EUROPEAN RENEWABLE ETHANOL

Overview of biofuel policies and markets across the EU-28

September 2018

ePURE
european renewable ethanol

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Note to the reader

Rationale for the report

In June 2016, ePURE published a report on Member States' biofuel policies and markets, detailing the national transposition and implementation status of the Renewable Energy Directive (RED) and the Fuel Quality Directive (FQD). This report updates that status for each country now that the deadline for transposing the so-called ILUC Directive amending both the RED and FQD has passed.

The report seeks to provide a detailed overview of the current national biofuel policies across the EU 28 Member States, with a focus on:

- The national policy frameworks regulating biofuels, in particular the implementation of the RED and FQD as amended by the ILUC Directive; and
- Relevant national fuels (including biofuels) and vehicles market data.

Sources and methodology

- Most of the national legislative information included in the report was provided between March and May 2018 by ePURE members and/or officials or biofuels experts in the relevant capitals. The texts of the legislations are accessible via hyperlinks included in each Member State profile.
- Market data and graphs have been prepared and designed by the ePURE team based on data from the European Commission, European industry associations and Member State reports. Specifically:
    - **Energy consumed in the transport sector:** Actual figures from 2010 to 2014 have been extracted from Member State progress reports and figures for 2015 and 2016 have been extracted from SHARES reports;
    - **RES-T contribution of each fuel category and share according to RED calculation:** Data have been extracted from SHARES reports. When possible, details were given on the crop-based biofuels. Assessment of the percentage of energy mix and share of the RES-T were calculated according to the RED calculation methodology (including multiple counting);
    - **Ethanol blends available on the market, consumption, market share and biogasoline energy incorporation:** Data on fuel blends consumptions have been extracted from the EU fuel quality monitoring from Ricardo-AEA (2012/2013) and the European Environment Agency (2014-2016). Biogasoline incorporation was calculated from the biogasoline consumption from Member State progress reports and petrol biofree consumption from Eurostat;
    - **Sales of new road passenger cars and passenger cars fleet by fuel type:** Data have been extracted from ACEA reports. Data for the sales of new road passenger cars by fuel type were not available for the EU-28 (replaced by the EU-15) as well as Bulgaria, Cyprus, Czech Republic, Estonia, Croatia, Hungary, Malta, Lithuania, Luxembourg, Latvia, Poland, Romania, Slovenia, Slovakia. Data for the passenger cars fleet were not available for Bulgaria, Cyprus, Malta.

Acknowledgements

We would like to thank all ePURE members and national experts who have provided us with their valuable input.

Abbreviations and references

List of abbreviations

Legislation:

- **FQD:** Fuel Quality Directive
- **ILUC Directive**: Indirect Land-Use Change Directive
- **RED**: Renewable Energy Directive

Fuels:

- **ETBE:** Ethyl Tert-Butyl Ether
- **Crop-based biofuels:** Biofuels produced from cereal and other starch-rich crops, sugars and oil crops and from crops grown as main crops primarily for energy purposes
- **E0:** "Ethanol-free" petrol blends
- **E5:** Petrol blend that can contain up to 5% of ethanol in volume
- **E10:** Petrol blend that can contain up to 10% of ethanol in volume
- **E85:** Ethanol fuel blend that can contain up to 85% of ethanol in volume
- **LPG:** Liquefied Petroleum Gas

Vehicles:

- **AFV**: Alternative Fuelled Vehicle
- **BEV:** Battery Electric Vehicle
- **ECV:** Electricity Chargeable Vehicle (notably includes BEV, FCEV, PHEV)
- **FCEV**: Fuel Cell Electric Vehicle
- **HEV:** Hybrid Electric Vehicle (includes full and mild hybrids)
- **LPG:** Liquefied Petroleum Gas Vehicles
- **Other AFV:** Includes Alternative Fuelled Vehicles that are not electric (e.g. LPG-fuelled, Natural gas vehicles, E85 vehicles)
- **PHEV:** Plug-in Hybrid Electric Vehicles

Other reporting abbreviations (incl. units):

- **GHG:** Greenhouse Gas
- **l:** Litre
- **Ktoe**: Thousand tonnes of oil equivalent
- **N/A:** Not available
- **NREAPs**: National Renewable Energy Actions Plans
- **RE**: Renewable Energy
- **RES-T:** Renewable Energy Share in Transport

List of references

ACEA: Trends in fuel type of new cars between 2015 and 2016 by country

ACEA: Vehicles in use Europe 2017

European Commission: National Renewable Energy Action Plans (2011)

European Commission: Member States Progress Report (2009-2010, 2011-2012, 2013-2014)

European Environment Agency: Fuel quality monitoring in the EU (2014-2016)

Ricardo-AEA: EU fuel quality monitoring (2012, 2013)

SHARES: Energy consumed in the transport sector, RES-T contribution of each fuel category

RES Legal: Legal Sources on Renewable Energy

Executive summary

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:**
  - **The Renewable Energy Directive 2009/28/EC (RED) and the Fuel Quality Directive (FQD) as amended by Directive 2009/30/EC** have been transposed in all 28 Member States.
  - **Directive 2015/1513/EC (referred to as the 'ILUC Directive')** amending the RED and FQD was to be transposed by 10 September 2017. To ePURE's best knowledge, 19 Member States have implemented it: Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Luxembourg, Malta, Spain, Sweden, Slovakia, Lithuania, Poland, Portugal, Netherlands and the UK. Five Member States are in process of transposing it into their national legislation: Bulgaria, Latvia, Ireland, the Czech Republic and Greece.

- **Crop cap**:
  - **Within those Member States which have fully transposed the ILUC Directive:** Austria, Belgium, Croatia, Spain, Estonia, France, Finland, Hungary, Sweden, Slovakia, Malta, Lithuania, Poland, Portugal, Denmark and Italy have introduced the 7% crop cap. Luxembourg has not specified its level while Germany decided to lower it to 6.5% and the UK to 4%, with further reduction post-2020. The Netherlands sets the cap at 3% for 2018, 4% for 2019 and 5% for 2020.
  - **Within those Member States which are in the process of transposing the ILUC Directive:** Bulgaria and Greece proposed to set the cap at 7%, while the Irish authorities have no plans to deviate from the 7%. In Latvia, the cap is included in the draft law, while in Czech Republic the crop cap has not been introduced.

- **Advanced biofuels:**
  - **Within those Member States which have fully transposed the ILUC Directive:** Austria, Estonia, Finland, Lithuania, Portugal and Malta set the sub-target for advanced biofuels at 0.5%. Spain, Portugal, France, Croatia, Slovakia, Belgium, Germany and Poland have decided to set a sub-target lower than 0.5% by 2020. Denmark and Italy have increased the value above 0.5%. There is no sub-target set in the legislation in Hungary, Sweden and in the UK. The Netherlands sets the sub-target for advanced for at least 0.6% for 2018, 0.8% for 2019 and 1% for 2020, double counted.
  - **Within those Member States which are in the process of transposing the ILUC Directive:** Latvia and the Czech Republic propose a sub-target at 0.5%. Bulgaria proposes to set the sub- target for advanced biofuels at 0.05% in 2020, while Greece and Ireland would endeavour to achieve 0.2% and 0.25% respectively.

- **The double counting mechanism for biofuels** is in place in 20 Member States. It is in process of being implemented in the Czech Republic, while in Spain it is not operative yet. To ePURE's best knowledge, those countries that do not have double counting are Bulgaria, Sweden, Lithuania, Latvia and Germany.

Biofuels and decarbonisation targets

- **Biofuels targets:**
  - In 2018, 26 of the 28 Member States have some sort of biofuels incorporation obligation:
    - 14 had an overall biofuels incorporation target;
    - 8 had placed a differentiated renewables obligation in petrol or diesel or both;
    - 4 had both an overall biofuels obligation and differentiated incorporation obligations in petrol and /or diesel.
  - 2 Member States do not have mandatory biofuels incorporation but rely solely on targets for the reduction of the carbon intensity of transport fuels: Germany and Sweden as of July 2018.

Executive summary

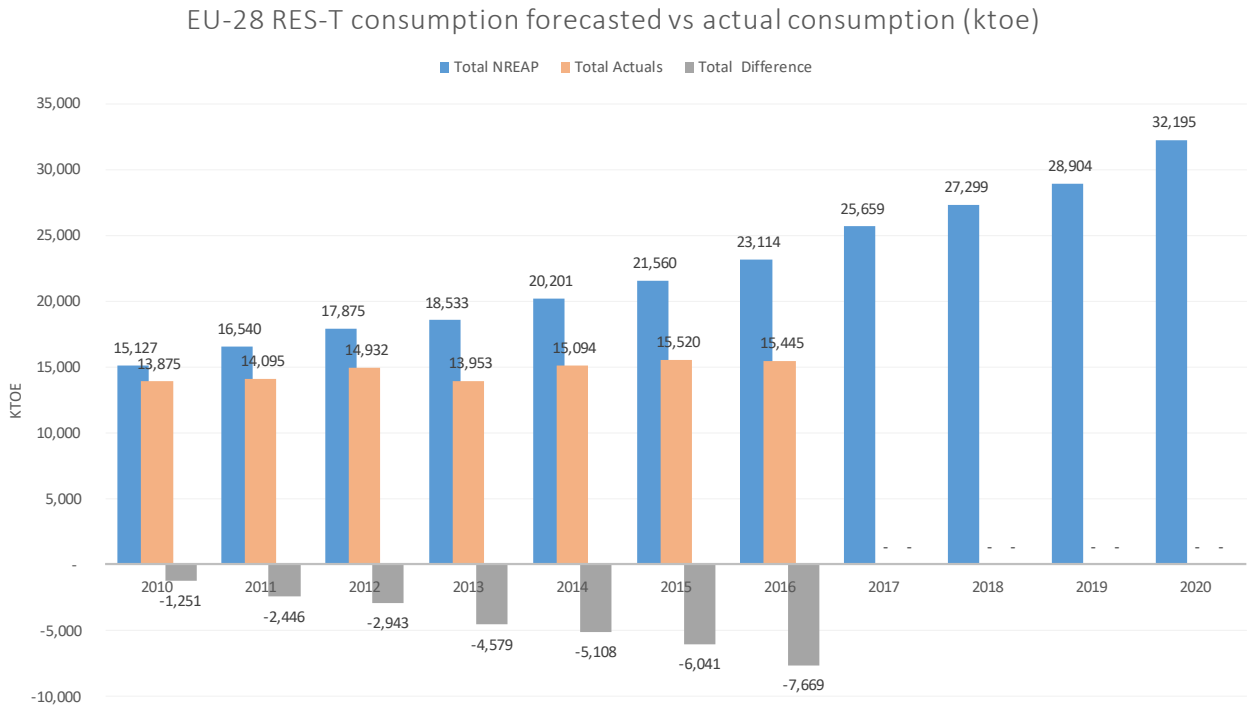
- **GHG reduction targets for transport fuels:** Article 7a of the FQD requiring the decrease of transport fuels' GHG intensity is implemented in all Member States. In Germany, the 6% emissions reduction targets applies to 2020 and beyond.

- **Penalties:** In 24 Member States where biofuels incorporation obligations are in place, as well as in Germany and Sweden, fuel suppliers that fail to meet their obligation are liable to a penalty or can pay a buy-out price. There is no penalty system for suppliers that do not fulfil the biofuel obligation in Latvia and Denmark.

- **Tax incentives for biofuels/or blends:** Most of the countries do not have differentiated fiscal frameworks for biofuels. Austria, Croatia, Czech Republic, France, Sweden, Slovakia, Denmark, Lithuania, the Netherlands, Slovenia and Portugal have incentives in order to increase the use of biofuels. In France, E10 and E85 are taxed less while in Sweden and Denmark the taxation is reduced based on the CO_2 of the fuels. In Finland transport fuels are taxed on their energy content and CO_2 footprint. Latvia and Czech Republic apply a reduced excise duty rate on E85 that also theoretically applies in Netherlands (although E85 is no longer offered in the Dutch market). Furthermore, the excise duty rate for biofuels is set at 0% in Croatia and Slovenia, while in Portugal biofuels produced only by small producers benefit from excise tax exemption.

Assessment of Member States' progress in reaching 2020 objectives

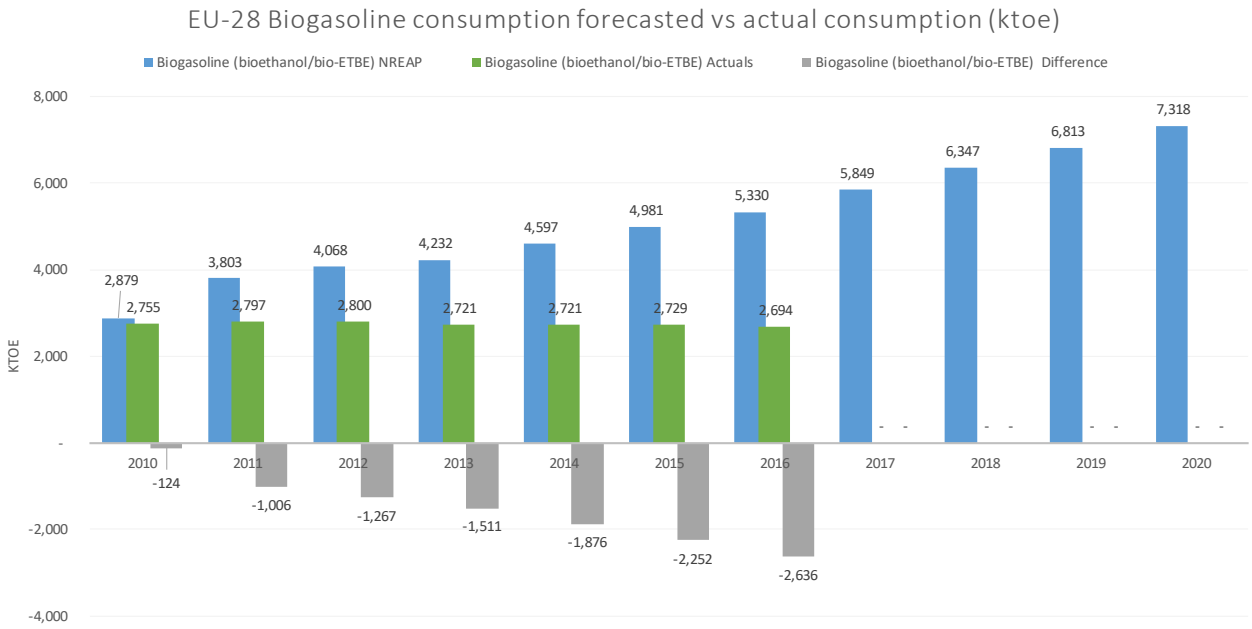
- **Achieving the 10% renewable energy share in transport (RES-T) target:** The gap between renewable energy in transport forecasted in the 28 EU National Renewable Energy Action Plans (NREAPs) and the actual consumption has widened over the last years. In 2016, the gap between the actual uptake of RES-T and the uptake forecasted by NREAPs was 7,669 ktoe. Steep efforts are required by Member Sates if the EU is to meet its 10% RES -target.



Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

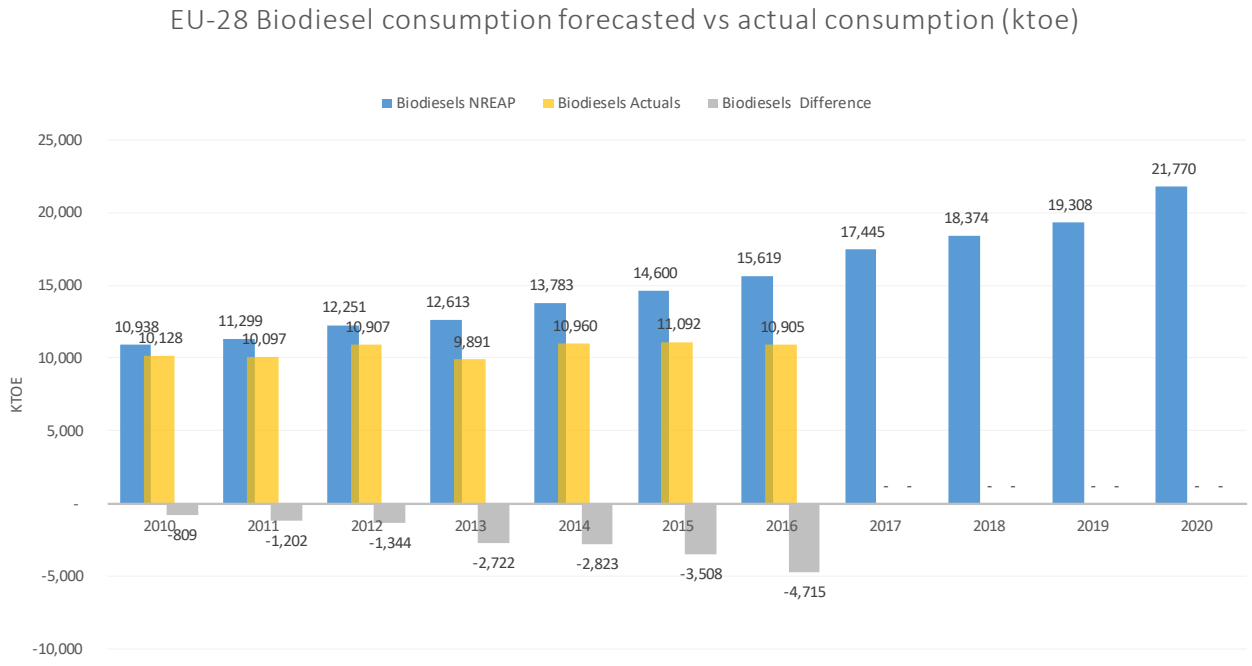
Executive summary

- **Forecasted bio-gasoline consumption vs actual consumption**: In the case of bio-gasoline (including ethanol), the actual uptake has remained relatively flat since 2010, averaging 2,745 ktoe. This uptake drastically contrasts with the increase forecasted by the 28 Member States. In 2016, the gap between the actual uptake and the one forecasted by the NREAP was 2,636 ktoe.



Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

- **Forecasted biodiesel consumption vs actual consumption**: In the case of biodiesel, the gap between the actual uptake of biodiesel and the forecasted by the NREAP was 4,715 ktoe in 2016. The market uptake has also remained relatively flat from 2010 to 2015 with a marginal decrease in 2013 and 2016.

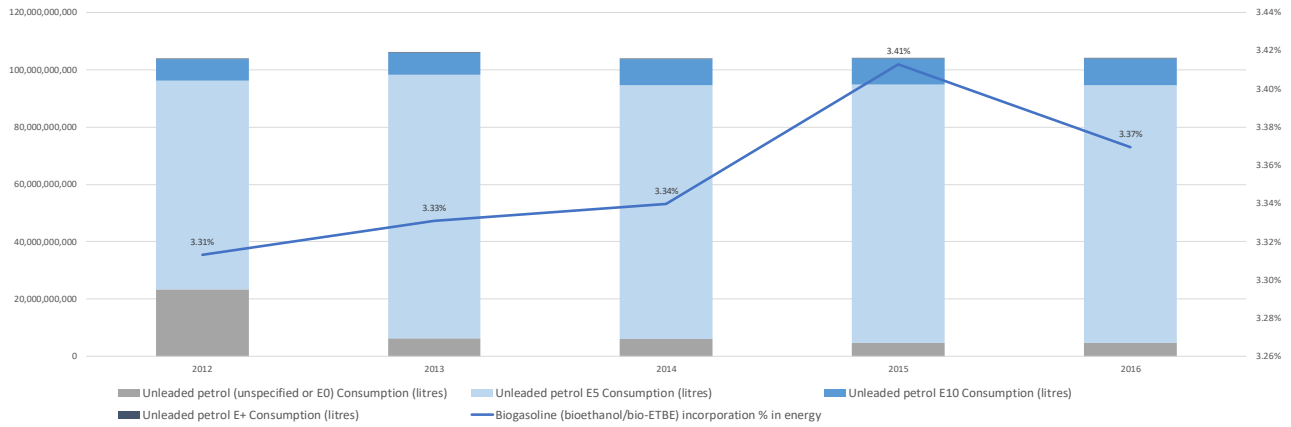


Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

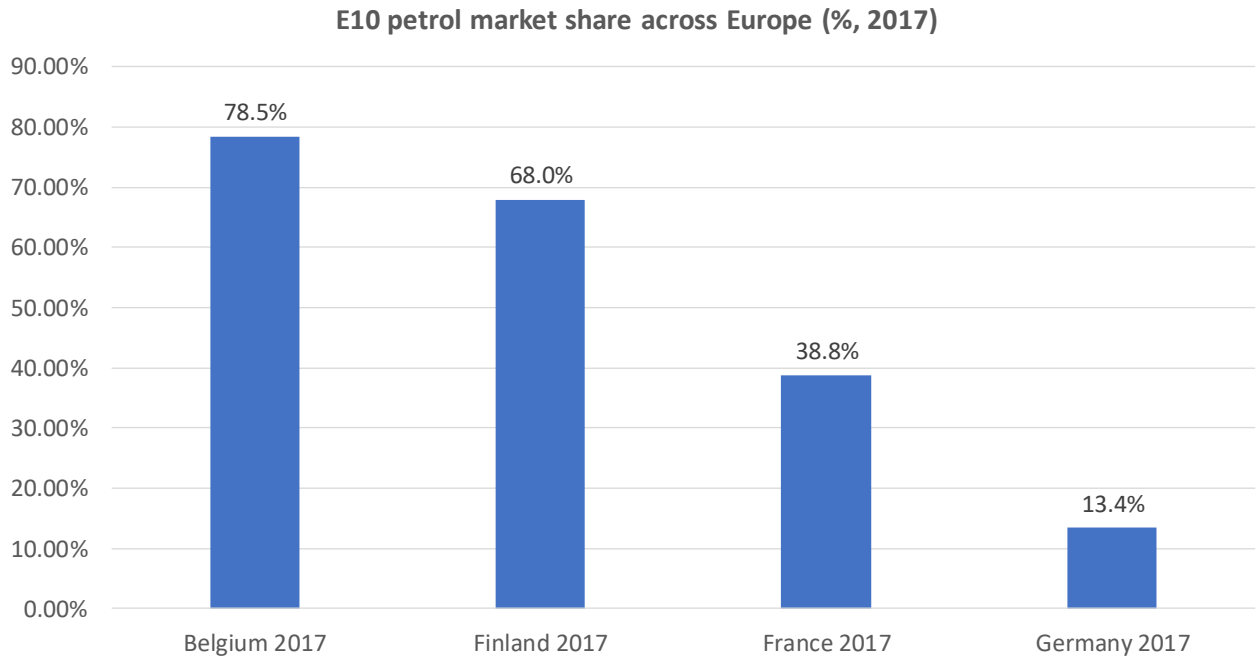
Executive summary

Market data for biofuels and passenger cars

- **RES incorporation rates in petrol**: The incorporation rate of bio-gasoline into the petrol pool has slowly increased from 2012 to 2015 then decreased in 2016 to 3.37%. Consumption of unleaded petrol (unspecified or E0) has been declining from 2012 to 2016, being replaced by:
  - unleaded petrol E5, whose consumption has remained at similar levels since 2013, and which represents the vast majority of the petrol market;
  - by E10, the consumption of which has been growing since 2013, reaching more than 9% of the petrol market in 2016; and
  - E+ (mainly E85) marginally, with a flat consumption of around 0.1% of the petrol market since 2013.



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation



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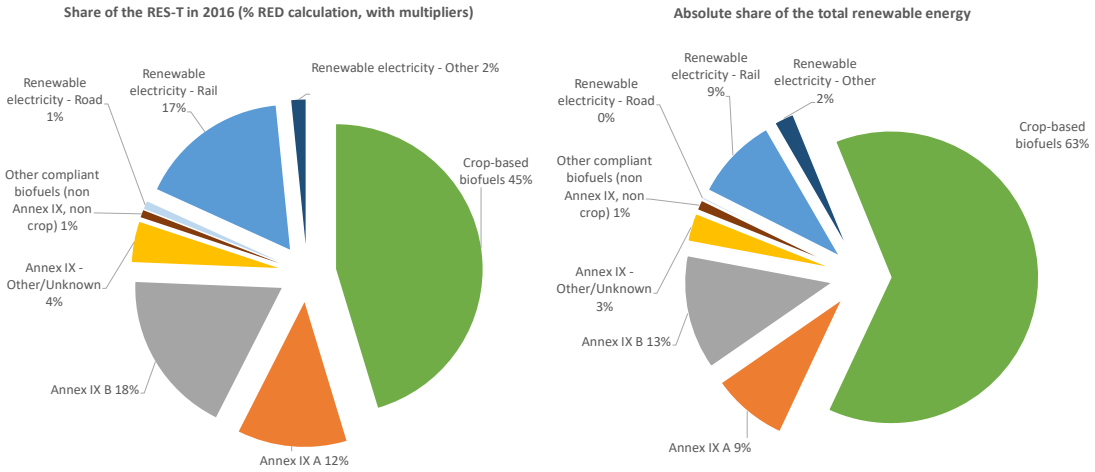
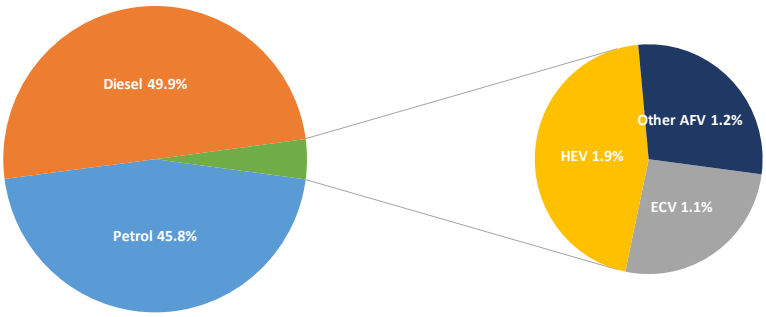
- **The Renewable Energy Share in Transport in 2016 was 7.13% on a RED calculation basis.** Within the RES-T, the share of biofuels was around 81%, also on a RED basis. Without the multipliers, this share was around 88%. Crop-based biofuels represented the major contributor to the renewable energy pool in Europe, both with and without multipliers.

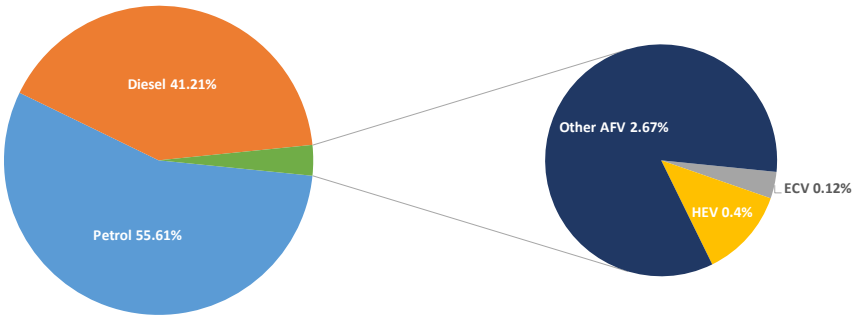


Sources: Eurostat, SHARES, ePURE calculation

- **EU 15 - Sales of <u>new</u> passenger cars by fuel type in 2016:** In 2016, 49.9% of all new passenger cars sold in EU-15 ran on diesel and 45.8% on petrol. Among alternative-fuelled vehicles (AFV), which represented 4.3% of the new passenger cars sales in 2016, hybrid (HEV) accounted for 1.9%, electrically chargeable vehicles (ECV) for 1.1% and other alternative-fuelled vehicles (Other AFV) for 1.2%. Moreover, the share of petrol cars sold in Germany, Denmark, Finland, the Nethearlands and in the U.K. is higher than the EU average. The share of alternative-fuelled vehicles sold in in Finland, Italy, the Netherlands and Sweden was also higher than the EU-15 average.



- **EU passenger car <u>fleet</u> by fuel type in 2015:** In the EU, more than half of all passenger cars raun on petrol. Diesel and petrol clearly dominated the market in 2015. On average, the share of alternative-fuelled vehicles (AFV) reached 3.18% in 2015.



Source: ACEA

Transposition of the ILUC Directive

	Crop cap in 2020 unless other wise specified	Sub-target for advanced biofuels in 2020 unless otherwise specified
Austria	7%	0.5%
Belgium	7%	0.1%
Bulgaria*	7%	0.05%
Croatia	7%	0.1% in 2018
Cyprus	No information	No information
Czech Republic*	Not introduced	0.5%
Denmark	7%	0.9%
Estonia	7%	0.5%
Finland	7%	0.5%
France	7%	0.6%**
Germany	6.5%	0.05%
Greece*	7%	0.2%
Hungary	7%	None
Ireland*	7%	0.25%
Italy	7%	0.6% in 2018, 0.8% in 2019 and 0.9% in 2020
Latvia*	Included	0.5%
Lithuania	7%	0.5%
Luxembourg	Not required	***
Malta	7%	0.5%
Netherlands	3% for 2018, 4% for 2019, 5% for 2020	0.6% for 2018, 0.8% for 2019 and 1% for 2020**
Poland	7%	0.1%
Portugal	7%	0.5%
Romania	No information	No information
Slovakia	7%	0.1% for 2019, 0.5% for 2020-2024
Slovenia	No information	No information
Spain	7%	0.1%
Sweden	7%	None
United Kingdom	4% in 2021, 3% in 2026, 2% in 2032	None

** Under legislative process*
*** Double counted*
**** Advanced biofuels which are blended must represent 15% in the biofuels mix after double counting*

Executive summary

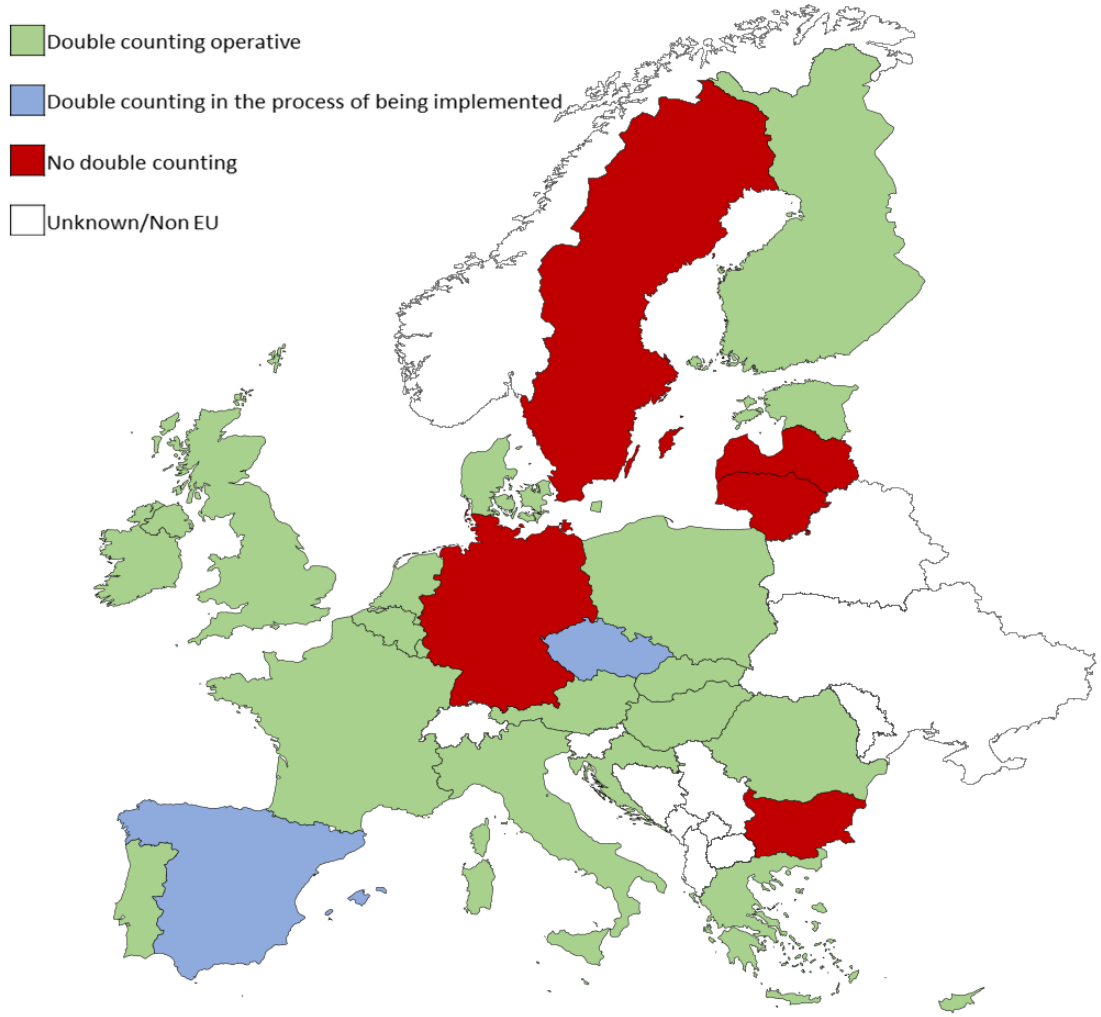
2018 national biofuel targets and GHG intensity of fuels

In (red) 2017 target, if any change

	Minimum biofuel targets		Type	Minimum overall biofuel target (%)	Type	Reduction of GHG intensity of fuels (%)
	Biofuel in petrol (%)	Biofuel in diesel (%)				
Austria	3.4	6.3	Energy	5.75	Energy	-
Belgium	8.5	6.0	Volume	-	-	-
Bulgaria	7.0 →8.0[1]	6.0	Volume	-	-	-
Croatia	-	-	-	6.92 (5.89)	Energy	-2
Cyprus	-	-	-	2.4	Energy	-
Czech Republic	4.1	6.0	Volume	-	-	- 3.5
Denmark	1.0	1.0	Energy	5.75	Energy	-
Estonia	-	-	-	0 → 3.1-3.3[2]	Energy	-
Finland	-	-	-	15.0 (12.0)	Energy	-
France	7.5	7.7	Energy	-	-	-
Germany	-	-	-	-	-	- 4
Greece	-	7.0	Volume	-	-	-
Hungary	-	-	-	4.9	Energy	-
Ireland	-	-	-	8.695	Volume	-
Italy	-	-	-	7.0 (0.6)[3] (6.5)	Energy	-
Latvia	4.5-5[4]	4.5[5]	Volume	-	-	-
Lithuania	5.0	7.0	Volume	-	-	-
Luxembourg	-	-	-	5.7 (5.40)	Energy	-
Malta	-	-	-	8.5 (7.5)	Energy	- 4
Netherlands	-	-	-	8.5 (0.6)[6] (7.75)	Energy	-
Poland	3.2	5.03[7]	Energy	7.5 (7.1)	Energy	-
Portugal	2.5	-	Energy	9 (7.5)	Energy	-
Romania	4.5	5.0	Volume	-	-	- 4
Slovakia	- (4.7)	- (6.9)	- (Volume)	5.8	Energy	- 3
Slovenia	-	-	-	7.5	Energy	- 4
Spain	-	-	-	6.0 (5.0)	Energy	-
Sweden[8]	-	-	-	-	-	- 2.6 for E5 - 19.3 for biodiesel
United Kingdom	-	-	-	7.25[9] (4.75)	Volume	-

[1] *BG: As of September 2018*
[2] *EE: As of May 2018. No blending from November to May for seasonal reasons*
[3] *IT: Minimum advanced biofuel*
[4] *LV: For grade 95 only*
[5] *LV: At least 4.5% FAME or paraffinic diesel fuel of biological origin*
[6] *NL: Minimum advanced biofuel of at least 0.6% after double counting*
[7] *PL: 3.22% for Q1, 5.03% for Q2/Q3, 3.68% for Q4*
[8] *SE: As of 1 July 2018*
[9] *UK: As of 15 April 2018*

Application of the double counting mechanism for market operators



Austria

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Austrian legislation through several pieces of legislation, including:
  - Ordinance BGBL.II Nr. 250/2010 (BGBL.II Nr. 250/2010)- transposing the sustainability criteria for feedstock, biofuels and bioliquids.
  - Act BGBL.II Nr. 398/2012 Kraftstoffverordnung (Fuel Ordinance)- introducing the double counting rules for biofuels and the national biofuels blending obligations.
  - The amendment to the Fuel Ordinance- transposing the ILUC Directive.
- **Crop cap:** The Austrian law sets the cap at 7%.
- **Advanced biofuels:** The Austrian law sets a sub-target for advanced biofuels at 0.5% from 1 January 2020.
- **Double counting of biofuels:** The Austrian law enables the double counting of biofuels made from certain materials. Decisions are made on a 'case by case' basis as to which materials are included on the list of feedstocks eligible for double counting.

Biofuels and decarbonisation targets

- **Overall obligation:** Austria has mandatory targets for the blending of biofuels. In 2018, the overall biofuels target is a minimum 5.75% biofuel in transport fuel in energy content.
- **Separate targets in petrol and diesel:** There are separate targets in energy content of at least 3.4% biofuel in petrol and at least 6.3% biofuel in diesel.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil the quota obligations shall pay an administrative penalty.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol	**Minimum RE target in diesel**	**Minimum overall biofuel target**	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2010	3.4	6.3	5.75	6.58
2011	3.4	6.3	5.75	6.75
2012	3.4	6.3	5.75	6.77
2013	3.4	6.3	5.75	6.19
2014	3.4	6.3	5.75	7.70
2015	3.4	6.3	5.75	8.90
2016	3.4	6.3	5.75	7.10
2017	3.4	6.3	5.75	No data
2018	**3.4**	**6.3**	**5.75**	**No data**

Source: BGBl. II Nr. 398/2012

- **Tax incentives for biofuelsor blends**: A differentiated fiscal framework for biofuels is implemented. Fuels composed of 100 % biofuels are completely exempted from petrol tax.

