

2021  
PROGRESS  
REPORT

# MAKING THE TRANSITION TO ZERO-EMISSION MOBILITY

Enabling factors for alternatively-powered  
cars and vans in the European Union

# EXECUTIVE SUMMARY<sup>1</sup>

## 1. MARKET UPTAKE ALTERNATIVELY-POWERED CARS AND VANS

- 5.4% of all cars sold in 2020 were battery electric (+5.1 percentage points since 2014).
- 5.1% of total car sales were plug-in hybrids (up 4.9 percentage points over seven years).
- 11.9% of new cars in the EU were hybrid electric last year (+10.5 percentage points).
- 0.6% of all cars sold were natural gas-powered (-0.4 percentage points since 2014).
- Fuel cell vehicles accounted for a small share (0.01%) of total EU car sales in 2020.
- 4.2% of new van sales were alternatively-powered last year.
- In 2020, 1.9% of all vans sold were battery electric (+1.3 percentage points over seven years), and 0.1% were plug-in hybrids (+0.1%).
- Hybrid electric vans made up 0.9% of the total market last year (+0.9% since 2014).

## 2. AFFORDABILITY

- The market uptake of electrically-chargeable vehicles (ECVs) is directly correlated to a country's GDP per capita, showing that affordability remains a major barrier to consumers.
- Countries with a total ECV market share of less than 3% have an average GDP of below €17,000, including EU member states in Central and Eastern Europe, but also Greece.
- 73% of all electric car sales are concentrated in just four Western European countries with some of the highest GDPs.

## 3. INFRASTRUCTURE AVAILABILITY

- Although there has been a strong growth in the deployment of charging infrastructure since 2014 (+750% from a very low base), the total number of charging points available across the EU (less than 225,000) falls far short of what is required.
- Under 25,000 of those points are suitable for fast charging (with a capacity of > 22kW), while 'normal' points account for the vast majority (about 200,000). Just 1 in 9 charging points in the EU is a fast charger.
- Based on Commission calculations, a further decrease of car CO<sub>2</sub> emissions to -50% in 2030 would require some 6 million public infrastructure points. This translates into a 27-fold increase in less than a decade.
- 70% all EU charging stations are concentrated in three countries in Western Europe: the Netherlands (66,665), France (45,751) and Germany (44,538). Together, these countries make up just 23% of the EU's total surface area.
- 124 hydrogen filling stations were available across 10 EU countries in 2020; 17 member states did not have any at all.
- The EU counts some 4,000 natural gas filling stations, up 31.6% since 2015. Two-thirds of these are concentrated in two countries alone (Italy and Germany).

1. Figures cited here are for the full year 2020 and chart progress over the past seven years (as compared with full year 2014).

# INTRODUCTION

## THE CONTEXT

In April 2019, 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 set for vans was -31%.

This year – as part of its ‘Fit for 55’ package – the European Commission is reviewing the Regulation, reporting to the European Parliament and Council on the progress made towards reaching the CO2 targets, and proposing further reductions. As part of the same package, the Commission is also publishing its proposal for a review of the Alternative Fuels Infrastructure Directive (AFID).

## THE PURPOSE OF THIS REPORT

The auto industry’s investments in alternatively-powered vehicles are paying off: in 2020 more than one in 10 cars registered in the EU was electrically chargeable. However, this positive trend can only be sustained if governments start making matching investments in infrastructure, and put in place meaningful and sustainable incentives.

The European Automobile Manufacturers’ Association (ACEA) publishes this statistical report – now in its fourth edition – on an annual basis in order to monitor the availability of infrastructure and purchase incentives. The aim is to track progress on these key ‘enabling factors’ for zero-emission vehicles over time.

The report also makes a number of correlations, analysing the influence of certain factors – such as national income or the number of charging points per 100km of road – on the market uptake of alternatively-powered vehicles.

It provides a factual, data-driven picture of progress, bringing together all available data sources (ACEA, EAFO, EEA, Eurostat, IHS Markit). In all cases it is the latest available full-year data for the European Union.

# 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.

## 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.

#### 1A. — 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.



#### 1B. — 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 (H<sub>2</sub>) 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 CO<sub>2</sub> 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 CO<sub>2</sub> reduction levels.

