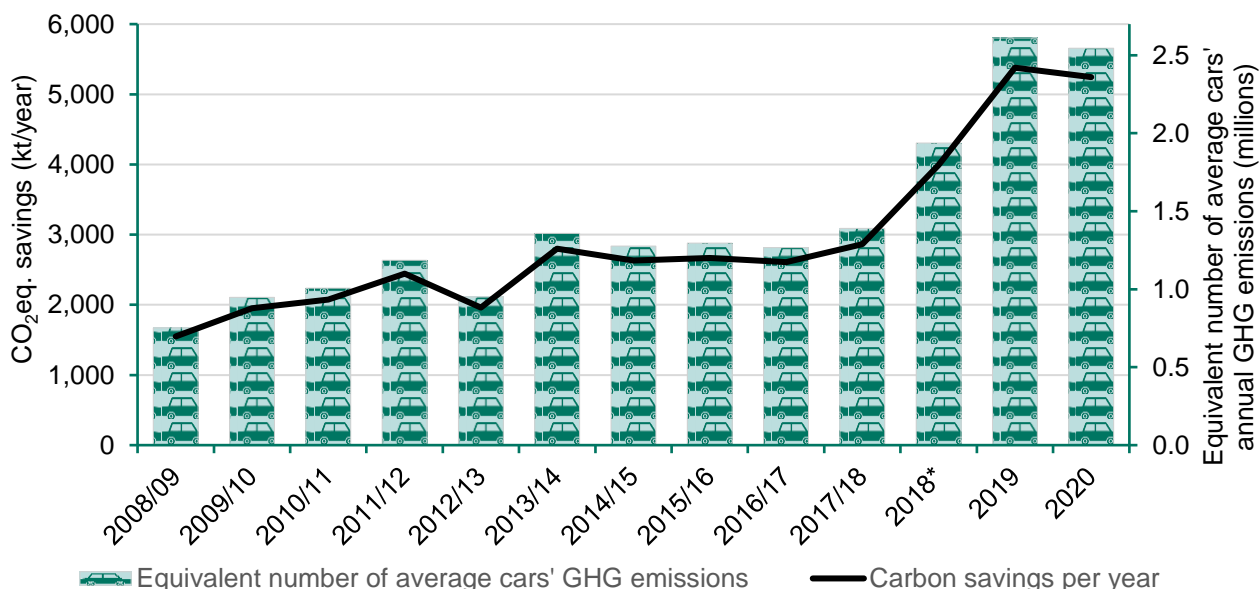
## 7. Scheme outcomes

### Introduction

7.1 The main policy objective of the RTFO is to reduce GHG emissions from transport. It requires that a certain percentage of road transport fuel is renewable and meets minimum GHG sustainability criteria.

### Greenhouse gas savings

7.2 The increased RTFO Obligation is reflected by an increase in renewable fuel supplied as a proportion of total fuel (5.9% in 2020 vs. 5.1% in 2019). This represents a supply of 2.54 billion litres equivalent (eq.) of renewable fuels in 2020. Figure 1 shows the total CO<sub>2</sub> eq. savings and the number of average cars' annual GHG emissions these savings are equivalent to<sup>10</sup>.



**Figure 1** Greenhouse gas savings from the RTFO (\* The GHG savings for the 2018 short year has been extrapolated to represent a full calendar year).

<sup>10</sup> The average direct GHG emissions per car per year (2.06t CO<sub>2</sub>eq./year for the most recent available year, 2019) is calculated by dividing the total direct territorial emissions associated with passenger cars (see [BEIS GHG inventory](#)) by the total number of cars in the UK (see [DfT Vehicles Statistics](#)).

