



MAKING THE TRANSITION TO ZERO-EMISSION MOBILITY

2020 PROGRESS REPORT

ENABLING FACTORS FOR ALTERNATIVELY-POWERED
CARS AND VANS IN THE EUROPEAN UNION

OCTOBER 2020



ACEA

European
Automobile
Manufacturers
Association

EXECUTIVE SUMMARY

1 – MARKET UPTAKE ALTERNATIVELY-POWERED CARS + VANS

- 3.0% of all cars sold in 2019 were electrically-chargeable (+2.4 percentage points since 2014).
 - 5.9% of new cars in the EU were hybrid electric last year (+4.5 percentage points over six years).
 - 0.5% of all cars sold in 2019 were natural gas-powered (-0.3 percentage points since 2014).
 - Fuel cell vehicles currently account for a small share (0.04%) of total EU car sales.
 - 2.8% of new van sales were alternatively-powered last year.
 - 1.2% of all vans sold in 2019 were electrically-chargeable (+0.7 percentage points over six years), and 0.2% were hybrid electric.
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2 – CO2 EMISSIONS OF NEW PASSENGER CARS + VANS

- In 2017, petrol vehicles became the most sold car type in the EU for the first time since 2009.
 - 2017 also marked the first rise (+0.3%) in new-car CO2 emissions since records began.
 - 2019 was the third consecutive year when CO2 from cars increased (+1.8%) to reach an EU-wide average of 123g CO2/km.
 - CO2 emissions from vans grew for the second consecutive year in 2019, going up by 0.4% to reach an EU-wide average of 158.5g CO2/km.
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3 – AFFORDABILITY

- The market uptake of electrically-chargeable vehicles (ECVs) is directly correlated to a country's GDP per capita, showing that affordability is a major barrier to consumers.
 - All countries with an ECV market share of less than 1% have a GDP below €30,000, including EU member states in Central and Eastern Europe, but also Italy and Greece.
 - More than 80% of all electric cars are sold in just 6 EU countries, with some of the highest GDPs.
 - 21 EU countries now offer bonus payments or premiums to buyers of ECVs. These purchase incentives, and especially their monetary value, differ greatly across the European Union.
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4 – INFRASTRUCTURE AVAILABILITY

- Although the deployment of ECV infrastructure has seen strong growth, the total number of charging points available across the EU (199,825) still falls far short of what is required.
- Only 28,586 of those points are suitable for fast charging (capacity of >22kW), while 'normal' points account for the vast majority. Just 1 in 7 charging points in the EU is a fast charger today.
- According to conservative estimates by the European Commission, at least 2.8 million ECV charging points will be needed by 2030. That means a 14-fold increase within the next 11 years.
- Four countries covering 27% of the EU's total surface area – the Netherlands, Germany, France and the UK – account for more than 75% of all ECV charging points in the EU.
- There are 137 hydrogen filling stations across 12 EU member states, but 16 countries do not have any at all.
- The EU counts more than 3,700 natural gas filling stations, up 30.8% since 2014. Two-thirds of these are concentrated in two countries alone (Italy and Germany).

INTRODUCTION

THE CONTEXT

Last year, the European Parliament and Council adopted Regulation (EU) 2019/631 introducing CO₂ emission standards for new passenger cars and light commercial vehicles (vans) in the European Union. This regulation set reduction targets of -15% and -37.5% for the tailpipe CO₂ emissions of newly-registered cars for the years 2025 and 2030 respectively. The 2030 target for vans is -31%. The new car targets follow on from the target of 95g CO₂/km for the year 2021, set in 2013.

Using laboratory test (WLTP) results, manufacturers' progress is monitored each year by the member states based on new registration data.

In 2021¹ the European Commission will review the Regulation, reporting back to the European Parliament and Council on the progress made towards reaching the CO₂ targets. Amongst other things, this 'mid-term review' will take stock of the roll-out of charging and refuelling infrastructure for alternatively-powered vehicles, their market uptake, as well as CO₂ reductions from the fleet.

THE PURPOSE OF THIS REPORT

Sales of electric and other alternatively-powered passenger cars and vans – including electrically-chargeable, hybrid, fuel cell and natural gas-powered vehicles – will have to pick up strongly if the 2025 and 2030 CO₂ targets are to be achieved. All European automobile manufacturers are constantly expanding their portfolios of such vehicles. However, their market penetration remains low and fragmented across the EU.

In order to drive this shift to zero- and low-emission vehicles, governments across the EU need to ramp up investments in charging and refuelling infrastructure, and to put in place meaningful and sustainable incentives to stimulate sales of alternatively-powered vehicles. The purpose of this report is to track progress on these key 'enabling factors' for both passenger cars and vans. Indeed, for the first time, the 2020 edition of the ACEA progress report also includes data on light commercial vehicles (ie N1 vehicles, most commonly referred to as 'vans').

The European Automobile Manufacturers' Association (ACEA) is publishing this statistical report on an annual basis in the run-up to the mid-term review of Regulation (EU) 2019/631, with a view to monitoring the availability of infrastructure and purchase incentives.

ACEA will put this in the context of the composition of the new vehicle market by fuel type and the average CO₂ emissions of new cars and vans. This report also makes a number of correlations, analysing the influence of some factors – such as national income or the number of charging points per 100 km of road – on the market uptake of alternatively-powered vehicles.

This report provides a factual, data-driven picture of progress, bringing together all available data sources (ACEA, EAFO², EEA, Eurostat, IHS Markit). In all cases it is the latest available full-year data.

Although the United Kingdom is no longer part of the European Union (as of 1 February 2020), this year's edition of the Progress Report covers the former EU28 perimeter, as all data sets in this report cover time frames during which the UK was still an EU member state.

¹ This date was brought forward from 2023 in December 2019.

² Currently, the only available source of EU-wide infrastructure data for all types of alternatively-powered vehicles is the European Commission's European Alternative Fuels Observatory (EAFO), www.eafo.eu.

GLOSSARY

CONVENTIONALLY-POWERED VEHICLES

Conventional vehicles use fossil fuels (diesel and petrol) to power an internal combustion engine (ICE). Both diesel and petrol engines convert fuel into energy via combustion, with the main difference being the way the combustion process occurs.

Diesel fuel has a higher energy content per litre than other fuels. Moreover, diesel engines convert more of this energy into useful work. Due to these two factors, diesel vehicles consume less fuel by volume than equivalent petrol vehicles.

Consequently, diesel vehicles have lower average CO₂ emissions per kilometre than equivalent petrol-powered ones. Although this gap is narrowing, it still remains significant. According to a recent report by the European Environment Agency (EEA), “if similar petrol and diesel segments are compared, new conventional petrol cars emitted 10-40% more [CO₂] than new conventional diesel cars”.

ALTERNATIVELY-POWERED VEHICLES

Alternatively-powered vehicles (APVs) are vehicles powered by technologies alternative to, or supplemental to, conventional internal combustion engines using fossil fuels. The main types of APVs, and how they differ from each other, are explained below.

1 – ELECTRIC VEHICLES

Electric vehicles include electrically-chargeable vehicles (ECVs) and fuel cell electric vehicles (FCEVs). Both are propelled by an electric motor but require very different infrastructure.

1.1 – ELECTRICALLY-CHARGEABLE VEHICLES

Electrically-chargeable vehicles (ECVs) include full battery electric vehicles and plug-in hybrids, both of which require recharging infrastructure which connects them to the electricity grid.

- **Battery electric vehicles (BEVs)** are fully powered by an electric motor, using electricity stored in an on-board battery that is charged by plugging into the electricity grid.
- **Plug-in hybrid electric vehicles (PHEVs)** have an internal combustion engine (running on petrol or diesel) and a battery-powered electric motor. The battery is recharged by connecting to the grid as well as by the on-board engine. Depending on the battery level, the vehicle can run on the electric motor and/or the internal combustion engine.



1.2 – FUEL CELL ELECTRIC VEHICLES

Fuel cell electric vehicles (FCEVs) are also propelled by an electric motor, but their electricity is generated within the vehicle by a fuel cell that uses compressed hydrogen (H₂) and oxygen from the air. So, unlike ECVs, they are not recharged by connecting to the electricity grid. Instead, FCEVs require dedicated hydrogen filling stations.



2 – HYBRID ELECTRIC VEHICLES

Hybrid electric vehicles (HEVs) have an internal combustion engine (running on petrol or diesel) and a battery-powered electric motor. Electricity is generated internally from regenerative braking, cruising and the combustion engine, so they do not need recharging infrastructure. The hybridisation level ranges from mild to full.



- **Mild hybrid electric vehicles** are powered by an internal combustion engine, but also have a battery-powered electric motor that supports the conventional engine. These vehicles cannot be powered by the electric motor alone.
- **Full hybrid electric vehicles** are powered by both an electric motor and a combustion engine, each of which (or together) can power the wheels.

3 – NATURAL GAS VEHICLES

Natural gas vehicles (NGVs) run on compressed natural gas (CNG) or liquefied natural gas (LNG), the latter mainly being used for commercial vehicles such as trucks and the former for passenger cars. NGVs are based on mature technologies and use internal combustion engines. Dedicated refuelling infrastructure is required.



‘ELECTRIFIED’ AND ‘ELECTRIC’ VEHICLES

Some people presume that the term ‘**electrified**’ or ‘**electric**’ refers exclusively to battery electric vehicles (BEVs) that are fully powered by electricity and have no CO2 coming from their tailpipe.

However, in practice ‘**electrified**’ and ‘**electric**’ are often used as blanket terms for all available **electrification technologies**, ie BEVs, PHEVs and HEVs. The reality is that each of these technologies has different requirements in terms of infrastructure as well as varying CO2 reduction levels.