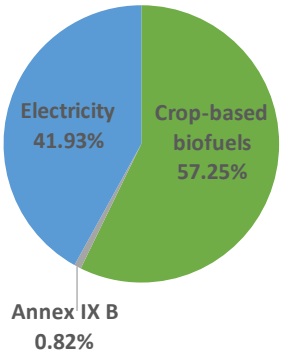
Austria

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*54.00*	*67.90*	*276.00*	*339.00*	-	-	*171.00*	*193.00*	*63.00*	*77.00*
2011	*55.00*	*77.00*	*280.00*	*333.00*	-	-	*174.00*	*180.00*	*64.00*	*88.00*
2012	*56.00*	*77.00*	*285.00*	*348.00*	-	-	*176.00*	*169.00*	*65.00*	*64.00*
2013	*57.00*	*66.00*	*291.00*	*383.00*	-	-	*181.00*	*170.00*	*67.00*	*75.00*
2014	*59.00*	*63.00*	*299.00*	*356.00*	-	-	*185.00*	*169.00*	*68.00*	*175.00*
2015	*61.00*	*60.10*	*309.00*	*366.72*	-	-	*191.00*	*182.10*	*71.00*	*218.35*
2016	*63.00*	*57.19*	*321.00*	*370.80*	-	-	*199.00*	*188.70*	*73.00*	*104.21*
2017	*66.00*	*n/a*	*337.00*	*n/a*	-	*n/a*	*209.00*	*n/a*	*77.00*	*n/a*
2018	*70.00*	*n/a*	*356.00*	*n/a*	-	*n/a*	*223.00*	*n/a*	*81.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

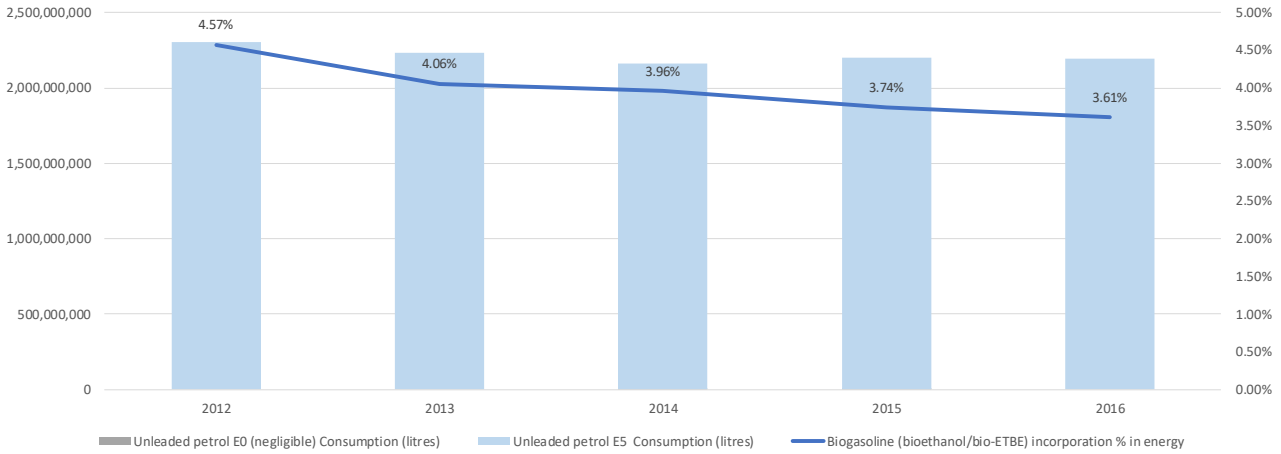
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*512*	*6.05%*	*57.25%*
Annex IX B	*4*	*0.09%*	*0.82%*
Electricity	*189*	*4.43%*	*41.93%*
Total	***704***	***10.58%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

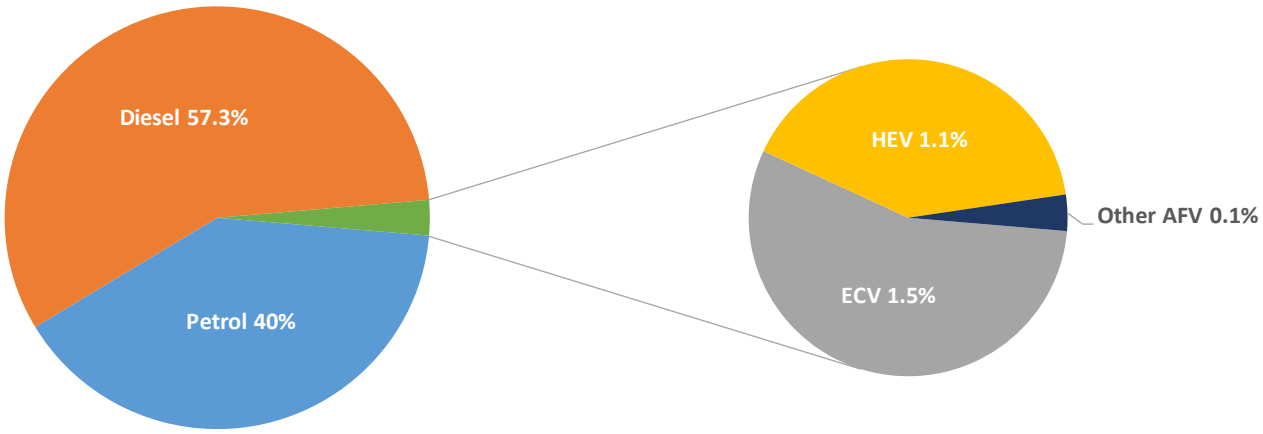


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Austria

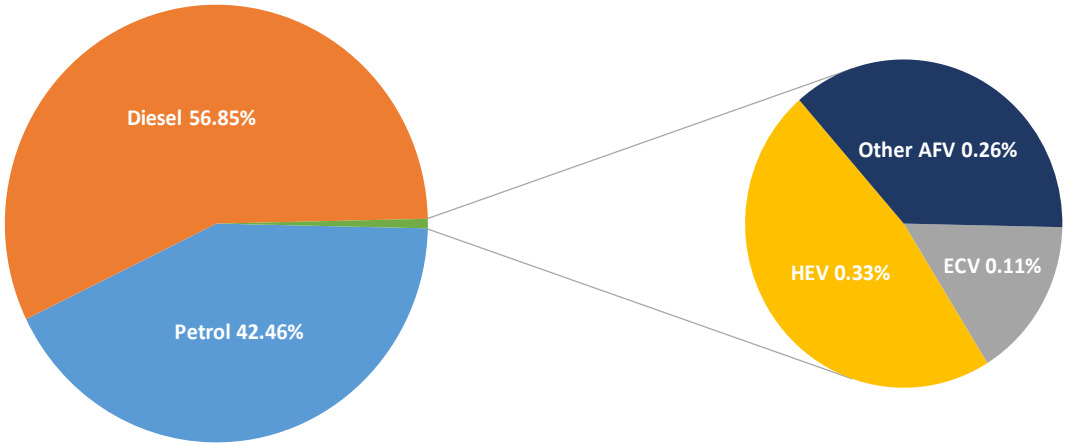
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Belgium

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Belgian legislation through several pieces of legislation, including:
  - Royal Decree of 26 November 2011- establishing product standards for biofuels.
  - Law of 17 July 2013- introducing national biofuels blending obligations.
  - Royal Decree of 4 May 2018 on the minimum nominal volumes of sustainable biofuels- transposing the ILUC Directive.
- **Crop cap:** The Belgian law sets the cap at 7%.
- **Advanced biofuels:** The Belgian law sets the sub-target for advanced biofuels at 0.1% in 2020.
- **Double counting of biofuels:** The multiple counting (including, but not limited to, double counting) was implemented into the national law. There is no list of eligible feedstocks and the Ministry of Economy and Energy makes decisions on a 'case by case' basis as to which biofuel feedstocks are eligible for multiple counting. The 2018 law limits the double counting to 0.6% for products listed in Annex IX, excluding crop-based biofuels and crops cultivated primarily for energy purposes in 2020.

Biofuels and decarbonisation targets

- **Overall obligation:** There is an overall target for biofuels use in road transport only in 2020, of 8.5% in energy content.
- **Separate targets in petrol and diesel:** Belgium has differentiated targets for the mandatory blending of biofuels in both petrol and diesel. In 2018, these obliged fuel suppliers to blend at least 8.5% biofuels in petrol and at least 6% biofuels in diesel in volume.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil the quota obligations is liable to pay a penalty of €900 per 1,000 litres missing.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in volume

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)
2010	7	6.36	5	4.59	n/a
2011	7	6.12	5	4.42	n/a
2012	7	6.10	5	4.64	n/a
2013	7	6.15	5	4.63	n/a
2014	4	4.0	6		n/a
2015	4	4.0	6		n/a
2016	4	4.0	6		n/a
2017	8.5		6.0		n/a
2018	8.5		6.0		n/a
2020*	6.5	6.5			8.5

Source: Law of 17 July 2013; Royal decree on the minimum nominal volumes of sustainable biofuels
**The new law sets the minimum overall biofuel targets and separate biofuel target in e/e*

- **Tax incentives for biofuels or blends:** There is no differentiated fiscal framework for biofuels.

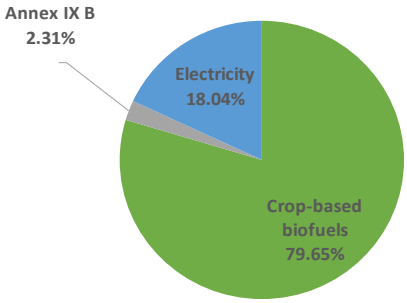
Belgium

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*37.18*	*38.20*	*291.87*	*304.60*	-	-	*23.84*	*2.40*	-	-
2011	*35.86*	*48.00*	*293.52*	*290.10*	-	-	*26.76*	*26.40*	-	-
2012	*43.47*	*48.00*	*368.61*	*298.00*	-	-	*29.85*	*26.80*	-	-
2013	*41.82*	*48.37*	*370.67*	*282.79*	-	-	*33.39*	*31.51*	-	-
2014	*49.34*	*36.76*	*447.27*	*350.84*	-	-	*37.44*	*31.25*	-	-
2015	*47.42*	*40.58*	*449.33*	*220.61*	-	-	*47.34*	*34.59*	-	-
2016	*55.38*	*43.34*	*466.18*	*398.00*	-	-	*56.24*	*38.51*	-	-
2017	*64.51*	*n/a*	*460.99*	*n/a*	-	n/a	*65.51*	n/a	-	n/a
2018	*76.29*	*n/a*	*556.56*	*n/a*	-	n/a	*75.46*	n/a	-	n/a

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

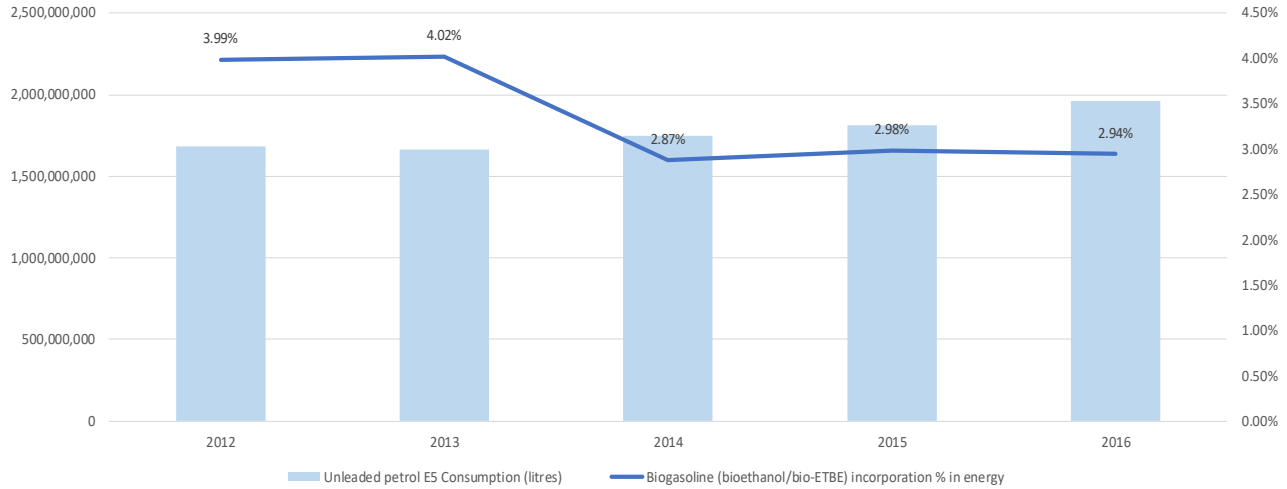
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*425*	*4.69%*	*79.65%*
Annex IX B	*6*	*0.14%*	*2.31%*
Electricity	*39*	*1.06%*	*18.04%*
Total	***470***	***5.89%***	

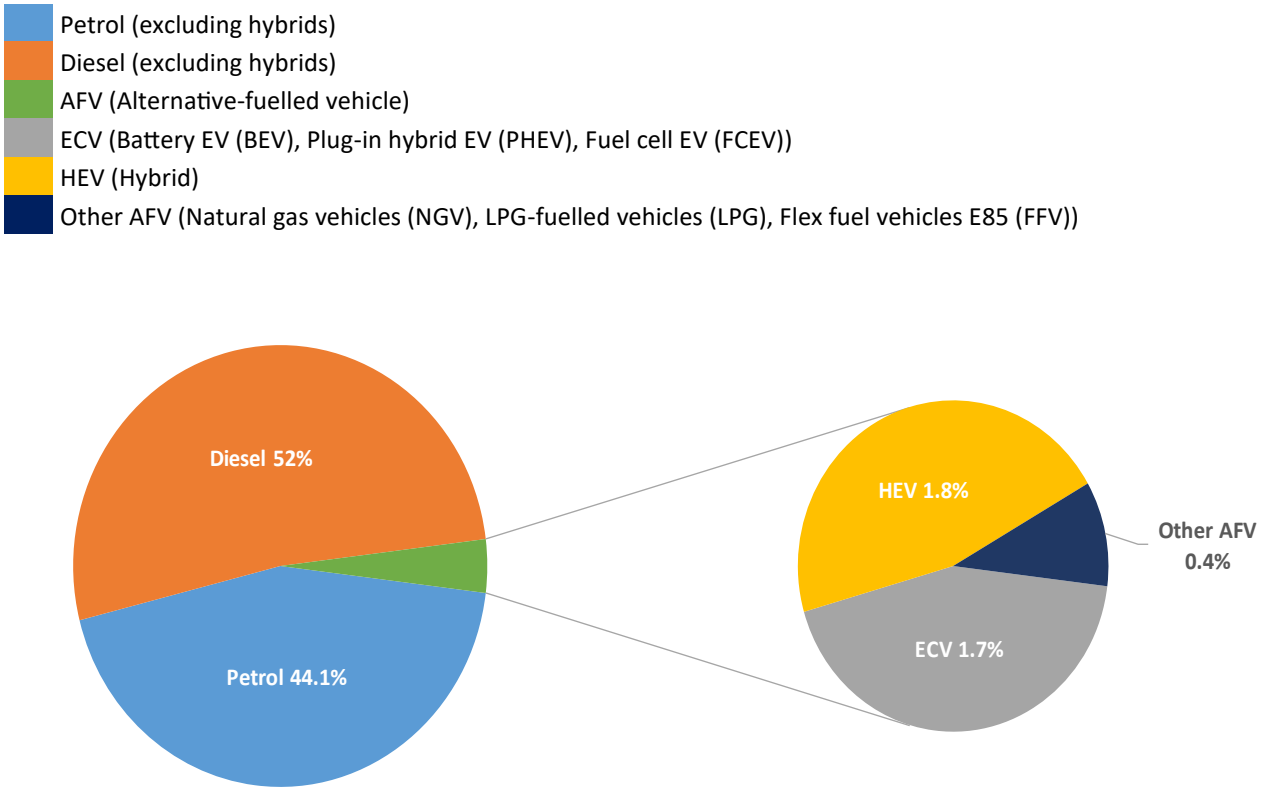
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

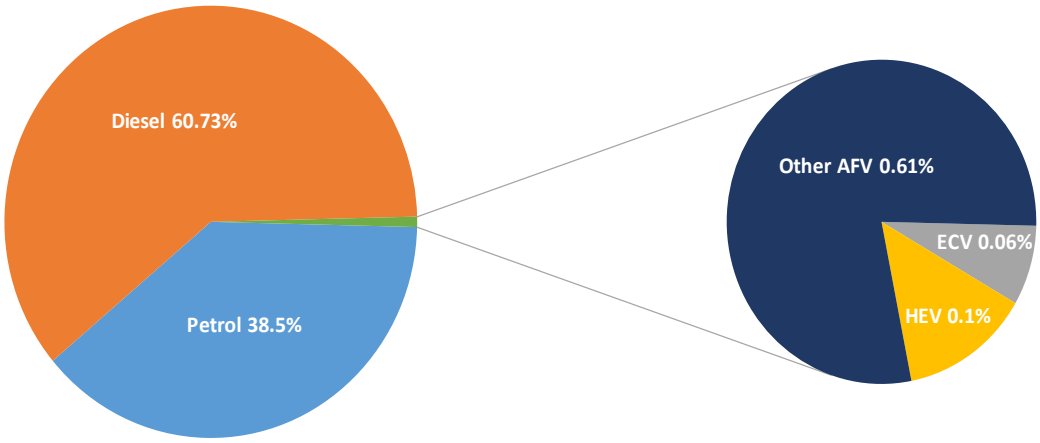
Belgium

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Bulgaria

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Bulgarian legislation through several pieces of legislation, including:
  - Renewable Energy Sources Act (2011)- transposing the RED, including the sustainability criteria.
  - Ordinance of liquid fuel quality (2011)- transposing the FQD and adopting the Ordinance on sustainability criteria.
  - A draft amendment to the Renewable Energy Sources Act- transposing the ILUC Directive – was put for public consultation in 2017 but has yet to be approved by the Council of Ministries and has not been transmitted to the Parliament.
- **Crop cap:** The draft law proposes to set the cap at 7%.
- **Advanced biofuels:** The draft law proposes to set a sub-target for advanced biofuels of 0.05% in 2020.
- **Double counting of biofuels:** There are no rules for the double counting of biofuels made from certain materials.

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** Bulgaria has differentiated targets for the mandatory blending of biofuels in both petrol and diesel. In 2018 fuel suppliers are obliged to blend petrol with at least 7% biofuels and diesel with at least 6% biofuels in volume. As of September 2018, fuel suppliers will be obligated to blend petrol with at least 8% biofuels.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil a quota obligation is liable to pay an administrative penalty.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in volume

	Minimum RE target in petrol		Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	Actuals (%)	As per law (%)	As per law (%)
2012	3	3	6	n/a
2013	4	4	6	n/a
2014	5	5	6	n/a
2015	7	7	6	n/a
2016	7		6	n/a
2017	7		6	n/a
2018	7→8*		6	n/a
2019	9			
2020	9			

Source: Renewable Energy Sources Act (2011)

** As of September 2018*

- **Tax incentives for biofuels or blends:** There is no differentiated fiscal framework for biofuels.

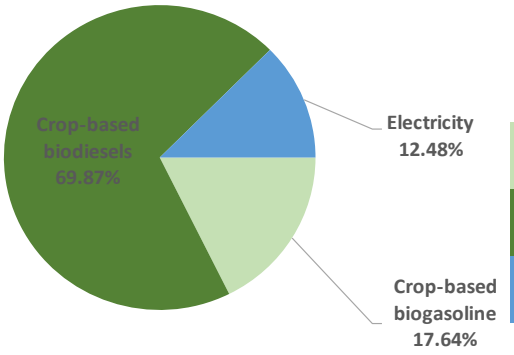
Bulgaria

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	-	*33.00*	*13.40*	-	-	*3.00*	*7.50*	-	-
2011	*1.00*	-	*46.00*	-	-	-	*4.00*	*8.00*	-	-
2012	*3.00*	-	*64.00*	-	-	-	*4.00*	*6.10*	-	-
2013	*5.00*	*8.40*	*85.00*	*95.90*	-	-	*5.00*	*6.60*	-	-
2014	*15.00*	*14.80*	*110.00*	*95.90*	-	-	*5.00*	*8.80*	-	-
2015	*19.00*	*32.24*	*140.00*	*113.97*	-	-	*7.00*	*7.68*	-	-
2016	*22.00*	*32.89*	*172.00*	*130.25*	-	-	*8.00*	*8.36*	-	-
2017	*37.00*	*n/a*	*190.00*	*n/a*	-	*n/a*	*10.00*	*n/a*	*2.00*	*n/a*
2018	*38.00*	*n/a*	*210.00*	*n/a*	-	*n/a*	*13.00*	*n/a*	*4.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

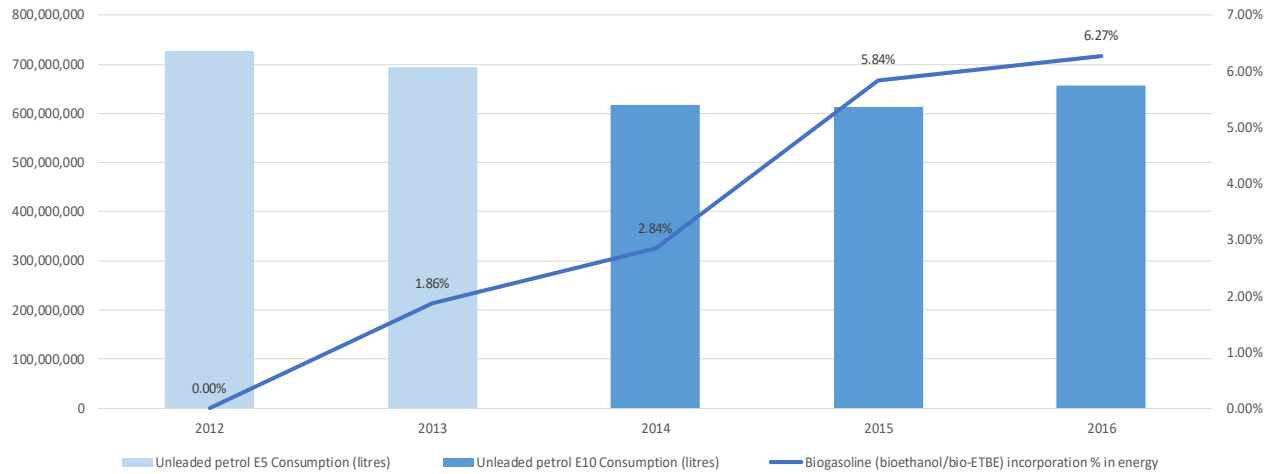
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biogasoline	33	1.28%	17.64%
Crop-based biodiesels	*130*	*5.08%*	*69.87%*
Electricity	*8*	*0.91%*	*12.48%*
Total	***172***	***7.27%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Croatia

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Croatian legislation through several pieces of legislation, including:
  - Energy Act (OG No. 120/2012 and 14/2014) and Act on Energy Activities Regulation (OG No 120/12)- transposing the RED.
  - Air Protection Act (OG No. 130/11, 47/14) and Regulation on liquid fuels quality (OG No. 113/13, 76/14)- transposing the FQD.
  - Act on Biofuels for Transport (OG No. 65/09, 145/10, 144/12, 14/14)- transposing transport specific elements of the FQD and the RED.
- **Crop cap:** The Croatian law sets the cap at 7%.
- **Advanced biofuels:** The Croatian law sets the sub-target for advanced biofuels at 0.1% in 2018 but it could be shifted higher in 2019 depending on availability of supplies.
- **Double counting of biofuels:** The law enables the double counting of biofuels.

Biofuels and decarbonisation targets

- **Overall obligation:** Croatia has an overall target for the minimum blending of biofuels into transport fuels. In 2018, fuel suppliers are obligated to blend conventional transport fuels with at least 6.92% biofuels in energy content.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil a quota obligation is liable to pay a penalty.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 2%, 3% and 6% respectively in 2018, 2019 and 2020.

Overall targets for biofuels in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2010	n/a	n/a	0.13
2011	n/a	n/a	0.89
2012	n/a	n/a	1.69
2013	n/a	n/a	2.44
2014	n/a	n/a	3.18
2015	n/a	n/a	3.88
2016	n/a	n/a	4.89
2017	n/a	n/a	5.89
2018	n/a	n/a	6.92
2019			7.85
2020			8.81

Source: National Action Plan for Renewable Energy Source (2013)

- **Tax incentives for biofuels or blends**: Biofuels are exempt from excise duty as stated in the Excise Duty Act.

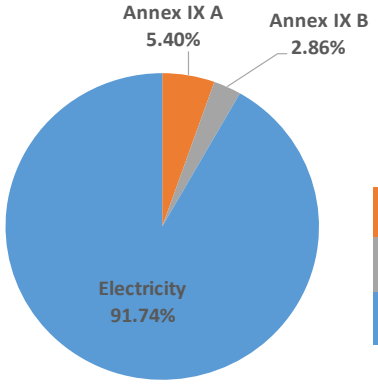
Croatia

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	*n/a*	*2.60*	*n/a*	-	*n/a*	*8.90*	*n/a*	-	*n/a*
2011	-	*1.27*	*17.40*	*2.67*	-	-	*9.50*	*8.05*	-	-
2012	-	*1.27*	*32.10*	*35.67*	-	-	*10.00*	*8.04*	-	-
2013	*3.20*	*1.27*	*42.40*	*31.46*	-	-	*10.60*	*7.70*	-	-
2014	*6.50*	-	*52.60*	*29.83*	-	-	*11.10*	*7.71*	-	-
2015	*16.20*	-	*55.60*	*24.29*	-	-	*11.70*	*8.87*	-	-
2016	*16.20*	-	*68.80*	*0.85*	-	-	*13.00*	*9.77*	*1.00*	-
2017	*16.30*	*n/a*	*82.00*	*n/a*	-	*n/a*	*14.40*	*n/a*	*2.10*	*n/a*
2018	*23.20*	*n/a*	*95.20*	*n/a*	-	*n/a*	*15.80*	*n/a*	*3.10*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

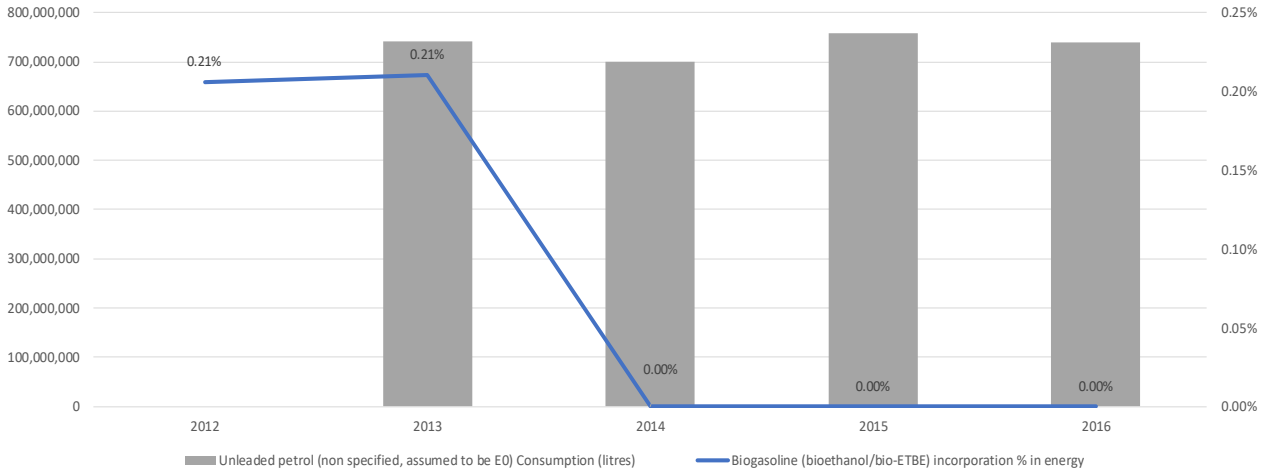
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Annex IX A	*1*	*0.07%*	*5.40%*
Annex IX B	*0*	*0.04%*	*2.86%*
Electricity	*10*	*1.15%*	*91.74%*
Total	***11***	***1.26%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

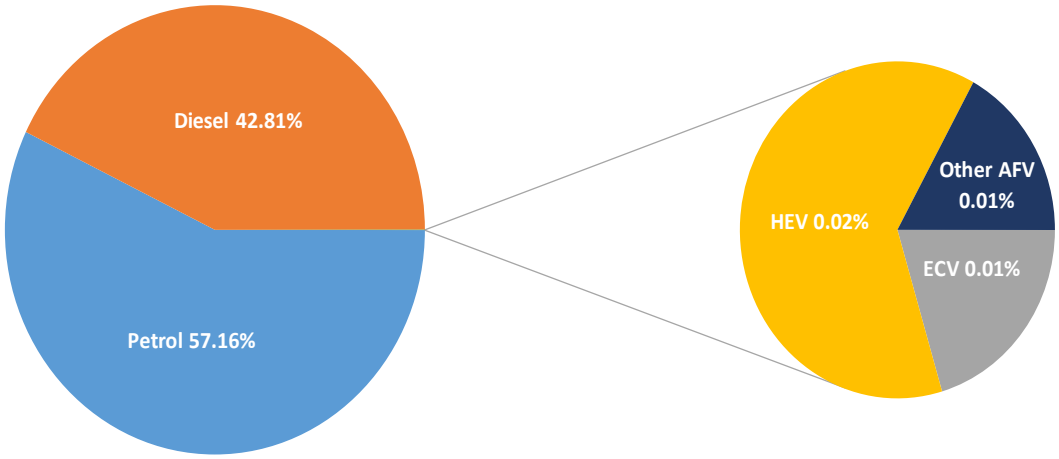


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Croatia

Passenger cars fleet by fuel type in 2015 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Cyprus

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Cyprus legislation through several pieces of legislation, including:
  - Act N112 (I)/2013 for the promotion and encouragement of the use of renewable energy- transposing the RED.
  - Law N111 (I)/2013 amending the specifications for Petroleum Products and Fuel- transposing the FQD and sustainability criteria for biofuels.
- **Crop cap:** No information available.
- **Advanced biofuels:** No information available.
- **Double counting of biofuels:** The Ministerial Decree provides that the energy content of biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be twice that made by other biofuels.

Biofuels and decarbonisation targets

- **Overall obligation:** Cyprus has a minimum overall target for the mandatory blending of biofuels in transport fuel. Fuels suppliers are obliged to blend fuels with at least 2.4% biofuels in energy content since 2011.
- **Penalty for non-fulfilment:** The provision of false or misleading statements regarding compliance with the sustainability criteria constitutes an offence convicted to imprisonment up to five years or to a fine of €85,247 or both.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels and actuals in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2010	n/a	n/a	2.0	1.93
2011	n/a	n/a	2.4	2.42
2012	n/a	n/a	2.4	2.82
2013	n/a	n/a	2.4	2.60
2014	n/a	n/a	2.4	2.62
2015	n/a	n/a	2.4	
2016	n/a	n/a	2.4	
2017	n/a	n/a	2.4	
2018	n/a	n/a	2.4	

Source: Κ.Δ.Π. 328/2013

- **Tax incentives for biofuels or blends:** No information available.

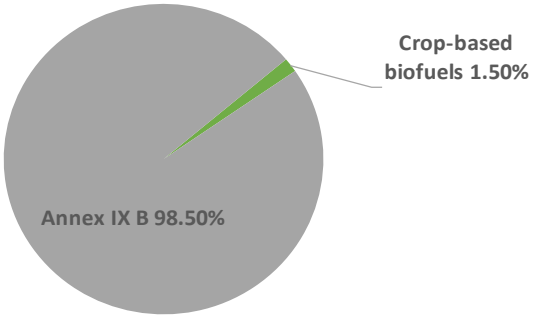
Cyprus

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	-	*15.70*	*14.96*	-	-	-	-	-	-
2011	-	-	*16.80*	*16.01*	-	-	*0.05*	-	-	-
2012	-	-	*18.10*	*17.00*	-	-	*0.10*	-	-	-
2013	-	-	*19.50*	*14.90*	-	-	*0.16*	-	-	-
2014	*1.30*	-	*19.60*	*10.30*	-	-	*0.21*	-	-	-
2015	*2.60*	-	*19.80*	*9.72*	-	-	*0.27*	-	-	-
2016	*5.20*	-	*20.20*	*8.84*	-	-	*0.33*	-	-	-
2017	*6.60*	*n/a*	*21.90*	*n/a*	-	*n/a*	0.38	*n/a*	-	*n/a*
2018	*8.80*	*n/a*	*22.80*	*n/a*	-	*n/a*	0.44	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

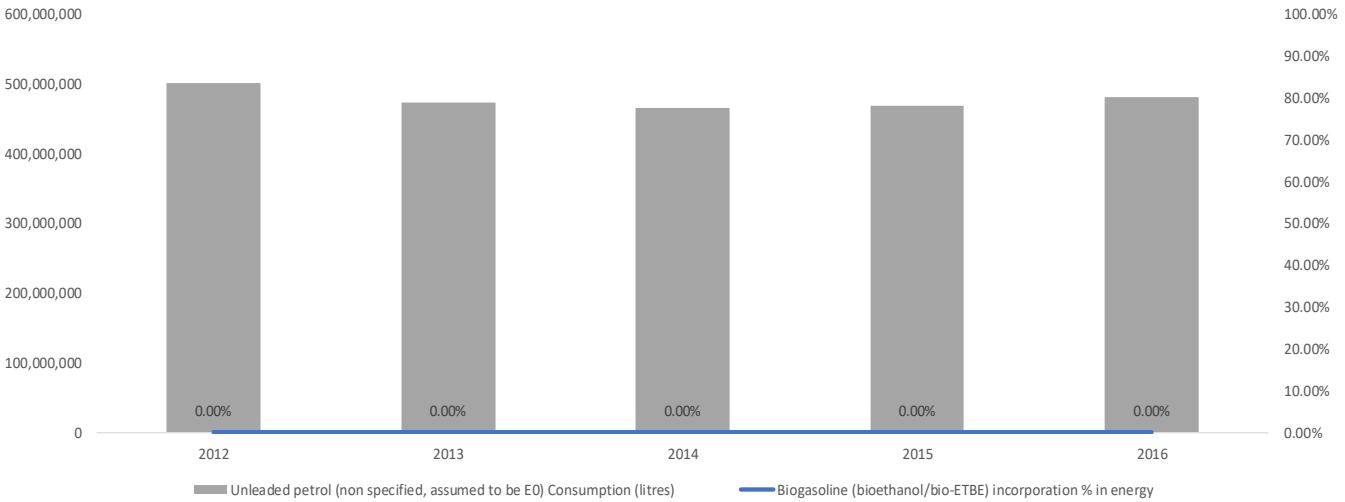
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	0	0.04%	1.50%
Annex IX B	9	2.61%	98.50%
Total	**9**	**2.65%**	

Sources: Eurostat, SHARES , ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Czech Republic

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Czech legislation through several pieces of legislation, including:
  - Act No. 201/2012 Coll. on Air Protection- transposing the FQD, and obligations for demonstrating compliance with sustainability criteria and rules for fuel quality.
  - Act No. 180/2005 Coll. on the promotion of electricity production from renewable energy sources.
  - Government Regulation No. 351/2012 Coll- transposing the RED and sustainability criteria.
- **Transposition of the ILUC Directive** has not yet been completed by the Czech Government. It is assumed that it will be completed during the summer 2018 through an amendment to the Air Protection Act.
- **Crop cap:** The crop cap has been not introduced by the Czech government.
- **Advanced biofuels:** The Czech Republic has a 0.5% sub-target for advanced biofuels.
- **Double counting of biofuels:** There is no mechanism included in the national law to facilitate double counting. It will be introduced after completion of the transposition of the ILUC Directive. It will apply to the

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** The Czech Republic has differentiated targets for the mandatory blending of biofuels in both petrol and diesel. In 2018, fuel suppliers are obliged to blend petrol with at least 4.1% biofuels and diesel with at least 6% biofuels in volume.
- **Penalty for non-fulfilment:** Fuel suppliers that fail to fulfil a quota obligation shall pay a penalty of CZK 40 for every litre of missing biofuel.
- **GHG intensity reduction target:** Fossil fuel distributors have an obligation to reduce a GHG emissions by 3.5% until the end of the year 2017 and then by 6% until the end of the year 2020. Fuel suppliers that fail to fulfil a GHG obligation shall pay a penalty of CZK 10 per kgCO2 that caused the failure to reduce GHG.

Differentiated targets and actuals in volume

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2010	4.1	6	n/a
2011	4.1	6	n/a
2012	4.1	6	n/a
2013	4.1	6	n/a
2014	4.1	6	n/a
2015	4.1	6	n/a
2016	4.1	6	n/a
2017	4.1	6	n/a
2018	4.1	6	n/a
2019	4.1	6	
2020	4.1	6	

Source: Act No. 201/2012 Coll

- **Tax incentives for biofuels or blends**: In Czech Republic there is lower excise duty on pure biofuels (B100) and high blend biofuel (E85, B30 and HVO30 – fossil diesel with 30 % HVO).