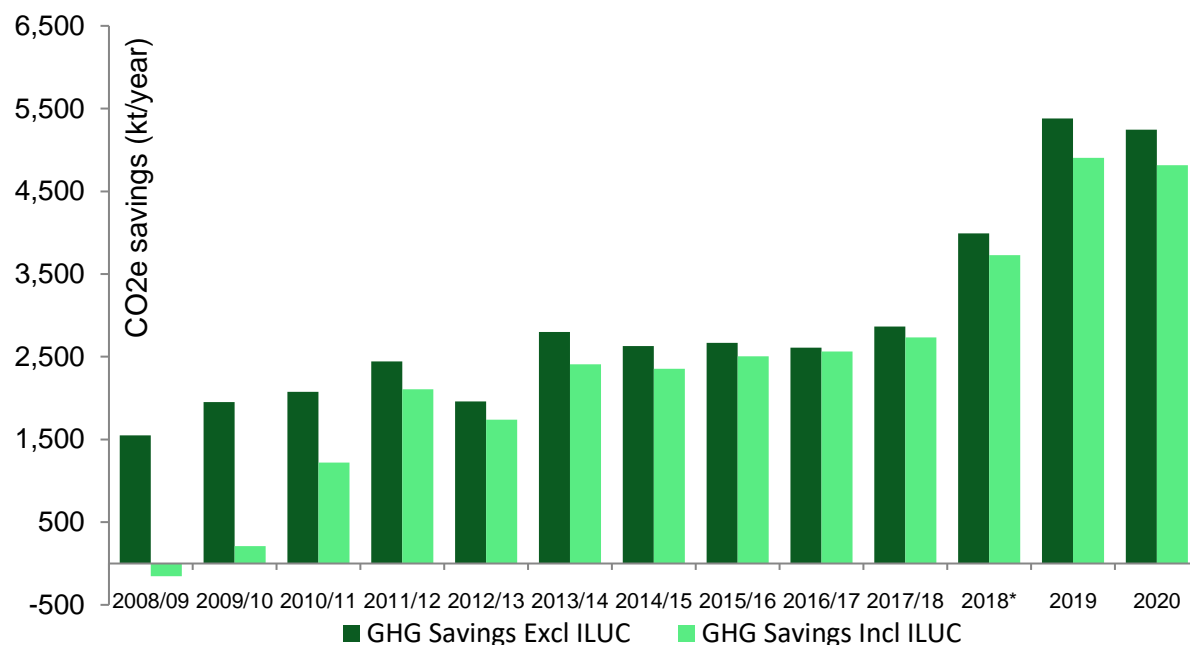
7.3 The total renewable fuel supplied includes 2.42 billion litres of liquid fuel and a smaller volume (61.1 million kg, or 111.8 million litres eq.) of biogases (biomethane and biopropane). There was also a small volume of Hydrogen (613 kg, or 2,807 litres eq.) following the introduction of development fuels. Biodiesel (including Biodiesel ME and Off-road biodiesel) and bioethanol represent 66.7% and 22.2% of the total volume of renewable fuels, respectively, with other fuels accounting for the remaining 11.1%.

7.4 In 2020, the average GHG saving from the renewable fuels supplied under the RTFO was 82% compared to fossil fuels (excluding indirect land use change – see paragraph 7.6). This represents a total saving of 5.24 million tonnes of CO<sub>2</sub> eq. This is equivalent to the annual emissions of approximately 2.5 million average cars. This is a slight decrease compared to 2019 (5.38 million tonnes of CO<sub>2</sub> eq.) as a result of less fuel being supplied overall in 2020 due to the COVID-19 pandemic and associated restrictions.

7.5 In recent years the level of GHG savings have gradually increased (Figure 2), which is due to higher volumes of renewable fuels and the increasing proportion of waste-derived renewable fuels (76% in 2020). The RTFO awards double RTFCs to waste-derived renewable fuels as they do not have ILUC implications and generally have greater GHG emissions savings than crop-derived renewable fuel.

### Indirect land use change

7.6 When agricultural land is used to grow a feedstock for renewable fuel production, there may be a 'knock-on' effect from the expansion of agricultural land use into other areas. This is called 'indirect land use change' (ILUC). ILUC may involve expansion onto areas of high carbon stock which leads to additional GHG emissions. The RTFO accounts for these GHG emissions.



**Figure 2** RTFO GHG savings excluding and including ILUC per obligation year (\* The GHG savings for the 2018 short year was extrapolated to represent a full calendar year).

- 7.7 After accounting for ILUC, in 2020, the total GHG saving from the RTFO was 4.81 million tonnes of CO<sub>2</sub> eq. (Figure 2).
- 7.8 In the early years of the RTFO, there was a high proportion of crop-based feedstocks. The total GHG emission savings for these years were low, and even negative after accounting for the risk of ILUC from these crops. Since 2011 there have been additional incentives for renewable fuels from waste-based feedstocks and in 2020, 76% of UK renewable fuels were made from waste.