## THE 'ELECTRIFIED' CAR MARKET EXPLAINED

	Electrically-chargeable cars 10.5% of EU car sales in 2020	Hybrid electric cars 11.9% of car sales	Fuel cell cars 0.01% of car sales	
	 <b>BEVs</b> Battery electric	 <b>PHEVs</b> Plug-in hybrid electric	 <b>HYBRIDS</b> Full and mild hybrids	 <b>FCEVs</b> Fuel cell electric
<b>Tailpipe CO<sub>2</sub> reduction</b> (On average)	100%	50-75%	Mild: 10-20% Full: 20-40%	100%
<b>Share of 'electrified' cars</b>	24.1%	22.8%	53.1%	0.03%

Source: ACEA

# MARKET UPTAKE

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



Trends over time in the EU (in units, 2014-2020)

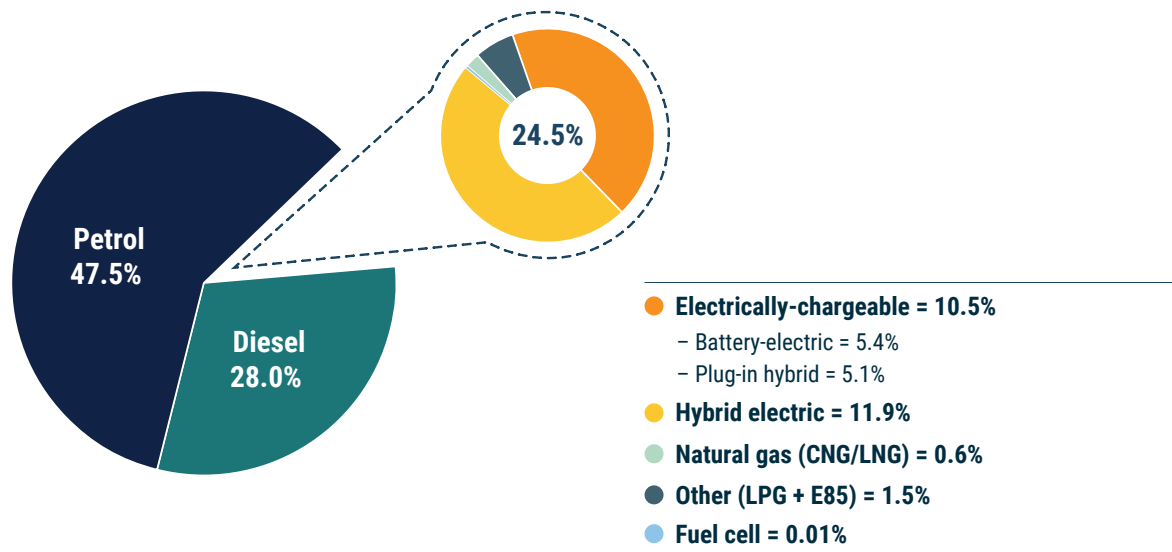
	2014	2015	2016	2017	2018	2019	2020
Petrol	4,174,069	4,752,707	5,481,409	6,205,957	7,055,394	7,514,812	4,713,778
Diesel	5,359,263	5,762,740	5,890,470	5,551,109	4,655,747	4,106,951	2,778,817
Electrically-chargeable	55,356	119,323	118,542	168,901	240,347	387,325	1,045,082
→ Battery electric	30,820	49,231	53,215	84,070	131,954	247,371	538,023
→ Plug-in hybrids	24,536	70,092	65,327	84,831	108,393	139,954	507,059
Hybrid electric	139,280	174,695	226,940	359,093	503,618	742,084	1,182,792
Fuel cell	32	165	113	218	230	483	749
Natural gas (CNG)	97,214	78,511	57,609	49,553	65,023	68,129	55,028
Other (LPG + E85)	141,452	140,321	118,430	156,710	164,270	186,141	153,344

Source: ACEA

### KEY FINDINGS

- After reaching 7.5 million cars registered in 2019, petrol car demand dropped to 4.7 million units in 2020 (just 539,709 units more than in 2014).
- The number of diesel cars sold dropped by almost 2.6 million units over the same timeframe.
- Electrically-chargeable cars – ie battery electric cars and plug-in hybrids combined – increased by a total of almost 1 million units (to 1,045,082) over the seven-year period.
- Sales of battery electric cars more than doubled between 2019 and 2020.
- During the same period, sales of plug-in hybrids more than tripled.
- 1 million more hybrid electric vehicles were sold in 2020 compared to 2014.
- Registrations of fuel cell cars increased by 55% in 2020, going from 483 in 2019 to 749 last year.

## NEW CARS IN THE EU, BY FUEL TYPE (2020)



Source: ACEA

### KEY FINDINGS

- Overall in 2020, conventional fuel types – petrol and diesel combined – still dominated EU car sales in terms of market share (75.5%).
- Almost a quarter of all cars sold were alternatively powered.
- Electrically-chargeable cars accounted for 10.5% of all new car registrations in the European Union in 2020, compared to a 3.0% market share the year before.
  - Battery electric cars made up 5.4% of all new car sales, with plug-in hybrids at 5.1%.
- Hybrid vehicles represented 11.9% of total passenger car sales across the EU, up from 5.7% in 2019.