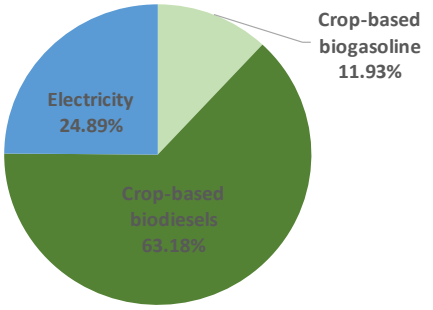
Czech Republic

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*60.00*	*n/a*	*173.00*	*n/a*	-	*n/a*	*7.00*	*n/a*	-	*n/a*
2011	*54.00*	*59.00*	*221.00*	*241.00*	-	-	*10.00*	*8.00*	-	-
2012	*65.00*	*59.00*	*251.00*	*221.00*	-	-	*11.00*	*9.00*	-	-
2013	*74.00*	*74.00*	*283.00*	*283.00*	-	-	*14.00*	*14.00*	-	-
2014	*82.00*	*82.00*	*317.00*	*317.00*	-	-	*16.00*	*16.00*	-	-
2015	*91.00*	*63.20*	*347.00*	*233.30*	-	-	*17.00*	*35.11*	-	-
2016	*99.00*	*47.72*	*378.00*	*252.75*	-	-	*18.00*	*38.63*	-	-
2017	*107.00*	*n/a*	*409.00*	*n/a*	-	*n/a*	*19.00*	*n/a*	-	*n/a*
2018	*114.00*	*n/a*	*437.00*	*n/a*	-	*n/a*	*20.00*	*n/a*	*48.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

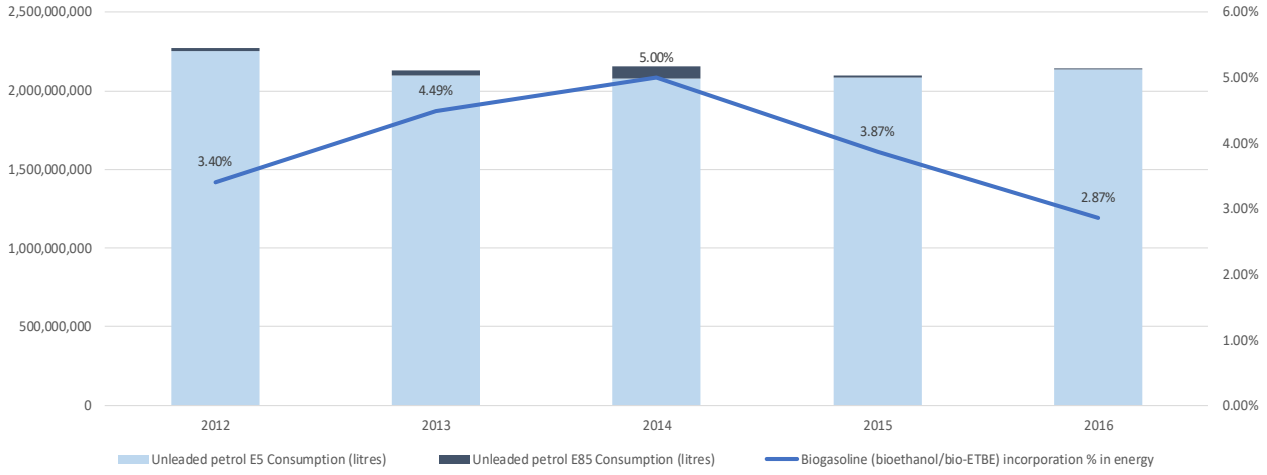
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biogasoline	*48*	*0.77%*	*11.93%*
Crop-based biodiesels	*253*	*4.06%*	*63.18%*
Electricity	*39*	*1.60%*	*24.89%*
Total	***339***	***6.42%***	

Sources: Eurostat, SHARES, ePURE calculation

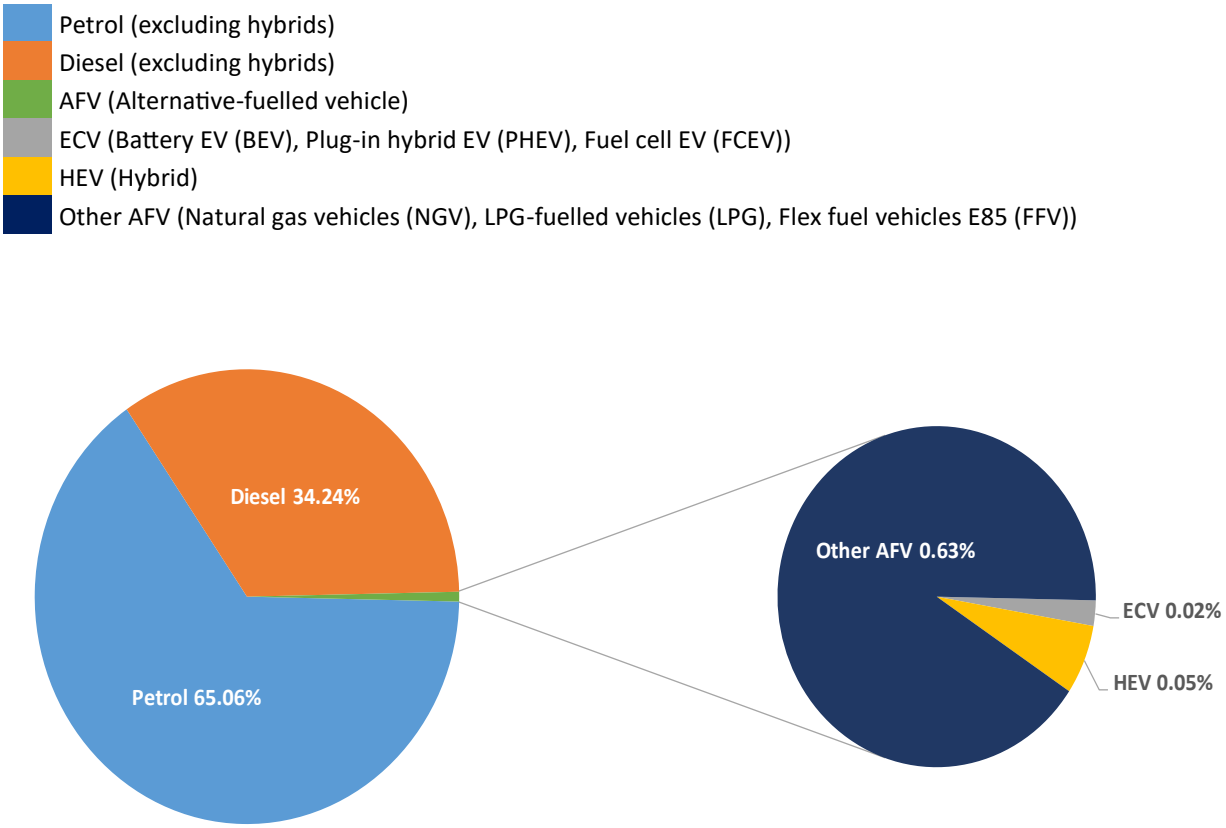
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Czech Republic

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Denmark

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Danish legislation through several pieces of legislation, including:
  - Act No. 468 of 12 June 2009- Law for sustainable biofuels.
  - Act No. 1607 of 22 December 2010- Law amending the Law on Sustainable Biofuels.
  - Executive Order No. 1639 of 16 December 2010- Order amending the Order on the sustainability of biofuels.
  - Executive Order No. 843 of 7 July 2011 amending the Order on the sustainability of biofuels.
  - LBK nr. 674 of 21 June 2011- transposing the transport requirements of the RED (main law)
  - Act. No. 1498 of 23 December 2014- allowing to transfer a surplus or deficit of the mandatory annual minimum biofuels target from one year to the next.
  - Executive Order no. 1044 of 7 September 2017- transposing the ILUC Directive
  - Act No. 1754 of 27 December 2016 Act amending the Act on Sustainable Biofuels and reducing greenhouse gases from transport- transposing the ILUC Directive.
  - Handbook by the Danish Energy Agency about documentation practice of sustainable biofuels. (guidelines for suppliers to meet the above-mentioned regulations).
- **Crop cap:** The Danish law sets the cap at the 7%.
- **Advanced biofuel sub-target:** Fuel suppliers are obligated to add minimum 0.9% advanced biofuels to the overall biofuel target by 1 January 2020.
- **Double counting of biofuels:** There is a mechanism included in the national law that enables the double counting for biofuels made from certain materials. Those waste and residue materials that are eligible for double counting are included on a positive list which includes: straw; bagasse; husks; bellows; the non-edible part of corncobs; nutshells; animal manure; raw glycerine; sulphate pitch; Animal fat categories 1 and 2. Used cooking oil is excluded from list of materials that can be double counted.

Biofuels and decarbonisation targets

- **Overall obligation:** Denmark has a minimum overall biofuel target. Since 2010, fuels suppliers are obligated to blend fuels with at least 5.75% biofuels in energy content. Until 2020 suppliers can transfer a surplus or deficit of up to 0.5% of the mandatory annual minimum biofuels target of 5.75% from one year to the next. From 2020 suppliers are not allowed to transfer a surplus or deficit.
- **Separate targets in petrol and diesel:** In 2018 there are separate targets in energy content of at least 1% biofuel in petrol and at least 1% biofuel in diesel, added as a regulatory element to the blending mandate of 5.75%.
- **Penalty for non-fulfilment:** There is no penalty system for suppliers that do not fill the biofuel obligation.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2011	n/a	n/a	5.75	5.75
2012	n/a	n/a	5.75	5.75
2013	n/a	n/a	5.75	5.75
2014	n/a	n/a	5.75	5.75
2015	n/a	n/a	5.75	5.75
2016	n/a	n/a	5.75	
2017	n/a	n/a	5.75	
2018	1.0	1.0	5.75	
2019			5.75	
2020			5.75	

Source: LBK nr. 674 of 21/06/2011.

- **Tax incentives for biofuels or blends**: There are two taxes, one based on energy and another based on CO_2. Biofuels are taxed on energy content similarly to fossil but are exempted from the CO_2 tax that fossil has to pay.

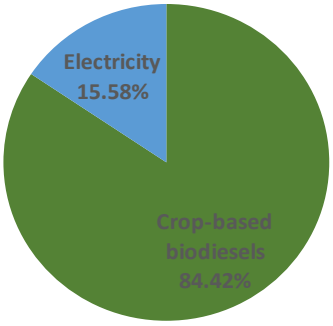
Denmark

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*13.00*	-	*18.00*	-	-	-	*11.00*	*10.80*	-	-
2011	*57.00*	*n/a*	*83.00*	*n/a*	-	-	*12.00*	*13.20*	-	-
2012	*98.00*	*n/a*	*147.00*	*n/a*	-	-	*13.00*	*18.10*	-	-
2013	*96.00*	*46.00*	*148.00*	*162.00*	-	-	*16.00*	*14.30*	-	-
2014	*95.00*	*44.70*	*149.00*	*168.70*	-	-	*16.00*	*16.10*	-	-
2015	*95.00*	-	*152.00*	*231.98*	-	-	*19.00*	*14.71*	-	*0.02*
2016	*95.00*	-	*155.00*	*235.56*	-	-	*20.00*	*17.39*	-	*0.10*
2017	*95.00*	*n/a*	*158.00*	*n/a*	-	*n/a*	*21.00*	*n/a*	-	*n/a*
2018	*95.00*	*n/a*	*161.00*	*n/a*	-	*n/a*	*23.00*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

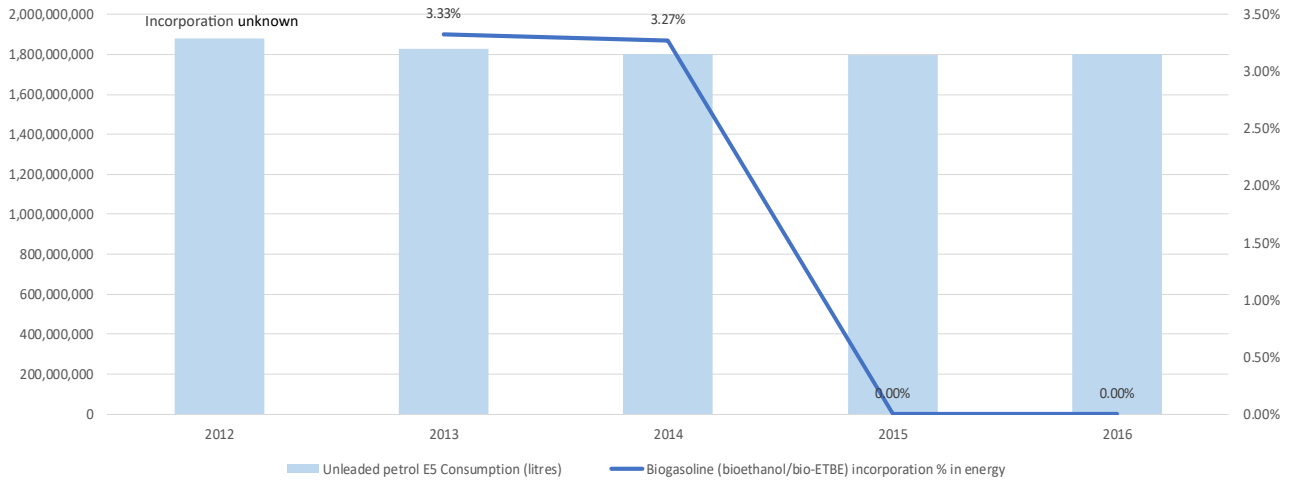
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biodiesels	*236*	*5.70%*	*84.42%*
Electricity	*17*	*1.05%*	*15.58%*
Total	***253***	***6.76%***	

Sources: Eurostat, SHARES, ePURE calculation

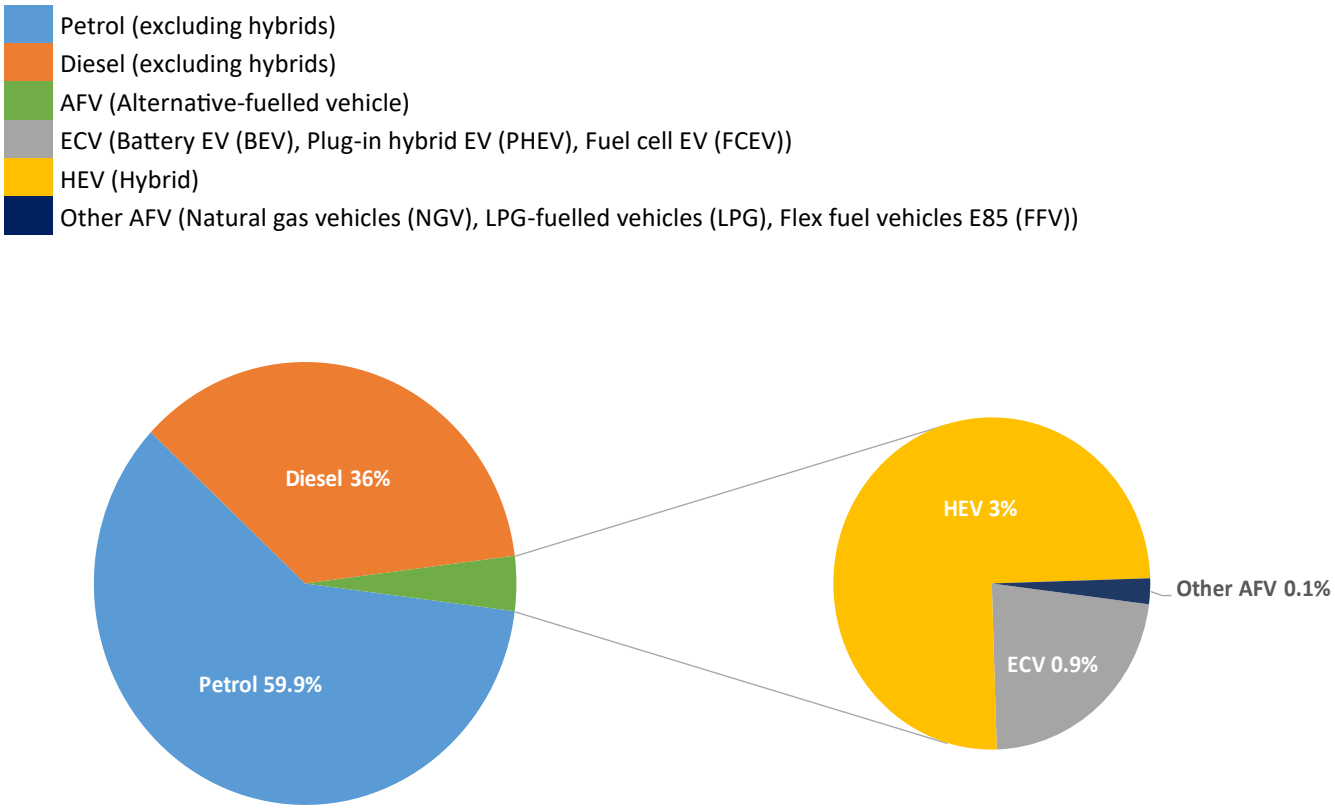
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

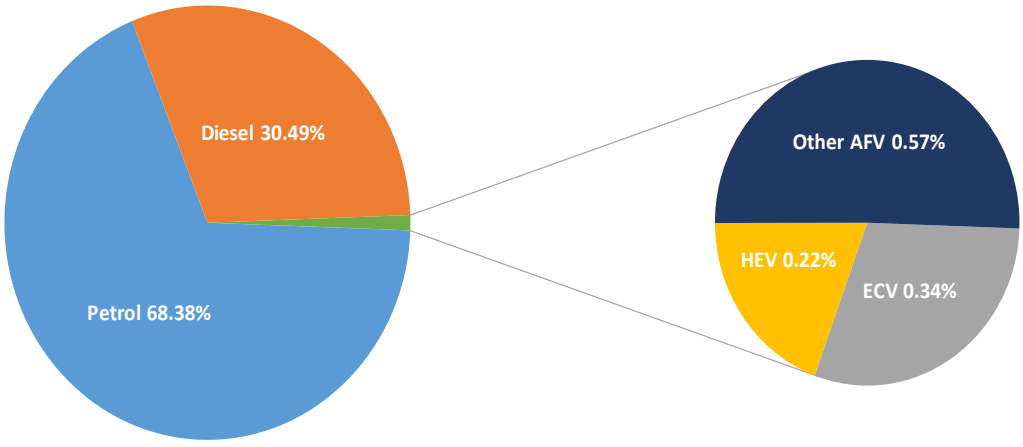
Denmark

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Estonia

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis**: The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Estonian legislation, through several pieces of legislation, including:
  - Order No. 452 "Estonia's renewable energy agenda for 2020"- transposing the RED for the period 2010-2013.
  - Amendments to the legislative Act No. 153- transposing the FQD, including the biofuels sustainability criteria.
  - Atmospheric Air Protection Act- transposing the GHG reduction requirement.
  - Liquid Fuel Act- transposing the biofuel requirement.
- **Crop cap:** The Estonian law sets the cap for crop-based biofuels at 7%.
- **Advanced biofuels:** The Estonian law has introduced the advanced biofuels minimum level of 0.5%.
- **Double counting of biofuels:** Biofuel produced from waste or residues listed in RED Annex IX can be counted double.

Biofuels and decarbonisation targets

- **Overall obligation:** As of May 2018, Estonia's legislation requires fuel distributors to blend petrol and diesel with a minimum overall biofuel target of 3.1% to 3.3% in energy content, with exemption from November to May for weather reasons.
- **Penalty for non-fulfilment:** If a supplier fails to comply with the requirements, it shall be fined with up to €400,000 for every month the biofuel requirement is not met.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall target for biofuels in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2018	n/a		n/a		3.1-3.3	

Source: Liquid Fuel Act

- **Tax incentives for biofuels or blends**: Estonia has no tax incentives for biofuels, except for biomethane.

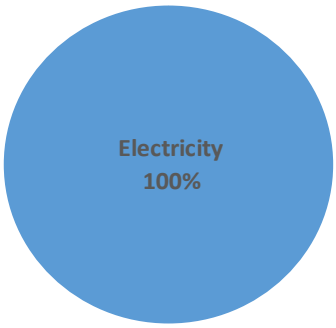
Estonia

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	-	*0.90*	-	-	-	*0.10*	*0.76*	-	-
2011	-	-	*6.90*	-	-	-	*0.10*	*0.90*	-	-
2012	*5.60*	-	*8.20*	-	-	-	*0.10*	*0.90*	*0.10*	-
2013	*8.40*	*3.20*	*11.30*	-	-	-	*0.20*	*1.76*	*0.10*	-
2014	*10.00*	*5.76*	*16.70*	-	-	-	*0.20*	*1.55*	*0.10*	-
2015	*14.00*	*3.20*	*20.50*	-	-	-	*0.30*	*1.03*	*0.20*	-
2016	*18.00*	*2.56*	*26.40*	-	-	-	*0.40*	*1.13*	*0.20*	-
2017	23.00	*n/a*	*32.30*	*n/a*	-	n/a	*0.50*	*n/a*	*0.20*	*n/a*
2018	29.00	*n/a*	*38.10*	*n/a*	-	n/a	*0.60*	*n/a*	*0.30*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

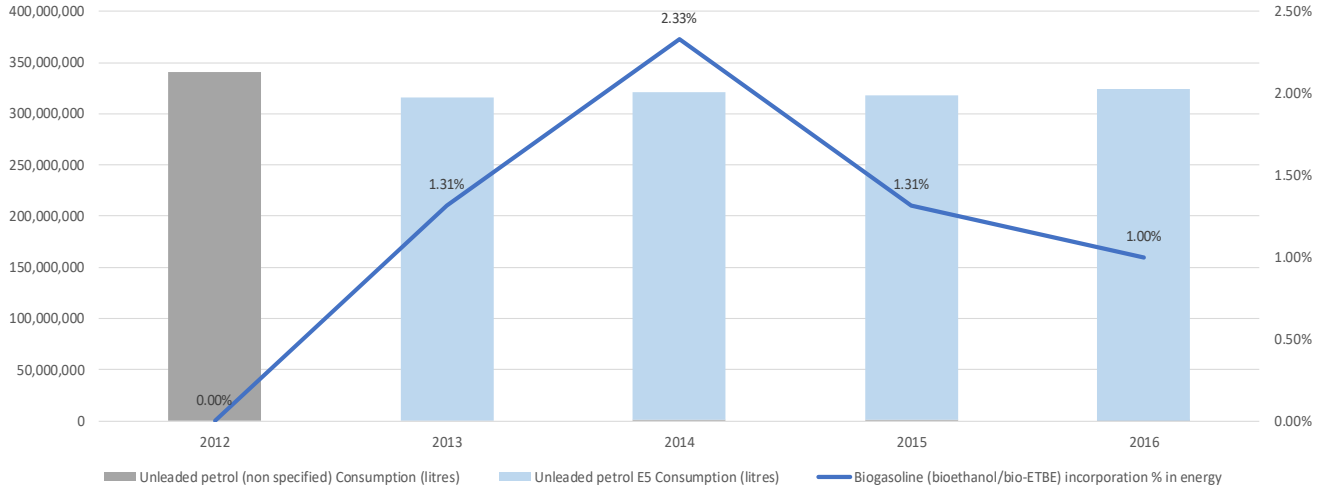
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multi-pliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Electricity	1	0.40%	100%
Total	**1**	**0.40%**	

Sources: Eurostat, SHARES, ePURE calculation

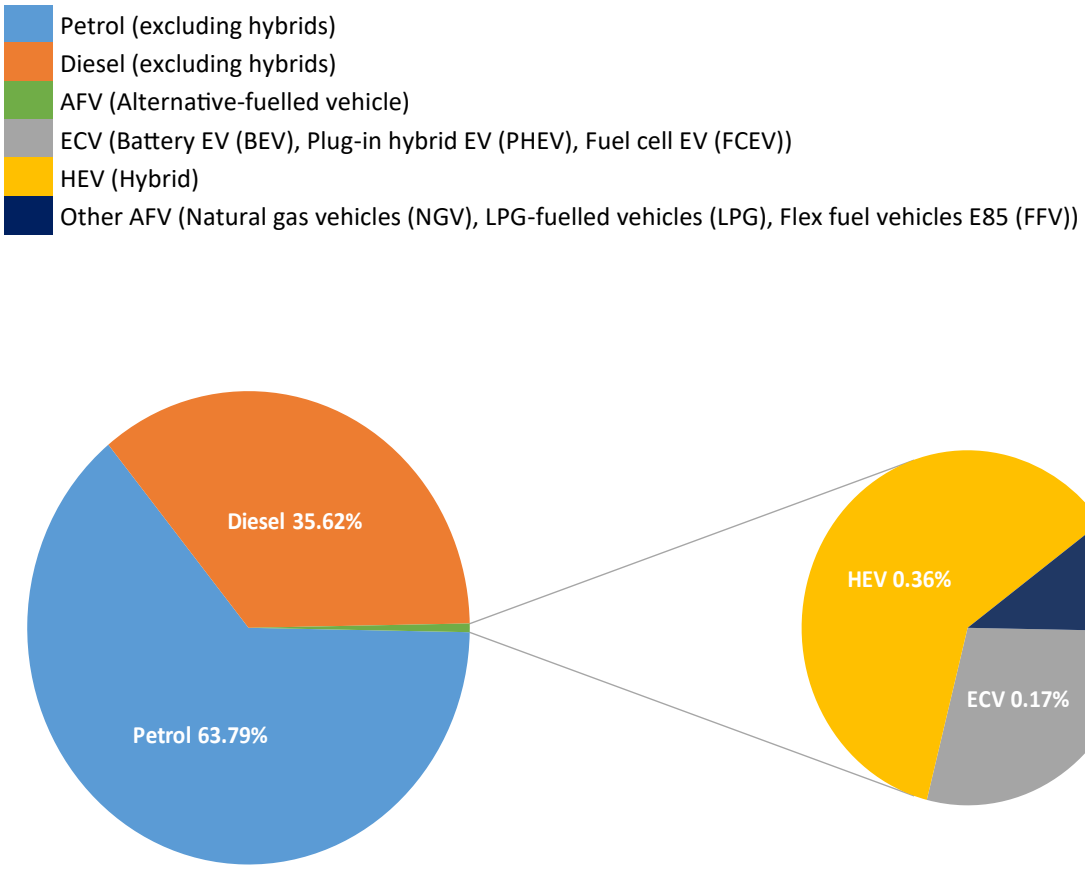
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Estonia

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Finland

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and the FQD, including the sustainability criteria for biofuels, have been transposed into the Finnish legislation through the following legislation:
  - Act 393/2013 on Biofuels and Bioliquids- modified according to ILUC during 2017 by Act 388/2017 and Act 387/2017- amendments were implemented in 2018.
  - Act 446/2007 on Promotion of Biofuels in Transport, amended by Act 387/2017.
  - Act 170/280 on the reduction of the lifecycle greenhouse gas emissions of certain fuels- introducing provisions on the calculation of fuels and electricity greenhouse gas emissions.
- **Crop cap:** The Finnish law sets the cap for crop-based biofuels at 7%.
- **Advanced biofuel sub-target:** The Finnish law sets the sub-target for advanced biofuels at 0.5% by 2020.
- **Double counting of biofuels:** There is a mechanism included in the national law that enables the double counting of biofuels produced from certain materials. There is no positive list published how to interpret Annex IX. Also, there is no public list of what is grandfathered.

Biofuels and decarbonisation targets

- **Overall obligation:** Finland has a minimum overall biofuel target. In 2018, fuel suppliers are obligated to blend their road transport fuels with at least 15% biofuels in energy content.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil a quota obligation shall pay a penalty of € 0.04/MJ, i.e. €0.84/l for ethanol and €1.32/l for biodiesel.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels and actuals in energy content

	Minimum overall biofuel target		Minimum RE target in petrol	Minimum RE target in diesel
	As per law (%)	Actuals (%)	As per law (%)	As per law (%)
2010	4		n/a	n/a
2011	6		n/a	n/a
2012	6		n/a	n/a
2013	6	¬12	n/a	n/a
2014	6	23.5	n/a	n/a
2015	8		n/a	n/a
2016	10		n/a	n/a
2017	12		n/a	n/a
2018	15		n/a	n/a
2019	18			
2020	20			

- **Tax incentives for biofuels or blends:** The Act 1994/1472 on liquid fuels excise duty includes energy and CO_2 components for each fuel blending components on 1 January 2011. Current levels are €62/tCO_2 and Eurocent 1.6 MJ (for diesel like fuels Eurocent 0.88 /MJ + tax on diesel powered vehicles). There are no tax incentives for biofuels. There is an Energy and CO_2 tax components for each fuel. The latest table on tax rates on liquid fuels is available here.

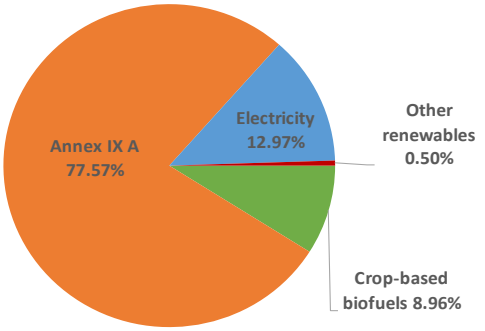
Finland

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	70.00	71.50	150.00	60.00	-	-	20.00	17.20	-	-
2011	80.00	88.00	180.00	108.00	-	-	20.00	17.00	-	0.10
2012	90.00	90.00	210.00	108.00	-	-	20.00	18.00	-	0.30
2013	100.00	66.00	240.00	157.00	-	-	20.00	19.00	-	0.90
2014	110.00	70.00	270.00	428.00	-	-	20.00	18.00	-	1.30
2015	120.00	65.58	300.00	432.01	-	-	20.00	18.67	-	1.99
2016	120.00	67.63	330.00	108.90	-	-	20.00	19.13	-	1.88
2017	120.00	n/a	360.00	n/a	-	n/a	30.00	n/a	-	n/a
2018	130.00	n/a	390.00	n/a	-	n/a	30.00	n/a	-	n/a

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

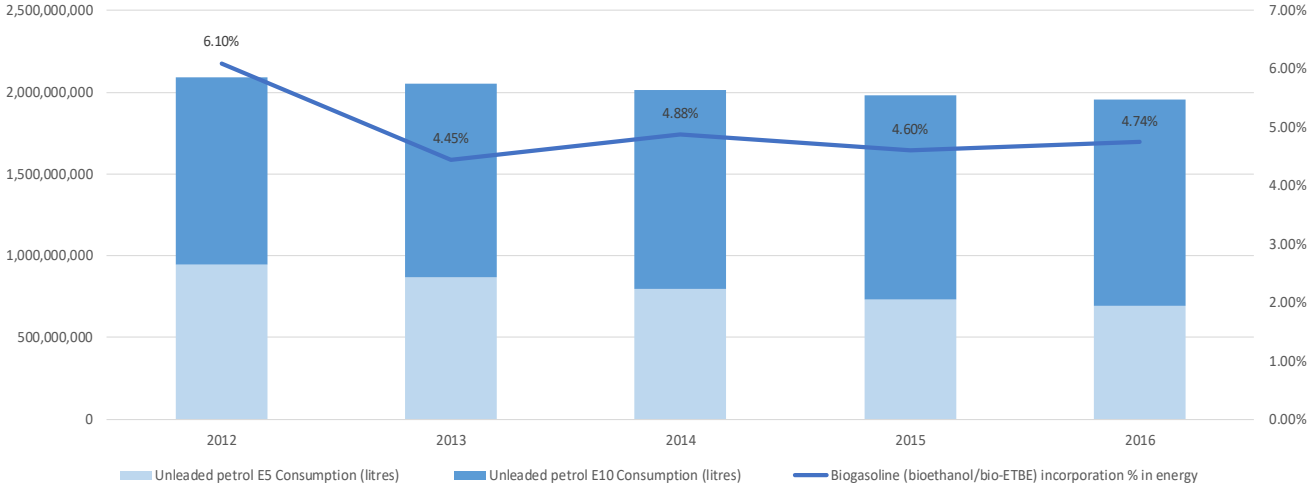
RES-T contribution of each fuel category and share according to RED calculation



2016	Absolute quantity of renewable in 2016 (ktoe)	% of the energy mix according to RED Calculation in 2016 (with multipliers)	Share of the RES-T in 2016 (% RED calculation, with multipliers)
Crop-based biofuels	33	0.76%	8.96%
Annex IX A	145	6.58%	77.57%
Electricity	19	1.10%	12.97%
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	1.88	0.04%	0.50%
Total	**199**	**8.48%**	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

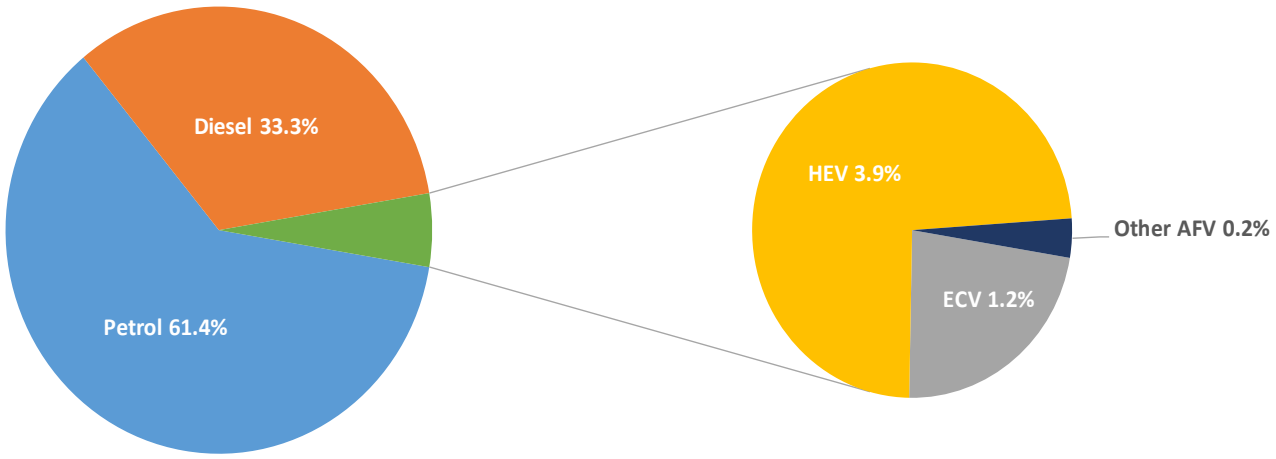


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Finland

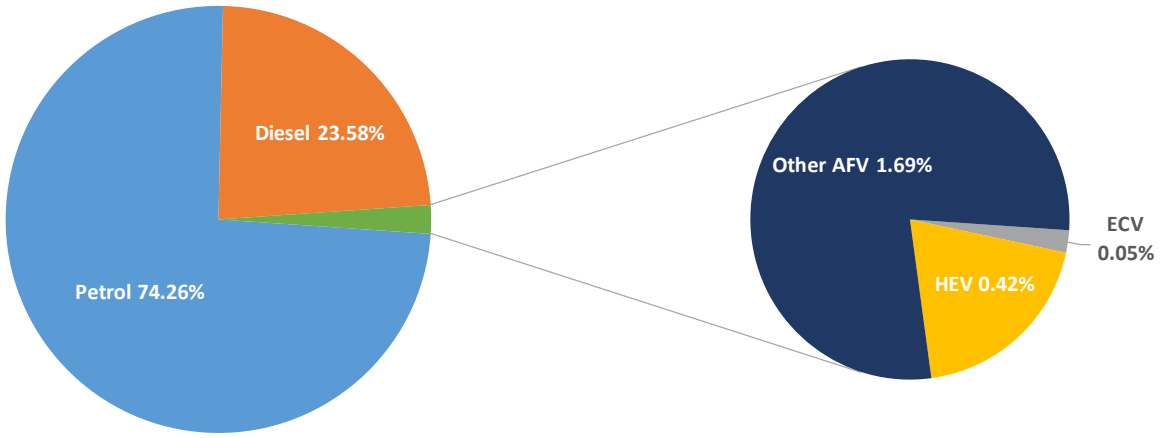
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

France

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the French legislation through several pieces of legislation, the most relevant being:
  - Ordinance 2011-1105 of 14 September 2011- transposing the RED and FQD, including the sustainability criteria for biofuels, national biofuel targets and setting an overall target for 10% GHG reduction in fuels by 31 December 2020.
  - Decree 2011-1468 of 9 November 2011- implementing the above ordinance.
  - Order of 23 Nov. 2011 on the sustainability of biofuels and bioliquids.
  - Law No.2011-12 of 5 January 2011 on various provisions for adapting the legislation to the law of the European Union.
  - Law No.2017-1839 of 30 December 2017 putting an end to the research as well as to the exploitation of hydrocarbons and bearing various provisions relating to the energy and the environment, including provisions relating to the controls of biofuels in chapter IV.
- **Crop cap**: The French legislation sets a 7% cap for crop-based biofuels.
- **Advanced biofuels:** The French legislation sets a sub-target for advanced biofuels at 0.6% (2x0.3% of marcs and lees and ligno-cellulosic ethanol).
- **Double counting of biofuels:** There is a mechanism included into the French law that enables double counting for biofuels. The following feedstocks count double towards the objectives: UCOME and animal fats cat. 1 and 2, marcs and lees, non-food cellulosic material, ligno-cellulosic material. There is a cap on the amount of material that can be double counted (0.35% of biodiesel and 0.25% of ethanol in energy content).

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** France has differentiated targets for the blending of biofuels in both petrol and diesel. In 2018, fuels suppliers are obliged to blend petrol with 7.5% and diesel with 7.7% biofuels in energy content.
- **Penalty for non-fulfilment**: The TGAP (Taxe Générale sur les Activités Polluantes), a pollution tax, is to be paid by fuel suppliers who do not comply with the blending obligations.
- **GHG intensity reduction target**s: Transport fuels sold on the market must reduce their greenhouse gas intensity by 10% by 2020.

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2010	7.0	6.07	7.0	6.85	n/a	6.70
2011	7.0	5.78	7.0	7.07	n/a	6.84
2012	7.0	5.82	7.0	7.04	n/a	6.83
2013	7.0	5.66	7.0	7.01	n/a	6.78
2014	7.0	6.11	7.7	7.72	n/a	7.45
2015	7.0	6.39	7.7	7.70	n/a	7.48
2016	7.0	6.99	7.7	7.70	n/a	7.58
2017	7.5		7.7		n/a	
2018	7.5		7.7		n/a	

- **Tax incentives for biofuels or blends**:
  - In 2018, E10 is taxed 2 cents€/litre less than E5 (66.29€/hl vs 68.29€/hl). E85 is taxed at 11.83 €/hl.
  - In 2022, E10 will be taxed at 75.8€/hl; E5 at 77.8€/hl; E85 at 18.95€/hl.