	ELECTRICALLY-CHARGEABLE CARS 3.0% OF EU CAR SALES IN 2019		HYBRID ELECTRIC CARS 5.9% CAR SALES	FUEL CELL CARS 0% CAR SALES
	BEVS Battery electric vehicles	PHEVS Plug-in hybrid electric vehicles	HYBRIDS Full and mild hybrids	FCEVS Fuel cell electric vehicles
TAILPIPE CO2 REDUCTION (ON AVERAGE)	100%	50-75%	MILD: 10-20% FULL: 20-40%	100%
SHARE OF ‘ELECTRIFIED’ CARS	21%	12.8%	66.1%	0.04%

Source: ACEA

1. MARKET UPTAKE

1.A.1 – NEW CAR REGISTRATIONS IN THE EU, BY FUEL TYPE



Trends over time in the EU (2014-2019, in units)

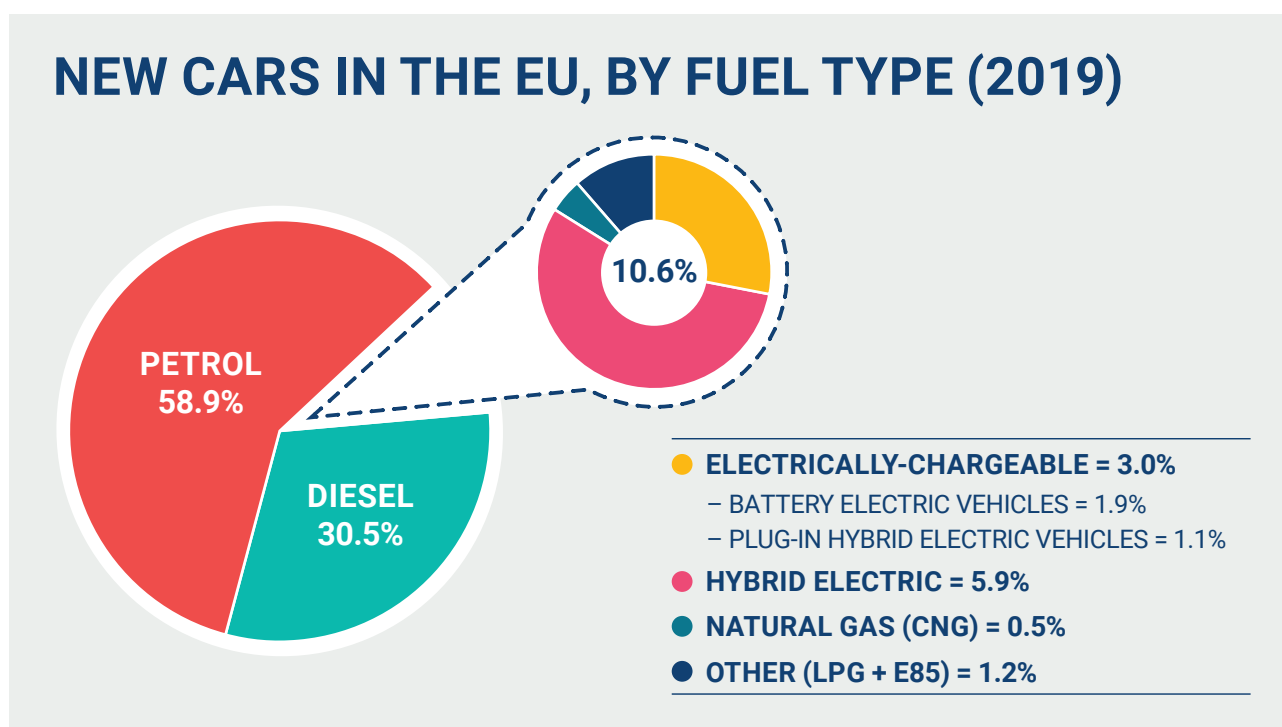
	2014	2015	2016	2017	2018	2019
Petrol	5,358,452	6,036,564	6,800,116	7,563,739	8,521,418	8,964,034
Diesel	6,599,462	7,039,611	7,175,630	6,617,051	5,402,079	4,650,558
Electrically-chargeable	69,958	148,027	155,634	218,083	300,258	458,915
– Battery electric	37,517	59,165	63,479	97,667	147,428	284,812
– Plug-in hybrids	32,441	88,862	92,155	120,416	152,830	174,103
Hybrid electric	176,525	218,755	278,729	426,769	598,462	896,785
Fuel cell	38	176	123	253	266	535
Natural gas (CNG)	97,214	78,511	57,609	49,553	65,023	68,581
Other (LPG + E85)	141,452	140,321	118,430	156,710	164,270	187,378

Source: ACEA

KEY FINDINGS

- Between 2014-2019, the petrol market grew by 3.6 million units, reaching 9 million cars in 2019.
- The number of diesel cars sold dropped by almost 2 million units over the same timeframe.
- Electrically-chargeable cars increased by 389,000 (to 458,915 cars) over the six-year period.
- 720,260 more hybrid electric vehicles were sold in 2019 compared to 2014.
- Sales of fuel cell electric vehicles doubled in 2019, going from 266 cars in 2018 to 535 last year.

Market shares of fuel types in the EU (2019)



Source: ACEA

KEY FINDINGS

- Overall in 2019, more than half of all new passenger cars registered in the EU ran on petrol (58.9%, compared to 56.6% in 2018). Petrol cars are the most sold fuel type in the EU.
- Diesel accounted for 30.5% of new passenger cars sold last year (down from 35.9% in 2018).
- 10.6% of all new passenger cars were alternatively-powered last year (up from 7.5% in 2018).
- 3.0% of all cars sold in 2019 were electrically-chargeable ones, and 5.9% were hybrid electric.

1.A.2 – NEW SALES: SHARE OF ALTERNATIVELY-POWERED CARS



Trends over time in the EU (2014-2019, market share)

	2014	2015	2016	2017	2018	2019	Change 14/19
Electrically-chargeable	0.6%	1.1%	1.1%	1.5%	2.0%	3.0%	+2.4 % points
– Battery electric	0.3%	0.4%	0.4%	0.6%	1.0%	1.9%	+1.6 % points
– Plug-in hybrids	0.3%	0.7%	0.6%	0.8%	1.0%	1.1%	+0.8 % points
Hybrid electric	1.4%	1.6%	1.9%	2.8%	4.0%	5.9%	+4.5 % points
Fuel cell	0.0%	0.0%	0.0%	0.0%	0.0%	0.04%	+0.04 % points
Natural gas (CNG)	0.8%	0.6%	0.4%	0.3%	0.4%	0.5%	-0.3 % points
Other (LPG + E85)	1.1%	1.0%	0.8%	1.0%	1.1%	1.2%	+0.1 % points

Source: ACEA

KEY FINDINGS

- The electrically-chargeable car market grew by 2.4 percentage points over the last six years.
- During the same period, the share of hybrid electric vehicles increased by 4.5 percentage points.
- 0.5% of all cars sold in 2019 were natural gas-powered (-0.3 percentage points since 2014).
- Although sales doubled in 2019, fuel cell cars only account for a small share (0.04%) of EU sales.

By country: market share of alternatively-powered cars (2019)

MARKET SHARE OF ALTERNATIVELY-POWERED CARS, BY COUNTRY

	AT	BE	BG	CZ	DK	EE	FI	FR	DE	GR	HU	IE
ECVs	3.5%	3.2%	0.6%	0.5%	4.2%	0.3%	6.9%	2.8%	3.0%	0.4%	1.9%	4.1%
HEVs	4.4%	3.2%	4.8%	3.1%	4.4%	8.1%	13.6%	4.8%	5.4%	5.8%	5.8%	8.7%
FCEVs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NGVs	0.1%	0.6%	1.1%	0.7%	0.0%	2.1%	1.9%	0.0%	0.2%	1.4%	0.0%	0.0%
OTHER	0.0%	0.0%	4.3%	0.2%	0.0%	0.0%	0.0%	0.4%	0.2%	0.6%	0.0%	0.0%

	IT	LV	LT	NL	PL	PT	RO	SK	SI	ES	SE	GB
ECVs	0.9%	0.5%	0.4%	15.0%	0.5%	5.7%	0.9%	0.4%	0.9%	1.4%	11.3%	3.1%
HEVs	5.7%	7.5%	7.3%	6.5%	7.0%	4.2%	4.6%	4.2%	2.8%	8.6%	8.5%	6.8%
FCEVs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NGVs	2.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.4%	1.5%	0.0%
OTHER	7.1%	0.6%	0.0%	0.1%	1.5%	0.9%	0.9%	0.2%	0.1%	1.6%	0.2%	0.0%

ECVs = ELECTRICALLY-CHARGEABLE VEHICLES
 HEVs = HYBRID ELECTRIC VEHICLES
 FCEVs = FUEL CELL ELECTRIC VEHICLES

NGVs = NATURAL GAS VEHICLES (CNG)
 OTHER = OTHER ALTERNATIVELY-POWERED VEHICLES (LPG + E85)

Source: ACEA

ELECTRICALLY-CHARGEABLE VEHICLES (ECVs)**Top 5: MOST ECVs sold (units + share)**

1. Germany: 108,629 (3.0%)
2. United Kingdom: 72,766 (3.1%)
3. Netherlands: 66,801 (15.0%)
4. France: 61,356 (2.8%)
5. Sweden: 40,404 (11.3%)

Top 5: LEAST ECVs sold (units + share)

1. Estonia: 97 (0.3%)
2. Latvia: 102 (0.5%)
3. Lithuania: 162 (0.4%)
4. Bulgaria: 237 (0.6%)
5. Slovakia: 367 (0.4%)

HYBRID ELECTRIC VEHICLES (HEVs)**Top 5: MOST HEVs sold (units + share)**

1. Germany: 193,902 (5.4%)
2. United Kingdom: 156,178 (6.8%)
3. Italy: 109,789 (5.7%)
4. Spain: 108,684 (8.6%)
5. France: 106,781 (4.8%)

Top 5: LEAST HEVs sold (units + share)

1. Latvia: 1,468 (7.5%)
2. Bulgaria: 1,975 (4.8%)
3. Slovenia: 2,002 (2.8%)
4. Estonia: 2,693 (8.1%)
5. Lithuania: 3,355 (7.3%)

FUEL CELL ELECTRIC VEHICLES (FCEVs)**Top 5: MOST FCEVs sold (units + share)**

1. Germany: 210 (0%)
2. Netherlands: 156 (0%)
3. United Kingdom: 68 (0%)
4. France: 63 (0%)
5. Austria: 19 (0%)

Top 5: LEAST FCEVs sold (units + share)

1. Italy: 0 (0%)
2. Poland: 0 (0%)
3. Czech Republic: 0 (0%)
4. Portugal: 0 (0%)
5. Romania: 0 (0%)

NATURAL GAS VEHICLES (NGVs)**Top 5: MOST NGVs sold (units + share)**

1. Italy: 38,615 (2%)
2. Germany: 7,623 (0.2%)
3. Spain: 5,476 (0.4%)
4. Sweden: 5,337 (1.5%)
5. Belgium: 3,504 (0.6%)

Top 5: LEAST NGVs sold (units + share)