## Renewable transport fuel sustainability and sources

- 7.9 To receive RTFCs, suppliers must be able to provide evidence that their renewable fuels meet the sustainability requirements. For 2020, renewable fuels had to meet a minimum GHG saving of 50% if the installation in which they were produced was operating on or before 5 October 2015, and 60% if produced in an installation that was in operation after that date.
- 7.10 Suppliers must ensure that growing crops as a feedstock for renewable fuels does not lead to a loss of biodiversity or loss of high-carbon stock land such as forest or peatland. In 2020, these sustainability requirements were met for 100% of the renewable transport fuel supplied into the UK.
- 7.11 A total of 42 different feedstocks made up the renewable fuel supply in 2020, 25 of which were wastes. Table 4 shows the main feedstocks from which the UK's renewable fuels were made in 2020. "Other fuels" represent a mix of 12 renewable fuels including hydrotreated vegetable oil (HVO), biomethanol and biomethane.
- 7.12 The top five waste feedstocks in 2020 were used cooking oil (over half of all renewable fuel), food waste, starch slurry (waste), category 1 tallow and waste pressings from production of vegetable oils.

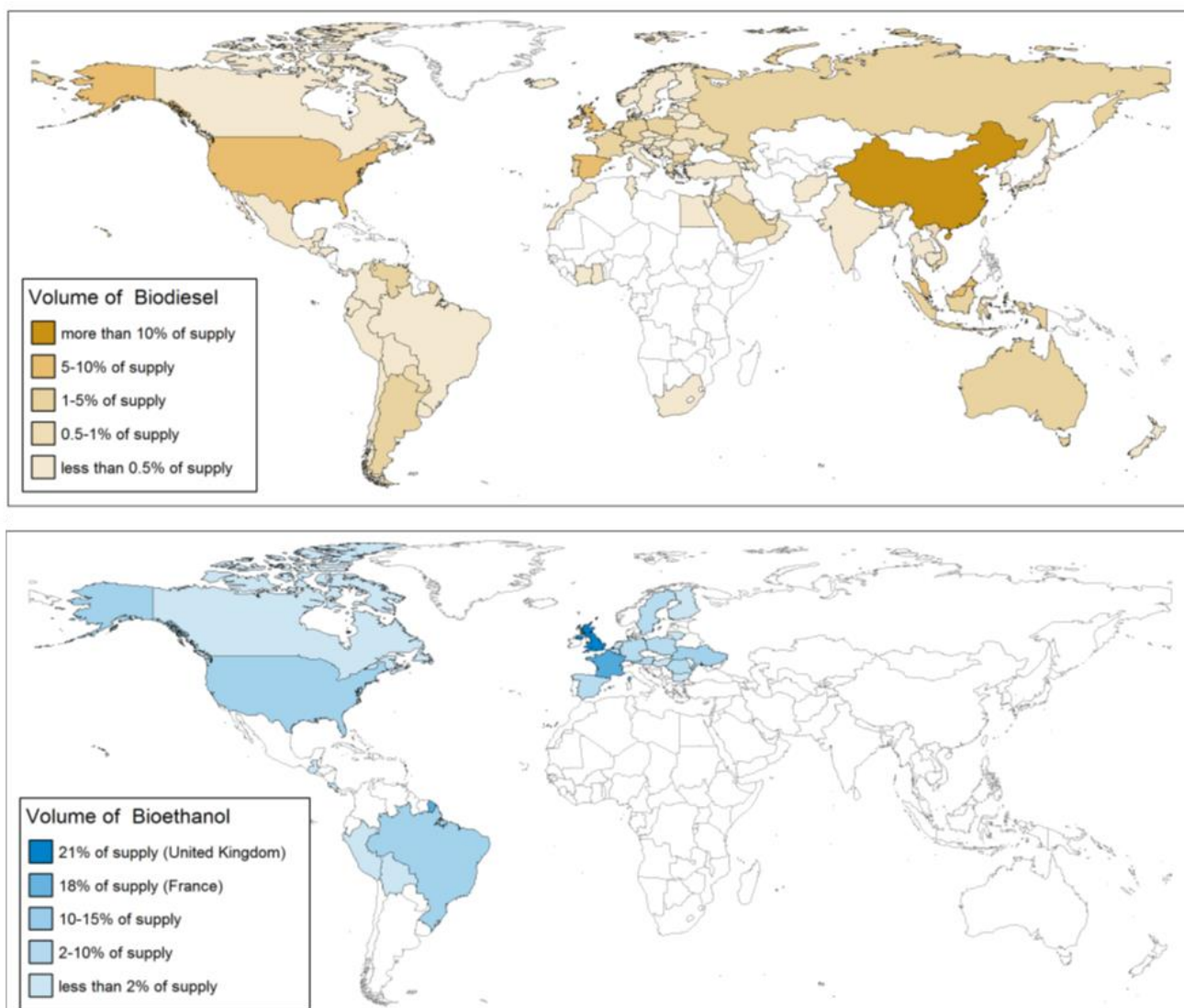
| Fuel type    | Feedstock                                    | Total volume (million litres equivalent) | Percentage of total renewable fuel supply |
|--------------|--|--|---|
| Biodiesel    | Used cooking oil                             | 1,279.70                                 | 50.5%                                     |
| Biodiesel    | Tallow - category 1                          | 88.34                                    | 3.5%                                      |
| Biodiesel    | Soy  | 69.45                                    | 2.7%                                      |
| Biodiesel    | Oilseed rape                                 | 60.22                                    | 2.4%                                      |
| Biodiesel    | Soapstock acid oil contaminated with sulphur | 52.01                                    | 2.1%                                      |
| Biodiesel    | Other biodiesel feedstocks                   | 140.45                                   | 5.5%                                      |
| Bioethanol   | Corn   | 176.87                                   | 7.0%                                      |
| Bioethanol   | Wheat  | 100.95                                   | 4.0%                                      |
| Bioethanol   | Starch slurry (waste)                        | 92.56                                    | 3.7%                                      |
| Bioethanol   | Sugar cane                                   | 74.06                                    | 2.9%                                      |
| Bioethanol   | Sugar beet                                   | 57.64                                    | 2.3%                                      |
| Bioethanol   | Other bioethanol feedstocks                  | 60.83                                    | 2.4%                                      |
| Other fuels  | Other feedstocks                             | 282.70                                   | 11.1%                                     |
| <b>Total</b> |  | <b>2,535.78</b>                          | <b>100.0%</b>                             |