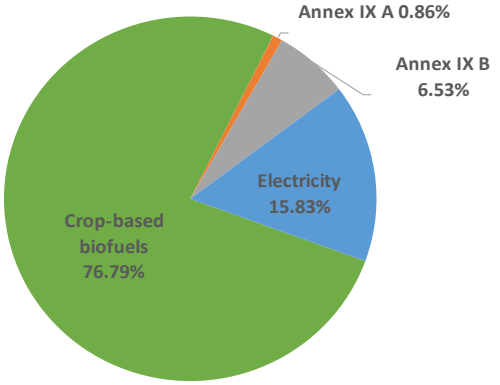
France

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*550.00*	*394.00*	*2,165.00*	*2,086.00*	-	-	*183.00*	*155.00*	-	-
2011	*550.00*	*392.00*	*2,250.00*	*2,393.00*	-	-	*192.00*	*196.00*	-	-
2012	*550.00*	*418.00*	*2,350.00*	*2,424.00*	-	-	*212.00*	*209.00*	-	-
2013	*550.00*	*394.00*	*2,350.00*	*2,294.00*	-	-	*221.00*	*241.00*	-	-
2014	*550.00*	*414.00*	*2,350.00*	*2,541.00*	-	-	*240.00*	*251.00*	*10.00*	-
2015	*550.00*	*432.00*	*2,375.00*	*2,564.00*	-	-	*260.00*	*239.77*	*30.00*	*0.01*
2016	*550.00*	*476.00*	*2,500.00*	*2,630.01*	-	-	*287.00*	*254.62*	*50.00*	*0.03*
2017	*575.00*	*n/a*	*2,600.00*	*n/a*	-	*n/a*	*306.00*	*n/a*	*80.00*	*n/a*
2018	*600.00*	*n/a*	*2,700.00*	*n/a*	-	*n/a*	*335.00*	*n/a*	*110.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

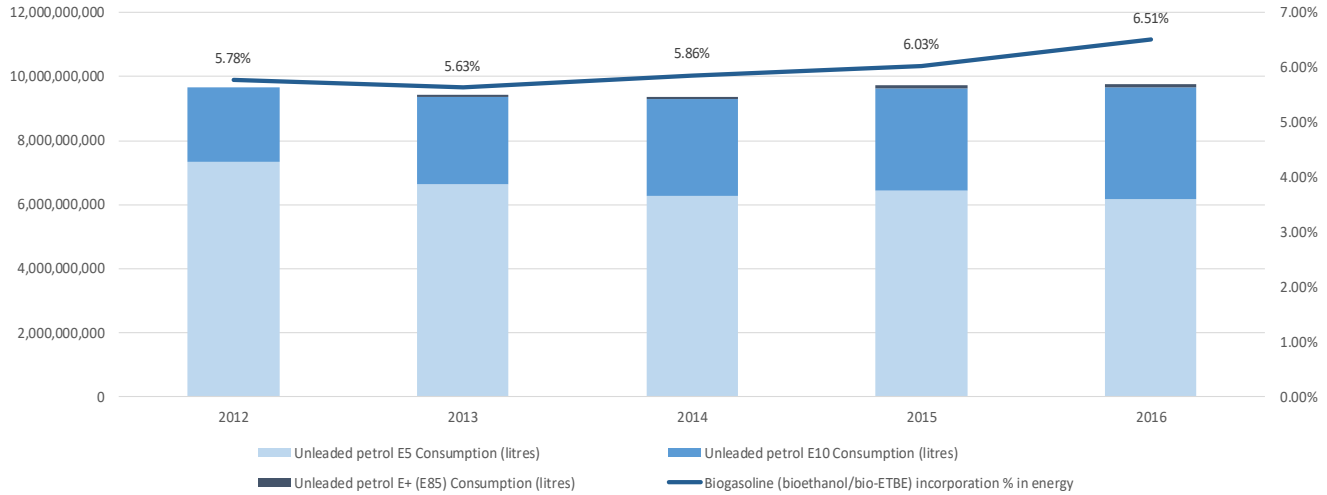
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*2,972*	*6.83%*	*76.79%*
Annex IX A	*17*	*0.08%*	*0.86%*
Annex IX B	*126*	*0.58%*	*6.53%*
Electricity	*255*	*1.41%*	*15.83%*
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*0.03*	*0.00%*	*0.00%*
Total	***3,370***	***8.90%***	

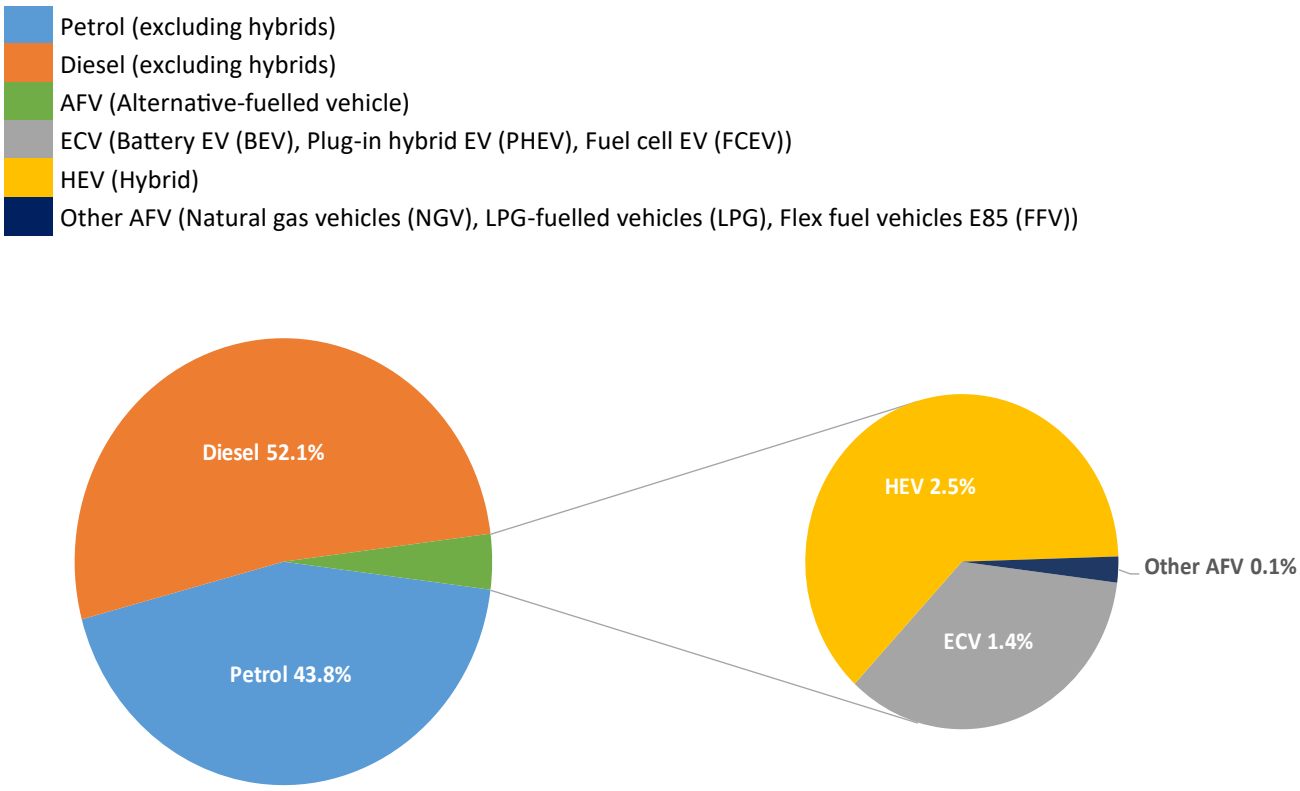
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

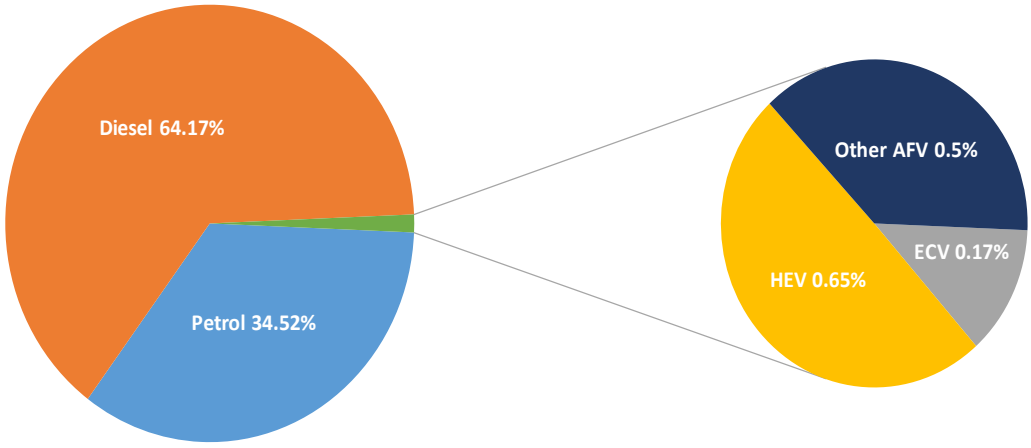
France

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Germany

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the German legislation through several pieces of legislation, including:
  - §37a of BImSchG on the minimum share of biofuels in the total quantity of fuel marketed; greenhouse gas reduction- transposing the FQD.
  - Biokraft-NachV on requirements for the sustainable production of biofuels- transposing the RED and sustainability criteria for biofuels.
  - 10. BImSchV on the implementation of the Federal Pollution Control Act- transposing the FQD.
  - 37.BImSchV on the implementation of the Federal Emission Control Act (Ordinance on the Calculation of Electricity based Fuels and Co-processed Biogenic Oils for the Greenhouse Gas Quota.
  - 38. BImSchV on the Implementation of the Federal Pollution Control Act (Ordinance laying down further provisions on the reduction of greenhouse gases for fuels)- transposing the ILUC Directive.
- **Crop cap:** Crop-based biofuels are limited to 6.5% energy content.
- **Advanced biofuel sub-target:** Fuel suppliers will be obliged to blend a minimum of advanced biofuels:
  - 0.05% from 2020 (for fuel suppliers supplying at least 20 PJ/a);
  - 0.1% from 2021 (for fuel suppliers supplying at least 10 PJ/a);
  - 0.2% from 2023 (for fuel suppliers suppling at least 2 PJ/a);
  - 0.5% from 2025 (without exceptions).
- **Double counting of biofuels:** There is no longer any double counting mechanism included in the national legislation.

Biofuels and decarbonisation targets

- **GHG intensity reduction target:** Since 2015, energy-based targets were replaced with a greenhouse gas emission reduction target for transport fuels. In Germany, the FQD target of 6% GHG emission reduction in transport in 2020 has been transposed, with intermediate steps of 3.5% reduction in 2015 and 2016 and 4% from 2017. Germany applies the 6% target to 2020 and beyond, in contrast to the FQD objective of 6% by 2020.
- **Penalty for non-fulfilment:** Fuel suppliers that fail to fulfil the obligation shall pay a penalty of €470 /tCO_{2eq}.

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2010	2.8	3.77	4.4	6.10	6.25	5.75
2011	2.8	3.99	4.4	6.16	6.25	5.63
2012	2.8	4.29	4.4	6.08	6.25	5.68
2013	2.8	4.18	4.4	5.44	6.25	5.05
2014	2.8	4.24	4.4	5.64	6.25	5.18
2015	n/a	4.14	n/a	5.06	n/a	4.77
2016	n/a	4.15	n/a	4.92	n/a	4.68
2017p	n/a	4.00	n/a	4.95	n/a	4.65
2018	n/a		n/a		n/a	

Source: Own calculation based on BAFA (Amtliche Mineralöldaten für die Bundesrepublik Deutschland

- **Tax incentives for biofuels or blends:** There is no differentiated fiscal framework for biofuels.

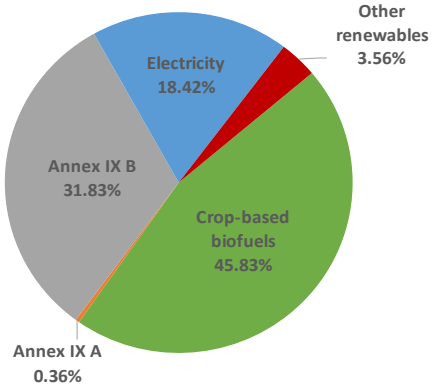
Germany

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*639.00*	*751.00*	*2,790.00*	*2,097.00*	-	-	*219.00*	*157.00*	*102.00*	*68.00*
2011	*1,187.00*	*795.00*	*2,300.00*	*2,000.00*	-	-	*245.00*	*182.00*	*105.00*	*34.00*
2012	*1,145.00*	*806.00*	*2,325.00*	*2,111.00*	-	-	*272.00*	*188.00*	*108.00*	*58.00*
2013	*1,103.00*	*779.00*	*2,086.00*	*1,892.00*	-	-	*307.00*	*215.00*	*18.00*	*47.00*
2014	*1,060.00*	*793.00*	*2,108.00*	*1,959.00*	-	-	*338.00*	*235.00*	*26.00*	*55.00*
2015	*996.00*	*744.22*	*2,074.00*	*1,791.88*	-	-	*374.00*	*245.08*	*35.00*	*31.09*
2016	*950.00*	*745.49*	*2,070.00*	*1,792.11*	-	-	*416.00*	*284.07*	*49.00*	*33.99*
2017	*978.00*	*n/a*	*2,987.00*	*n/a*	-	*n/a*	*463.00*	*n/a*	*67.00*	*n/a*
2018	*936.00*	*n/a*	*2,969.00*	*n/a*	-	*n/a*	*513.00*	*n/a*	*121.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

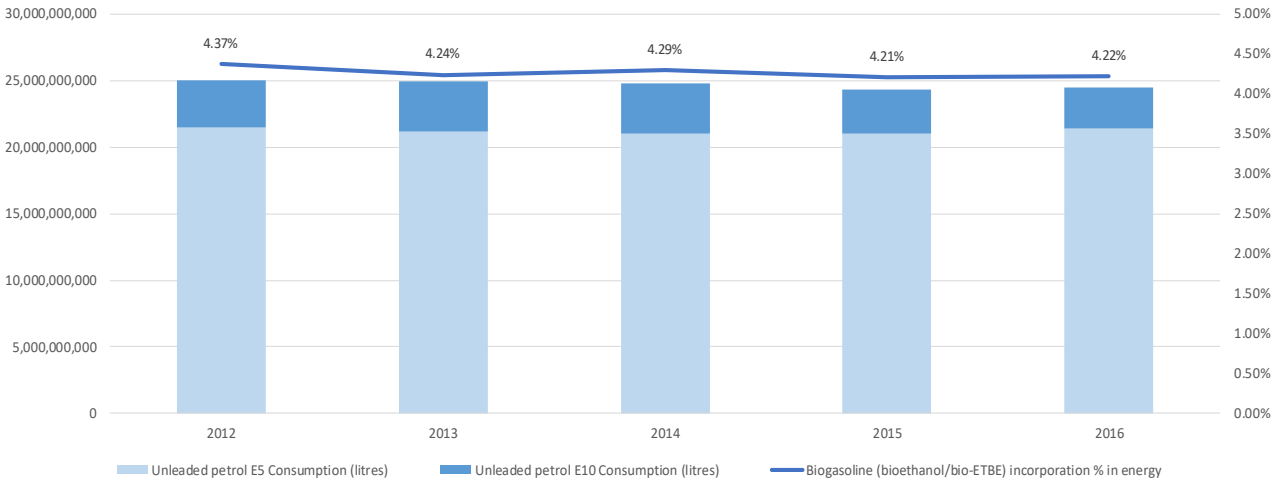
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*1,783*	*3.18%*	*45.83%*
Annex IX A	*7*	*0.02%*	*0.36%*
Annex IX B	*619*	*2.21%*	*31.83%*
Electricity	*284*	*1.28%*	*18.42%*
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*138.40*	*0.25%*	*3.56%*
Total	***2,832***	***6.94%***	

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

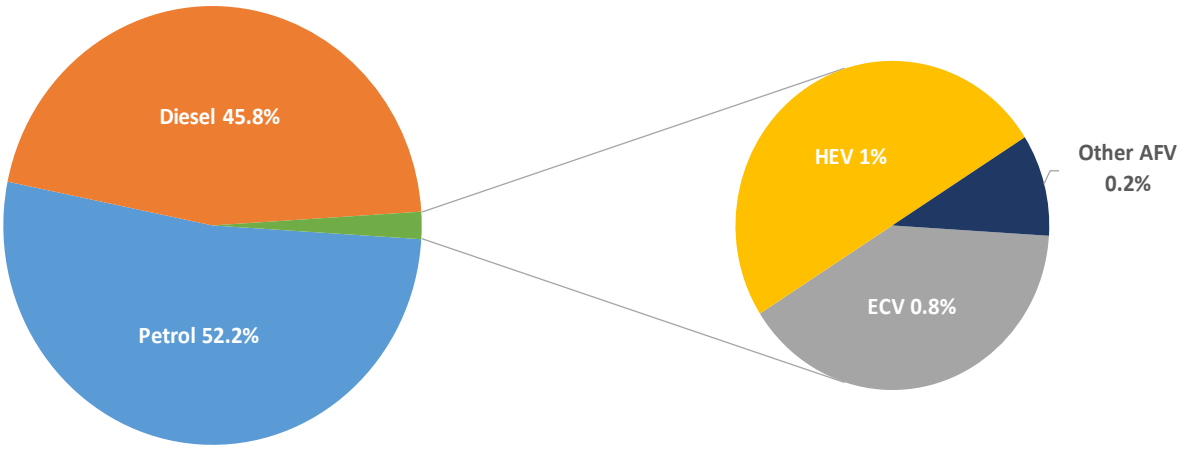


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Germany

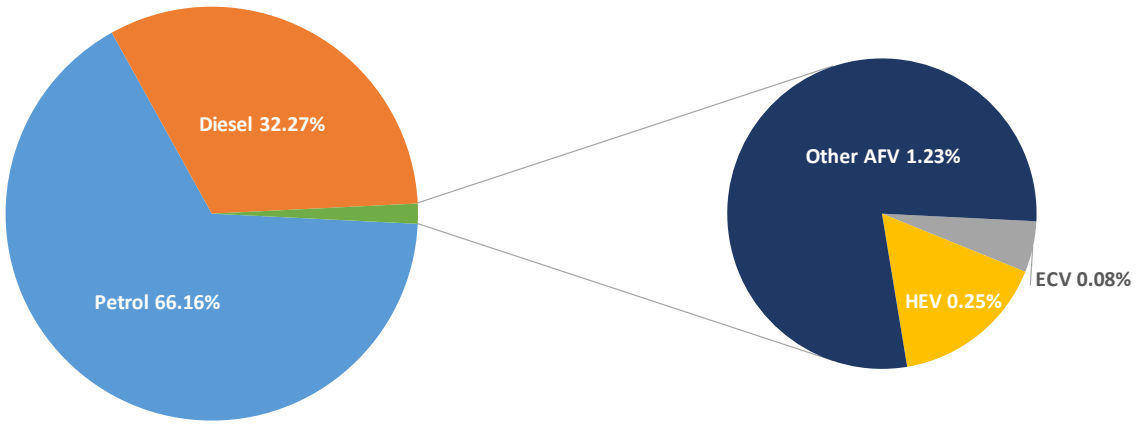
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Greece

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and the FQD, including the sustainability criteria for biofuels, have been fully transposed into the Greek legislation, through several pieces of legislation, including:
  - Article 1 of L.3851/2010- transposing the RED.
  - L.4062/2012 unit C, OG A'70- transposing the RED and FQD, including the sustainability criteria for biofuels.
  - 316/2010 Decision (OG B' 501/2012) of the Chemical Supreme Council- transposing the FQD.

  The legislative text transposing the ILUC Directive has been submitted to be voted by the Greek Parliament.
- **Crop cap:** The Greek legislation proposes the cap on biofuels at 7%.
- **Advanced biofuels:** The Greek legislation proposes the sub-target for advanced at 0.2%.
- **Double counting of biofuels:** JMD Δ1/A/10839/2012 (OG1667) provides a list of those feedstocks that are eligible for double counting. These include used cooking oils, animal fats, animal manure, non-food cellulosic and ligno-cellulosic materials (straw, nutshells, etc.), wastes and residues of agriculture, forestry, aquaculture.

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** Greece has only a mandatory target for the blending of biodiesel into diesel at exactly 7% in volume of the whole quantity of diesel used in transport in 2018. This obligation has applied since 2014.
- **Penalty for non-fulfilment:** A supplier who fails to fulfil the quota has to pay a fine.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Differentiated targets for biofuels and actuals in volume

	Minimum biofuel in petrol	Minimum biofuel target in diesel		Minimum overall biofuel target
	As per law (%)	As per law (%)	Actuals (%)	As per law (%)
2014	n/a	7	7	n/a
2015	n/a	7	7	n/a
2016	n/a	7	7	n/a
2017	n/a	7	7	n/a
2018	n/a	7	7	n/a

- **Tax incentives for biofuels or blends:** No information available.

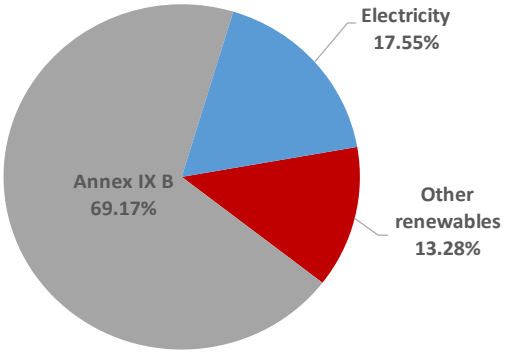
Greece

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*43.00*	-	*64.00*	*128.00*	-	-	*2.40*	*3.00*	-	-
2011	*142.00*	-	*69.00*	*20.00*	-	-	*3.30*	*3.30*	-	-
2012	*171.00*	-	*83.00*	*24.00*	-	-	*4.00*	*3.20*	-	-
2013	*198.00*	-	*97.00*	*23.00*	-	-	*5.10*	*5.00*	-	-
2014	*226.00*	-	*113.00*	*30.00*	-	-	*6.20*	*6.90*	-	-
2015	*256.00*	*n/a*	*130.00*	*n/a*	-	n/a	*7.20*	n/a	-	n/a
2016	*287.00*	*n/a*	*146.00*	*n/a*	-	n/a	*8.30*	n/a	-	n/a
2017	*316.00*	*n/a*	*161.00*	*n/a*	-	*n/a*	*9.40*	*n/a*	-	*n/a*
2018	*346.00*	*n/a*	*175.00*	*n/a*	-	*n/a*	*12.10*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

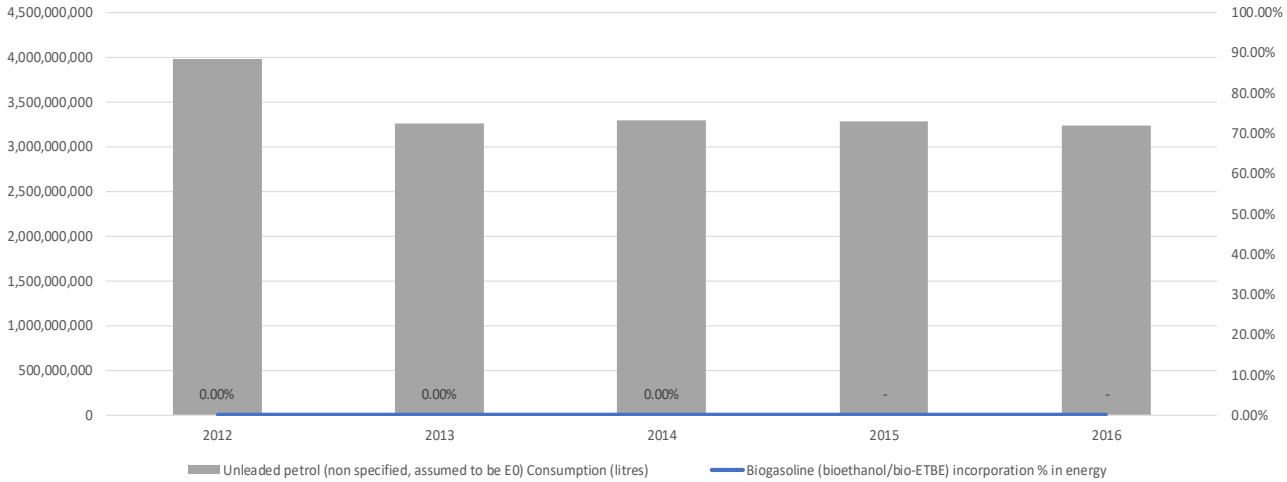
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*9*	*0.18%*	*13.28%*
Annex IX B	*24*	*0.95%*	*69.17%*
Electricity	*4*	*0.24%*	*17.55%*
Total	***38***	***1.38%***	

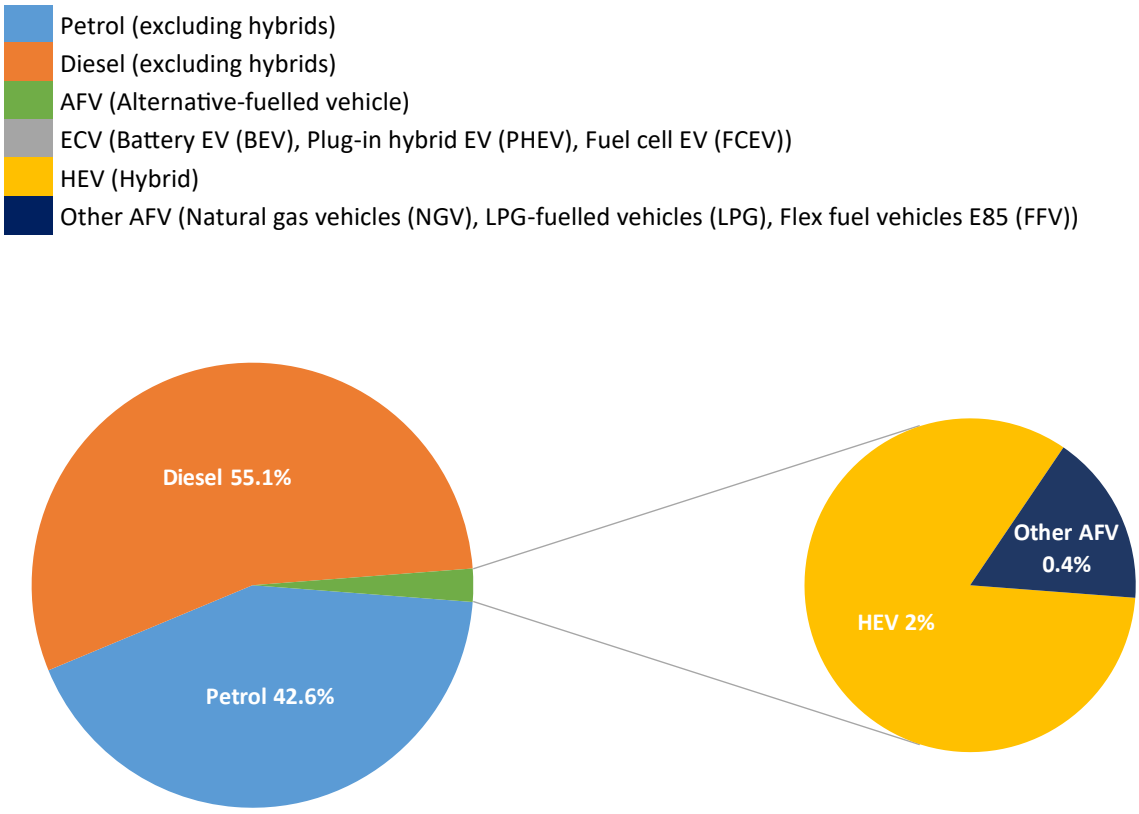
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

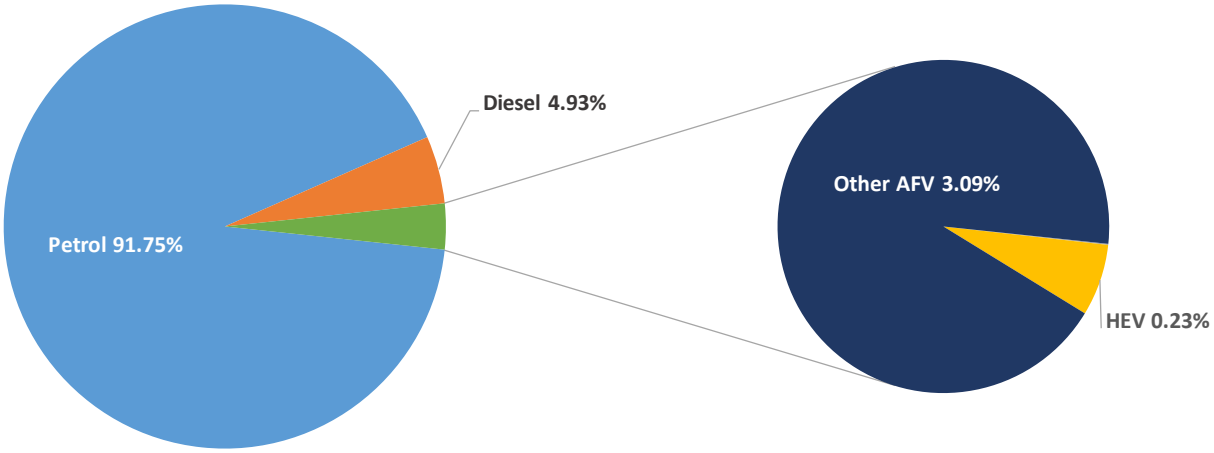
Greece

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Hungary

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Hungarian legislation, through several pieces of legislation, including:
  - Act CXVII of 2010 on the promotion of the use of renewable energy for transport purposes and on the reduction of greenhouse gas emissions from energy used in transport.
  - Decree No 42/2010. (XII. 20.) of the Minister of Agriculture on the detailed rules of territorial detachment for sustainable production of biofuels.
  - Decree No 1/2012. (I.20.) of the Minister of National Development on the calculation of the share of Energy from renewable sources.
  - Government Decree No. 309/2013. (VIII. 16.) on the guarantees of origin.
  - Decree 53/2014. (XII.13) of the Minister of National Development on the sulphur content of certain liquid fuels and heating fuels- transposes the FQD.
  - Decree No 39/2017. (X. 9.) of the Minister of National Development on the calculation of avoiding of Greenhouse Gas impact in connection with the compliance of sustainability criteria of biofuels and bioliquids.
  - Decree 17/2017. (V. 26.) of the Minister of National Development on the quality requirements of motor fuels.
  - Government Decree 279/2017 on the certification and criteria of biofuels and bioliquids- transposes the ILUC directive.
- **Crop cap:** The Hungarian law sets the crop cap at 7%.
- **Advanced biofuels:** There is no sub-target set by the Hungarian legislation.
- **Double counting of biofuels:** The Hungarian law introduces the double counting mechanism for biofuels made from waste, agricultural/forestry residues, non-food cellulosic materials and ligno-cellulosic materials, used cooking oil and fats of animal origin classified in categories 1 and 2 of Regulation (EC) No 1069/2009.

Biofuels and decarbonisation targets

- **Overall obligation:** Hungary has an overall target for the minimum biofuels content of fuels. In 2018, fuel suppliers are obligated to blend 4.9% biofuels in energy content.
- **Penalty for non-fulfilment:** Fuel suppliers that fail to fulfil the biofuel obligation are liable to pay a penalty of HUF 35/ MJ missing.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2011	3.1	4.4	n/a
2012	3.1	4.4	n/a
2013	3.1	4.4	n/a
2014	4.9	4.9	4.9
2015	4.9	4.9	4.9
2016	n/a	n/a	4.9
2017	n/a	n/a	4.9
2018	n/a	n/a	4.9
2019	n/a	n/a	6.4
2020	n/a	n/a	6.4

Source: Article 5 subparagraph (3) of Government Decree 343/2010 (XII.28) (ineffective), and Article 6 subparagraph (3) of Government Decree 279/2017.

- **Tax incentives for biofuels or blends**: There are no tax incentives for biofuels/blends.

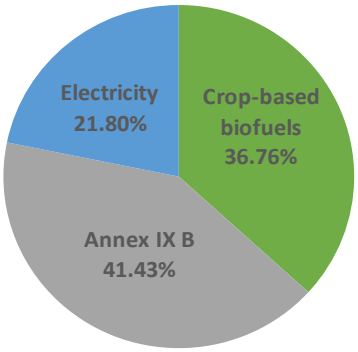
Hungary

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*34.00*	*57.00*	*110.00*	*119.00*	-	-	*6.00*	*5.00*		-
2011	*71.00*	*46.00*	*122.00*	*116.00*	-	-	*7.00*	*18.00*	-	-
2012	*82.00*	*34.00*	*135.00*	*103.00*	-	-	*9.00*	*17.00*	-	-
2013	*88.00*	*37.48*	*138.00*	*105.69*	-	-	*10.00*	*1.55*	-	-
2014	*93.00*	*60.36*	*142.00*	*128.08*	-	-	*14.00*	*23.36*	*1.00*	*n/a*
2015	*106.00*	*42.57*	*144.00*	*132.56*	-	-	*15.00*	*25.55*	*1.00*	*n/a*
2016	*108.00*	*43.84*	*163.00*	*143.31*	-	-	*16.00*	*7.79*	*2.00*	-
2017	*129.00*	*n/a*	*181.00*	*n/a*	-	*n/a*	*18.00*	*n/a*	*2.00*	*n/a*
2018	*173.00*	*n/a*	*182.00*	*n/a*	-	*n/a*	*21.00*	*n/a*	*3.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

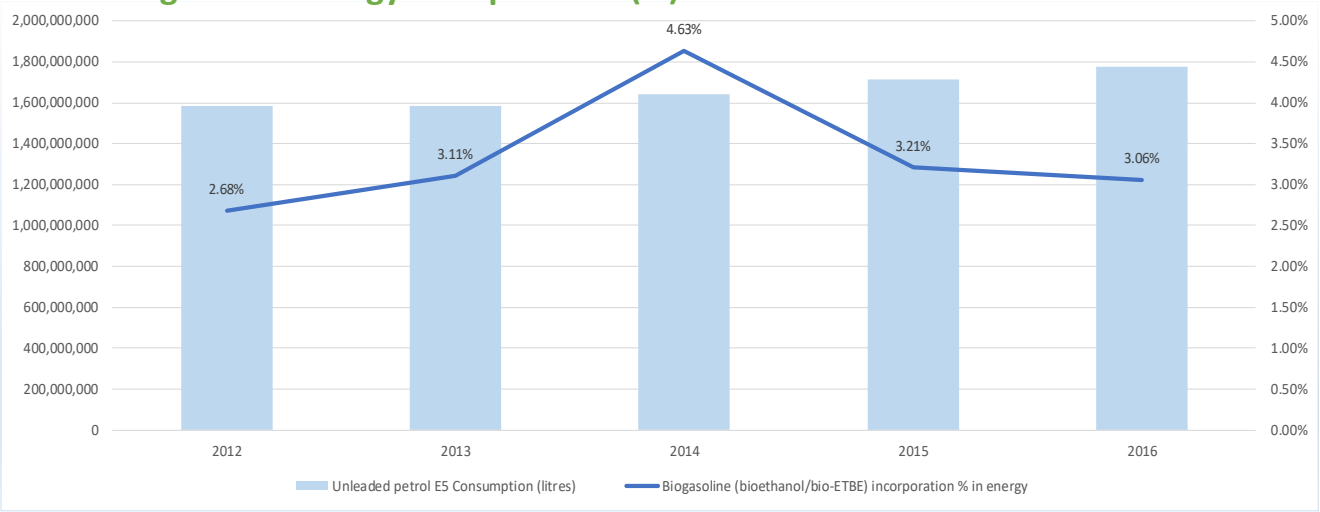
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*119*	*2.73%*	*36.76%*
Annex IX B	*67*	*3.08%*	*41.43%*
Electricity	*28*	*1.62%*	*21.80%*
Total	***214***	***7.44%***	

Sources: Eurostat, SHARES, ePURE calculation

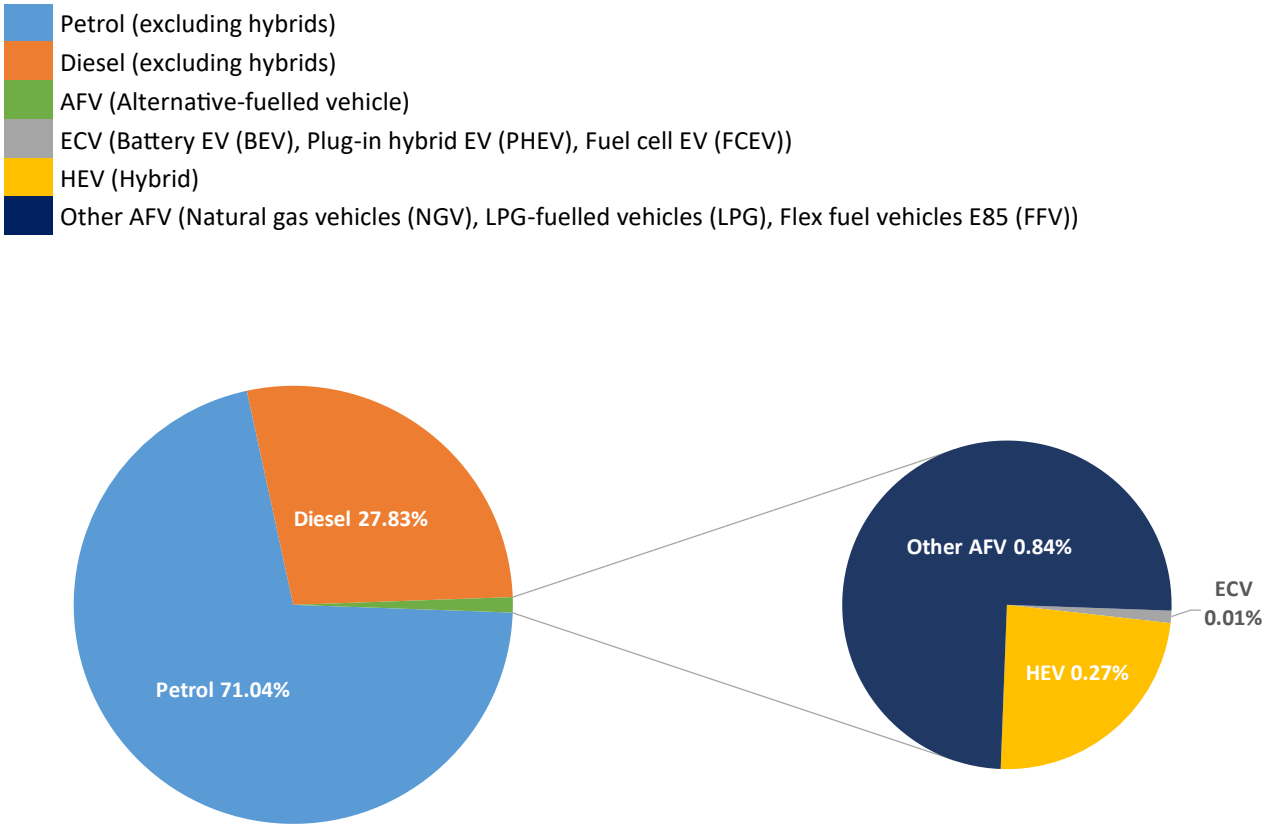
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Hungary

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Ireland

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Irish legislation through several pieces of legislation, including:
  - Energy (Biofuel Obligation and Miscellaneous Provisions) Act 2010- introducing national biofuel obligations.
  - S.I. No. 33/2012- European Union Biofuel Sustainability Criteria Regulations 2012.
  - S.I. No. 482/2014- Sustainable Energy Act 2002 (Conferral of Additional Functions - Renewable Energy) (Amendment) Order 2014.
  - S.I. No. 483/2014- European Union (Renewable Energy) Regulations 2014.
  - S.I. No. 581/2016- European Union (Renewable Energy) (Amendment) Regulations 2016.
  - S.I. No. 160/2017- European Union (Greenhouse Gas Emission Reductions, Calculation Methods and Reporting Requirements) Regulations 2017.