1. United Kingdom: 0 (0%)
2. Romania: 0 (0%)
3. Ireland: 0 (0%)
4. Slovenia: 1 (0%)
5. Hungary: 3 (0%)

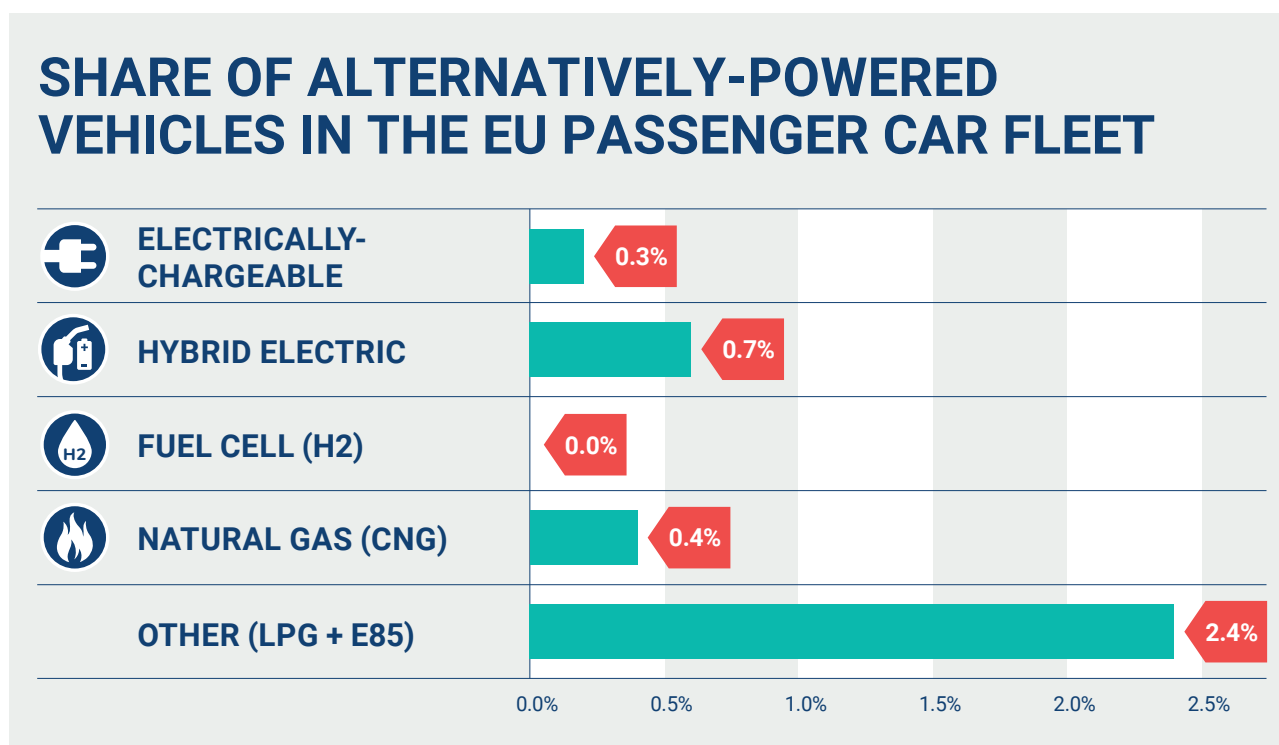
KEY FINDINGS

- In only six EU countries, electrically-chargeable vehicles have a market share of over 3.5%.
- An ECV market share of 3.5% and under is found in 18 member states.
- 11 EU member states have an ECV market share lower than 1%, of which 7 have 0.5% or lower.
- The market share of hybrid electric cars is almost two times bigger than that of ECVs.
- Hybrid electric vehicles make up more than half of all EU sales of alternatively-powered cars, and 66.1% of the 'electrified' car market.
- Sales of cars running on natural gas are mainly concentrated in Italy and Germany (67% of total).
- In terms of units, Germany is the number one market for all types of electric vehicles.

1.A.3 – CARS ON THE ROAD



Alternatively-powered vehicles: share of the EU car fleet
(2018, latest data available)



Source: ACEA

KEY FINDINGS

- 0.3% of all passenger cars on EU roads today are electrically-chargeable.
- Hybrid electric vehicles make up 0.7% of all cars in the European Union.
- Passenger cars fuelled by natural gas (CNG) account for 0.4% of the EU car fleet.
- Other alternatively-powered vehicles account for 2.4% of all passenger cars on EU roads, of which LPG (2.3%) and the E85 ethanol-petrol mix (0.1%) make up the vast majority.

1.B.1 – VAN REGISTRATIONS IN THE EU, BY FUEL TYPE



Trends over time in the EU (2014-2019, in units)

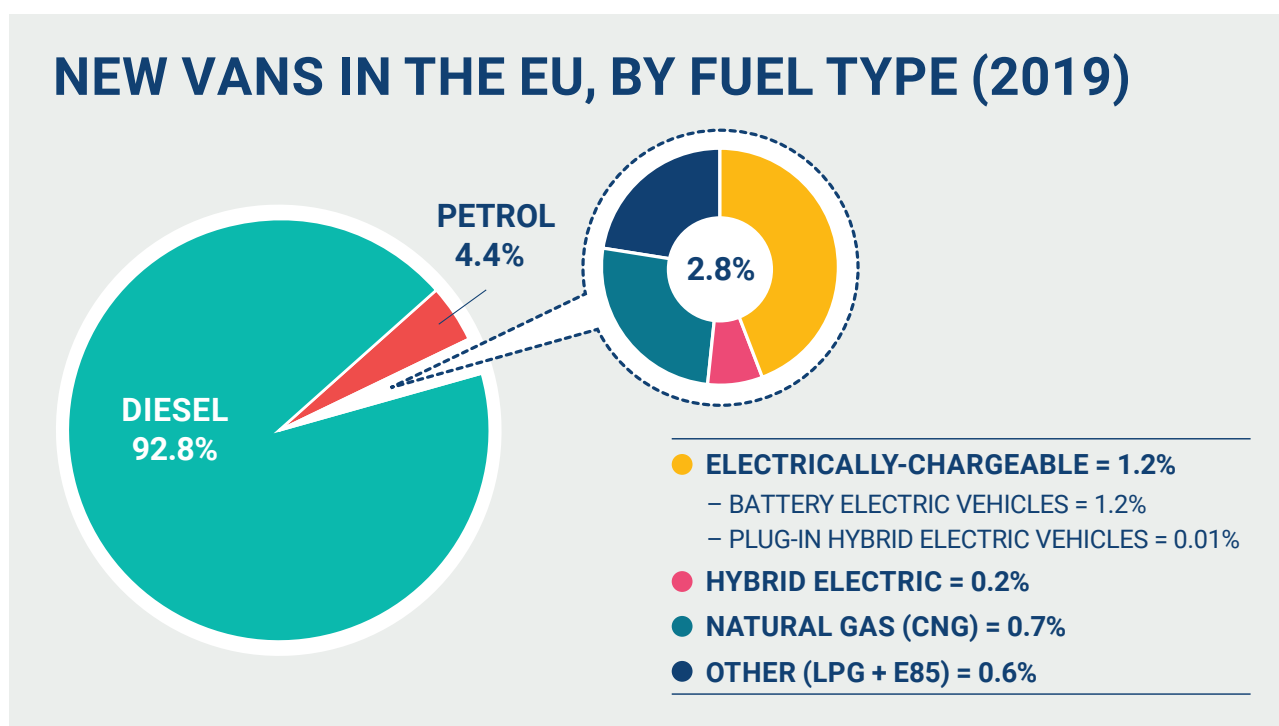
	2014	2015	2016	2017	2018	2019
Petrol	30,711	27,959	31,695	41,208	81,277	93,373
Diesel	1,404,653	1,445,525	1,575,001	1,605,232	1,909,835	1,956,004
Electrically-chargeable	7,601	8,705	11,202	14,187	21,204	26,106
– Battery electric	7,601	8,705	11,202	14,187	21,112	25,844
– Plug-in hybrids	0	0	0	0	92	262
Hybrid electric	28	2,438	251	50	1,762	4,577
Fuel cell	0	0	0	0	38	1
Natural gas (CNG)	8,438	8,212	10,163	8,247	10,608	14,169
Other (LPG + E85)	2,396	3,570	9,378	6,086	9,829	13,136

Source: ACEA (2018-2019), EEA (2014-2017)

KEY FINDINGS

- Between 2014 and 2019, the market for petrol vans more than tripled (+62,662 units), reaching 93,373 vehicles sold in 2019.
- Sales of diesel vans increased by 551,351 units (to almost 2 million) over the same timeframe.
- The number of electrically-chargeable vans sold in the EU went up by some 18,500 over the six-year period, to reach 26,106 ECV vans in total.
- 4,549 more hybrid electric vans were sold in 2019 than in 2014.
- Only one fuel cell electric van was sold across the European Union last year.

Market shares of fuel types in the EU (2019)



Source: ACEA

KEY FINDINGS

- Overall in 2019, 92.8% of all new light commercial vehicles registered in the EU ran on diesel, a slight drop compared to 2018 (93.9%).
- Petrol accounted for 4.4% of all new vans sold last year (up from 4.0% in 2018).
- 2.8% of all new light commercial vehicles were alternatively-powered in 2019 (+0.7% on the previous year).
- 1.2% of all vans sold in 2019 were electrically-chargeable, and 0.2% were hybrid electric.

1.B.2 – NEW SALES: SHARE OF ALTERNATIVELY-POWERED VANS



Trends over time in the EU (2014-2019, market share)

	2014	2015	2016	2017	2018	2019	Change 14/19
Electrically-chargeable	0.5%	0.6%	0.7%	0.8%	1.0%	1.2%	+0.7 % points
– Battery electric	0.5%	0.6%	0.7%	0.8%	1.0%	1.2%	+0.7 % points
– Plug-in hybrids	0.0%	0.0%	0.0%	0.0%	0.005%	0.01%	+0.01% points
Hybrid electric	0.002%	0.2%	0.02%	0.003%	0.1%	0.2%	+0.2 % points
Fuel cell	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
Natural gas (CNG)	0.6%	0.5%	0.6%	0.5%	0.5%	0.7%	+0.1% points
Other (LPG + E85)	0.2%	0.2%	0.6%	0.4%	0.5%	0.6%	+0.4 % points













Source: ACEA (2018-2019), EEA (2014-2017)













KEY FINDINGS

- The electrically-chargeable van market grew by 0.7 percentage points over the last six years.
- During the same period, the share of hybrid electric vehicles increased by 0.2 percentage points.
- 0.7% of all vans sold in 2019 were natural gas-powered, or +0.1 percentage points since 2014.
- The fuel type composition of the vans market has remained rather stable in the last six years.