**Table 4** Most common feedstocks for UK renewable fuels in 2020.



7.13 High ILUC feedstocks represented a small (but significant) volume of renewable fuel, such as palm (1.7%), soy (2.7%) and oilseed rape (2.4%). As in 2019, a small volume of hydrogen was produced using wind power. The only new feedstocks used were sugar beet betaine residue (0.3% of renewable fuel) and waste slurry from the distillation of grain mixture (0.03% of renewable fuel).

7.14 Feedstocks for UK renewable transport fuel were sourced from a total of 91 countries, compared to 88 in 2019 and 18 when the RTFO began in 2008-09. The five top supplying countries are China, UK, USA, Malaysia and Spain. Last year, in 2019, the five top countries were China, UK, USA, Spain and France. The proportion of renewable fuels supplied by the UK has increased to 12% compared to 11% in 2019. Figure 3 shows the top supplying countries for biodiesel and bioethanol.



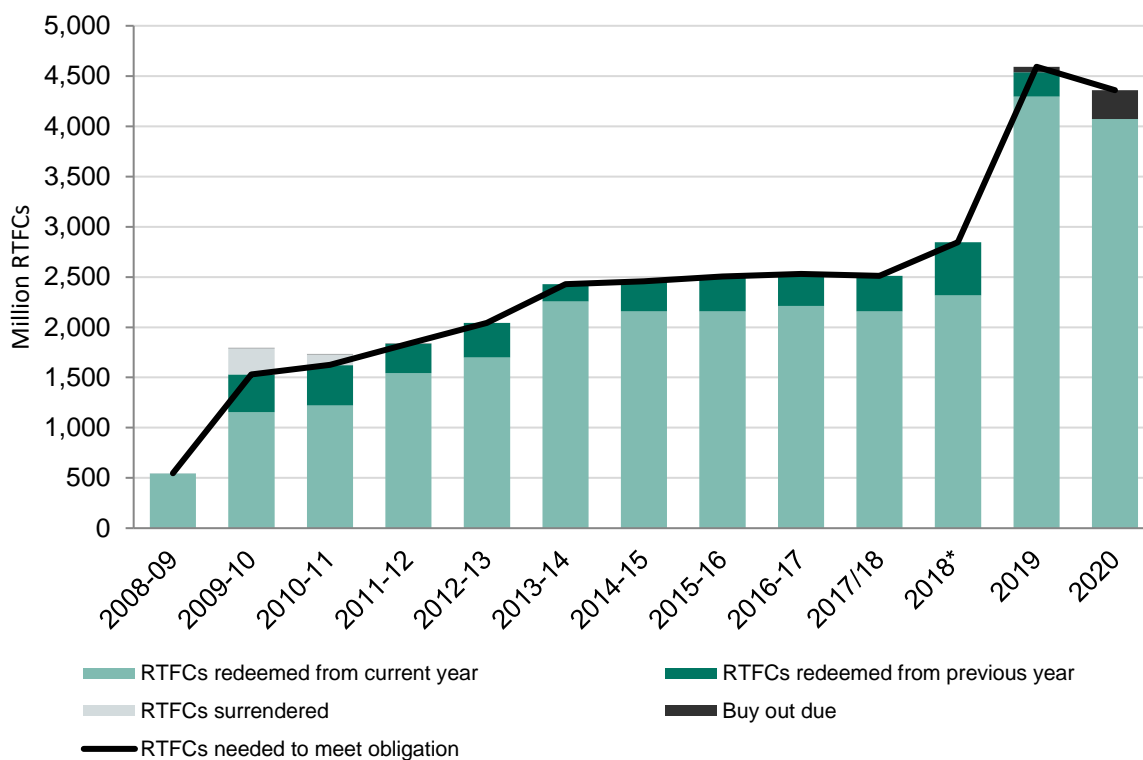
**Figure 3** Global feedstock sources for UK Biodiesel and Bioethanol 2020

## Meeting the 2020 obligation

7.15 The main obligation for 2020 (10.637%) was met by suppliers.<sup>11</sup> Five obligated suppliers achieved this at least partially through buy-out.

7.16 The development fuel obligation for 2020 (0.166%) was also met by suppliers. However, all suppliers achieved this by at least partially buying out of their obligation.

7.17 In 2020, 4,072 million RTFCs were redeemed. 6.6% of the total obligation (including the development fuel sub-target) was met through buy-out. Figure 4 shows the number of RTFCs redeemed and surrendered each year for the total obligation including both the main obligation and development fuel sub-target.



**Figure 4** RTFCs redeemed and surrendered. The figures shown here include the development fuel sub-target, brought in from 2019. (\* The GHG savings for the 2018 short year was extrapolated to represent a full calendar year).

7.18 As the Administrator of the RTFO, the Department for Transport operates systems and processes designed to prevent and detect inaccurate or non-compliant applications for RTFCs. It also has powers to impose civil penalties if certain requirements of the RTFO Order are not complied with. In 2020, 4.7 million RTFCs were revoked due to inaccurate applications made that year. No civil penalties were imposed.

<sup>11</sup> Note that the actual equivalent share of fuel supplied is somewhat less than the obligation level due to buy-out, carry-over of certificates from previous years and predominantly because renewable fuels produced from eligible waste feedstocks and renewable fuels of non-biological origin are awarded double certificates. Renewable fuels represented 5.9% of total fuel in 2020 (see paragraph 7.2).

## Modelled RTFC prices

7.19 We have modelled certificate prices for the 2020 obligation year using market price data for fuels (since RTFC price data is not publicly available). For this purpose, we assume used cooking oil biodiesel is the marginal fuel supplied under the RTFO and therefore it is the price differential between diesel and used cooking oil biodiesel which determines the RTFC price. We estimate that RTFC prices in 2020 ranged from £0.28 per RTFC to £0.32 per RTFC, with a mean value of £0.30 per RTFC.

## Conclusion

7.20 The RTFO continues to meet its objective of reducing GHG emissions from road transport. All the renewable fuels rewarded under the RTFO meet the mandatory sustainability criteria. The RTFO is designed and managed to ensure a high level of compliance with its requirements.









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