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



Trends over time in the EU (in units, 2014-2020)














	2014	2015	2016	2017	2018	2019	2020	Change 14/20
Electrically-chargeable	0.6%	1.1%	1.0%	1.4%	1.9%	3.0%	10.5%	+10.0% points
→ Battery electric	0.3%	0.4%	0.4%	0.7%	1.0%	1.9%	5.4%	+5.1% points
→ Plug-in hybrids	0.2%	0.6%	0.5%	0.7%	0.9%	1.1%	5.1%	+4.9% points
Hybrid electric	1.4%	1.6%	1.9%	2.9%	4.0%	5.7%	11.9%	+10.5% points
Fuel cell	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	+0.01% points
Natural gas (CNG)	1.0%	0.7%	0.5%	0.4%	0.5%	0.5%	0.6%	-0.4% points
Other (LPG + E85)	1.4%	1.3%	1.0%	1.3%	1.3%	1.4%	1.5%	+0.1% points

Source: ACEA













## KEY FINDINGS

- The electrically-chargeable car market grew by 10.0 percentage points over the last seven years.
  - Battery electric sales progressed by 5.1 percentage points over this timeframe, with plug-in hybrids up 4.9 points.
- During the same period, the share of hybrid electric vehicles increased by 10.5 percentage points.
- Hybrid electric cars make up more than half the 'electrified' car market, with a market share over twice that of battery electric cars.
- 0.6% of all cars sold in 2020 were natural gas-powered (-0.4 percentage points since 2014).
- Although sales doubled between 2019 and 2020, fuel cell cars only account for a small share (0.01%) of EU sales.

## MARKET SHARE OF ALTERNATIVELY-POWERED CARS, BY COUNTRY (2020)

	 AT	 BE	 HR	 CY	 CZ	 DK	 EE	 FI	 FR	 DE	 GR	 HU	 IE
<b>BEVs</b>	6.4%	3.5%	1.5%	0.5%	1.6%	7.2%	1.5%	4.4%	6.7%	6.7%	0.8%	2.4%	4.5%
<b>PHEVs</b>	3.1%	7.3%	0.4%	0.0%	0.9%	9.2%	0.3%	13.7%	4.5%	6.9%	1.8%	2.3%	2.8%
<b>FCEVs</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>HEVs</b>	10.5%	3.7%	6.0%	3.0%	5.1%	4.9%	11.7%	19.4%	10.2%	11.2%	14.5%	24.8%	12.4%
<b>NGVs</b>	0.2%	0.7%	0.0%	0.0%	0.6%	0.0%	3.5%	1.9%	0.0%	0.2%	1.7%	0.0%	0.0%
<b>OTHER</b>	0.0%	0.2%	2.0%	0.0%	0.6%	0.0%	0.0%	0.0%	1.0%	0.2%	0.5%	0.2%	0.0%

	 IT	 LV	 LT	 LU	 NL	 PL	 PT	 RO	 SK	 SI	 ES	 SE
<b>BEVs</b>	2.4%	2.0%	1.1%	5.5%	20.5%	0.9%	5.4%	2.2%	1.2%	3.1%	2.1%	9.6%
<b>PHEVs</b>	2.0%	0.6%	0.0%	5.9%	4.5%	1.0%	8.2%	0.0%	0.7%	0.1%	2.7%	22.6%
<b>FCEVs</b>	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>HEVs</b>	16.1%	10.7%	20.6%	8.4%	13.1%	14.5%	8.2%	11.3%	9.9%	3.2%	16.1%	9.9%
<b>NGVs</b>	2.3%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.4%	1.2%
<b>OTHER</b>	6.8%	0.7%	0.0%	0.0%	0.6%	2.1%	1.2%	7.3%	0.7%	0.3%	1.2%	0.0%