By country: market share of alternatively-powered vans (2019)

MARKET SHARE OF ALTERNATIVELY-POWERED VANS, BY COUNTRY

	 AT	 BE	 CY	 CZ	 DK	 EE	 FI	 FR	 DE	 GR	 HU	 IE
ECVs	1.0%	0.5%	0.2%	0.2%	0.8%	0.1%	0.4%	1.7%	2.2%	0.1%	0.3%	1.3%
HEVs	0.0%	0.1%	0.0%	0.0%	1.4%	0.0%	0.1%	0.4%	0.1%	0.0%	0.0%	0.0%
FCEVs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NGVs	0.2%	1.6%	0.0%	2.8%	0.0%	0.6%	0.4%	0.2%	0.3%	2.2%	0.0%	0.0%
OTHER	0.1%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%

	 IT	 LV	 LU	 NL	 PL	 PT	 RO	 SK	 SI	 ES	 SE	 GB
ECVs	0.6%	0.1%	1.7%	1.7%	0.2%	0.6%	0.2%	0.3%	0.4%	0.9%	2.6%	0.9%
HEVs	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%
FCEVs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NGVs	3.4%	0.1%	0.0%	0.6%	0.1%	0.1%	0.1%	0.6%	0.0%	0.9%	2.0%	0.0%
OTHER	2.0%	0.3%	0.0%	1.4%	2.3%	0.0%	0.0%	0.2%	0.4%	2.1%	0.2%	0.0%

ECVs = ELECTRICALLY-CHARGEABLE VEHICLES

HEVs = HYBRID ELECTRIC VEHICLES

FCEVs = FUEL CELL ELECTRIC VEHICLES

NGVs = NATURAL GAS VEHICLES (CNG)

OTHER = OTHER ALTERNATIVELY-POWERED VEHICLES (LPG + E85)

Source: ACEA

ELECTRICALLY-CHARGEABLE VEHICLES (ECVs)

Top 5: **MOST** ECVs sold (units + share)

1. France: 8,087 (1.7%)
2. Germany: 6,704 (2.2%)
3. United Kingdom: 3,427 (0.9%)
4. Spain: 1,937 (0.9%)
5. Sweden: 1,389 (2.6%)

Top 5: **LEAST** ECVs sold (units + share)

1. Latvia: 2 (0.1%)
2. Estonia: 3 (0.1%)
3. Cyprus: 4 (0.2%)
4. Greece: 11 (0.1%)
5. Slovakia: 23 (0.3%)

HYBRID ELECTRIC VEHICLES (HEVs)

Top 5: **MOST** HEVs sold (units + share)

1. France: 1,861 (0.4%)
2. Italy: 1,296 (0.7%)
3. Spain: 553 (0.3%)
4. Denmark: 451 (1.4%)
5. Germany: 312 (0.1%)

NATURAL GAS VEHICLES (NGVs)

Top 5: **MOST** NGVs sold (units + share)

6. Italy: 6,293 (3.4%)
1. Spain: 1,858 (0.9%)
2. Belgium: 1,281 (1.6%)
3. France: 1,117 (0.2%)
4. Sweden: 1,081 (2.0%)

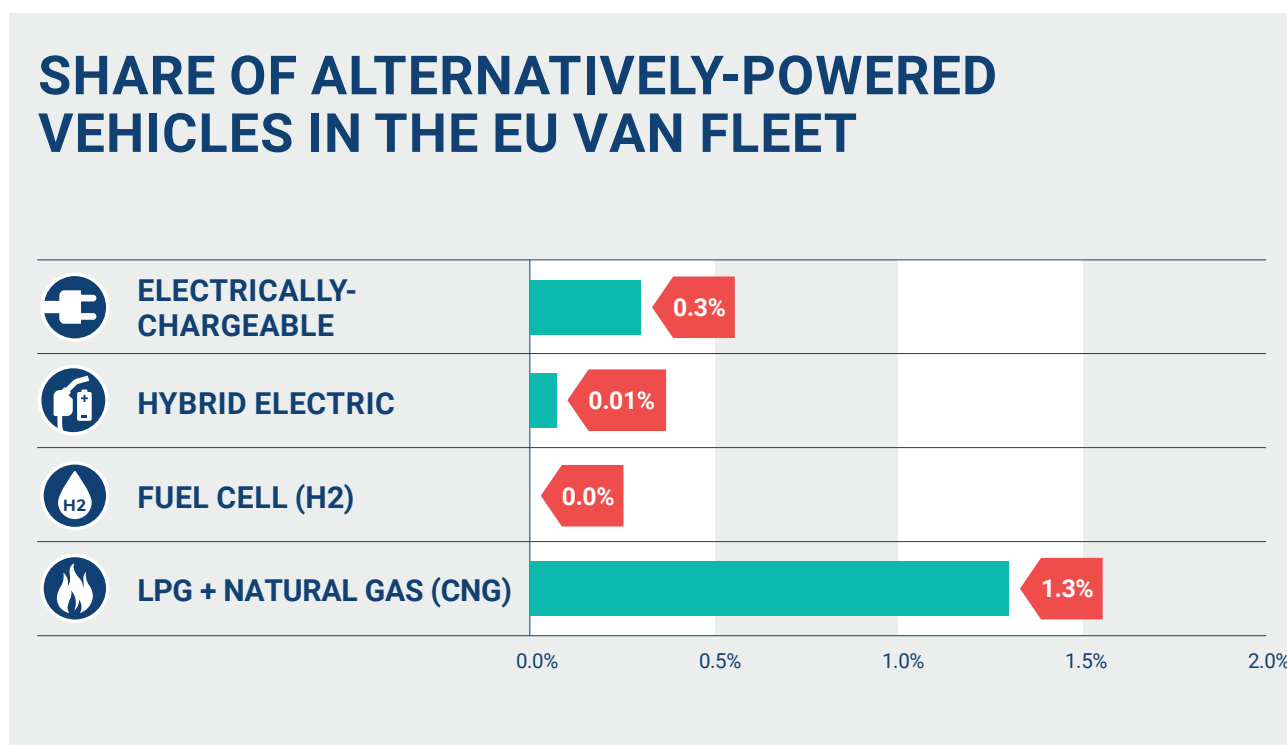
KEY FINDINGS

- In only six EU countries, electrically-chargeable vans have a market share of over 1%.
- 18 member states have an ECV market share of 1% and under.
- 12 EU countries have a market share of electrically-chargeable vans that is 0.5% or lower.
- Denmark is the only country with a market share of hybrid electric vans above 1%, although France leads sales in absolute terms (with 1,861 HEV vans sold in 2019).
- Sales of vans running on natural gas are mainly concentrated in Italy (3.4% share), Spain (0.9%), Belgium (1.6%), France (0.2%) and Sweden (2.0%).

1.B.3 – VANS ON THE ROAD



Alternatively-powered vehicles: share of the EU van
(2018, latest data available)



Source: ACEA

KEY FINDINGS

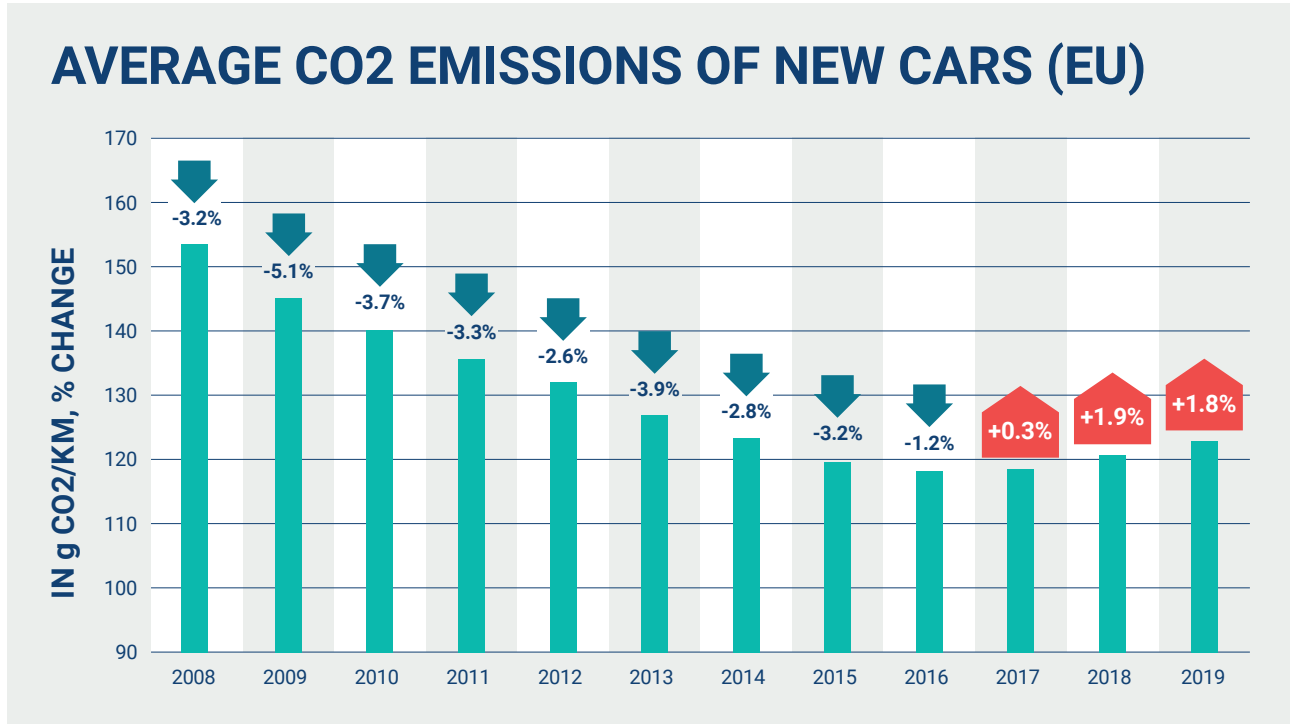
- 0.3% of all light commercial vehicles on EU roads today are electrically-chargeable.
- Hybrid electric vehicles make up 0.01% of all vans in the European Union.
- Vans fuelled by natural gas and LPG account for 1.3% of the EU fleet.