  The provisions of the ILUC Directive are in the process of being transposed into the national legislation. The process of finalising the RED elements is expected to be in place in June 2018. The FQD elements may be transposed during the summer 2018.
- **Crop cap:** There is no plan to go below 7% for the crop cap.
- **Advanced biofuel sub-target:** In April 2017, Ireland officially notified the EC that would endeavour to achieve 0.25% of energy in the transport sector from advanced biofuels.
- **Double counting of biofuels**: There is a mechanism included in the national law to enable the double counting of biofuels made from certain materials. The National Oil Reserves Agency (NORA) decides on a case-by-case basis as to the eligibility of biofuels for double counting. The legislation requires NORA to consult with the National Standards Authority of Ireland (NSAI), the Sustainable Energy Authority of Ireland (SEAI), the Environmental Protection Agency and the Minister for the Environment, Community and Local Government. Those biofuels that are eligible for double counting are generally "considered to be a biodegradable waste, residue, non-food, cellulosic material, ligno-cellulosic material or algae."

Biofuels and decarbonisation targets

- **Overall target:** Ireland has an overall target for the blending of biofuels into transport fuels. In 2018, fuel suppliers are obliged to blend conventional transport fuels with at least 8.695% biofuels in volume. Under the Biofuels Obligation Scheme, certificates for biofuels which are placed on the market in one year can be carried over and counted towards a maximum of 25% of an obligated party's biofuel obligation in either of the next two years. The new order will reduce the carryover limit to 15% in 2020 from 25%. The biofuel obligation rate will be increased to circa 11.111% from 2019 (10% by volume) and 12.359% (11% by volume) from 2020.
- **Penalty for non-fulfilment:** An obligated party that has not collected sufficient BOS Certificates to meet its obligation in a given obligation period is liable to pay a buy-out charge which is currently set at €0.45 per litre.
- **GHG intensity reduction target:** The reduction should amount to at least 6% by 31 December 2020 compared to 2010. The average litre of biofuel placed on the market in Ireland in 2016 had a carbon intensity of circa 18.5 gCO_{2eq}/MJ, which represents a 78% reduction in carbon intensity in comparison to road transport fossil fuel.

Overall targets for biofuels in volume

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2012	n/a	n/a	4.0
2013	n/a	n/a	6.0
2014	n/a	n/a	6.0
2015	n/a	n/a	6.0
2016	n/a	n/a	6.0
2017	n/a	n/a	8.695
2018	n/a	n/a	8.695
2019			11.111
2020			12.359

Source: Biofuels Obligation Scheme Policy Statement April 2018

- **Tax incentives for biofuels or blends**: Carbon Tax does not apply to biofuels. There are no other tax incentives.

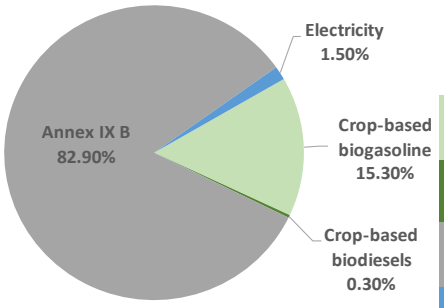
Ireland

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*40.00*	*30.00*	*94.00*	*60.00*	-	-	*1.00*	*0.57*	*0.90*	*2.00*
2011	*50.00*	*29.00*	*117.00*	*68.00*	-	-	*1.00*	*0.53*	*0.90*	*0.12*
2012	*60.00*	*29.00*	*140.00*	*56.00*	-	-	*1.00*	*0.58*	*0.90*	*0.08*
2013	*70.00*	*29.00*	*163.00*	*74.00*	-	-	*1.00*	*0.62*	*0.90*	-
2014	*80.00*	*27.00*	*186.00*	*90.00*	-	-	*1.00*	*0.65*	*0.90*	-
2015	*90.00*	*29.75*	*209.00*	*97.93*	-	-	*1.00*	*0.94*	*0.90*	-
2016	*100.00*	*31.65*	*232.00*	*86.35*	-	-	*7.00*	*1.16*	*0.90*	-
2017	*110.00*	*n/a*	*255.00*	*n/a*	-	*n/a*	*14.00*	*n/a*	*0.90*	*n/a*
2018	*120.00*	*n/a*	*278.00*	*n/a*	-	*n/a*	*20.00*	*n/a*	*0.90*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

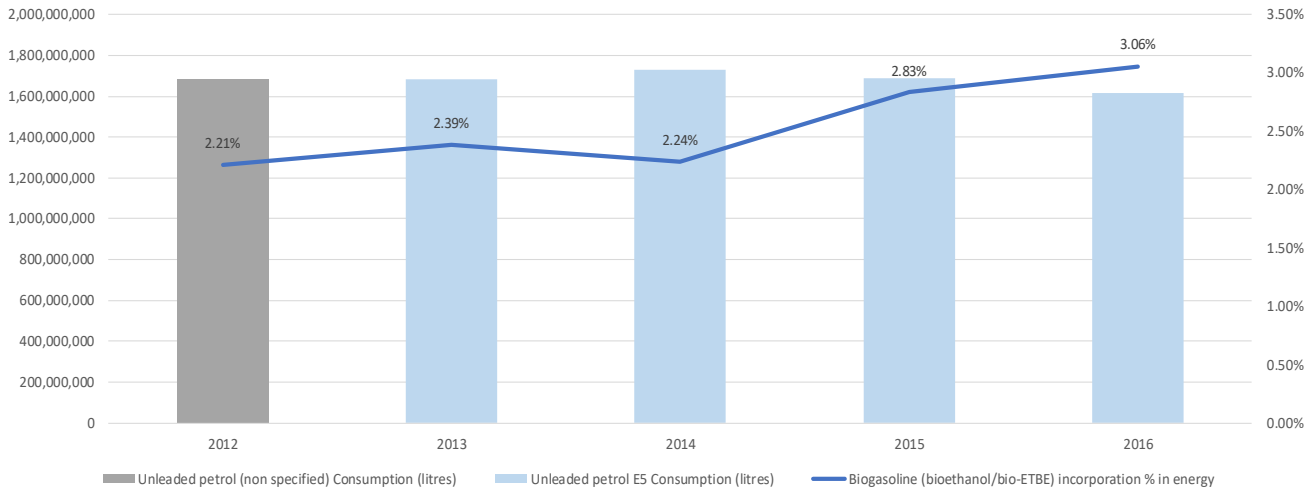
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biogasoline	*32*	*0.77%*	*15.30%*
Crop-based biodiesels	*1*	*0.02%*	*0.30%*
Annex IX B	*86*	*4.17%*	*82.90%*
Electricity	*1*	*0.08%*	*1.50%*
Total	***119***	***5.04%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

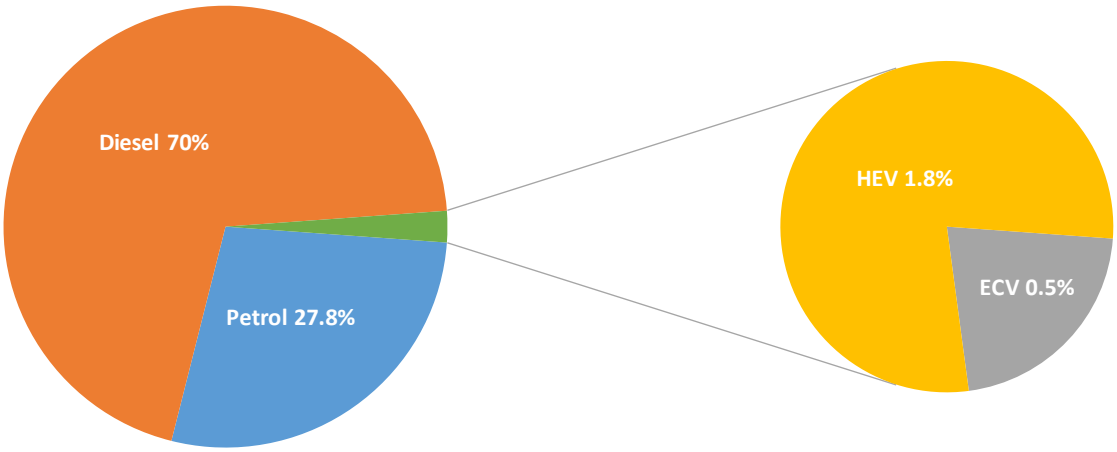


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Ireland

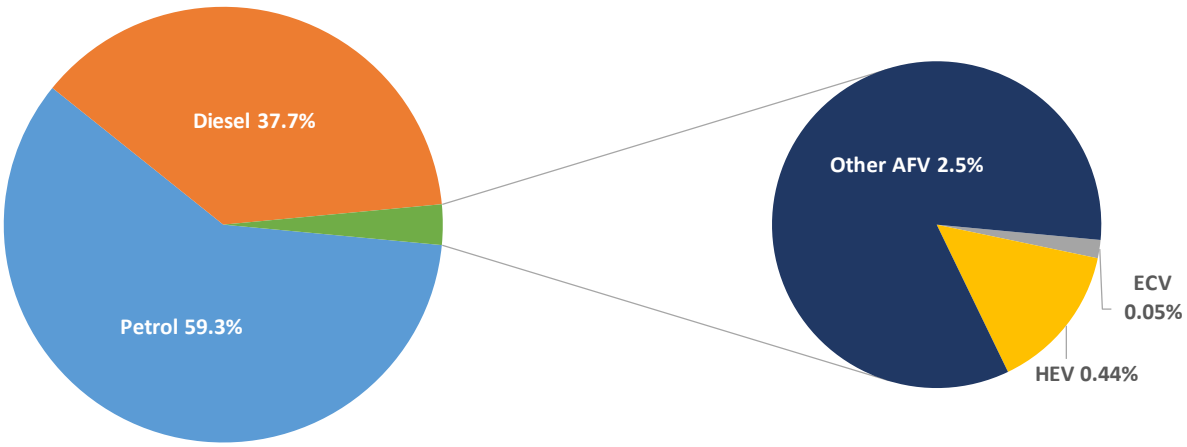
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Italy

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Latvian legislation through several pieces of legislation, including:
  - Legislative Decree No. 28 of 3 March 2011- transposing the RED.
  - Legislative Decree No. 55 of 31 March 2011- transposing the FQD and the sustainability criteria.
  - "Destinazione Italia Law" No. 145 of 23 December 2013- introducing the national biofuel targets.
  - Decree of 10 October 2014- updating the national biofuel targets until 2022, introducing a definition of "advanced biofuel" and establishing specific target for advanced biofuels starting from 2018.
  - Legislative Decree No. 51 of 21 March 2017- transposing the ILUC Directive.
  - Interministerial Decree of 2 March 2018- aiming at the promotion of biomethane in transport.
- **Crop cap:** Crop-based biofuels are capped at 7% by 2020.
- **Advanced biofuel sub-target:** The Italian law sets targets for advanced biofuels from 2018 to 2020, ramping up from 0.6% to 0.9%. Advanced biofuel targets are being split into two sub-targets: 75% advanced biomethane and 25% other advanced biofuels. Those percentages are subject to change according to availability and price of relevant advanced biofuels (both biomethane and other biofuels).
- **Double counting of biofuels:** There is a mechanism included in the national law that enables the double counting of biofuels. There is a positive list of biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material that are eligible to be counted double towards the biofuels target. In February 2014 the "Destinazione Italia Law" No. 145 modified the list of materials eligible for double counting with additional by-products (residues) that can be used: glycerine waters; fatty acids caused by physical or chemical refining of oils; soap fatty acids caused by neutralization (or "counteraction") of residual acidic part of oil; residues of distillation reaction of coarse fatty acids and of glycerine; lubricating vegetable oil, derivative of fatty acids; marc and lees; animal fats of category n. 1 and 2. The positive list of the materials that can be used to produce double counting biofuels, including also advanced biofuels, has been further updated by the Decree of 10 October 2014.

Biofuels and decarbonisation targets

- **Overall obligation:** Italy has a minimum overall target for the blending of biofuels. In 2018, fuel suppliers are obliged to blend conventional automotive fuels with at least 7% biofuels in energy content of which 0.6% advanced biofuels, split into 0.45% advanced biomethane and 0.15% other advanced biofuels.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil a quota obligation is liable to pay a penalty of €750 for every, missing certificate (10 gigacalories) of biofuel.
- **GHG intensity reduction target**: Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2010	n/a	n/a	3.5
2011	n/a	n/a	4.0
2012	n/a	n/a	4.5
2013	n/a	n/a	4.5
2014	n/a	n/a	4.5
2015	n/a	n/a	5
2016	n/a	n/a	5.5
2017	n/a	n/a	6.5
2018	n/a	n/a	7.0 (0.6*)
2019	n/a	n/a	8.0 (0.8*)
2020	n/a	n/a	9.0 (0.9*)

* *Minimum advanced biofuels*
Source: Interministerial Decree

- **Tax incentives for biofuels or blends:** There is no incentive or excise reduction for the consumption of biofuels.

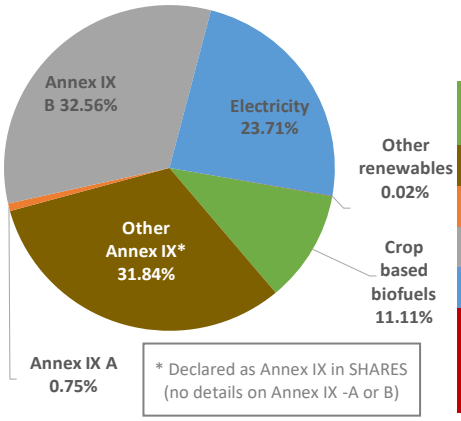
Italy

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*148.00*	*122.00*	*868.00*	*1,297.00*	-	-	*170.00*	*68.00*	*5.00*	-
2011	*193.00*	*114.00*	*969.00*	*1,296.00*	-	-	*195.00*	*78.00*	*9.00*	-
2012	*238.00*	*103.00*	*1,070.00*	*1,262.00*	-	-	*210.00*	*84.00*	*14.00*	-
2013	*284.00*	*72.00*	*1,172.00*	*1,178.00*	-	-	*228.00*	*103.00*	*18.00*	-
2014	*329.00*	*8.00*	*1,273.00*	*1,055.00*	-	-	*246.00*	*119.00*	*23.00*	-
2015	*374.00*	*24.80*	*1,374.00*	*1,141.78*	-	-	*265.00*	*292.19*	*27.00*	*0.02*
2016	*419.00*	*32.54*	*1,475.00*	*1,008.34*	-	-	*284.00*	*320.75*	*32.00*	*0.02*
2017	*464.00*	*n/a*	*1,576.00*	*n/a*	-	*n/a*	*303.00*	*n/a*	*36.00*	*n/a*
2018	*510.00*	*n/a*	*1,678.00*	*n/a*	-	*n/a*	*324.00*	*n/a*	*41.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

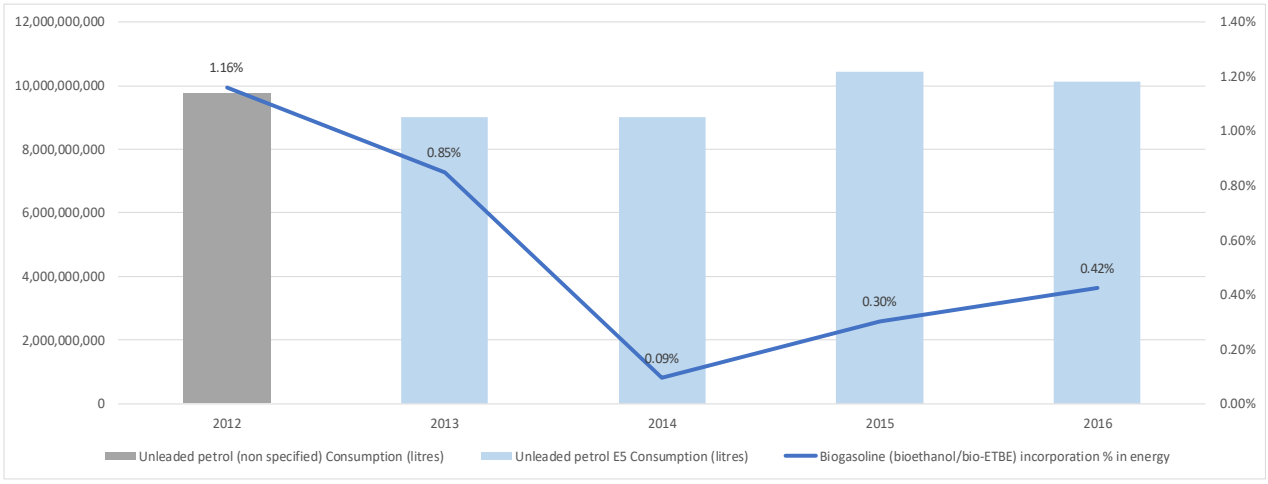
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*264*	*0.80%*	*11.11%*
*Other Annex IX**	*378*	*2.31%*	*31.84%*
Annex IX A	*9*	*0.05%*	*0.75%*
Annex IX B	*387*	*2.36%*	*32.56%*
Electricity	*321*	*1.72%*	*23.71%*
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*0.50*	*0.00%*	*0.02%*
Total	***1,360***	***7.24%***	

Sources: Eurostat, SHARES, ePURE calculation

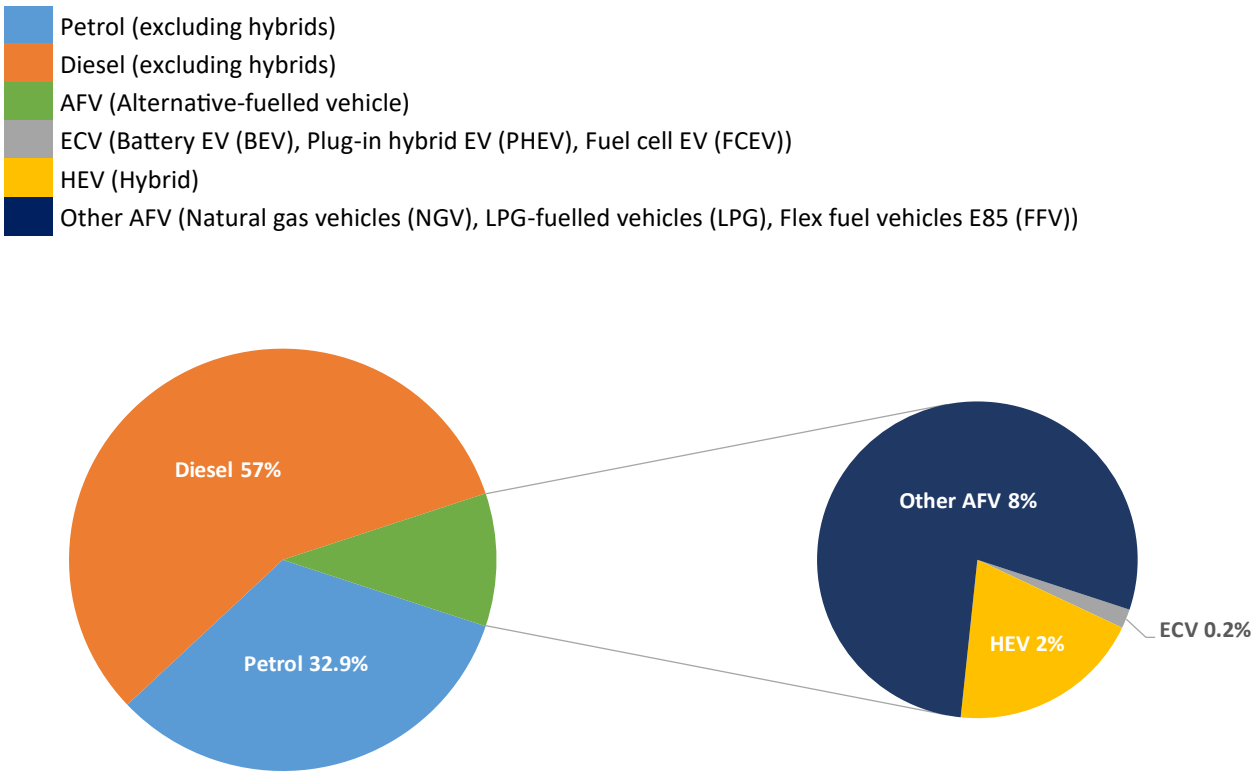
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

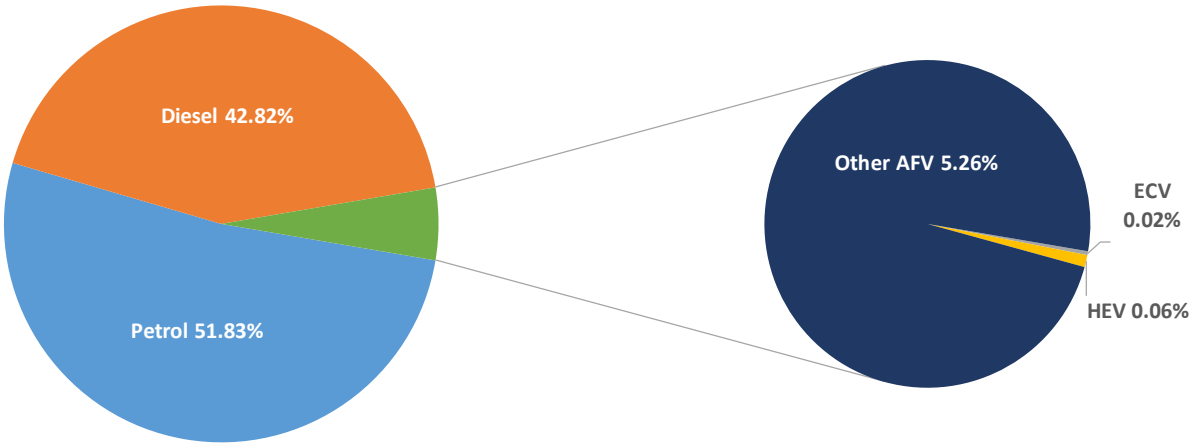
Italy

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Latvia

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD have been transposed through several pieces of legislation into the Latvian legislation, including:
  - Amendments to the Law "On Pollution"- transposing the FQD. These amendments also authorize the Cabinet of Ministers to issue the Regulation that will establish the procedure for calculating the greenhouse gas intensity of fuels and energy supplied, as well as the fuel supplier's report template and inspection procedures.
  - Amendments to the Latvian Administrative Violations Code- transposing the FQD requirements regarding the penalties.
  - Cabinet Regulation No. 332- transposing the FQD regarding the quality of petrol and diesel fuel and the market supervision.
  - Cabinet Regulation No. 772- transposing the FQD regarding procedures for consumer information.
  - Cabinet Regulation No. 545- transposing the RED and the FQD regarding the sustainability criteria for biofuels and bioliquids.
  - Transposition of the ILUC Directive: partially with the latest amendments in Cabinet Regulation No 332.
- **Crop cap:** It is included in a draft law (Law on Transport Energy) which has not been approved yet.
- **Advanced biofuels:** Advanced biofuel sub-target and amendments to sustainability criteria as in Directive 2015/1513 will be included in the subordinate legislation under the draft law.
- **Double counting of biofuels:** There is no double counting mechanism included in Latvia's national legislation.

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** There is a mandatory requirement to blend diesel fuel with 4.5-7% FAME or at least 4.5% paraffinic diesel fuel of biological origin by volume. This does not apply to diesel fuel used in maritime transport, aviation and to diesel fuel sold in the cold period (between 1 November and 15 April). Unleaded petrol with an octane number of 95 or more but less than 98 can be marketed only if it contains 4.5-5% by volume ethanol.
- **Penalty for non-fulfilment:** There are no penalties for fuel suppliers.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Differentiated targets and actuals in volume

	Minimal RE share in petrol		Minimal RE share in diesel		Minimum overall biofuel target	
	According to regulation (volume, %)*	Actuals (%)	According to regulation (volume, %)**	Actuals (%)	As per law (%)	Actuals (%)
2010	4.5-5	2.9	4.5	2.5	n/a	2.6
2011	4.5-5	2.9	4.5	2.7	n/a	2.7
2012	4.5-5	2.8	4.5	2.4	n/a	2.5
2013	4.5-5	3.1	4.5	2.3	n/a	2.5
2014	4.5-5	3.2	4.5	2.6	n/a	2.7
2015	4.5-5	3.8	4.5	2.3	n/a	2.6
2016	4.5-5	4.3	4.5	0.6	n/a	1.3
2017	4.5-5		4.5		n/a	
2018	4.5-5		4.5		n/a	

* *Only for grade 95 petrol*
** *At least 4.5% FAME or paraffinic diesel fuel of biological origin*

- **Tax incentives for biofuels or blends**: Reduced excise duty rates apply to the following high biofuels blends: blend of unleaded petrol and ethanol with an ethanol content of 70 to 85 % by volume (E85), rapeseed oil that is sold or used as heating fuel or transport fuel and pure biodiesel from rapeseed oil (B100).

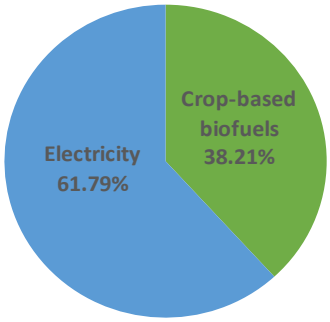
Latvia

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*14.00*	*8.00*	*25.00*	*19.00*	-	-	*3.00*	*4.00*	-	-
2011	*16.00*	*7.70*	*25.00*	*16.90*	-	-	*3.00*	*4.50*	-	-
2012	*17.00*	*6.40*	*25.00*	*15.10*	-	-	*3.00*	*4.70*	*1.00*	-
2013	*18.00*	*6.30*	*23.00*	*12.40*	-	-	*3.00*	*4.80*	*4.00*	-
2014	*19.00*	*6.10*	*22.00*	*15.90*	-	-	*4.00*	*4.50*	*6.00*	-
2015	*19.00*	*7.68*	*20.00*	*16.88*	-	-	*4.00*	*4.44*	*10.00*	-
2016	*20.00*	*8.32*	*20.00*	*4.44*	-	-	*5.00*	*4.61*	*19.00*	-
2017	*21.00*	*n/a*	*20.00*	*n/a*	-	*n/a*	*5.00*	*n/a*	*27.00*	*n/a*
2018	*22.00*	*n/a*	*22.00*	*n/a*	-	*n/a*	*5.00*	*n/a*	*31.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

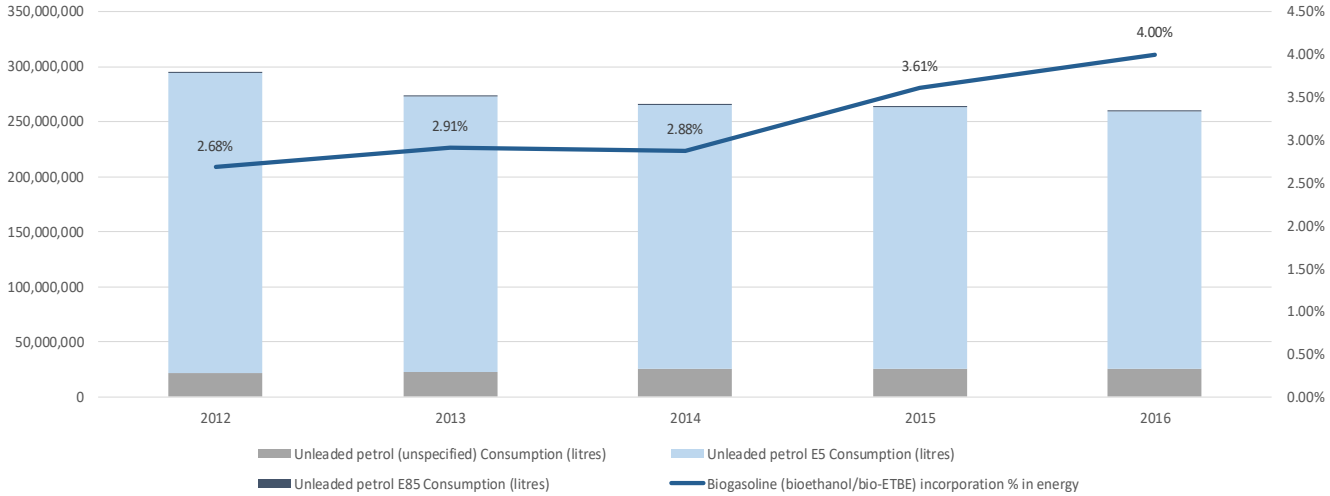
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	10	1.05%	38.21%
Electricity	5	1.70%	61.79%
Total	**15**	**2.76%**	

Sources: Eurostat, SHARES, ePURE calculation

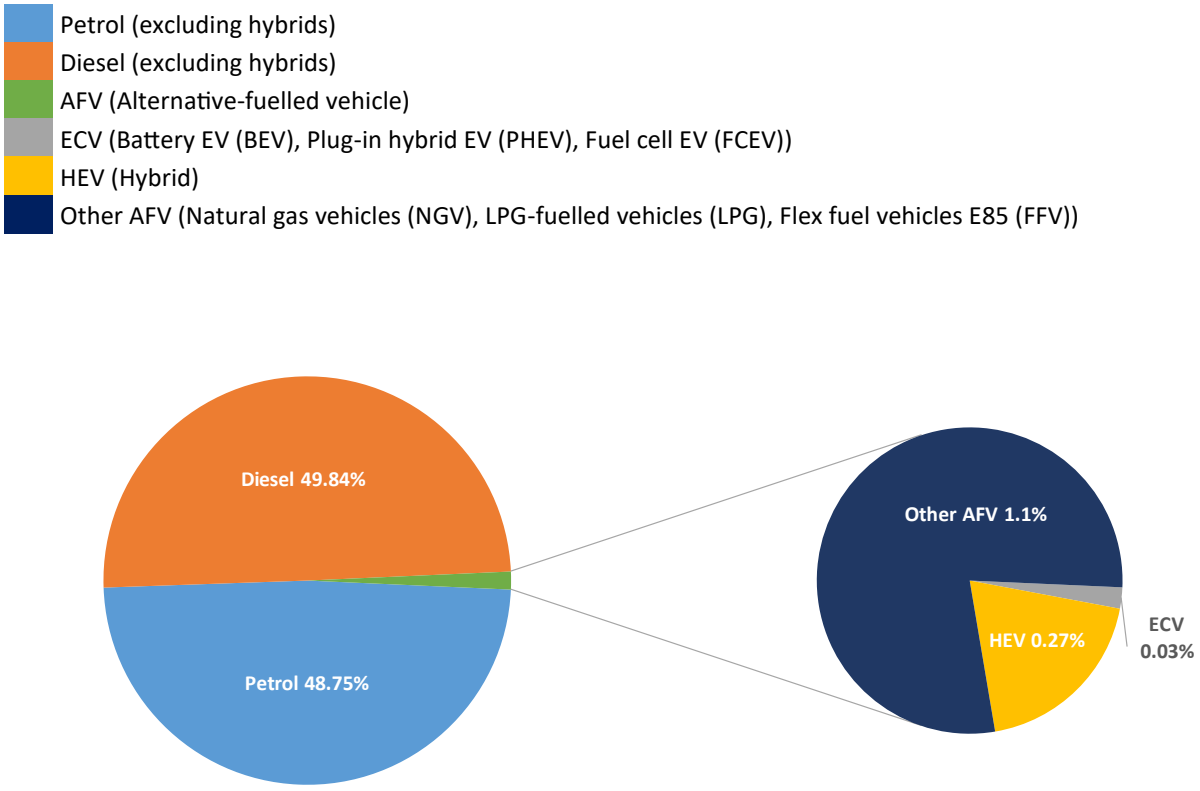
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Latvia

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Lithuania

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Lithuanian legislation through several pieces of legislation, including:
  - Act on Use of Biofuels n. 2-83 (2011).
  - Renewable Energy Law as amended- transposing ILUC provisions.
  - Decree No. 1-348/D1-1014/3-742 as amended- transposing the FQD.
- **Crop cap:** The renewable energy law sets the crop-based biofuels cap at 7%.
- **Advanced biofuel sub-target:** The renewable energy law sets a sub-target for advanced biofuels at 0.5%.
- **Double counting of biofuels:** There is no double counting mechanism included in the national legislation.

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel:** Lithuania has differentiated targets for the blending of biofuels in both petrol and diesel. In 2018, fuel suppliers are obligated to blend by volume petrol with at least 5% and to blend diesel with at least 7% (excluding the winter season from November to March).
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil the quota obligation is liable to pay a penalty with the possible loss of sales license.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in volume

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)
2010	n/a		n/a		5.8
2011	n/a		n/a		n/a
2012	n/a		n/a		n/a
2013	n/a		n/a		n/a
2014	3.34	3.34	6.45	4.3	n/a
2015	5	5	7	4.6	n/a
2016	5	5	7	4.6	n/a
2017	5	5	7	4.6	n/a
2018	5		7		n/a

- **Tax incentives for biofuels or blends**: There is no incentive in place, except for B100 (not used) or E85 (very small amounts).