2. CO2 EMISSIONS

2.A – AVERAGE CO2 EMISSIONS OF NEW CARS

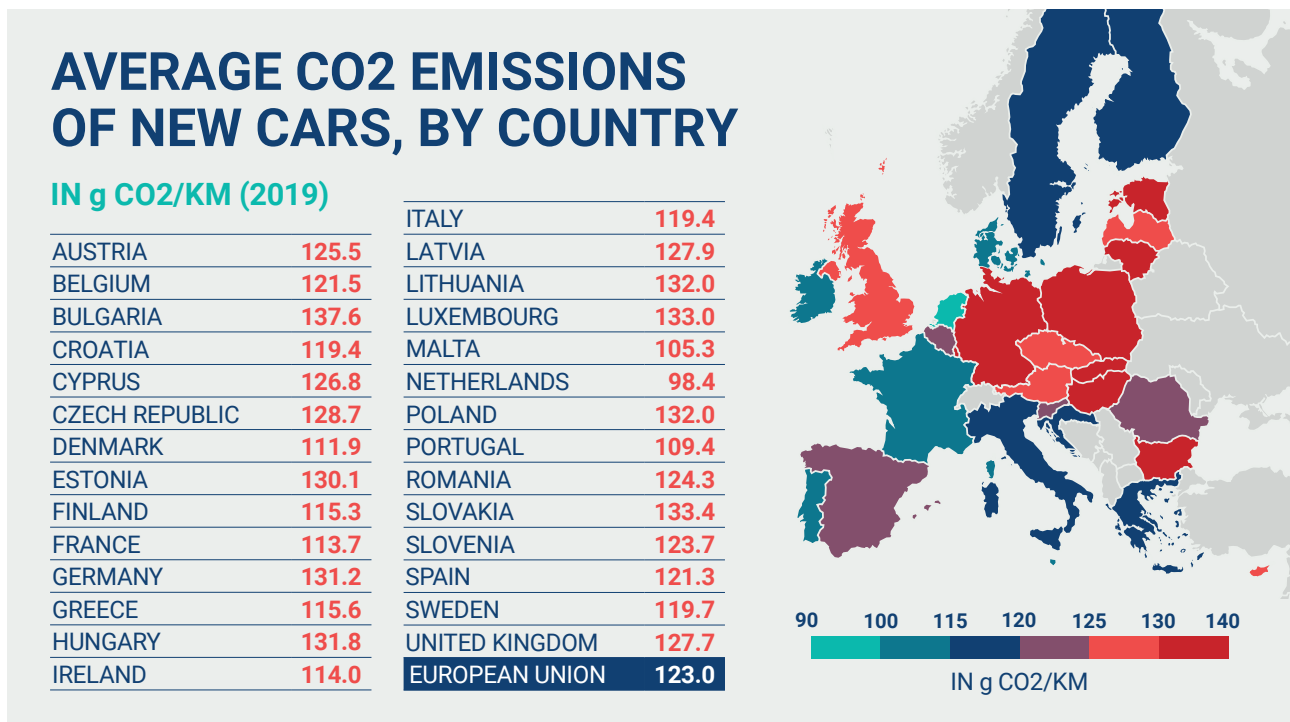


Trend over time in the EU (2008-2019)



Source: EEA

CO2 emissions of new passenger cars, by country (2019)



Source: EEA

Top 5: HIGHEST new-car CO2 emissions

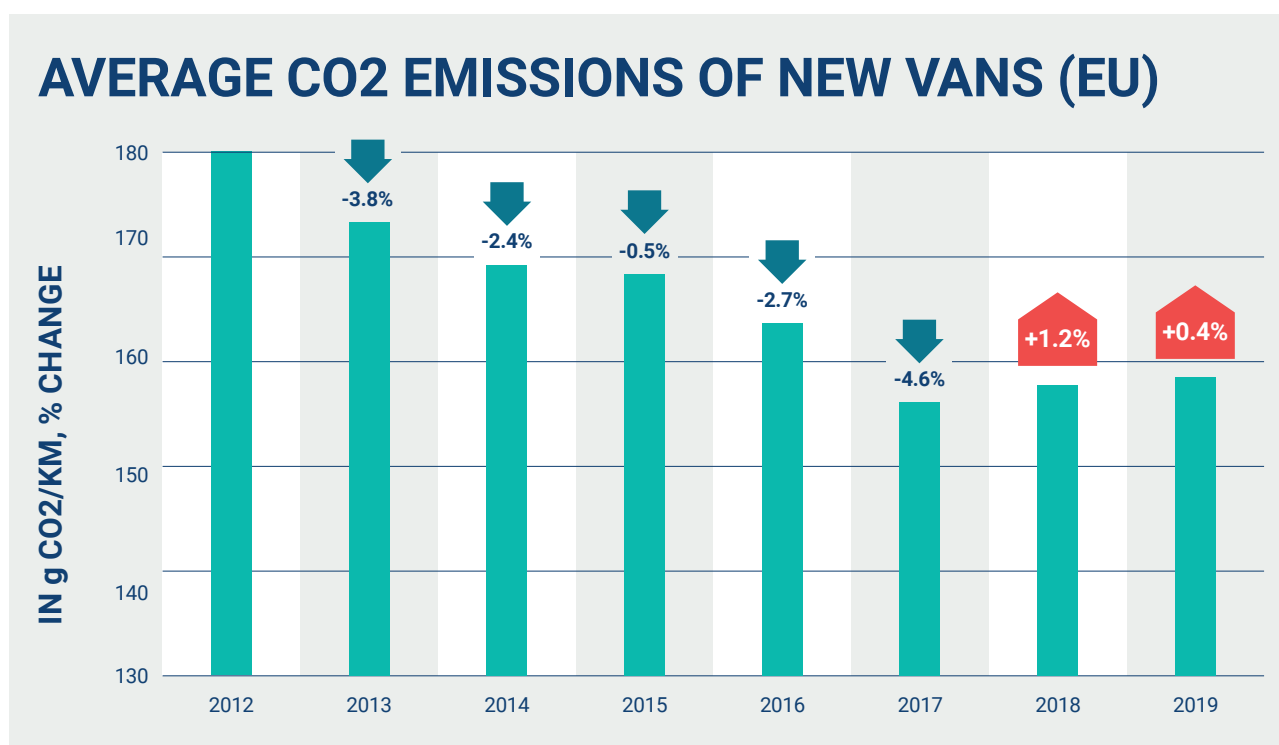
1. Bulgaria (137.6g CO2/km)
2. Slovakia (133.4g CO2/km)
3. Luxembourg (133.0g CO2/km)
4. Lithuania (132.0g CO2/km)
5. Poland (132.0g CO2/km)

Top 5: LOWEST new-car CO2 emissions

1. Netherlands (98.4g CO2/km)
2. Malta (105.3g CO2/km)
3. Portugal (109.4g CO2/km)
4. Denmark (111.9g CO2/km)
5. France (113.7g CO2/km)

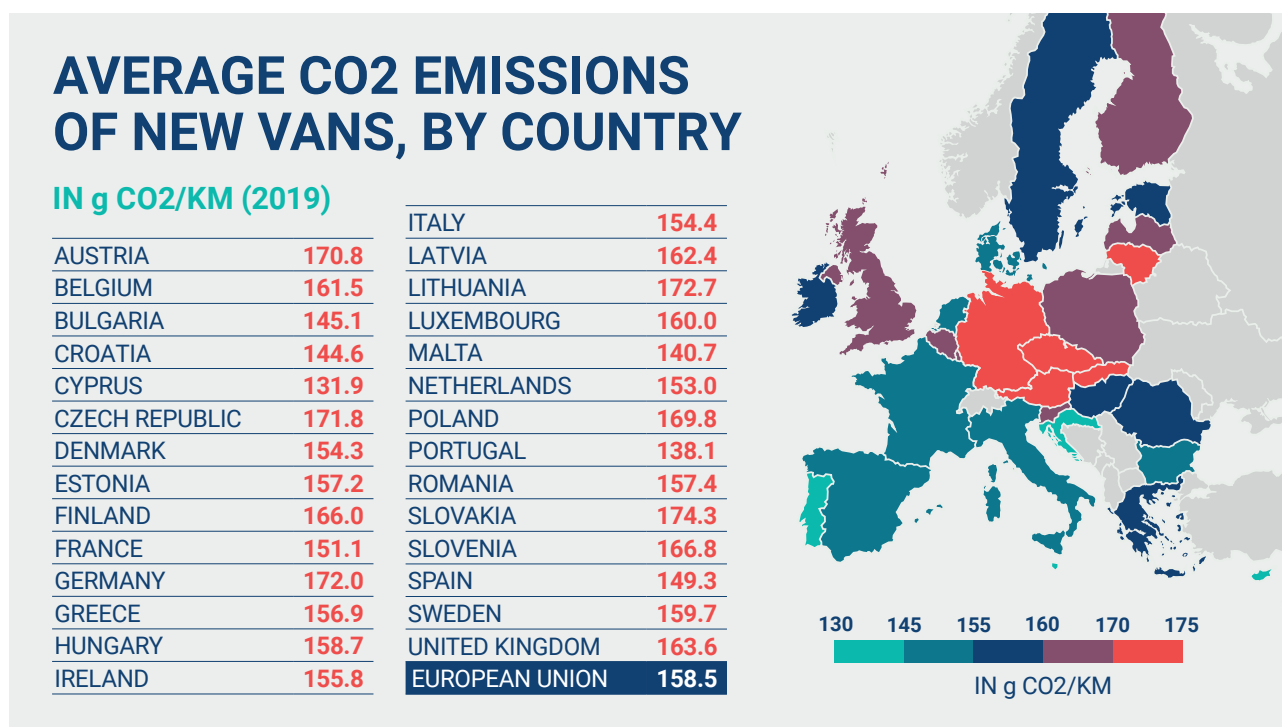
KEY FINDINGS

- Between 2007 and 2016, average new-car CO2 emissions recorded a steady decline, dropping from 158 to 118.1g CO2/km. This represents a drop of more than 25% over that decade.
- However, this downward trend reversed for the first time in 2017, when emissions went up slightly by 0.3% (to 118.5g CO2/km).
- 2017 also marked the year in which petrol vehicles became the most sold car type in the EU for the first time since 2009.
- 2018 saw an even bigger drop in diesel sales, and a stronger surge in demand for petrol, with a 1.9% CO2 increase.
- 2019 was the third year in a row during which CO2 emissions grew. This time going up by 1.8% to reach an EU-wide average of 123g CO2/km.
- Bulgaria has the highest average CO2 emissions from new passenger cars (137.6g CO2/km). The Netherlands has the lowest (98.4g CO2/km).