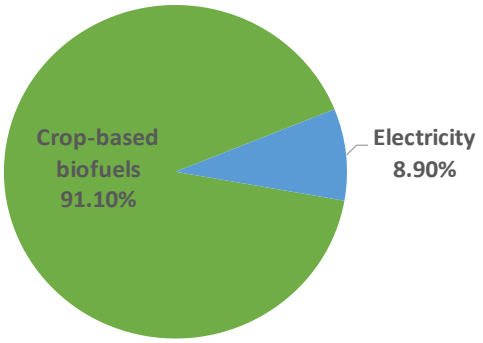
Lithuania

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*13.00*	*10.00*	*42.00*	*35.00*	-	-	*0.30*	*1.00*	-	-
2011	*14.00*	*10.00*	*43.00*	*35.00*	-	-	*0.80*	-	-	-
2012	*22.00*	*9.00*	*53.00*	*52.00*	-	-	*0.80*	-	-	-
2013	*25.00*	*6.50*	*65.00*	*51.30*	-	-	*0.90*	*1.40*	-	-
2014	*26.00*	*5.80*	*67.00*	*53.90*	-	-	*0.90*	*1.30*	-	-
2015	*30.00*	*9.67*	*79.00*	*58.33*	-	-	*1.60*	*1.46*	-	-
2016	*32.00*	*6.45*	*91.00*	*50.37*	-	-	*1.60*	*1.70*	-	-
2017	*33.00*	*n/a*	*104.00*	*n/a*	-	*n/a*	*2.40*	*n/a*	-	*n/a*
2018	*34.00*	*n/a*	*119.00*	*n/a*	-	*n/a*	*2.40*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

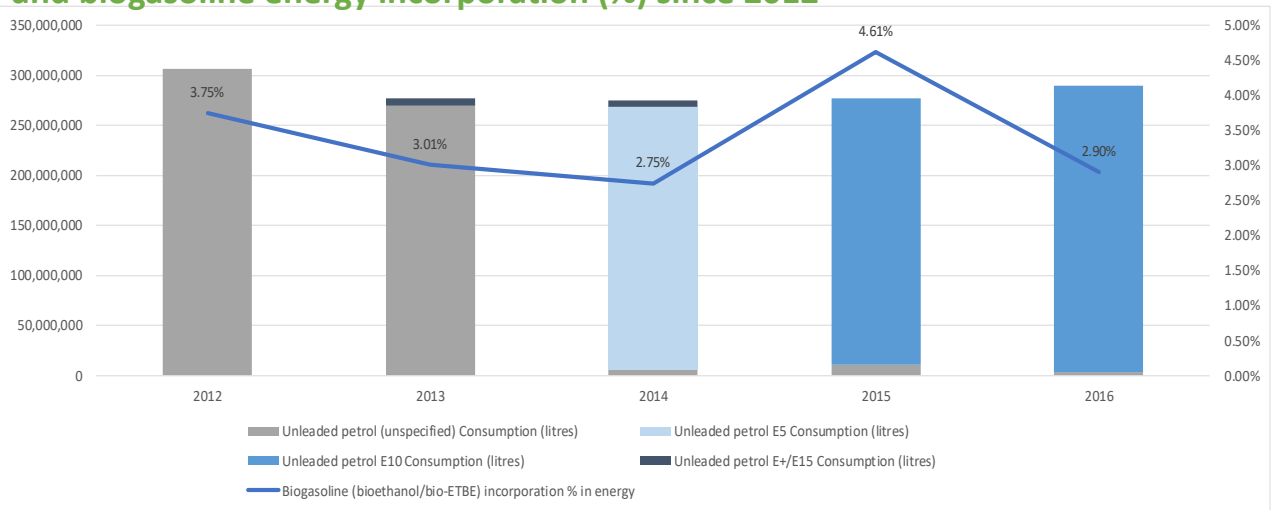
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*57*	*3.31%*	*91.10%*
Electricity	*2*	*0.32%*	*8.90%*
Total	***58***	***3.63%***	

Sources: Eurostat, SHARES, ePURE calculation

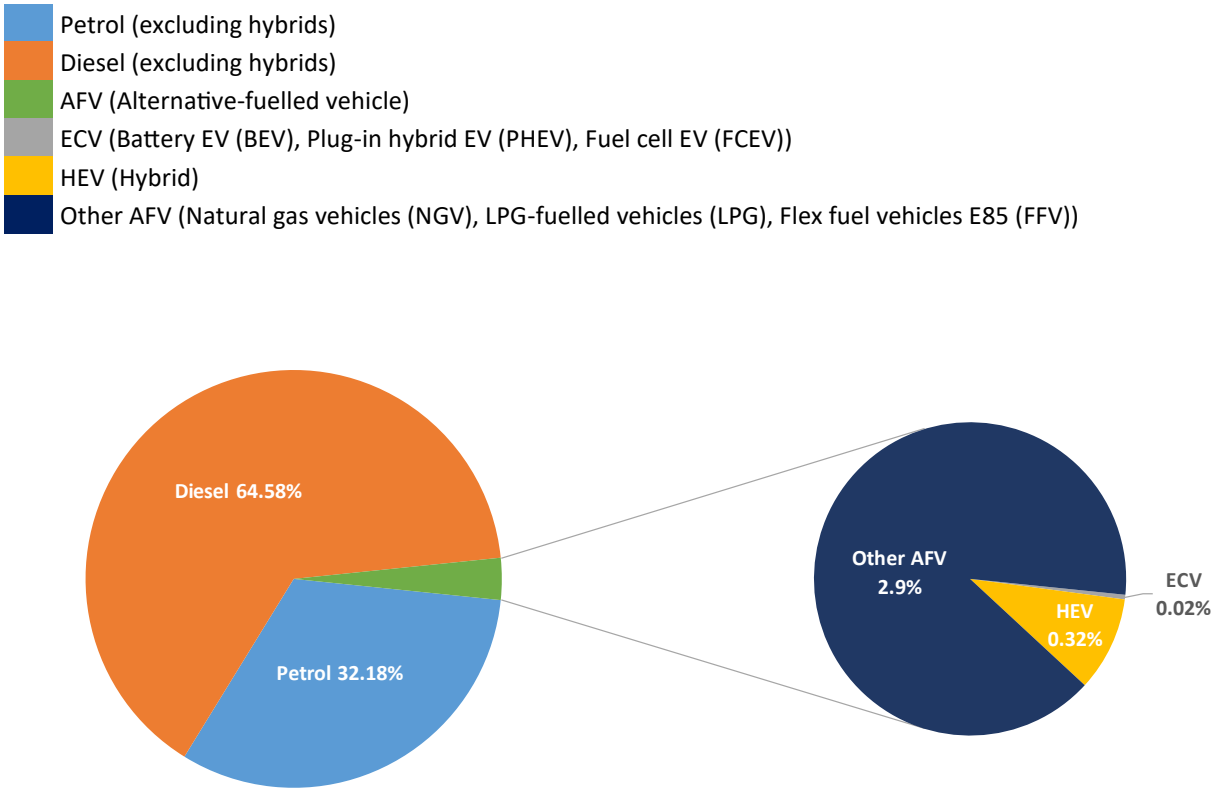
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Lithuania

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Luxembourg

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into national legislation, including:
  - The amended law of 17 December 2010 (Mémorial A No. 228 of 21 December 2010)- provides for the blending obligation on oil distributors.
  - The amended grand ducal regulation of 27 February 2011 (Mémorial A No.41 of 2 March 2011) on the sustainability criteria of biofuels- transposing the sustainability criteria.
  - The amended law of 21 June 1976 (Mémorial A No. 35 of 1 July 1976)- provides the greenhouse gas reduction obligation.
  - The amended grand ducal regulation of 16 March 2012 (Mémorial A No.55 of 26 March 2012) concerning the quality of petrol and diesel fuels and the sustainable use of biofuels- providing the calculation method by transposing Directives 98/70/CE and 2015/652 into national law.
  - Grand ducal regulation of 28 February 2017 (Memorial A No.246 of 7 March 2017) amending the Grand-Ducal Regulation of 27 February 2011- transposes the ILUC Directive.
- **Crop cap:** Currently the 7% cap is not yet required.
- **Advanced biofuels:** Advanced biofuels which are blended must represent 15% in the biofuels mix after double counting.
- **Double counting of biofuels:** The double counting provisions are implemented by the amended law of 17 December 2010.

Biofuels and decarbonisation targets

- **Overall obligation**: Luxembourg has a minimum target for biofuels incorporation in fuels. In 2018, fuel suppliers are obliged to blend conventional transport fuels with at least 5.7% biofuels in energy content. Luxembourg does not have separate targets in petrol and diesel.
- **Penalty for non-fulfilment:** Fuel suppliers that fail to fulfil the quota obligation are liable to pay a pollution tax amounting to €1,200 per 1,000 litres of biofuels that were not blended.
- **GHG intensity reduction target**: Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Overall targets for biofuels, differentiated targets in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target*
	As per law (%)	As per law (%)	As per law (%)
2010	n/a	n/a	n/a
2011	n/a	n/a	2.00
2012	n/a	n/a	2.00
2013	n/a	n/a	3.75
2014	n/a	n/a	4.75
2015	n/a	n/a	5.40
2016	n/a	n/a	5.15
2017	n/a	n/a	5.40
2018	n/a	n/a	5.70

** Note that after 2016, these figures no longer include double counting.*

- **Tax incentives for biofuels or blends:** Biofuels are taxed at the same rates as fossil fuels.

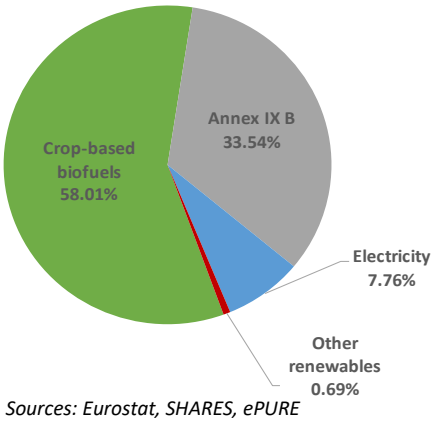
Luxembourg

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	4.70	1.00	36.80	41.00	-	-	1.90	2.00	-	-
2011	2.70	7.00	21.50	39.00	-	-	2.20	2.00	-	-
2012	4.00	1.00	31.70	46.00	-	-	2.50	2.00	-	-
2013	5.50	1.00	44.00	55.00	-	-	2.80	2.00	-	
2014	7.20	1.00	58.20	68.00	-	-	3.30	2.00	-	
2015	8.80	7.04	71.80	75.60	-	-	3.70	2.70	-	0.06
2016	10.00	8.96	81.90	81.06	-	-	4.90	3.57	-	0.05
2017	12.30	n/a	101.70	n/a	-	n/a	6.10	n/a	-	n/a
2018	14.70	n/a	121.90	n/a	-	n/a	7.50	n/a	-	n/a

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

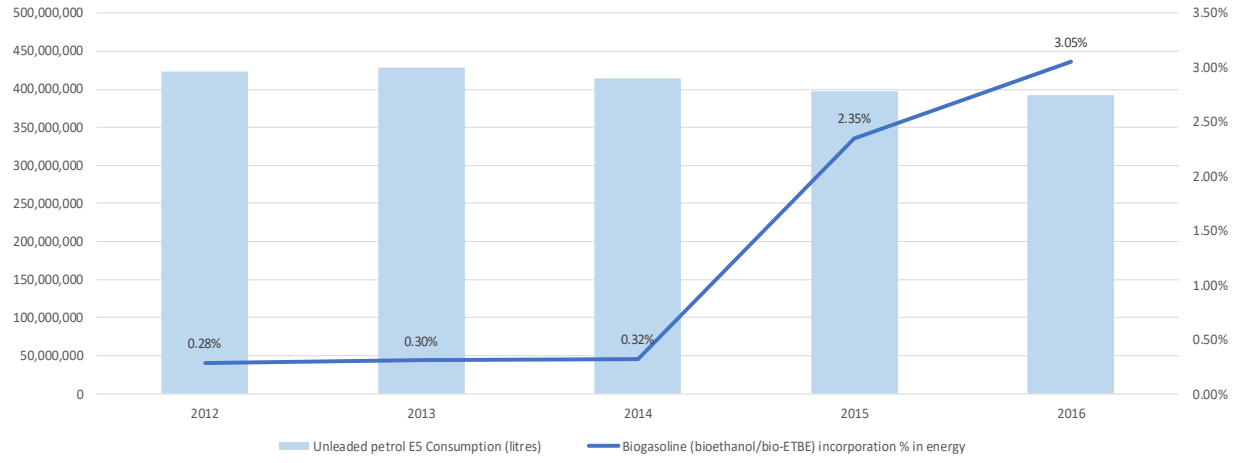
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*67*	*3.44%*	*58.01%*
Annex IX B	*19*	*1.99%*	*33.54%*
Electricity	*4*	*0.46%*	*7.76%*
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*0.79*	*0.04%*	*0.69%*
Total	***91***	***5.92%***	

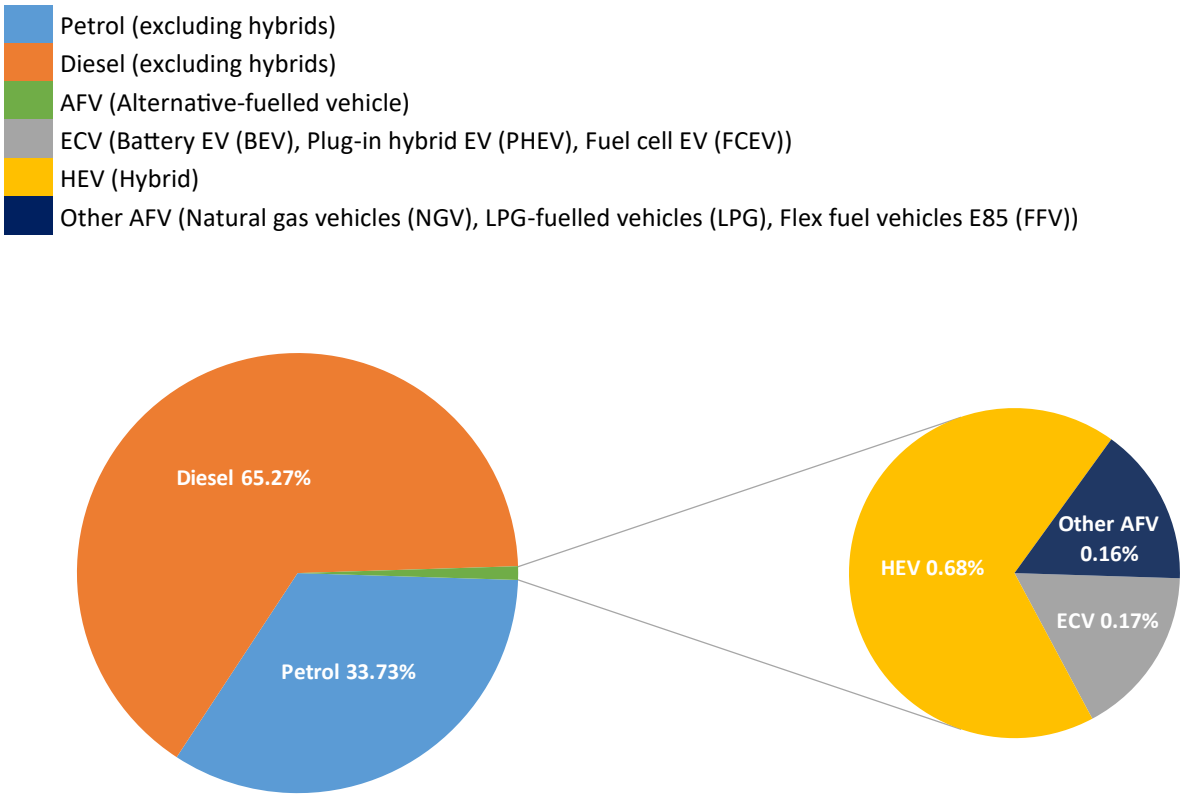
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Luxembourg

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Malta

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and the FQD, including the sustainability criteria for biofuels, have been transposed into the Maltese legislation, including:
    - Biofuels (Sustainability Criteria) Regulations 2010 (LN553/10), as amended by 2012 (LN50/2012) and 2017 (LN265/2017)- transposing the RED and the sustainability criteria for biofuels.
    - The Promotion of Energy from Renewable Sources Regulations, 2010 (LN538/10), as amended by 2012 (LN210/2012), 2014 (LN471/2014), 2017 (LN263/2017) and Biofuels and Bioliquids Markets Regulations, 2012 (LN85/2012), as amended by 2012 (LN184/2012) and Act XXV of 2015- transposing the RED.
    - Quality of Fuels Regulations, as amended, 2008 (LN44/08), 2014 (LN300/2014), 2015 (LN168/2015) and 2017 (LN264/2017) and Lifecycle Greenhouse Gas Emissions from Fuels Regulations, 2010 (LN556/10) and 2017 (LN410/2017)- transposing the FQD.
    - Legal Notice 264/2017- providing powers for monitoring of compliance with relevant regulations to the Regulator for Energy and Water Services and ensures that the Regulator reports on national fuel quality data for the previous year.
    - Legal Notice 410/2017- which introduced new definitions, provided the option for suppliers of biofuels for use in aviation to become contributors to the reduction obligation and setting out reporting obligations for suppliers on the greenhouse gas intensity of fuel and energy supplied. The legal notice also sets out an obligation for suppliers to reduce as gradually as possible life cycle greenhouse gas emissions per unit of energy from fuel and energy. Offences and penalties for persons failing to comply or otherwise breaching these regulations are also stipulated.
    - LN 263/2017 amending and supplementing the Promotion of Energy from Renewable Sources Regulations, LN 265/2017 amending the Biofuels Sustainability Criteria and LN 264/2017 amending the Quality of Fuels Regulations- transposing the ILUC Directive.
- **Crop cap:** The Maltese law sets the crop cap at 7% in 2020.
- **Advanced biofuel sub-target:** The Maltese law sets a sub-target for advanced biofuels at 0.5%.
- **Double counting of biofuels:** There is a separate mechanism included in the national law to enable the double counting of biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material. The definition of waste used is the one provided in the Waste Framework Directive 2008/98/EC.

Biofuels and decarbonisation targets

- **Overall obligation**: Malta requires a minimum biofuel content as a percentage of the total energy content of fuel placed on the market. In 2018, fuel suppliers are obliged to blend conventional automotive fuels with at least 8.5% biofuels in energy content.
- **Penalty for non-fulfilment**: A fuel supplier that fails to fulfil the obligation is liable to imprisonment for not more than 18 months or to a fine of not more than €69,881.20 or €1,397.62 for each day during which the offence persists, or to both.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020 with intermediate targets of 2% GHG reduction of fuels by 31 December 2014 and 4% reduction by 31 December 2017. As prescribed in the FQD, an additional indicative target of 2% is to be achieved through the supply of energy for certain types of transport and/or the use of any technology capable of reducing life cycle greenhouse gas emissions per unit of energy supplied and a 2% target to be achieved through the use of credits via the Clean Development Mechanism of the Kyoto Protocol.

Malta

Overall targets for biofuels and actuals in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2010	n/a	n/a	n/a	0.6
2011	n/a	n/a	1.5	2.2
2012	n/a	n/a	2.5	3.5
2013	n/a	n/a	3.5	3.8
2014	n/a	n/a	4.5	5.0
2015	n/a	n/a	5.5	5.2*
2016	n/a	n/a	6.5	6.3*
2017	n/a	n/a	7.5	
2018	n/a	n/a	8.5	

*Source: *REWS, 423.28 'Petroleum for the Inland Market, Bottling of LPG and Primary Storage Facilities and Regulations*

- **Tax incentives for biofuels or blends**: Biofuels are taxed at the same rates as the fossil fuels.

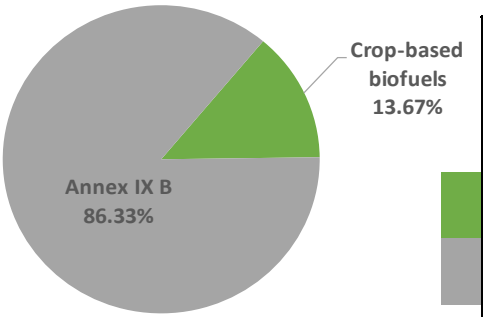
Malta

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	-	*1.23*		-	-	-	-	-	-
2011	-	-	*1.25*	*1.32*	-	-	-	-	-	-
2012	-	-	*1.27*	*3.03*	-	-	-	-	-	-
2013	-	-	*1.29*	*3.18*	-	-	-	*0.004*	-	-
2014	-	-	*1.30*	*4.38*	-	-	*0.01*	*0.006*	-	-
2015	-	-	*4.78*	*4.74*	-	-	*0.02*	*0.01*	-	-
2016	-	-	*5.64*	*6.11*	-	-	*0.02*	*0.11*	-	-
2017	-	*n/a*	*6.50*	*n/a*	-	*n/a*	*0.02*	*n/a*	-	*n/a*
2018	-	*n/a*	*6.61*	*n/a*	-	*n/a*	*0.03*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

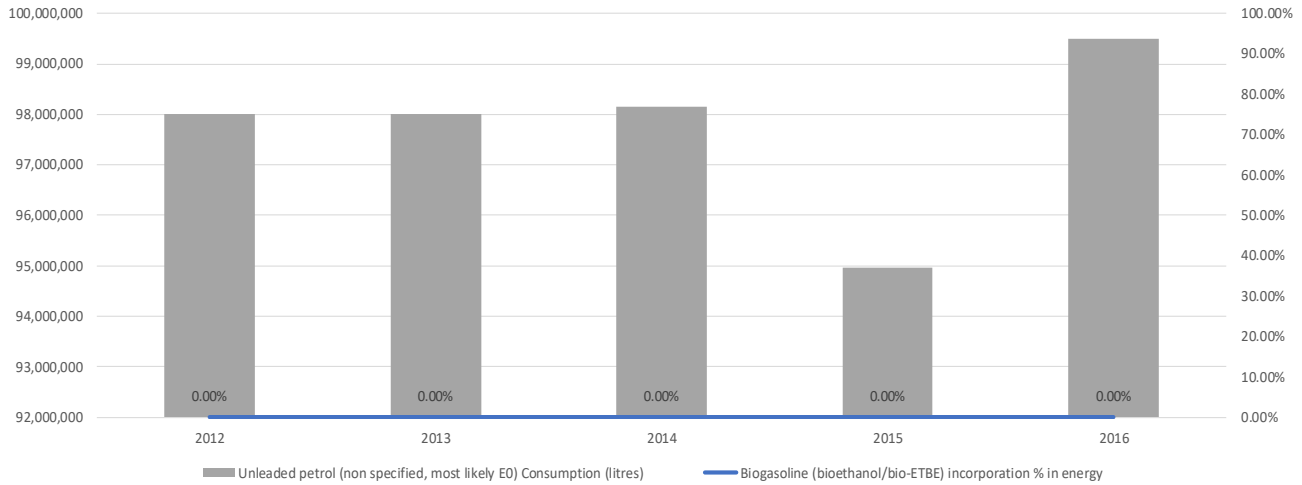
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	1	0.74%	13.67%
Annex IX B	5	4.67%	86.33%
Total	**6**	**5.41%**	

Sources: Eurostat, SHARES , ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Netherlands

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Dutch legislation, including:
  - Decision of 18 April 2011 on the rules concerning the use of renewable energy in transport (known as Decree on Renewable Energy in Transport)- transposing the RED and sustainability criteria.
  - Regulation No. BJZ2011044006 of the Minister of Infrastructure and Environment of 2 May 2011, concerning detailed rules for energy from renewable sources in transport (Transport Control Renewable Energy).
  - Law of 24 March 2011 amending the Environmental Management Act, the Economic Offences Act and the Electricity Act, 1998 that transposes the RED, the FQD.
  - Law of 26 September 2014 amending the Environmental Management Act concerning an annual obligation of renewable energy transport, renewable fuel units and electronic register of renewable energy transport.
  - Decision of 25 November 2014 on the rules concerning the execution of title 9.7 Renewable energy transport of the Environmental Management Act (Decree on Renewable Energy in Transport 2015).
  - Regulation No. IenM/BSK-2014/259021 of the State Secretary for Infrastructure and the Environment of 27 November 2014, concerning the rules for execution of title 9.7 Renewable Energy in Transport of the Environmental Management Act and of the Decree on Renewable Energy in Transport 2015 (Regulation on Renewable Energy in Transport 2015).
  - Regulation No BJZ2011043268 of 20 April 2011 of the Minister of Infrastructure and the Environment, laying down rules concerning the quality and sulphur content of fuels.
  - Decision of 8 April 2011 laying down the fuels requirements to implement Directive 2009/30/EC (known as the Decree on Fuel Pollution).
  - Law of 18 April 2018 amending the Environment Management Act- amending the law by changing chapter 9.7 (on biofuels) and adding a chapter 9.8 to be able to implement the FQD. The law allows also the use of 'better fossil fuels' to achieve the 6% GHG emission saving target as in line with the implementation Directive on the FQD. The government enforces the new law retroactively from 1 January 2018.
  - The Decision of 3 May 2018 containing rules relating to the annual obligation for renewable energy transport and the reporting and reduction obligation for transport emissions- contains detailed rules on chapter 9.7 and 9.8.
- **Crop cap:** The Dutch law sets the cap for conventional biofuels of 3% for 2018, 4% for 2019 and 5% for 2020.
- **Advanced biofuel sub-target:** The Dutch law sets a mandate for biofuels from Annex IX part A of at least 0.6% for 2018, 0.8% for 2019 and 1% for 2020 after double counting.
- **Double counting of biofuels:** The Dutch law enables the double counting for biofuels produced from certain materials. In the new law, the double counting mechanism will be continued for Annex IX until 2021. From January 2019 onwards, the obligated parties will need to demonstrate that the feedstock used for obtaining double counting status is not intentionally produced. It is assumed that until the end of 2018, all feedstock listed in Annex IX are so-called non-modified feedstock. The amendment adopted by the Lower House stipulates that in case a feedstock for biofuel production is not listed in part A and B of Annex IX, this biofuel has to be considered a single counting "other" type of biofuel. The new legislation creates 3 types of tickets (HBE - Hernieuwbare Brandstof Eenheid): one for conventional biofuels, one for advanced (double counting), one for other (partly double counting) biofuel. Renewable electricity for road transport will count 5 times.

Biofuels and decarbonisation targets

- **Overall obligation:** Netherlands has targets mandating the blending of biofuels. In 2018, the overall biofuel target is a minimum 8.5% biofuel in transport fuel in energy content.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil the quota obligation is liable to pay a penalty. The level of the penalty depends partly on the severity of the offence and partly on the actual situation and how strong the incentive for compliance should be.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Netherlands

Overall targets for biofuels, differentiated biofuels in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2010	3.5		3.5		4.0	
2011	3.5	3.78	3.5	4.62	4.25	4.31
2012	3.5	3.99	3.5	4.86	4.5	4.54
2013	3.5	4.07	3.5	5.62	5.0	5.05
2014	3.5	4.12	3.5	6.40	5.5	5.54
2015	n/a				6.25	6.25*
2016	n/a				7.0	7.0**
2017	n/a				7.75	
2018	n/a				8.5 (≤3) (≥0.6)***	
2019					12.5 (≤4) (≥0.8)****	
2020					16.4 (≤5) (≥1.0)*****	

Source: The Decision of 3 May 2018
** Broken down per category: 1.8% 1G, 0.2% 2G and 2.2% other (=UCO). Source: NEa*
*** Broken down per category: 1.4% 1G, 0.2% 2G and 2.6% other (=UCO). Source: NEa*
**** 8.5% overall target, 3% cap 1G, for advanced at least 0.6% double counted*
***** 12.5% overall target, 4% cap 1G, for advanced at least 0.8% double counted*
****** 16.4% overall target, 5% cap for 1G, for advanced at least 1.0 %, double counted*

- **Tax incentives for biofuels or blends**: There is a tax incentive for fuels that contain more than 10% bio component. Effectively that tax inventive applies to E85 only. However, E85 is no longer offered in the Dutch market.

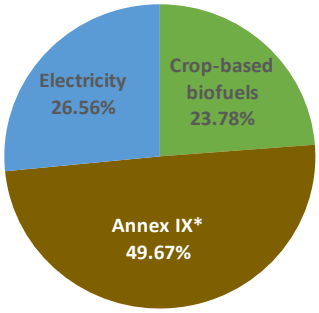
Netherlands

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*168.00*	*134.00*	*139.00*	*95.00*	-	-	*12.00*	*25.00*	*n/a*	-
2011	*206.00*	*149.00*	*210.00*	*172.00*	-	-	*14.00*	*28.00*	*n/a*	-
2012	*202.00*	*124.00*	*240.00*	*194.00*	-	-	*16.00*	*30.00*	*n/a*	-
2013	*208.00*	*124.00*	*280.00*	*165.00*	-	-	*19.00*	*33.00*	*n/a*	-
2014	*215.00*	*128.00*	*319.00*	*208.00*	-	-	*21.00*	*35.00*	*n/a*	-
2015	*217.00*	*141.87*	*350.00*	*155.54*	-	-	*23.00*	*38.23*	*n/a*	*0.08*
2016	*230.00*	*120.59*	*391.00*	*121.07*	-	-	*33.00*	*44.18*	*n/a*	*0.09*
2017	*243.00*	*n/a*	*431.00*	*n/a*	-	*n/a*	*42.00*	*n/a*	*n/a*	*n/a*
2018	*256.00*	*n/a*	*471.00*	*n/a*	-	*n/a*	*52.00*	*n/a*	*n/a*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

RES-T contribution of each fuel category and share according to RED calculation

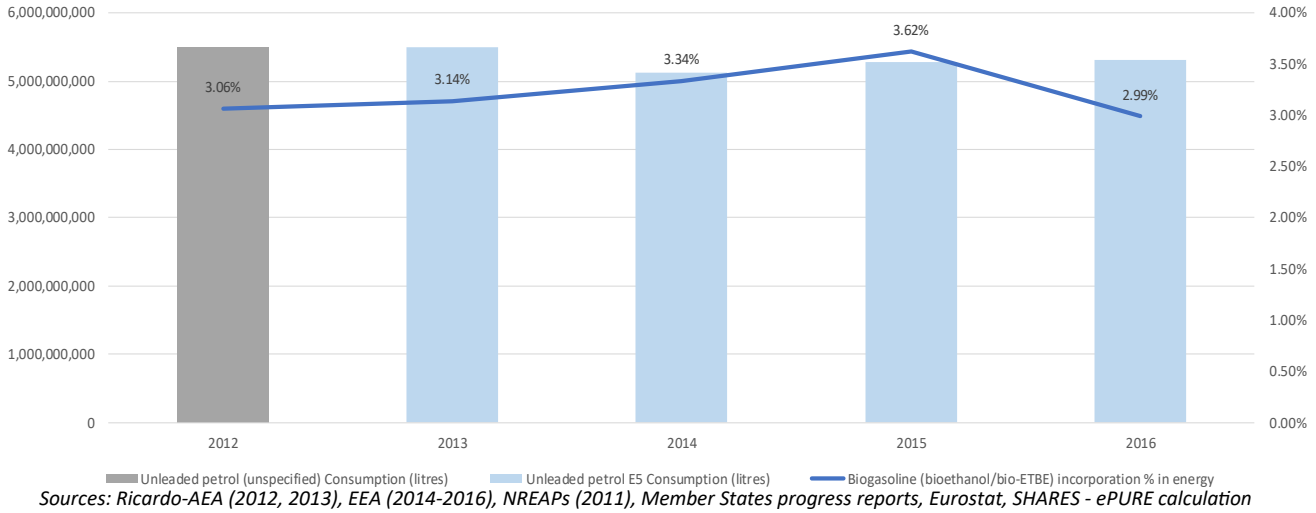


* Declared as Annex IX in SHARES (no details on Annex IX -A or B)

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*114*	*1.10%*	*23.78%*
*Annex IX**	*119*	*2.30%*	*49.67%*
Electricity	*44*	*1.23%*	*26.56%*
Total	***276***	***4.63%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

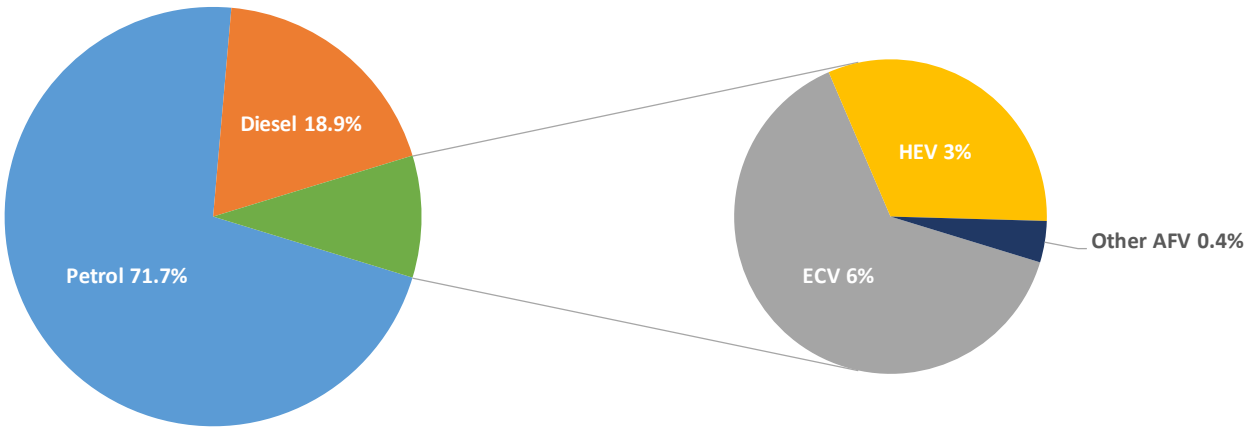


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Netherlands

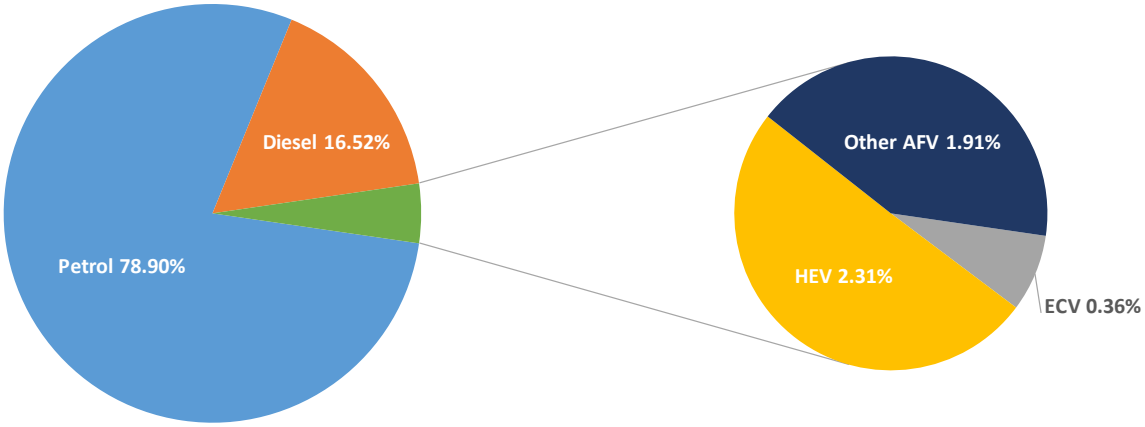
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Poland

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD have been transposed into the Polish legislation through:
  - Act. No 169/2006 on biocomponents and liquid biofuels amended by Act no. 2290/2017- transposing provisions of the ILUC Directive.
  - Act no. 984/2013 of 26 July 2013 amending the 1997 Energy law and some other acts.
  - Act no. 457/2014 on biocomponents and liquid biofuels, amending Act. No 169/2006- transposing sustainability criteria.
  - Act. No 1088/2014 on the system of monitoring and controlling the quality of fuels- implementing the provision of FQD in terms of monitoring and reducing GHG of fuels and introducing B7 and the obligation to inform consumers on the content of biocomponents on liquid fuels.
  - Act no. 478/2015 on renewable energy.
  - Act no. 151/2015 on biocomponents and liquid biofuels amending Act. No 169/2006.
- **Crop cap:** The Polish law sets a 7% as the maximum limit for crop-based biofuels.
- **Advanced biofuel sub-target:** The target is set at min. 0.1% for biofuels produced from Annex IX-A for 2020.
- **Double counting of biofuels:** There is a double counting mechanism, which applies to biofuels made of feedstock listed in Annex IX A and B. There is a cap on the amount of material that can be double counted, set at 0.3% for 2018 and 0.5% for 2019 (before double counting), and no more than 1.5% as of 2020, with the exact figure to be decided.

Biofuels and decarbonisation targets

- **Overall obligation**: In 2018, fuel suppliers are obligated to blend fuels with at least 7.5% biofuels in energy content. The government proposes every two years reduction factors of the target, taking into account supply conditions of biocomponents and price of the biocomponents and liquid fuels market. For 2018, the reduction factor is proposed at the level of 0.86, and for 2019 at the level of 0.82. This means in effect the national target for 2018 is proposed to be 7.5x0.86=6.45%. Obligated parties have to meet 85% of the (reduced) national indicative target for 2018 and 2019 with physical amount of energy. The remaining can be replaced with a buy-out fee. Fuel suppliers producing less than 0.2% volume of liquid fuels are exempted from the obligation but are still obligated to meet the national indicative target.
- **Separate targets in petrol and diesel:** The minimum blending obligation for petrol is set at 3.2% in energy content for the year 2018. For diesel the minimum blending is set at 3.22% for Q1, 5.53% for Q2/Q3 and 3.68% for Q4 in energy content. The ministry may lower minimum blending obligations. For 2018, the minimum blending obligation for diesel is lowered to 5.03% in Q2/Q3.
- **Penalty for non-fulfilment:** Fuel suppliers that fail to fulfil the quota obligation are liable to pay a penalty.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 6% by 2020.

Poland

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2010	n/a	n/a	5.75	5.91
2011	n/a	n/a	6.2	6.06
2012	n/a	n/a	6.2	5.32
2013	n/a	n/a	7.1	5.67
2014	n/a	n/a	7.1	
2015	n/a	n/a	7.1	
2016	n/a	n/a	7.1	
2017	n/a	n/a	7.1	
2018	3.2	3.22 for Q1 5.03 for Q2/Q3 3.68 for Q4	7.5	
2019	3.2	3.22 for Q1 5.53 for Q2 3.68 for Q3	8.0	
2020	3.2	3.22 for Q1 5.53 for Q2 3.68 for Q3	8.5	

Source: Act No. 2290/2017, Act. No.1986/2016

- **Tax incentives for biofuels or blends**: There are no tax incentives for biofuels.