2.B – AVERAGE CO2 EMISSIONS OF NEW VANS**Trend over time in the EU (2012-2019)**

Source: EEA

CO2 emissions of new vans, by country (2019)



Source: EEA

Top 5: **HIGHEST** new-van CO2 emissions

1. Slovakia (174.3g CO2/km)
2. Lithuania (172.7g CO2/km)
3. Germany (172.0g CO2/km)
4. Czech Republic (171.8g CO2/km)
5. Austria (170.8g CO2/km)

Top 5: **LOWEST** new-van CO2 emissions

1. Cyprus (131.9g CO2/km)
2. Portugal (138.1g CO2/km)
3. Malta (140.7g CO2/km)
4. Croatia (144.6g CO2/km)
5. Bulgaria (145.1g CO2/km)

KEY FINDINGS

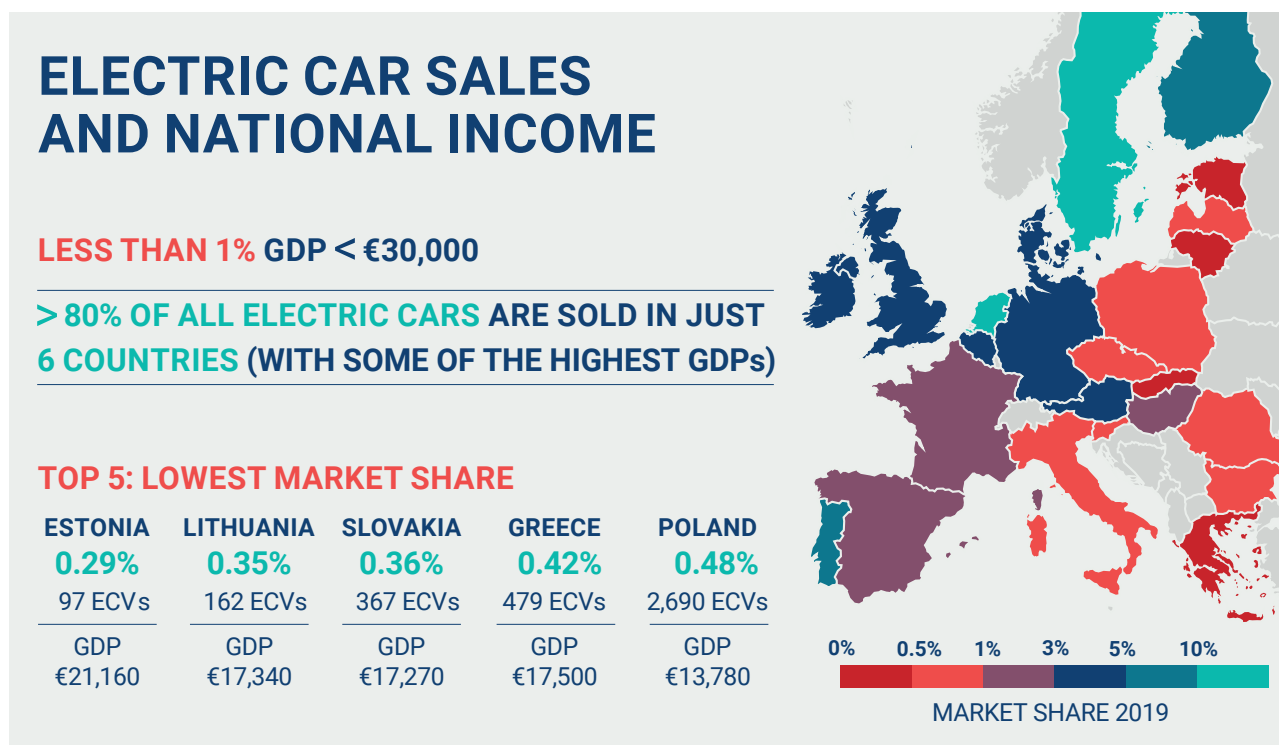
- Between 2012 and 2017, average new-van CO2 emissions dropped by more than 13%, going from 180.2 to 156.1g CO2/km.
- However, this trend reversed in 2018, when emissions went up 1.2% (to 157.9g CO2/km).
- During the same timeframe, petrol sales doubled from 41,208 in 2017 to 81,277 in 2018.
- 2019 was the second year in a row during which CO2 emissions grew. This time going up by 0.4% to reach an EU-wide average of 158.5g CO2/km last year.
- Slovakia has the highest average CO2 emissions from new light commercial vehicles (174.3g CO2/km); Cyprus has the lowest (131.9g CO2/km).

3. AFFORDABILITY

3.1 – NATIONAL INCOME AND ELECTRICALLY-CHARGEABLE CARS



Correlation ECV uptake and gross domestic product (GDP) per capita, by country (2019)



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)

Source: ACEA

Top 5: Countries with the **LOWEST** ECV market share in the EU (and their GDP), 2019

1. Estonia – 0.3% (GDP of €21,160)
2. Lithuania – 0.4% (GDP of €17,340)
3. Slovakia – 0.4% (GDP of €17,270)
4. Greece – 0.4% (GDP of €17,500)
5. Poland – 0.5% (GDP of €13,780)

ECV share of the **5 BIGGEST EU CAR MARKETS** (and their GDP), 2019

1. Germany – 3.0% (GDP of €41,510)
2. United Kingdom – 3.1% (GDP of €37,780)
3. France – 2.8% (GDP of €35,960)
4. Italy – 0.9% (GDP of €29,610)
5. Spain – 1.4% ECVs (GDP of €26,440)

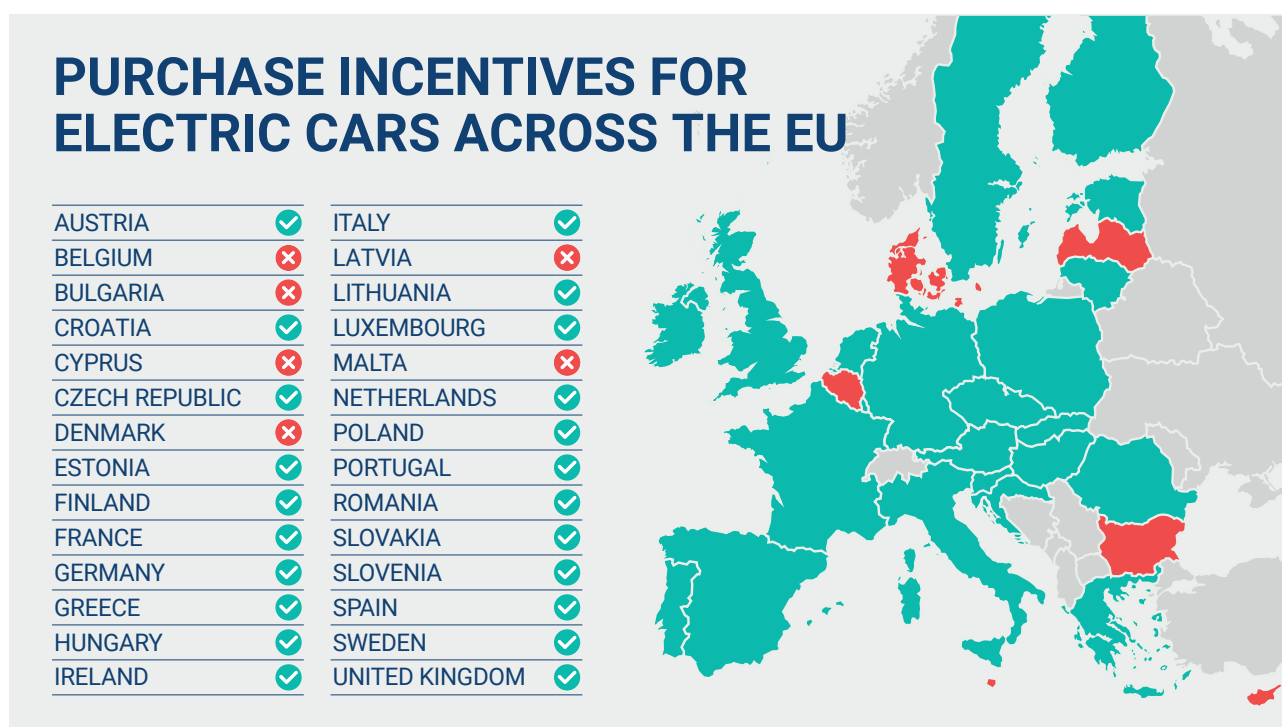
KEY FINDINGS

- The market uptake of electrically-chargeable vehicles is directly correlated to a country's GDP per capita, showing that affordability remains a major barrier to consumers.
- Across the EU, 3.0% of all new cars registered in 2019 were electrically-chargeable (ECVs).
- However, 11 EU member states still have an ECV market share lower than 1%.
- All countries with an ECV market share of less than 1% have a GDP below €30,000, including new EU member states in Central and Eastern Europe, but also Italy and Greece.
- Almost 80% of all electric car sales are concentrated in just six Western European countries with some of the highest GDPs.
- At €67,370, Norway's GDP is more than twice the EU average (€30,077). Likewise, its 56% ECV market share is an exception in Europe.
- The countries that come second and third, the Netherlands (15.0%) and Sweden (11.3%), have some of the highest GDPs in the EU (but far lower ECV shares than Norway).
- On the other end of the spectrum, in Estonia only 97 electric cars were sold in 2019 (representing a market share of 0.29%).
- There is a clear split in the affordability of ECVs between Central-Eastern Europe and Western Europe, as well as a pronounced North-South divide running across the continent (eg Greece 0.4% and Italy 0.9%).