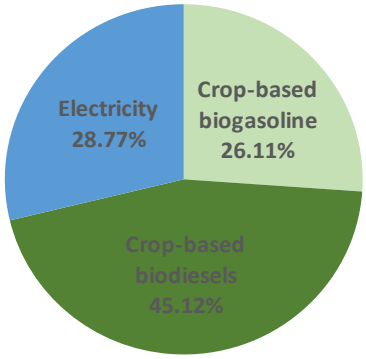
Poland

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*279.00*	*189.00*	*687.00*	*698.00*	-	-	*15.00*	*19.00*	-	-
2011	*299.00*	*178.76*	*755.00*	*535.63*	-	-	*17.00*	*53.73*	-	-
2012	*308.00*	*153.93*	*835.00*	*635.60*	-	-	*19.00*	*54.23*	-	-
2013	*330.00*	*144.12*	*891.00*	*603.41*	-	-	*20.00*	*58.84*	*13.00*	-
2014	*323.00*	*132.85*	*958.00*	*572.52*	-	-	*22.00*	*60.71*	*13.00*	-
2015	*334.00*	*153.48*	*993.00*	*499.95*	-	-	*23.00*	*67.80*	*26.00*	-
2016	*347.00*	*167.67*	*1,058.00*	*289.75*	-	-	*24.00*	*77.61*	*26.00*	-
2017	*374.00*	*n/a*	*1,153.00*	*n/a*	-	*n/a*	*25.00*	*n/a*	*26.00*	*n/a*
2018	*398.00*	*n/a*	*1,229.00*	*n/a*	-	*n/a*	*26.00*	*n/a*	*66.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

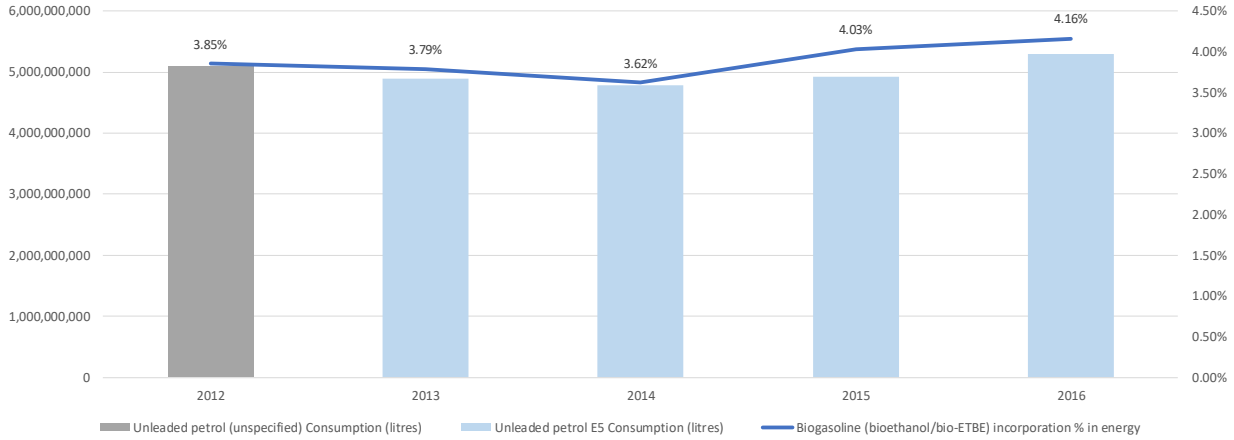
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biogasoline	*168*	*1.02%*	*26.11%*
Crop-based biodiesels	*290*	*1.77%*	*45.12%*
Electricity	*78*	*1.13%*	*28.77%*
Total	***535***	***3.92%***	

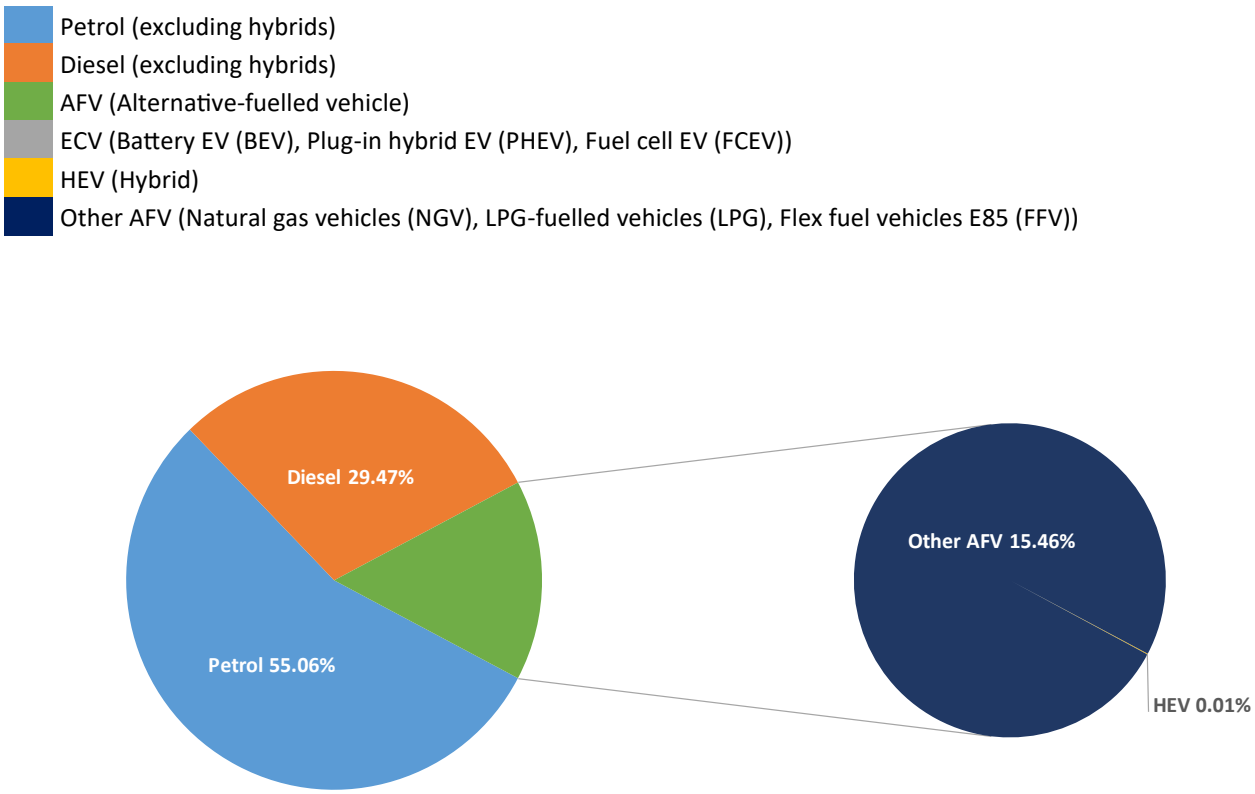
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Poland

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Portugal

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Portuguese legislation through several pieces of legislation, including:
  - Decree-Law no. 117/2010 and its amendment- transposing the sustainability criteria for biofuels.
  - Decree-Law no. 142/2010- transposing the FQD and introducing a mechanism of monitoring of reduction of GHGs.
  - Ordinance no. 8/2012- approving the regulation of operation of ECS (Coordinating entity for compliance of sustainability criteria).
  - Decree-Law no. 6/2012- postponing the sustainability criteria compliance until 1 July 2014.
  - Decree-Law no.152-C/2017- transposing the ILUC Directive
- **Crop cap:** The Portuguese law sets the cap for conventional biofuels at 7%.
- **Advanced biofuels:** The Portuguese law sets a sub-target for advanced biofuels at 0.5%.
- **Double counting of biofuels:** There is a mechanism to enable the double counting for biofuels produced from wastes, residues, non-food cellulosic material and ligno-cellulosic material. The definition of "wastes" is in accordance with the European Waste Directive. Through Ordinance no. 8/2012 of 4 January 2012 a positive list was introduced to define "Residues" which can be double counted: manure; olive pomace (after extraction of pomace); grape marc without alcohol; glycerine (not refined); cereal straws; rice straw; peel fruits stiff; fruit and other vegetables unfit for consumption; carob pulp; fleshy fruit pulp; sorelho (deproteinised whey from the dairy industry); brewers spent grains (originated from brewery industry).

Biofuels and decarbonisation targets

- **Overall obligation:** Portugal has a minimum overall biofuel target. In 2018, fuel suppliers are obliged to blend conventional transport fuels with at least 9% biofuels in energy content.
- **Separate targets in petrol and diesel:** There is a separate target in energy content of at least 2.5% biofuel in petrol.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their greenhouse gas intensity by 10% by 2020.
- **Penalty for non-fulfilment:** A fuel supplier that fails to fulfil the obligation is liable to pay a penalty of €2,000 per toe of biofuel missing.

Overall targets for biofuels, differentiated targets in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2011	2.5	n/a	n/a
2012	2.5	n/a	n/a
2013	2.5	n/a	n/a
2014	2.5	6.75	5.5
2015	2.5	n/a	7.5
2016	n/a	n/a	7.5
2017	n/a	n/a	7.5
2018	2.5	n/a	9
2019			10
2020			10

Tax incentives for biofuels or blends: Biofuels produced by dedicated small producers benefit from tax exemption of the Petrol Product Tax (ISP) up to the global limit fixed at art. 90 n. 1 of the IEC Code (Código dos Impostos Especiais de Consumo), which is 40,000 t/year.

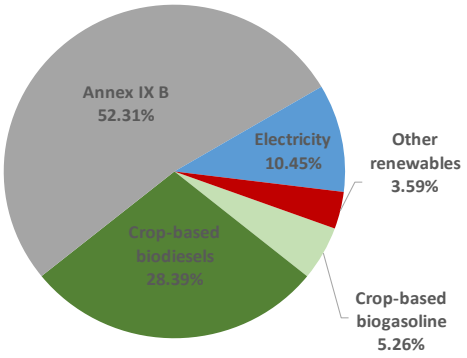
Portugal

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	-	-	*281.00*	*326.00*	-	-	*20.00*	*19.00*	-	*3.60*
2011	-	-	*283.00*	*4.10*	-	-	*23.00*	*13.50*	-	-
2012	-	-	*283.00*	*4.20*	-	-	*26.00*	*14.60*	-	-
2013	-	-	*306.00*	*9.38*	-	-	*30.00*	*15.38*	-	-
2014	-	*1.11*	*308.00*	*150.43*	-	-	*34.00*	*12.35*	-	-
2015	*24.00*	*22.23*	*405.00*	*302.24*	-	-	*37.00*	*13.01*	-	*3.23*
2016	*24.00*	*21.55*	*407.00*	*235.96*	-	-	*40.00*	*17.24*	-	*2.23*
2017	*25.00*	*n/a*	*441.00*	*n/a*	-	*n/a*	*43.00*	*n/a*	-	*n/a*
2018	*26.00*	*n/a*	*443.00*	*n/a*	-	*n/a*	*47.00*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

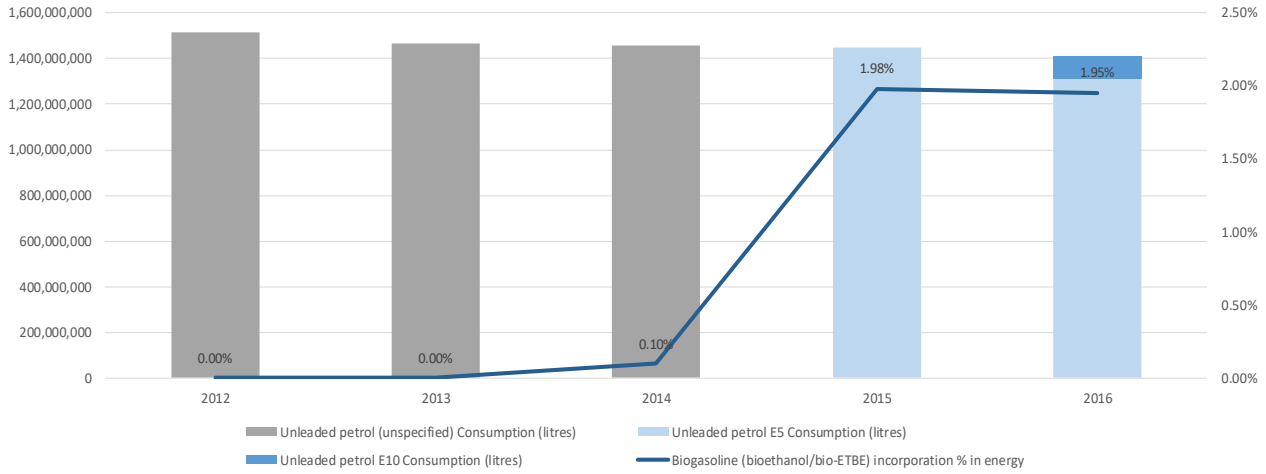
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biogasoline	*22*	*0.39%*	*5.26%*
Crop-based biodiesels	*116*	*2.13%*	*28.39%*
Annex IX B	*107*	*3.93%*	*52.31%*
Electricity	*17*	*0.78%*	*10.45%*
Other rene-wables (Other compliant bio-fuels, hydrogen, synthetic fuels)	*14.72*	*0.27%*	*3.59%*
Total	***277***	***7.51%***	

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

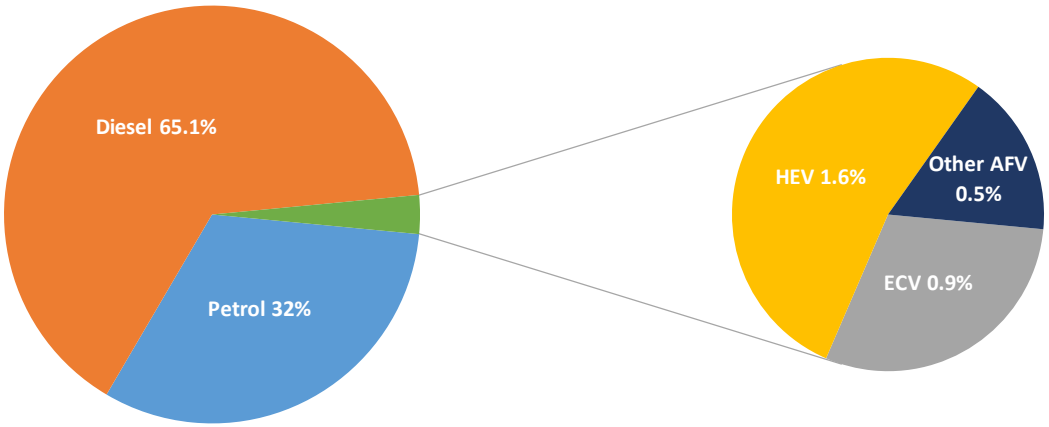


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Portugal

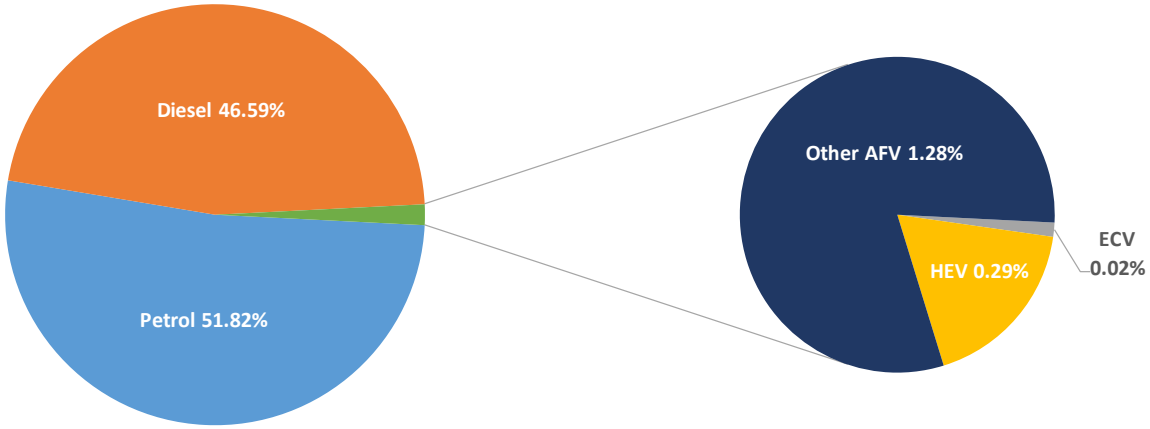
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Romania

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Romanian national legislation through several pieces of legislation, including:
  - Law No. 139/2010 (amending and supplementing Law No. 220/2008)- transposing the RED.
  - Decision No. 935/2011- transposing the sustainability criteria components, amended by Decision No. 918/2012 transposing the FQD.
  - Order No. 136/2012- transposing the RED into national legislation, approving the evaluation criteria for sustainability compliance and assessment and recognition of certifying bodies**.**
  - Decision No. 1121/2013 regarding the amendment and completion of Decision No. 935/2011 on promoting the utilisation of biofuels and bioliquids, as well as amending and completing Decision No. 928/2012 regarding the establishment of the conditions for introducing petrol and diesel and introducing a mechanism for monitoring and reducing greenhouse gas emissions.
  - Decision No. 928/2012 regarding the establishment of the conditions for introducing petrol and introducing a mechanism for monitoring and reducing greenhouse gas emissions.
- **Crop cap:** No information available.
- **Advanced biofuels:** No information available**.**
- **Double counting of biofuels:** The double counting for biofuels produced from wastes, residues, non-food cellulosic material and lignocellulosic material is implemented.

Biofuels and decarbonisation targets

- **Separate targets in petrol and diesel**: Romania has a minimum requirement in petrol and diesel. In 2018, fuel suppliers were obliged to blend petrol with at least 4.5% and diesel with at least 5% in volume. Further increases of the biofuel mandate have been delayed to 2019.
- **Penalty for non-fulfilment:** A penalty charge of RON 10,000-20,000 (approx. €2,200-4,500) is applied to fuel suppliers that do not submit the yearly documentation on compliance with the quota obligation and a penalty charge of RON 30,000-50,000 (approx. €6,700-11,200) is applied if the fuel retailers do not meet the prescribed quota in 2020.
- **GHG intensity reduction target:** Romania introduced intermediate targets of 2% GHG reductions of fuels by 31 December 2014 and 4% GHG reductions by 31 December 2017. There is an indicative target to reduce GHG emissions of fuels by 10% up to 31 December 2020.

Differentiated targets in volume

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2010	n/a	4	n/a
2011	n/a	5	n/a
2012	n/a	5	n/a
2013	n/a	5	n/a
2014	4.5	5	n/a
2015	4.5	5	n/a
2016	4.5	6.5	n/a
2017	4.5	5.0	n/a
2018	4.5	5.0	n/a
2019	8.0	6.5	
2020	8.0	6.5	

- **Tax incentives for biofuels or blends:** Currently there are no incentives of any nature to encourage the domestic biofuel production for transport.

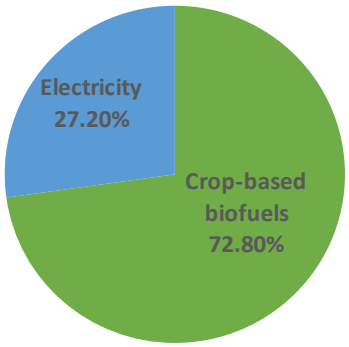
Romania

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/ bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*75.00*	*110.90*	*149.00*	*142.43*	-	-	*36.10*	*33.13*	-	-
2011	*85.00*	*24.60*	*169.00*	*38.40*	-	-	*36.40*	*39.75*	-	*0.02*
2012	*94.00*	*37.00*	*189.00*	*141.31*	-	-	*35.60*	*34.51*	-	*0.02*
2013	*103.00*	*37.00*	*206.00*	*147.40*	-	-	*38.50*	*35.20*	-	-
2014	*112.00*	*39.00*	*224.00*	*159.00*	-	-	*41.80*	*37.00*	-	-
2015	*121.00*	*61.45*	*242.00*	*141.03*	-	-	*45.40*	*34.90*	-	-
2016	*129.00*	*81.29*	*257.00*	*175.87*	-	-	*49.10*	*37.56*	-	-
2017	*137.00*	*n/a*	*274.00*	*n/a*	*1.50*	*n/a*	*51.10*	*n/a*	*3.50*	*n/a*
2018	*146.00*	*n/a*	*292.00*	*n/a*	*2.00*	*n/a*	*51.80*	*n/a*	*4.50*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

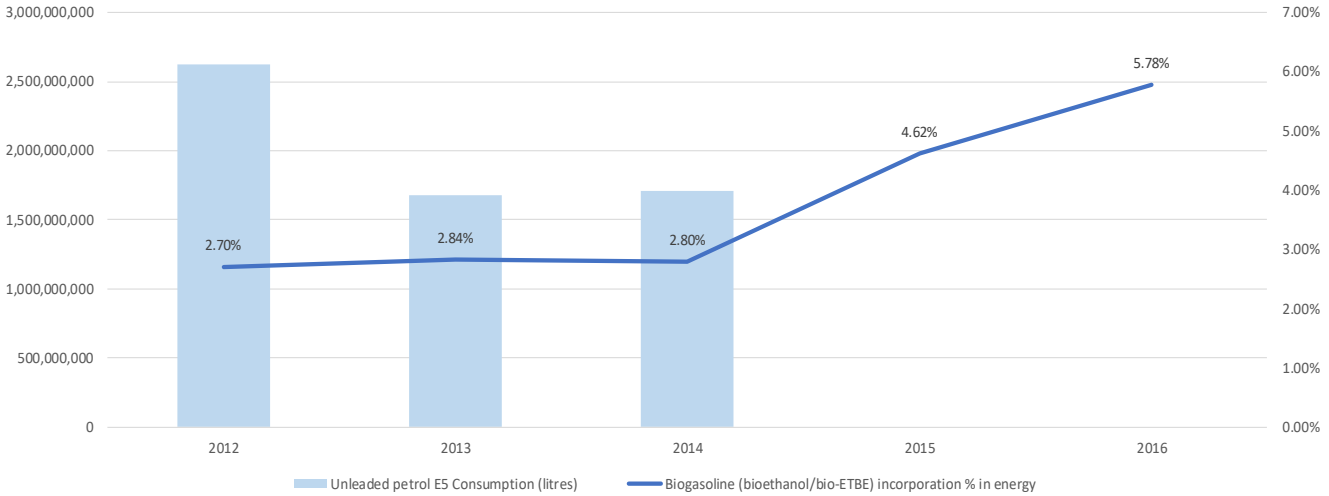
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*257*	*4.49%*	*72.80%*
Electricity	*38*	*1.68%*	*27.20%*
Total	***295***	***6.17%***	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

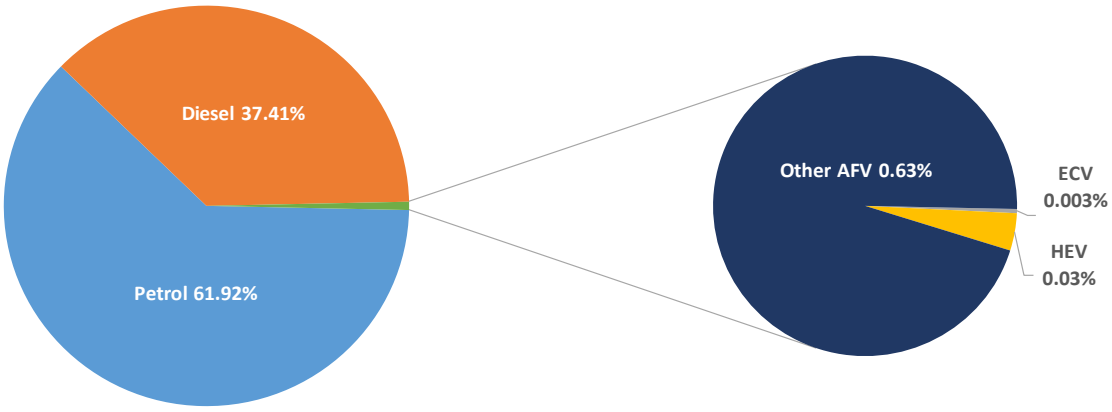


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Romania

Passenger cars fleet by fuel type in 2015 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Slovakia

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed through several pieces of legislation, including:
  - Act no. 309/2009 Coll. as amended by the Act no. 181/2017 Coll. on the promotion of renewable energy sources and high efficiency cogeneration.
  - Act no. 98/2004 Coll. on excise duties from mineral oils as amended.
  - Decree no. 271/2011 Coll. as amended by the Act. no. 191/2017 Coll. transposing the RED and the FQD, including sustainability criteria and intermediate targets for reducing GHG emissions from fuels.
  - Decree no. 373/2011 Coll. as amended - executing provisions of the Act. no. 309/2009 Coll.
  - The transposition of the ILUC Directive entered into force on 1 August 2017.
- **Crop cap:** A crop cap at 7% is set by the Slovak law, effective from 2020.
- **Advanced biofuels:** The Slovak law introduces a minimum advanced biofuel target at 0.1% for 2019. For the period 2020-2024 the subtarget is set at 0.5% and for the period 2025-2030 at 0.75%.
- **Double counting of biofuels:** There is a mechanism included in national law that enables double counting for biofuels made from certain materials. UCOME, biofuels from animal fats and cellulosic ethanol may be counted double for the purposes of the obligation.

Biofuels and decarbonisation targets

- **Overall obligation:** In 2018, fuel suppliers are obligated to blend fuels with at least 5.8% biofuels in energy content.
- **Penalty for non-fulfilment:** There is a penalty of €0.37/kgCO_2 for not sufficient emission savings put in place and of €0.05 for energy content of biofuels not delivered to the market.
- **GHG intensity reduction target:** There are different intermediate steps of reduction in place: 2% GHG reduction by 2014, and 3% by 2017 and 6% by 2020.

Overall targets for biofuels, differentiated targets and actuals in energy content and volume

	Minimum RE target in petrol*		Minimum RE target in diesel*		Minimum overall biofuel target**	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2011	3.1		5.2		3.8	
2012	3.2		5.3		3.9	
2013	3.3		5.4		4.0	
2014	4.1	6.37	6.8	6.72	4.5	5.73
2015	4.5	5.72	6.9	6.86	5.5	5.76
2016	4.6		6.9		5.5	
2017	4.7		6.9		5.8	
2018	n/a		n/a		5.8	
2019	n/a		n/a		6.9	
2020	n/a		n/a		7.6	
2021					8.0	
2022-2030					8.2	

* In volume

** In energy

Source: Legislative Act No. 309/2009 Coll. as amended

Slovakia

- **Tax incentives for biofuels or blends**:
  - For petrol – tax incentive of €40/1,000 l (€514 vs €554) with biofuels blended:
    - In volume of min. 5.9% from January 2018
    - Min. 6.2% of biofuels from January 2019
    - Min. 7.4% of biofuels including min. 0.5% of advanced biofuels from January 2020
    - Min. 1% of advanced biofuels from January 2021
    - Min. 1.5% of advanced biofuels from January 2022.
  - For diesel – tax incentive of €26/1,000 l (€368 vs €394) with biofuels blended:
    - In volume of min. 6.9% of biofuels or min. 6.4% of biofuels + min. 0.5% of advanced biofuels from January 2018 till end 2020
    - Min. 1% of advanced biofuels from January 2021

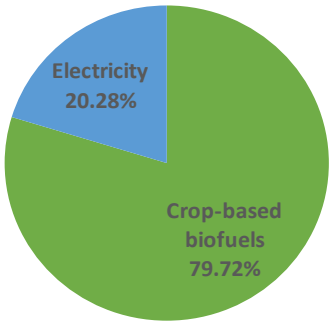
Slovakia

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*15.00*	*15.10*	*67.00*	*66.00*	-	-	*8.00*	*7.90*	-	-
2011	*16.00*	*14.60*	*70.00*	*97.70*	-	-	*8.00*	*9.20*	-	-
2012	*17.00*	*14.50*	*72.00*	*71.50*	-	-	*9.00*	*9.90*	-	-
2013	*19.00*	*14.80*	*75.00*	*79.70*	-	-	*9.00*	*10.30*	-	-
2014	*24.00*	*22.50*	*87.00*	*102.80*	-	-	*9.00*	*11.40*	-	-
2015	*30.00*	*22.93*	*107.00*	*120.98*	-	-	*10.00*	*13.14*	-	-
2016	*33.00*	*15.55*	*110.00*	*124.49*	-	-	*11.00*	*14.33*	*1.00*	-
2017	*38.00*	*n/a*	*113.00*	*n/a*	-	*n/a*	*13.00*	*n/a*	*1.00*	*n/a*
2018	*65.00*	*n/a*	*115.00*	*n/a*	-	*n/a*	*14.00*	*n/a*	*3.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

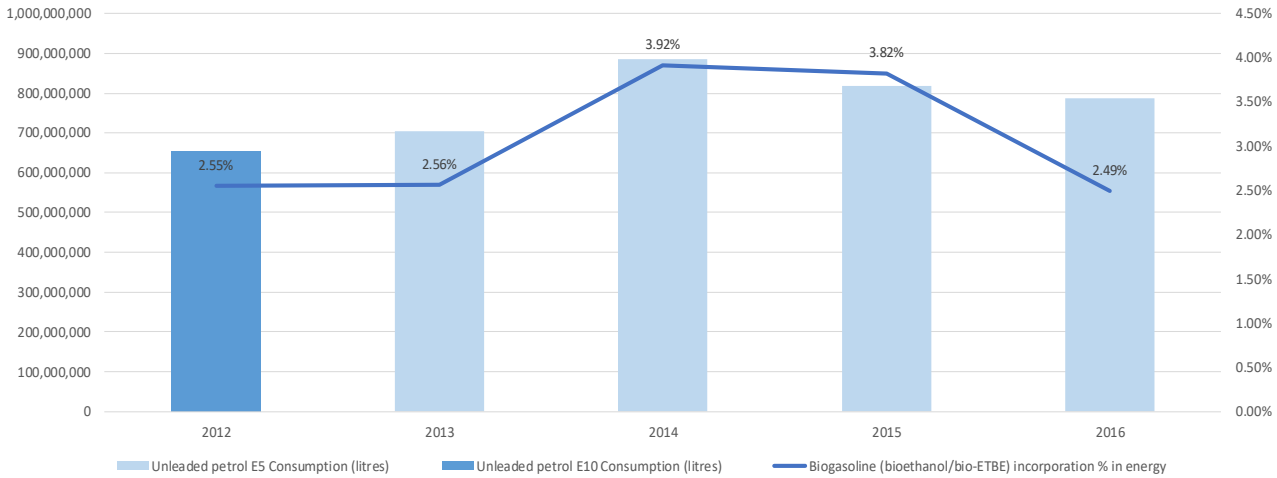
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	137	5.98%	79.72%
Electricity	14	1.52%	20.28%
Total	**151**	**7.50%**	

Sources: Eurostat, SHARES, ePURE calculation

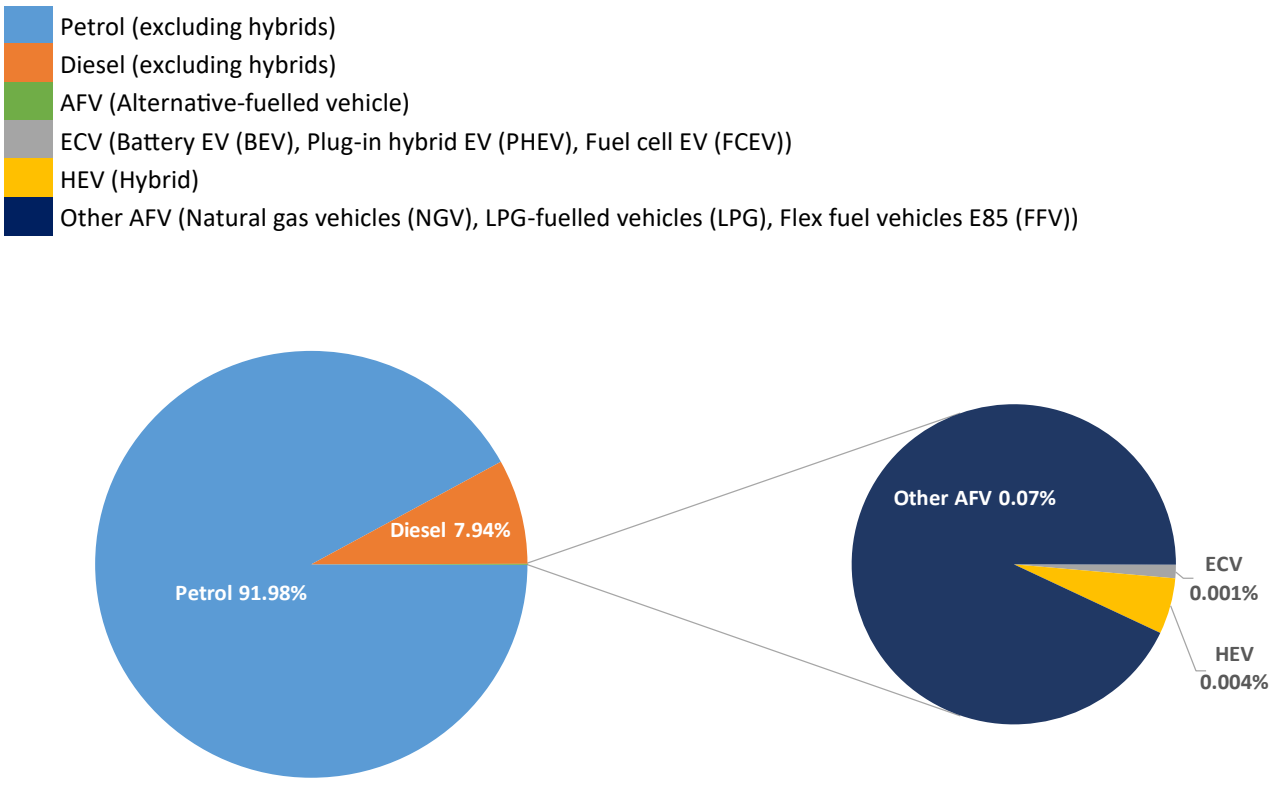
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Slovakia

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Slovenia

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and the FQD have been transposed into the Slovenian legislation, through several pieces of legislation, including:
  - Regulation No. 38/2012 on the sustainable criteria for biofuels and Greenhouse Gas Emissions- transposing the RED and the FQD, including sustainability criteria for biofuels.
  - Regulation No. 74/2011 on the physico-chemical properties of liquid fuels- transposing the FQD.
  - Decree No. 103/2007 on the promotion of the use of biofuels and other renewable fuels- introducing a blending obligation.
- **Crop cap:** No information available.
- **Advanced biofuels:** No information available.
- **Double counting of biofuels:** No information available.

Biofuels and decarbonisation targets

- **Overall obligation:** Slovenia has an overall biofuel target. In 2018, fuel suppliers are obliged to blend conventional automotive transport fuels with at least 7.5% biofuels in energy content.
- **Penalty for non-fulfilment**: The penalties for not complying with the obligation range from EUR €10,000 to EUR €100,000.
- **GHG intensity reduction target:** There are national targets for GHG reduction of fuels: 2% reduction of GHG by 31 December,; 4% reduction of GHG by 31 December 2017,; and 6% by 2020.

Overall target for biofuels in energy content

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target
	As per law (%)	As per law (%)	As per law (%)
2010	n/a	n/a	5.0
2011	n/a	n/a	5.5
2012	n/a	n/a	6.0
2013	n/a	n/a	6.5
2014	n/a	n/a	7.0
2015	n/a	n/a	7.5
2016	n/a	n/a	7.5
2017	n/a	n/a	7.5
2018	n/a	n/a	7.5

Source: Decree 103/2007

- **Tax incentives for biofuels or blends**: Excise duty is levied on all fuels; however, the producers/users of biofuels may be fully exempt from the payment of excise duty (§ 54 par.2 ZTro-1). The following biofuels are eligible:
  - Ethanol (tariff codes 2207 10 00 and 2207 20 00);
  - Biodiesel FAME (tariff code 3826 00 10);
  - ETBE (tariff code 2909 19 10), biogas (tariff code 2705 00 00);
  - Biodimethylether (tariff code 2909 19 90) and biomethanol (tariff code 2905 11 00).