3.2 – CONSUMER INCENTIVES AND TAX BENEFITS



Purchase incentives for electrically-chargeable vehicles (ECVs), by country (2020)



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)
Source: ACEA Tax Guide 2020

Top 10: Countries with the HIGHEST ECV purchase incentives

1. Romania (up to €11,500)
2. Croatia (up to €9,200)³
3. Germany (up to €9,000)
4. Poland (up to €8,350)
5. Slovakia (up to €8,000)
6. Slovenia (up to €7,500)
7. Hungary (up to €7,350)
8. France (up to €7,000)
9. Greece (up to €6,500)
10. Italy (up to €6,000)

KEY FINDINGS

- Purchase incentives for electrically-chargeable vehicles (ECVs), and especially their monetary value, still differ greatly across the European Union.
- 20 EU countries offer such bonus payments or premiums to buyers of ECVs today.
- 6 countries do not provide any purchase incentives for electric cars yet:
 - Belgium (3.2% ECV market share)
 - Bulgaria (0.6% ECV market share)
 - Cyprus (n/a)
 - Denmark (4.2% ECV market share)
 - Latvia (0.5% ECV market share)
 - Malta (n/a)

³Funds are limited. The entire €5.8 million budget for 2020 was claimed within two minutes after it became available.

Tax benefits for ECVs: acquisition, ownership and company cars, by country (2020)

TAX BENEFITS FOR ELECTRIC CARS

	Acquisition	Ownership	Company car		Acquisition	Ownership	Company car		Acquisition	Ownership	Company car
AUSTRIA	✓	✓	✓	GERMANY	✓	✓	✓	POLAND	✓	✗	✗
BELGIUM	✓	✓	✓	GREECE	✓	✓	✓	PORTUGAL	✓	✓	✓
BULGARIA	✗	✓	✗	HUNGARY	✓	✓	✓	ROMANIA	✗	✓	✗
CROATIA	✓	✓	✗	IRELAND	✓	✓	✓	SLOVAKIA	✓	✓	✗
CYPRUS	✓	✓	✗	ITALY	✗	✓	✗	SLOVENIA	✓	✗	✗
CZECH REPUBLIC	✓	✓	✗	LATVIA	✓	✓	✓	SPAIN	✓	✓	✗
DENMARK	✓	✓	✓	LITHUANIA	✗	✗	✗	SWEDEN	✗	✓	✓
ESTONIA	✗	✗	✗	LUXEMBOURG	✗	✓	✓	UNITED KINGDOM	✓	✓	✓
FINLAND	✓	✓	✗	MALTA	✓	✓	✗				
FRANCE	✓	✗	✓	NETHERLANDS	✓	✓	✓				

'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)

Source: ACEA Tax Guide 2020

KEY FINDINGS

- Only 11 EU countries offer tax benefits to stimulate the uptake of electrically-chargeable vehicles that cover acquisition, ownership and company cars.
- The majority of member states provide one or two of these types of tax benefits, but not the full package.
- Poland, for example, merely offers an exemption from the annual circulation tax for electric vehicles. Estonia and Lithuania do not offer any tax benefits at all.
- A comprehensive overview of all stimuli for electrically-chargeable cars can be [found here](#).

4. INFRASTRUCTURE AVAILABILITY

4.1 – ELECTRICALLY-CHARGEABLE VEHICLES



Both types of electrically-chargeable vehicles (ECVs) require appropriate infrastructure:

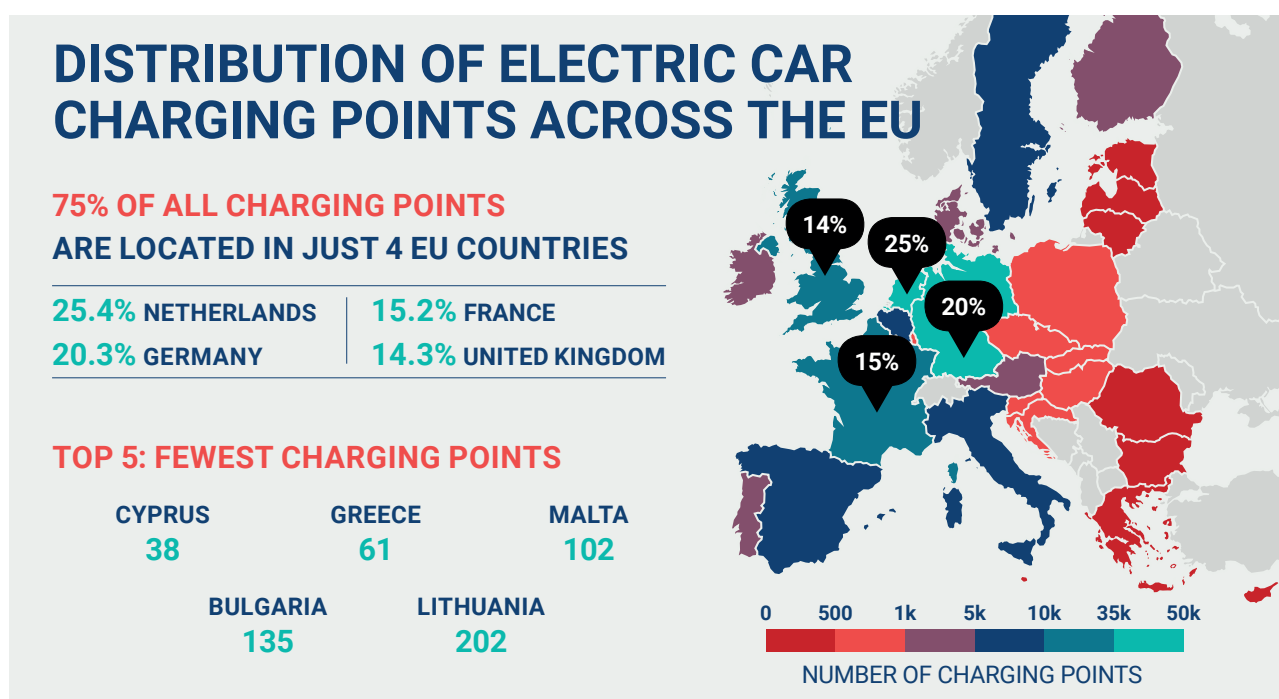
- Battery electric vehicles (BEVs), which are fully powered by an electric motor, need to plug into the electricity grid to charge their on-board battery.
- Plug-in hybrids (PHEVs), which have an electric motor that is complemented by a combustion engine, also need to charge the battery by connecting to the grid.

Charging points for ECVs per country, plus percentage of EU total (2019)

Austria	4,443	2.2%	Italy	9,370	4.7%
Belgium	6,551	3.3%	Latvia	306	0.2%
Bulgaria	135	0.1%	Lithuania	202	0.1%
Croatia	629	0.3%	Luxembourg	913	0.5%
Cyprus	38	0.0%	Malta	102	0.1%
Czech Republic	808	0.4%	Netherlands	50,824	25.4%
Denmark	2,817	1.4%	Poland	884	0.4%
Estonia	391	0.2%	Portugal	1,791	0.9%
Finland	2,145	1.1%	Romania	344	0.2%
France	30,367	15.2%	Slovakia	649	0.3%
Germany	40,517	20.3%	Slovenia	628	0.3%
Greece	61	0.0%	Spain	5,769	2.9%
Hungary	735	0.4%	Sweden	8,792	4.4%
Ireland	1,076	0.5%	United Kingdom	28,538	14.3%
				EU total	199,825

Source: EAFO

Distribution of ECV charging points across the EU (2019)



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)

Source: ACEA, EAFO

Top 5: Countries with MOST ECV points

1. Netherlands (50,824)
2. Germany (40,517)
3. France (30,367)
4. United Kingdom (28,538)
5. Italy (9,370)

Top 5: Countries with LEAST ECV points

1. Cyprus (38)
2. Greece (61)
3. Malta (102)
4. Bulgaria (135)
5. Lithuania (202)

Rollout of charging points for ECVs – Trend over time in the EU (2019)

EU total	2014	2015	2016	2017	2018	2019	% 14/19
ECV charging points	34,448	59,200	89,214	126,449	142,803	199,825	+480%

Source: EAFO

KEY FINDINGS

- Although there has been a strong growth in the deployment of ECV infrastructure since 2014 (+480%, but from a low base), the total number of charging points available across the entire EU (less than 200,000) falls far short of what is required.
- According to conservative estimates by the European Commission, at least 2.8 million ECV charging points will be needed by 2030.
- That means there should be roughly a 14-fold increase within the next 11 years.
- Of the 199,825 charging points⁴ available in the European Union today, over 25% are located in the Netherlands (50,824), with another 20% in Germany (40,517), 15% in France (30,367) and 14% in the United Kingdom (28,538).
- The Netherlands – the country with the most infrastructure – has more than 1,000 times more charging points than the country with the least infrastructure (Cyprus, with 38 charging points).

Normal and fast charging points, by country (2019)

	Normal (<22kW)	Fast (> 22kW)		Normal (<22kW)	Fast (> 22kW)
Austria	3,742	701	Italy	8,312	1,058
Belgium	6,070	481	Latvia	83	223
Bulgaria	70	65	Lithuania	79	123
Croatia	479	150	Luxembourg	900	13
Cyprus	38	0	Malta	102	0
Czech Republic	410	398	Netherlands	49,520	1,304
Denmark	2,244	573	Poland	509	375
Estonia	202	189	Portugal	1,471	320
Finland	1,786	359	Romania	211	133
France	27,661	2,706	Slovakia	350	299
Germany	34,203	6,314	Slovenia	452	176
Greece	40	21	Spain	4,500	1,269
Hungary	592	143	Sweden	4,036	4,756
Ireland	818	258	United Kingdom	22,359	6,179

Source: EAFO

KEY FINDINGS

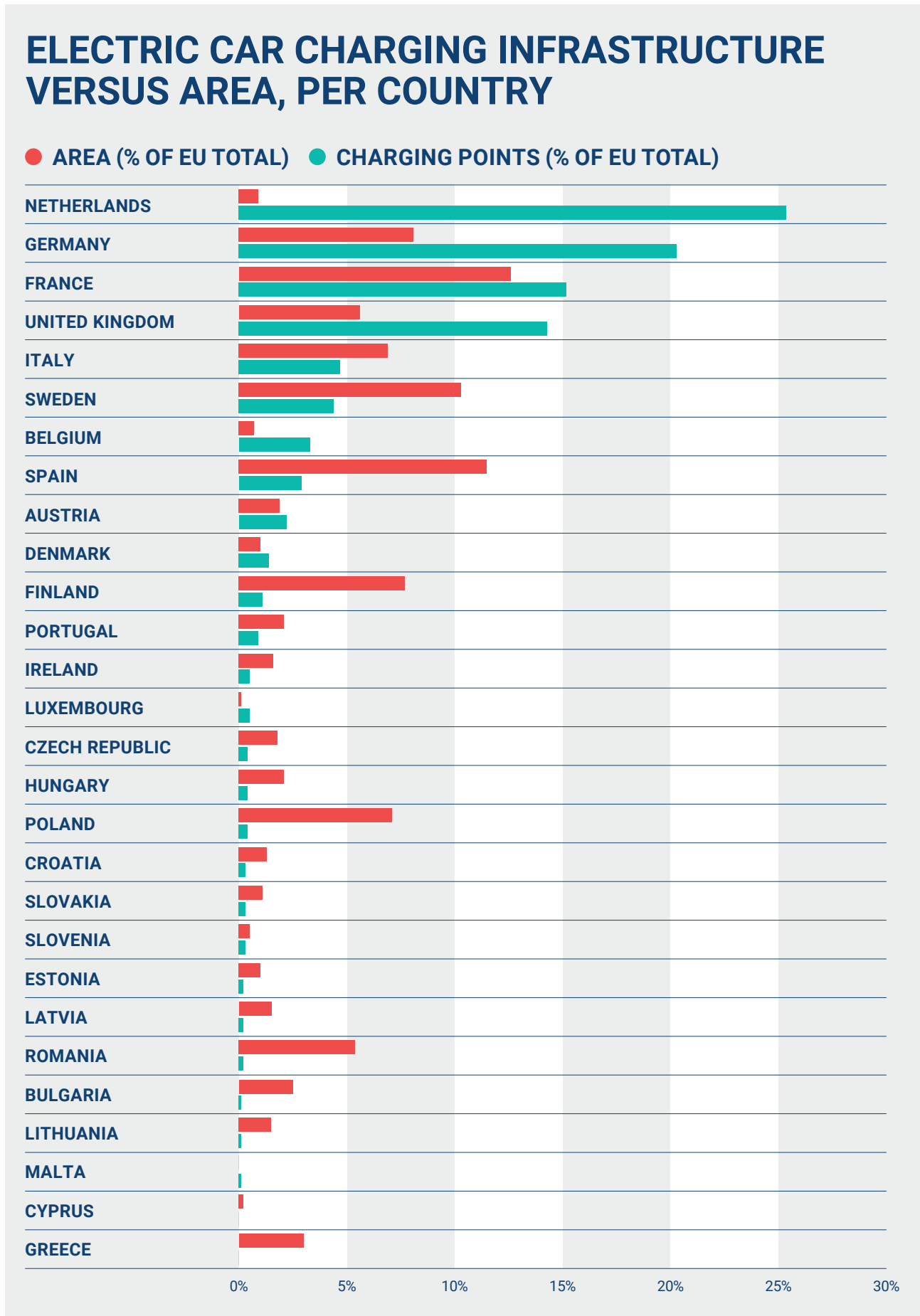
- Of the 199,825 charging points available across the EU today, only 28,586 are suitable for fast charging (with a capacity of >22kW), while 'normal' points (<22kW) account for the vast majority (171,239).
- The so-called 'normal' charging points also include many common-or-garden, low-capacity power sockets that are not suitable for charging vehicles at an acceptable speed.
- Just 1 in 7 charging points in the EU is a fast charger today.

Correlation ECV infrastructure and surface area, by country (2019)

	% of total EU ECV points	% of total EU area		% of total EU ECV points	% of total EU area
Austria	2.2%	1.9%	Italy	4.7%	6.9%
Belgium	3.3%	0.7%	Latvia	0.2%	1.5%
Bulgaria	0.1%	2.5%	Lithuania	0.1%	1.5%
Croatia	0.3%	1.3%	Luxembourg	0.5%	0.1%
Cyprus	0.0%	0.2%	Malta	0.1%	0.0%
Czech Republic	0.4%	1.8%	Netherlands	25.4%	0.9%
Denmark	1.4%	1.0%	Poland	0.4%	7.1%
Estonia	0.2%	1.0%	Portugal	0.9%	2.1%
Finland	1.1%	7.7%	Romania	0.2%	5.4%
France	15.2%	12.6%	Slovakia	0.3%	1.1%
Germany	20.3%	8.1%	Slovenia	0.3%	0.5%
Greece	0.0%	3.0%	Spain	2.9%	11.5%
Hungary	0.4%	2.1%	Sweden	4.4%	10.3%
Ireland	0.5%	1.6%	United Kingdom	14.3%	5.6%

Source: ACEA, EAFO

Correlation ECV infrastructure and surface area, by country (2019)



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)

Source: ACEA, EAFO

ECV market share / charging points per 100 km of road*, by country (2019)

	ECV share	Charging points per 100 km		ECV share	Charging points per 100 km
Austria	3.5%	3.4	Italy	0.9%	3.7
Belgium	3.2%	4.2	Latvia	0.5%	0.4
Bulgaria	0.6%	0.7	Lithuania	0.4%	0.3
Croatia	n/a	2.3	Luxembourg	n/a	31.6
Cyprus	n/a	0.4	Malta	n/a	3.6
Czech Republic	0.5%	0.6	Netherlands	15.0%	36.4
Denmark	4.2%	3.8	Poland	0.5%	0.2
Estonia	0.3%	0.7	Portugal	5.7%	12.5
Finland	6.9%	2.8	Romania	0.9%	0.4
France	2.8%	2.8	Slovakia	0.4%	1.1
Germany	3.0%	17.6	Slovenia	0.9%	1.6
Greece	0.4%	0.1	Spain	1.4%	0.9
Hungary	1.9%	0.3	Sweden	11.3%	4.1
Ireland	4.1%	1.1	United Kingdom	3.1%	6.8

Source: EAFO, Eurostat, ERF

* Includes motorways, main and national roads, secondary and regional roads

Top 5: **MOST** charging points/100km of road

1. Netherlands (36.4)
2. Luxembourg (31.6)
3. Germany (17.6)
4. Portugal (12.5)
5. United Kingdom (6.8)

Top 5: **LEAST** charging points/100km of road

1. Greece (0.1)
2. Poland (0.2)
3. Lithuania (0.3)
4. Hungary (0.3)
5. Latvia (0.4)

KEY FINDINGS

- Four countries covering 27% of the EU's total surface area – the Netherlands, Germany, France and the UK – account for more than 75% of all EV charging points in the EU.
- On the other end of the spectrum, a vast country like Romania – roughly six times bigger than the Netherlands – only counts 344 charging points, or 0.2% of the EU total.
- All EU member states with less than 2 charging points per 100 km of road have an ECV market share of under 2%, except for Ireland.

4.2 – FUEL CELL VEHICLES (HYDROGEN)



Hydrogen (H2) refuelling points per country, plus percentage of EU total (2019)

Austria	5	3.6%	Italy	3	2.2%
Belgium	2	1.5%	Latvia	-	
Bulgaria	-		Lithuania	-	
Croatia	-		Luxembourg	-	
Cyprus	-		Malta	-	
Czech Republic	1	0.7%	Netherlands	3	2.2%
Denmark	10	7.3%	Poland	-	
Estonia	-		Portugal	-	
Finland	1	0.7%	Romania	-	
France	12	8.8%	Slovakia	-	
Germany	76	55.5%	Slovenia	-	
Greece	-		Spain	5	3.6%
Hungary	-		Sweden	5	3.6%
Ireland	-		United Kingdom	14	10.2%
			EU total	137	

Source: EAFO

Top 5: Countries with MOST hydrogen points

1. Germany (76)
2. United Kingdom (14)
3. France (12)
4. Denmark (10)
5. Spain (5)

Rollout of hydrogen (H2) refuelling points – Trend over time in the EU (2019)

EU total	2014	2015	2016	2017	2018	2019	% 16/19
H2 filling stations	0	0	42	47	47	137	+226.2%

Source: EAFO

KEY FINDINGS

- There were 137 hydrogen filling stations available across 12 EU countries in 2019.
- 16 EU member states did not have a single hydrogen filling station.
- Over half of all filling stations for fuel cell cars and vans (76) are located in Germany.

4.3 – NATURAL GAS VEHICLES (CNG + LNG)



CNG + LNG refuelling points per country, plus percentage of EU total (2019)

Austria	154	4.1%	Italy	1,377	36.8%
Belgium	146	3.9%	Latvia	2	0.1%
Bulgaria	113	3.0%	Lithuania	5	0.1%
Croatia	2	0.1%	Luxembourg	2	0.1%
Cyprus	-	0.0%	Malta	-	0.0%
Czech Republic	208	5.6%	Netherlands	201	5.4%
Denmark	17	0.5%	Poland	28	0.7%
Estonia	18	0.5%	Portugal	17	0.5%
Finland	55	1.5%	Romania	3	0.1%
France	135	3.6%	Slovakia	13	0.3%
Germany	852	22.8%	Slovenia	6	0.2%
Greece	17	0.5%	Spain	126	3.4%
Hungary	21	0.6%	Sweden	208	5.6%
Ireland	1	0.0%	United Kingdom	16	0.4%
				EU total	3,743

Source: EAF0

Top 5: Countries with MOST CNG/LNG stations

1. Italy (1,377)
2. Germany (852)
3. Czech Republic (208)
4. Sweden (208)
5. Netherlands (201)

Top 5: Countries with LEAST CNG/LNG stations

1. Cyprus (0)
2. Malta (0)
3. Ireland (1)
4. Luxembourg (2)
5. Latvia (2)

Rollout of CNG + LNG refuelling points – Trend over time in the EU (2019)

EU total	2014	2015	2016	2017	2018	2019	% 14/19
CNG + LNG stations	2,862	3,041	3,202	3,236	3,364	3,743	+30.8%

Source: EAF0

KEY FINDINGS

- There are some 3,700 natural gas filling stations across the EU, up 30.8% since 2014.
- Nearly two-thirds of all CNG and LNG filling points in the EU are concentrated in two countries alone: Italy (36.8%) and Germany (22.8%).
- Two EU member states do not have a single natural gas filling station (Cyprus and Malta).



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