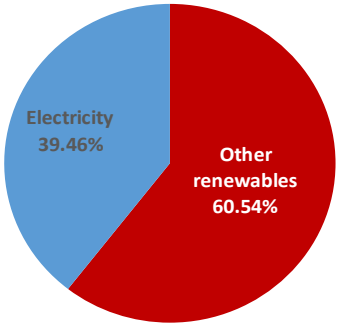
Slovenia

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*3.90*	*n/a*	*36.60*	*n/a*	-	*n/a*	*5.40*	*n/a*	-	*n/a*
2011	*4.10*	*3.70*	*38.80*	*31.30*	-	-	*6.00*	*4.80*	-	-
2012	*4.60*	*5.30*	*43.30*	*45.70*	-	-	*6.20*	*4.40*	-	-
2013	*5.30*	*5.50*	*50.20*	*52.40*	-	-	*6.50*	*4.10*	-	-
2014	*6.40*	*6.00*	*59.60*	*36.40*	-	-	*6.70*	*3.70*	-	-
2015	*7.60*	*6.52*	*71.60*	*22.91*	-	-	*7.00*	*4.33*	-	-
2016	*9.20*	*4.35*	*86.30*	*14.10*	-	-	*7.50*	*4.84*	-	-
2017	*11.10*	*n/a*	*103.80*	*n/a*	-	*n/a*	*8.20*	*n/a*	-	*n/a*
2018	*13.20*	*n/a*	*124.20*	*n/a*	-	*n/a*	*9.00*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

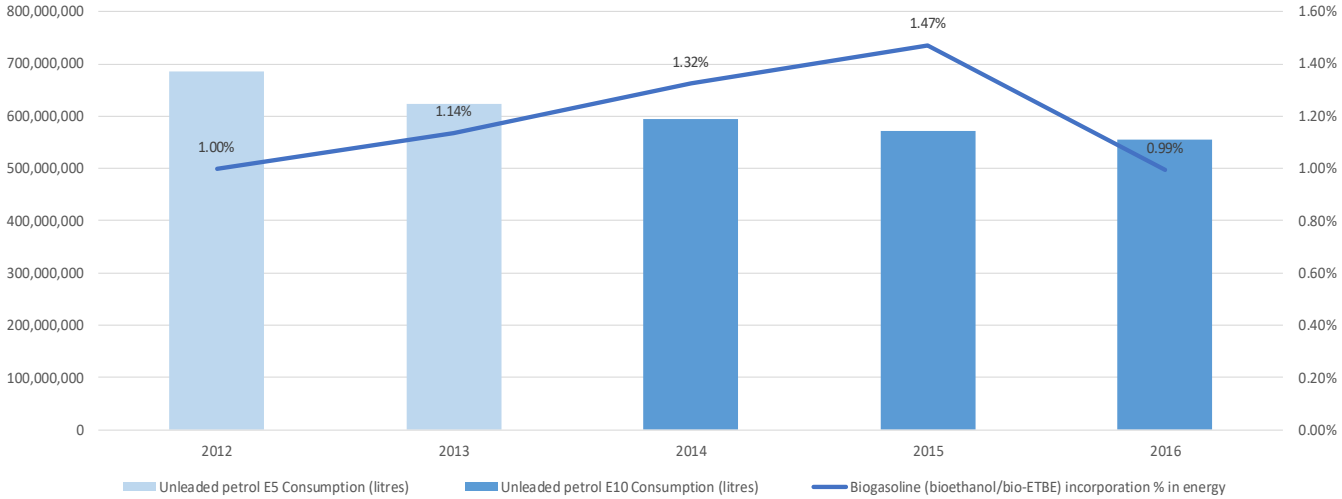
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*18*	*0.97%*	*60.54%*
Electricity	*5*	*0.63%*	*39.46%*
Total	***23***	***1.60%***	

Sources: Eurostat, SHARES , ePURE calculation

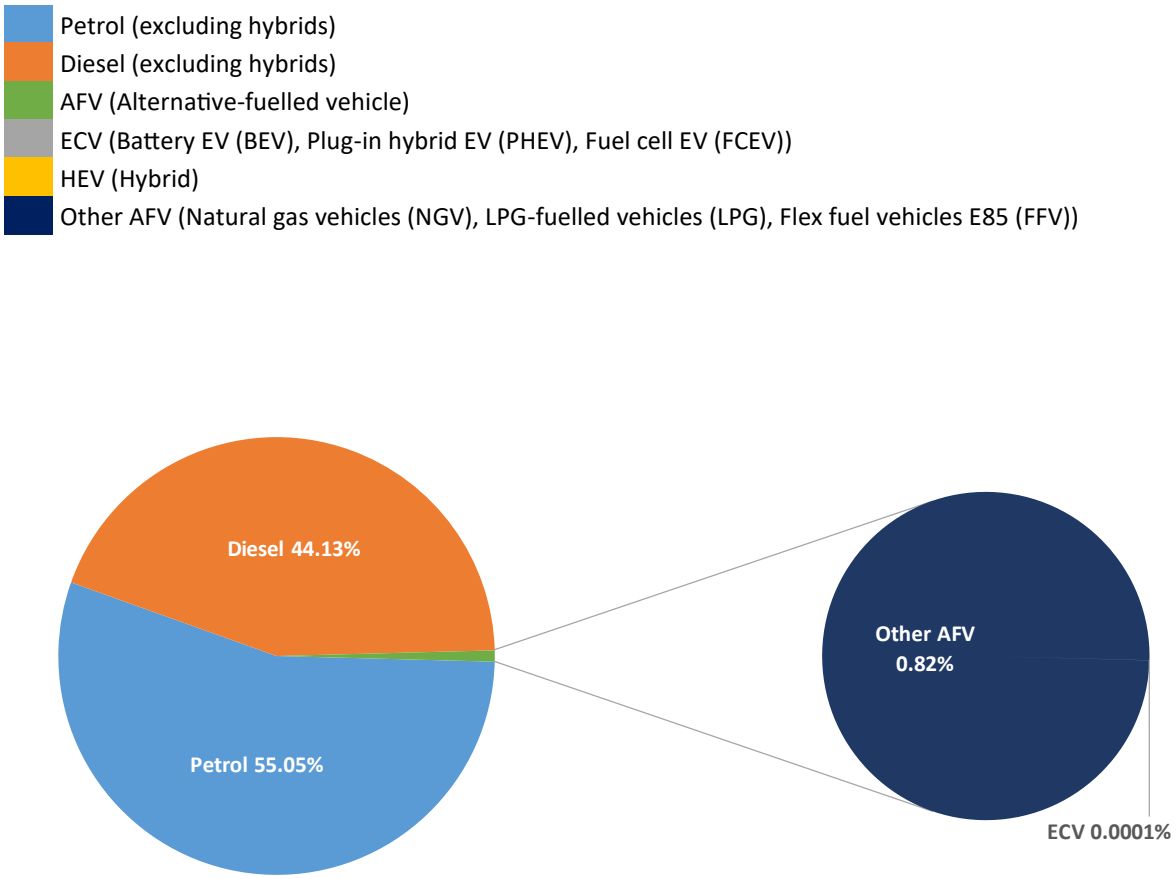
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

Slovenia

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Spain

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD have been transposed into the Spanish legislation through:
  - Sustainable Economy Law 2/2011 of 4 March 2011.
  - Royal Decree 1597/2011 of 4 November 2011- implementing the sustainability criteria for biofuels and bioliquids, the national verification system, and double counting, modified by Law 11/2013, article 42. Since 1 January 2016 the sustainability criteria for biofuels are mandatory. The Resolution of 29 April 2015 from the Secretary of State for Energy ended the grace period and started the transitory period, until all the details of the national system for verification are in place.
  - Royal Decree 1088/2010 of 4 September 2010 concerning the technical specifications of petrol, diesel and gas-oil, the use of biofuels and the sulphur content of fuel (this royal decree modifies Royal Decree 61/2006 of 31 January 2006).
  - Royal Decree 235/2018 of 1 May 2018- establishing calculation methods and information requirements in relation to the intensity of greenhouse gas emissions from fuels and energy in transportation. It modifies Royal Decree 1597/2011 of 4 November 2010- regulating the sustainability criteria for biofuels and bioliquids, the national verification system, and double counting and the Royal Decree 1085/2015 of 4 December 2015.
  - Royal Decree 1085/2015 and Royal Decree 235/2018- establishing calculation methods and information requirements in relation to the intensity of greenhouse gas emissions from fuels and energy in transportation- transposing the ILUC Directive.
- **Crop cap:** The Spanish law introduces the 7% cap for conventional biofuels.
- **Advanced biofuels:** The national target is 0.1% in energy content of the share of energy from renewable sources in 2020.
- **Double counting of biofuels:** The Resolution of 2 April 2014 from the Secretary of State for Energy introduced a list of materials from which double counting biofuels can be produced: UCO and animal fats cat. 1 and 2. This Resolution was invalidated by the Royal Decree 235/2018 that includes a list of raw materials and fuels considered as double counting in terms of the intensity of greenhouse gas emissions from fuels and energy in transportation. However, the double counting mechanism is not operative because the Spanish Competition Authority has not yet established the procedures to control the system and the information that the economic operators have to provide in order to benefit from double counting.

Biofuels and decarbonisation targets

- **Overall obligation:** Spain has a minimum target for the blending of biofuels. In 2018, the minimum overall biofuel target is set for 6.0% in energy content.
- **Penalty for non-fulfilment**: The breach of the obligations established for the achievement of the annual objectives of minimum content of biofuels and other renewable fuels constitutes a very serious infraction.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their GHG intensity by 6% by 2020.

Spain

Overall targets for biofuels, differentiated targets and actuals in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target	
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)
2010	3.9	4.2	3.9	5.1	5.83	5
2011	3.9	4.3	6	6.7	6.2	6.2
2012	4.1	4.1	7	9.5	6.5	8.5
2013	3.9	3.6	4.1	3.6	4.1	3.6
2014	3.9	4.1	4.1	3.9	4.1	3.9
2015	n/a		4.1		4.1	
2016	n/a		n/a		4.3	
2017	n/a		n/a		5.0	
2018	n/a		n/a		6.0	
2019	n/a		n/a		7.0	
2020	n/a				8.5	

- **Tax incentives for biofuels or blends**: There are no tax incentives for biofuels or blends in the Spanish legislation.

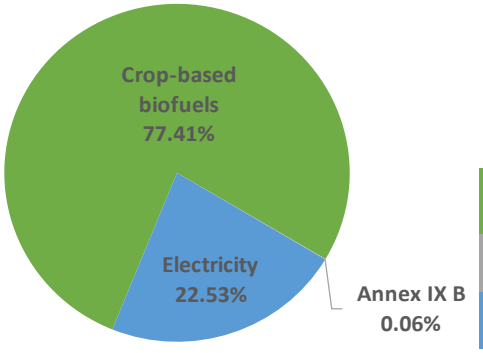
Spain

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*232.00*	*231.00*	*1,471.00*	*1,183.00*	-	-	*99.10*	*53.00*	-	-
2011	*232.00*	*225.00*	*1,471.00*	*1,392.00*	-	-	*130.50*	*108.00*	-	-
2012	*281.00*	*200.00*	*1,493.00*	*1,889.00*	-	-	*152.90*	*114.00*	-	-
2013	*281.00*	*169.00*	*1,493.00*	*552.00*	-	-	*175.80*	*123.52*	-	-
2014	*290.00*	*186.00*	*1,990.00*	*536.00*	-	-	*195.50*	*119.68*	*1.00*	-
2015	*301.00*	*188.85*	*2,169.00*	*769.42*	-	-	*223.60*	*176.27*	*1.00*	-
2016	*300.00*	*133.14*	*2,450.00*	*955.03*	-	-	*252.40*	*175.04*	*2.00*	-
2017	*325.00*	*n/a*	*2,600.00*	*n/a*	-	*n/a*	*282.30*	*n/a*	*2.00*	*n/a*
2018	*350.00*	*n/a*	*2,750.00*	*n/a*	-	*n/a*	*312.60*	*n/a*	*3.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

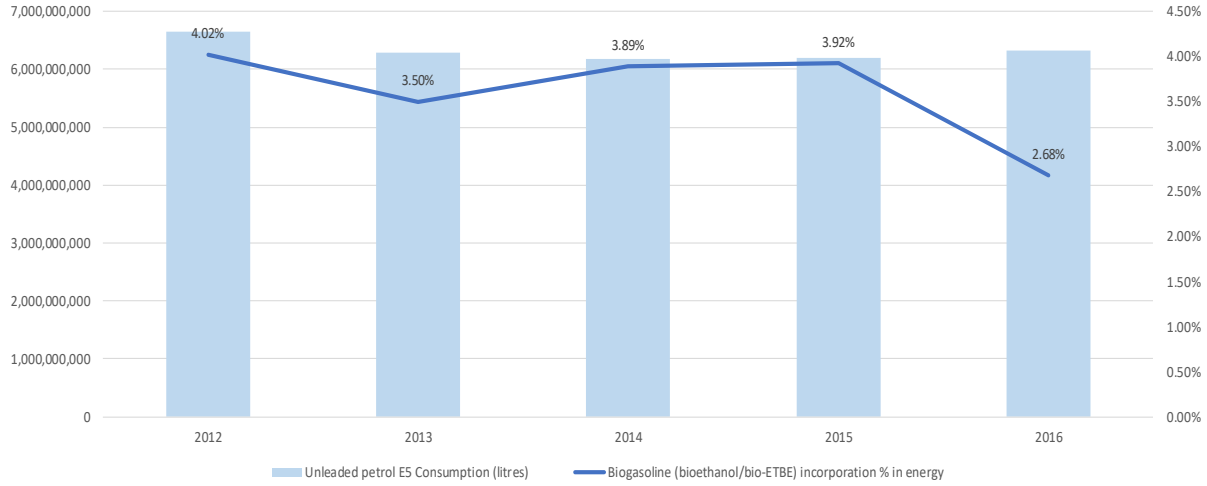
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*1,159*	*4.09%*	*77.41%*
Annex IX B	*0*	*0.00%*	*0.06%*
Electricity	*175*	*1.19%*	*22.53%*
Total	***1,334***	***5.28%***	

Sources: Eurostat, SHARES, ePURE calculation

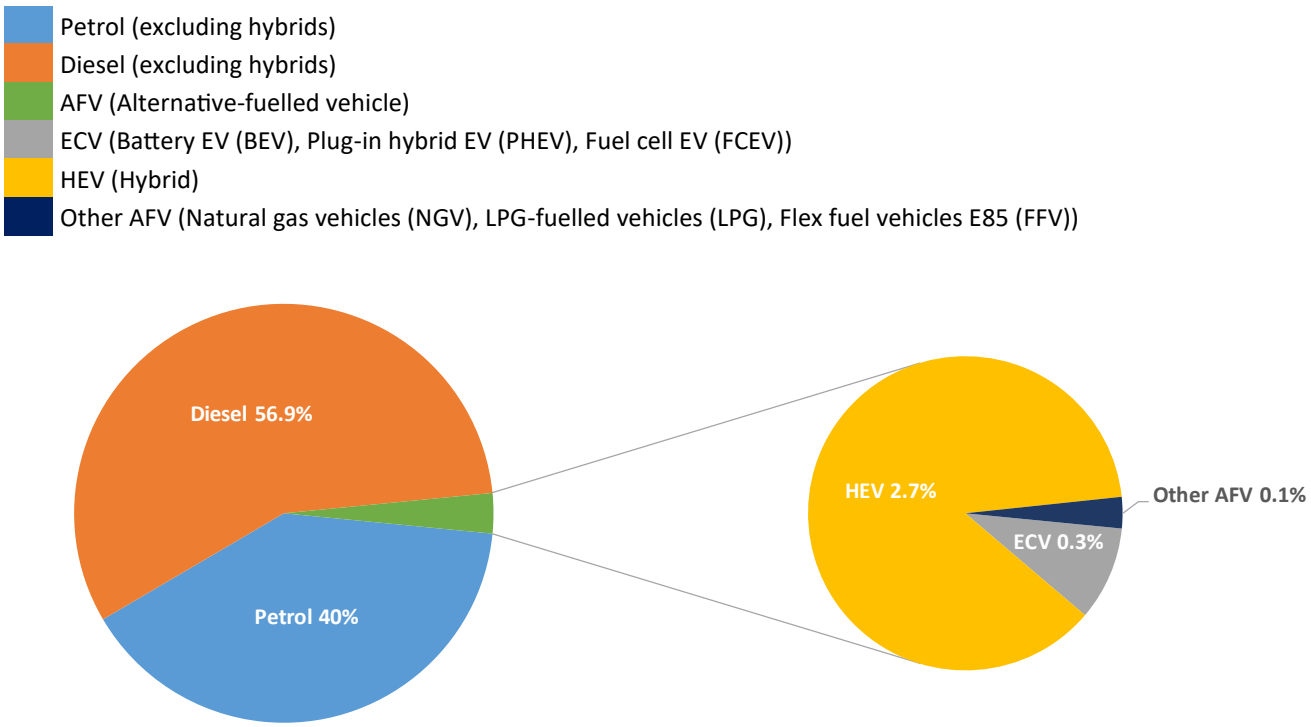
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

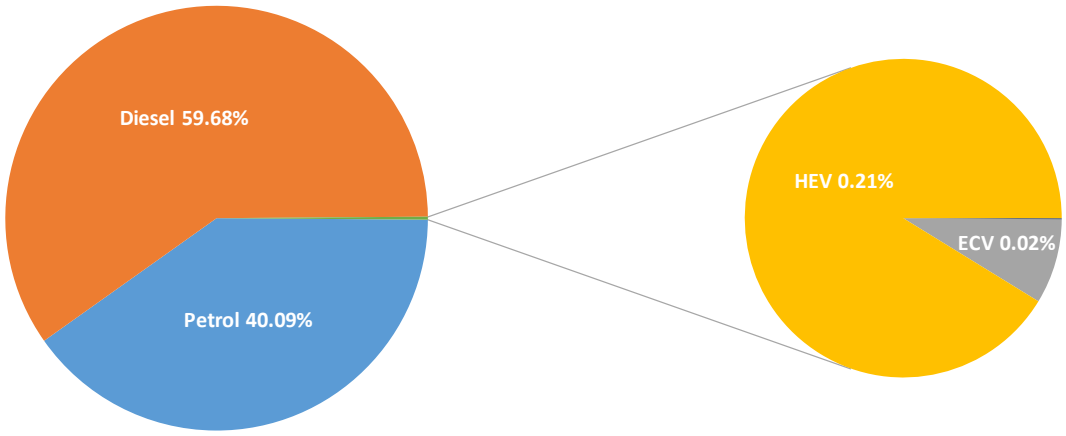
Spain

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

Sweden

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the Swedish national legislation by amendments to already existing national legislation, i.e. Swedish Tax law, Green Certificates law, Environmental legislation etc., and the following:
  - The law Lag (2010:598) on sustainability criteria for biofuels and liquid fuels, amended by law SFS (2011:1065)- transposing the RED and the sustainability criteria for biofuels and the ILUC Directive
  - The Fuel Regulation of 1 May 2011- transposing the FQD.
- **Crop cap:** The Swedish law sets the cap for crop-based biofuels at 7%.
- **Advanced biofuels:** There is no sub-target for advanced biofuels introduced by the Swedish law.
- **Double counting of biofuels:** There is no mechanism to enable the double counting for certain biofuels.
- **Other**: PFAD (palm fatty acid distillate) will be defined as a by-product as of 1 January 2019.

Biofuels and decarbonisation targets

- **GHG intensity reduction target:** As of 1 July 2018, there are GHG saving targets per fuel (low-blend in diesel and petrol), the GHG reduction mandate is 2.6% for petrol (E5) and 19.3% for biodiesel.
- **Penalty for non-fulfilment**: Fuel suppliers that fail to fulfil the GHG saving targets per fuel shall pay a penalty of SEK 5 per kgCO_2 for petrol and SEK 4 for diesel fuel.

Biofuel use in energy content

	Minimum RE target in petrol		Minimum RE target in diesel		Minimum overall biofuel target
	As per law (%)	Actuals (%)	As per law (%)	Actuals (%)	As per law (%)
2010	n/a		n/a		n/a
2011	n/a	4.7	n/a	5.2	n/a
2012	n/a	4.6	n/a	7.5	n/a
2013	n/a	5.1	n/a	12.0	n/a
2014	n/a	5.0	n/a	13.0	n/a
2015	n/a		n/a		n/a
2016	n/a		n/a		n/a
2017	n/a		n/a		n/a
2018	n/a		n/a		n/a

- **Tax incentives for biofuels or blends**: There is a tax break for all high blends of biofuels in the form of a full reduction of both the CO_2 and energy taxes. but during some periods it is not fully due to the EU over compensation regulations. The tax break will at least last until the end of 2020.

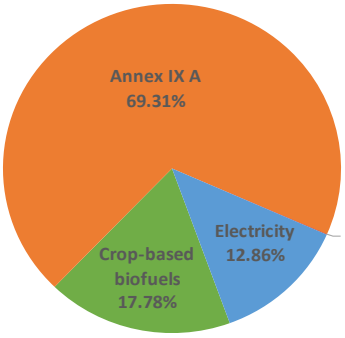
Sweden

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*251.00*	*203.00*	*89.00*	*178.00*	-	-	*147.00*	*140.00*	*40.00*	*49.00*
2011	*273.00*	*197.00*	*105.00*	*215.00*	-	-	*152.00*	*132.00*	*46.00*	*62.00*
2012	*294.00*	*197.00*	*122.00*	*331.00*	-	-	*157.00*	*129.00*	*51.00*	*69.00*
2013	*315.00*	*177.00*	*138.00*	*575.00*	-	-	*162.00*	*142.00*	*56.00*	*75.00*
2014	*337.00*	*163.00*	*154.00*	*735.00*	-	-	*168.00*	*135.00*	*62.00*	*87.00*
2015	*358.00*	*164.25*	*170.00*	*1,035.10*	-	-	*173.00*	*137.93*	*67.00*	*97.02*
2016	*379.00*	*159.39*	*186.00*	*1,120.57*	-	-	*178.00*	*144.81*	*73.00*	*98.88*
2017	*401.00*	*n/a*	*202.00*	*n/a*	-	*n/a*	*183.00*	*n/a*	*78.00*	*n/a*
2018	*422.00*	*n/a*	*219.00*	*n/a*	-	*n/a*	*188.00*	*n/a*	*83.00*	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

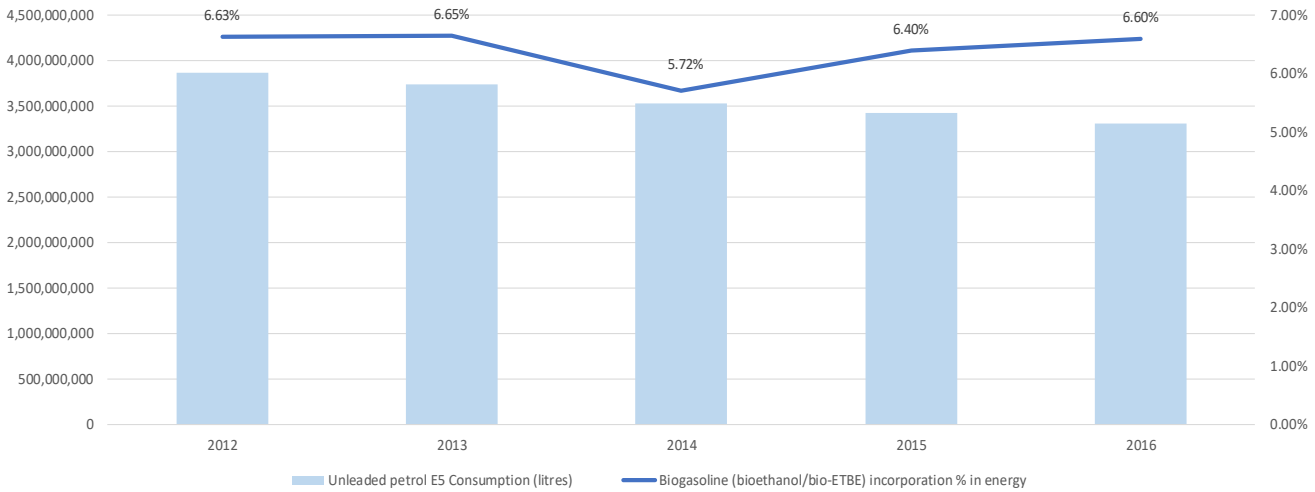
RES-T contribution of each fuel category and share according to RED calculation



Sources: Eurostat, SHARES, ePURE calculation

2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	*501*	*5.39%*	*17.78%*
Annex IX A	*976*	*21.00%*	*69.31%*
Other renewables (Other compliant biofuels, hydrogen, synthetic fuels)	*1*	*0.01%*	*0.05%*
Electricity	*145*	*3.90%*	*12.86%*
Total	***1,622***	***30.29%***	

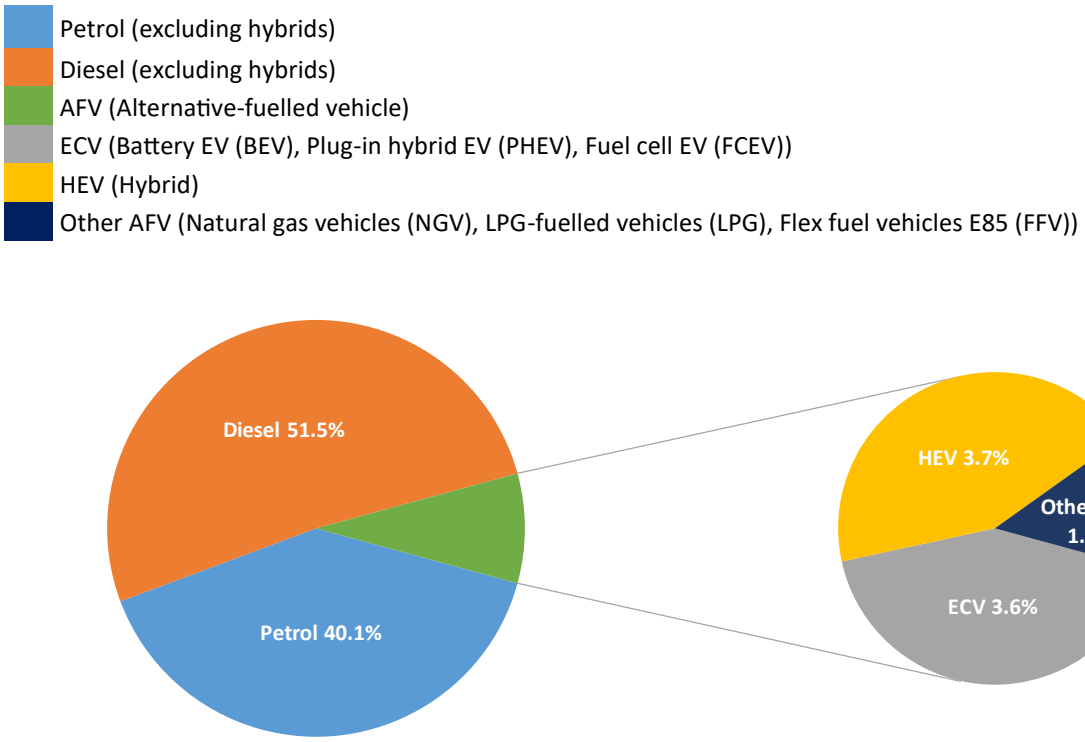
Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012



Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

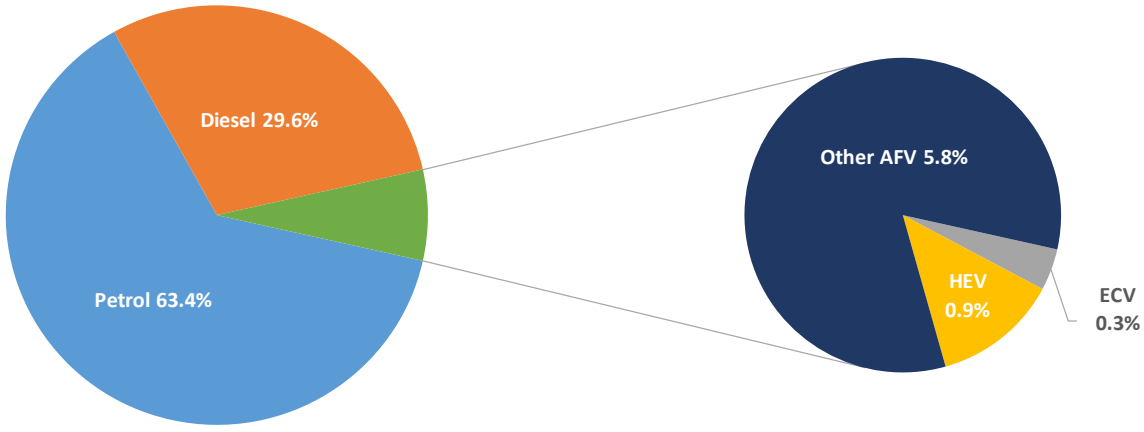
Sweden

Sales of new road passenger cars by fuel type in 2016 (in %)



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

United Kingdom

Transposition of the RED-FQD as amended by the ILUC Directive

- **Legal basis:** The RED and FQD, including the sustainability criteria for biofuels, have been transposed into the British legislation through several pieces of legislation, including:
  - Promotion of the Use of Energy from the Renewable Sources Regulation 2011 No. 243 of 7 February 2011- transposing the RED.
  - Renewable Transport Fuel Obligations (RTFO) (Amendment) Order 2011 No. 2937 of 7 December 2011- transposing the transport elements of the RED, including the sustainability criteria.
  - Renewables Obligation (Amendment) Order 2011, No. 984 of 29 March 2011- transposing the RED.
  - RTFO (Amendment) Order 2013 No. 816 of 8 April 2013- transposing the FQD regarding non-road mobile machinery.
  - Motor Fuel (Road Vehicle and Mobile Machinery) Greenhouse Gas Emissions Reporting Regulations 2012, No. 3030 of 5 December 2012- transposing some of the FQD provisions.
  - Statutory Instrument No. 374 of 13 March 2018- amending the RTFO Order and the Motor Fuel that intends to implement the provisions form the ILUC Directive and to implement the provisions of the implementing measures under the FQD.
- **Crop cap:** In 2018, the maximum level for the use of crops is set at 4% and will be reduced year on year from 2021 to reach 3% in 2026 and 2% in 2032.
- **Advanced biofuel sub-target:** None. By energy, the current share of fuels produced from materials included in RED Annex IX Part A in the UK is already around 0.3%, so it has been decided that no advanced biofuels sub-target was necessary.
- **Double counting of biofuels:** There is a mechanism to enable the double counting of biofuels made from qualifying wastes and residues. Tables 2-4 of the RTFO Guidance Note (2018) provide a list of feedstock that can count double. In the new Statutory Instrument, the UK DfT maintains the double counting mechanism, but the Government argues that the reference to waste hierarchy ensures that the eligible wastes are those that would not otherwise be used for higher value applications.
- **Other:** Instead of setting an advanced biofuels sub-target for RED Annex IX-A feedstock, a new target has been introduced to incentivise "development" fuels, renewable fuels made from sustainable wastes and residues of non-biological origin. These fuels are deemed to be of "strategic" importance to the UK and must meet the waste hierarchy requirements in order to qualify for double rewards. The sub-target for "development" fuels (which does not include cellulosic ethanol) starts at 0.1% in 2019 rising to 3.1% in 2032.

Obligation period	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sub-target (obligation level includes double rewarding)	0.1%	0.15%	0.5%	0.8%	1%	1.2%	1.6%	1.8%	2%	2.3%	2.5%	2.7%	3%	3.1%

Source: *Unofficial consolidated RTFO Order from 2007 to 2018 - Department for Transport.*

Biofuels and decarbonisation targets

- **Overall obligation:** The new Statutory Instrument coming into force in April 2018 sets the overall obligation level at 7.25% until the end of December 2018. This will rise to 8.5% in 2019 and 9.75% in 2020 and reach 12.4% in 2032 with an annual increase of approximately 0.2% from 2020 to 2032. Until 31 December 2018 the obligation year runs from April to April. From 1 January 2019 the obligation year will be based on the calendar year and run from January to January.
- **Penalty for non-fulfilment:** Fuel suppliers that do not meet the overall RTFO obligation and/or the obligation under the "development" fuels sub-target are liable to a penalty. The calculation of the penalty depends on the amount of the shortfall in reaching the supplier's obligation multiplied by the buy-out price of 30 pence per litre for the overall RTFO obligation and 80 pence per litre for the "development" fuels sub-target.
- **GHG intensity reduction target:** Transport fuels sold on the market must reduce their GHG intensity by 6% by 2020, with an interim target of 4% in 2019.

United Kingdom

Overall targets for biofuels and actuals volume

	Minimum RE target in petrol	Minimum RE target in diesel	Minimum overall biofuel target	
	As per law (%)	As per law (%)	As per law (%)	Actuals (%)
2010/11	n/a	n/a	3.5	3.1
2011/12	n/a	n/a	4.0	3.6
2012/13	n/a	n/a	4.5	3
2013/14	n/a	n/a	4.75	3.46
2014/15	n/a	n/a	4.75	3.29
2015/16	n/a	n/a	4.75	3
2016/17	n/a	n/a	4.75	3
2017/18	n/a	n/a	4.75	n/a
2018	n/a	n/a	4.75→7.25*	
2019			8.50	
2020			9.75	

** As of 15 April 2018*
Source: Department for Transport: The renewable transport fuel obligations order: Government response to the consultation on amendments, 2017.

- **Tax incentives for biofuels or blends**: There are no tax incentives for biofuels and no fuel duty reductions.

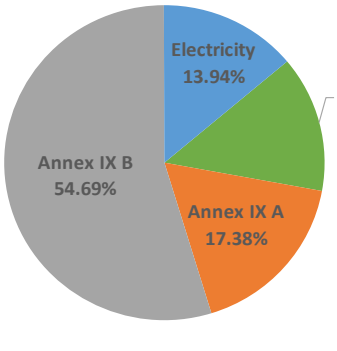
United Kingdom

Energy consumed in the transport sector since 2010 (ktoe)

	Biogasoline (bioethanol/bio-ETBE)		Biodiesels		Hydrogen from renewable sources		Renewable electricity		Others (biogas, veg. oils, etc)	
	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals	NREAP	Actuals
2010	*135.00*	*321.00*	*861.00*	*826.00*	-	-	*136.00*	*58.00*	-	-
2011	*179.00*	*330.00*	*1,135.00*	*635.00*	-	-	*146.00*	*6.00*	-	*4.00*
2012	*217.00*	*387.00*	*1,376.00*	*471.00*	-	-	*156.00*	*69.00*	-	*24.00*
2013	*244.00*	*411.00*	*1,544.00*	*608.00*	-	-	*167.00*	*80.00*	-	*29.00*
2014	*471.00*	*410.00*	*1,682.00*	*758.00*	-	-	*179.00*	*86.00*	-	*11.00*
2015	*692.00*	*404.30*	*1,818.00*	*528.53*	-	-	*192.00*	*98.55*	-	-
2016	*909.00*	*386.36*	*1,952.00*	*559.62*	-	-	*205.00*	*110.24*	-	-
2017	*1,121.00*	*n/a*	*2,084.00*	*n/a*	-	*n/a*	*219.00*	*n/a*	-	*n/a*
2018	*1,331.00*	*n/a*	*2,213.00*	*n/a*	-	*n/a*	*234.00*	*n/a*	-	*n/a*

Sources: European Commission, NREAPs (2011), Member States progress reports, SHARES - ePURE calculation

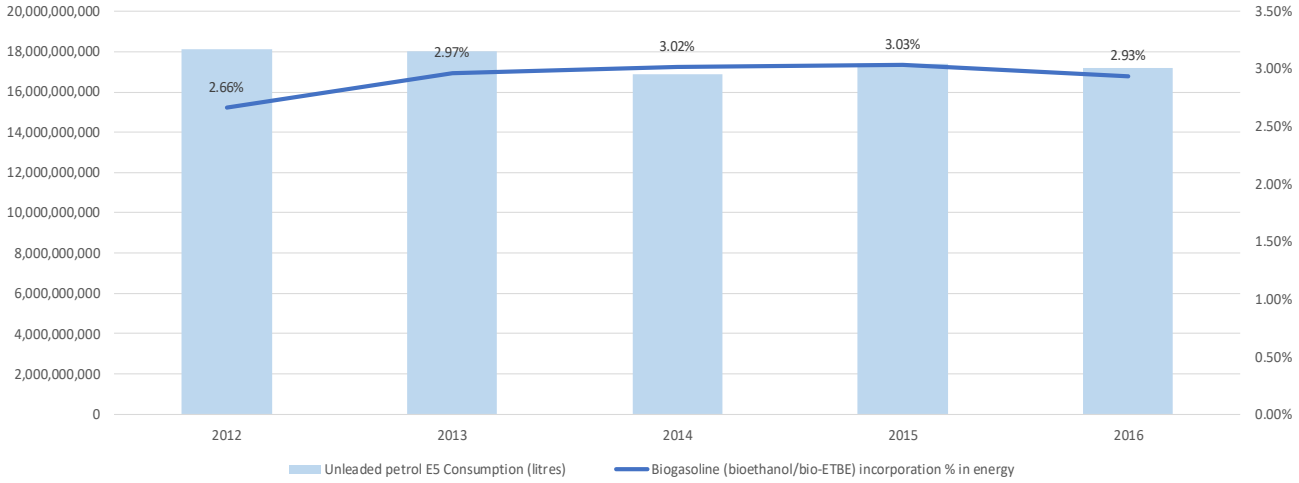
RES-T contribution of each fuel category and share according to RED calculation



2016	**Absolute quantity of renewable in 2016 (ktoe)**	**% of the energy mix according to RED Calculation in 2016 (with multipliers)**	**Share of the RES-T in 2016 (% RED calculation, with multipliers)**
Crop-based biofuels	284	0.69%	13.99%
Annex IX A	177	0.86%	17.38%
Annex IX B	555	2.70%	54.69%
Electricity	110	0.69%	13.94%
Total	**1,126**	**4.94%**	

Sources: Eurostat, SHARES, ePURE calculation

Ethanol blends available on the market, consumption (litres), market share (%) and biogasoline energy incorporation (%) since 2012

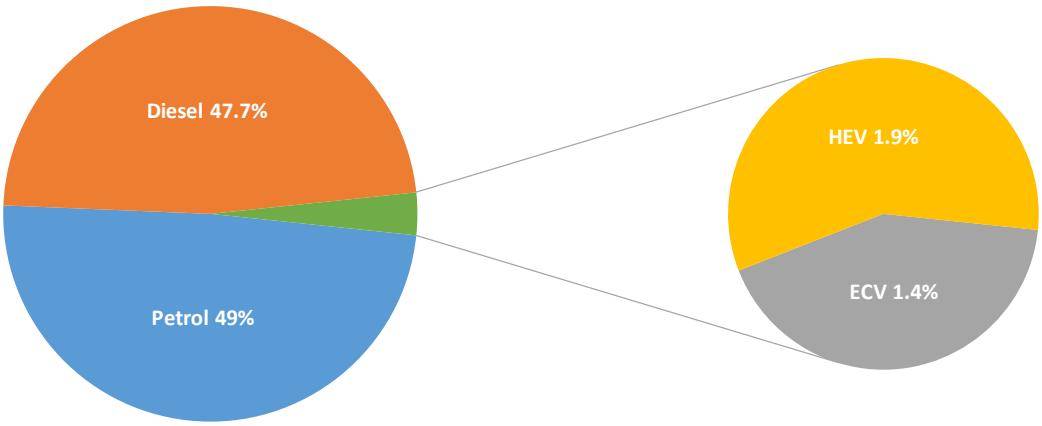


Sources: Ricardo-AEA (2012, 2013), EEA (2014-2016), NREAPs (2011), Member States progress reports, Eurostat, SHARES - ePURE calculation

United Kingdom

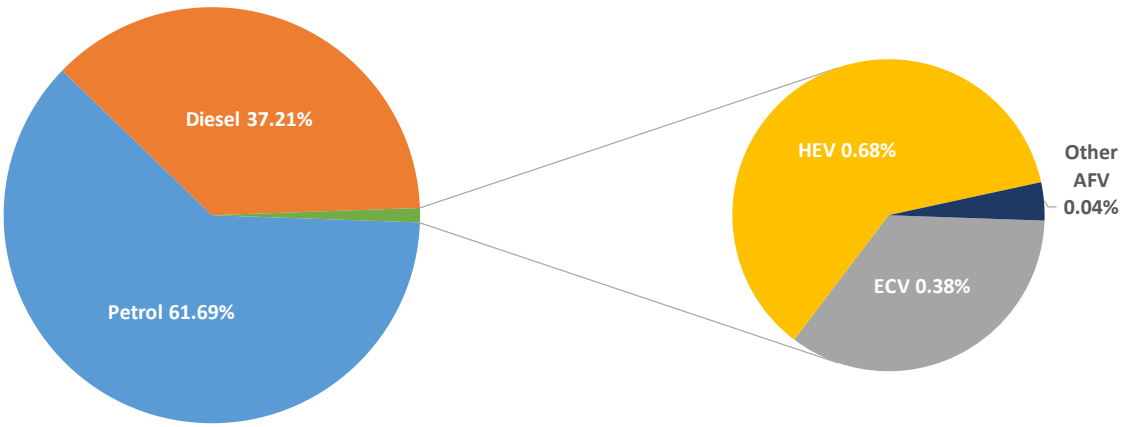
Sales of new road passenger cars by fuel type in 2016 (in %)

- Petrol (excluding hybrids)
- Diesel (excluding hybrids)
- AFV (Alternative-fuelled vehicle)
- ECV (Battery EV (BEV), Plug-in hybrid EV (PHEV), Fuel cell EV (FCEV))
- HEV (Hybrid)
- Other AFV (Natural gas vehicles (NGV), LPG-fuelled vehicles (LPG), Flex fuel vehicles E85 (FFV))



Source: ACEA

Passenger cars fleet by fuel type in 2015 (in %)



Source: ACEA

About ePURE

ePURE represents the interests of European renewable ethanol producers to the EU institutions, industry stakeholders, the media, academia and the general public.

Based in Brussels, ePURE speaks for 38 member companies (including 20 producing members), with about 50 plants in 16 EU Member States, accounting for about 85% of the renewable ethanol production in Europe.

The organisation, established in 2010, promotes the beneficial uses of ethanol throughout Europe.