**BEVs** = Battery-electric  
**PHEVs** = Plug-in hybrid

**HEVs** = Hybrid electric  
**FCEVs** = Fuel cell

**NGVs** = Natural gas (CNG/LNG)  
**OTHER** = Other alternatively powered (LPG+E85)

Source: ACEA

## KEY FINDINGS

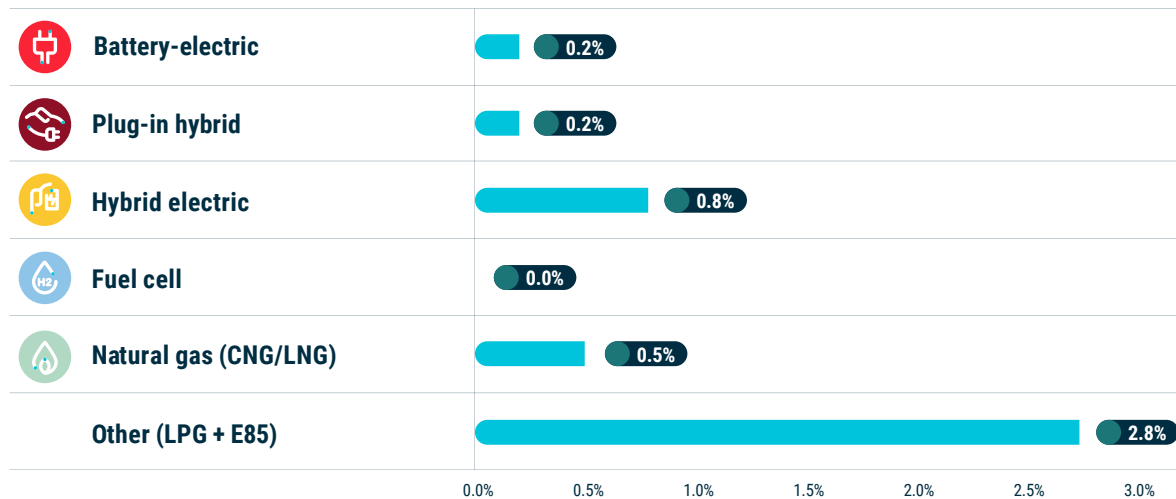
- 17 member states have a battery electric car (BEV) market share of 5% and under.
- 8 EU member states have a BEV market share less than 2%.
- Only 8 countries have a BEV market share of over 5%.
- Hybrid electric cars dominate the alternatively-powered car market in most countries.
- 15 member states have a HEV share of over 10%.



### 1.A.3. CARS ON THE ROAD



## SHARE OF ALTERNATIVELY-POWERED VEHICLES IN THE EU PASSENGER CAR FLEET (2019)<sup>2</sup>



Source: ACEA

### KEY FINDINGS

- 0.2% of all passenger cars on EU roads today are battery electric.
- 0.2% of all cars in circulation are plug-in hybrid.
- Hybrid electric vehicles make up 0.8% of all cars in the European Union.
- Passenger cars fuelled by natural gas (CNG) account for 0.5% of the EU car fleet.
- Other alternatively-powered vehicles account for 2.8% of all passenger cars on EU roads, of which LPG (2.7%) 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 (in units, 2014-2020)

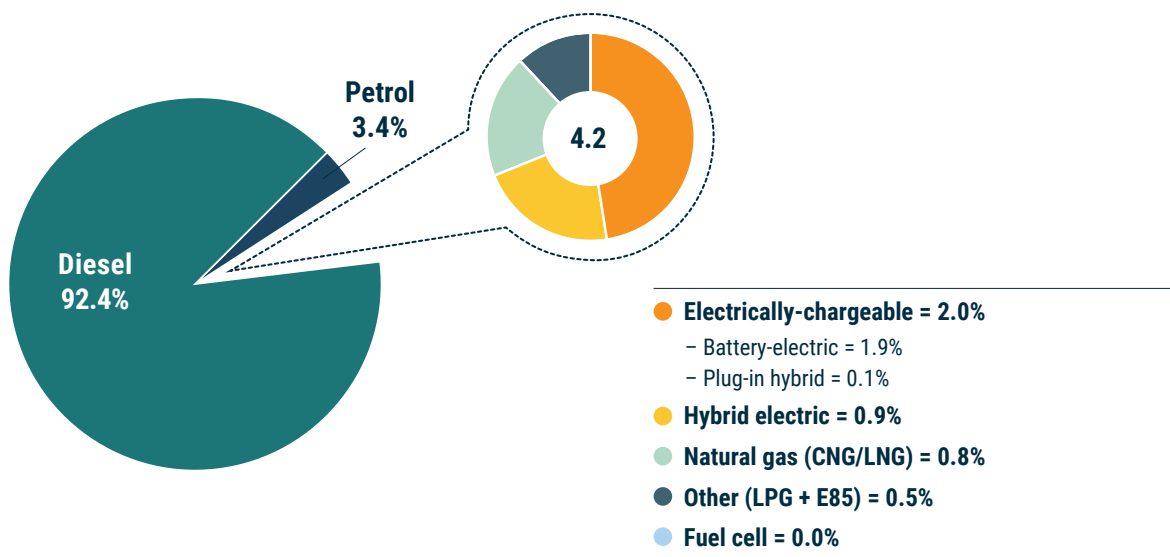
	2014	2015	2016	2017	2018	2019	2020
Petrol	30,432	27,178	31,270	38,999	77,567	89,925	49,056
Diesel	1,098,163	1,092,028	1,221,324	1,273,138	1,557,479	1,605,325	1,329,718
Electrically-chargeable	6,951	7,903	10,260	13,045	19,945	22,667	28,583
→ Battery electric	6,951	7,903	10,260	13,045	19,853	22,404	27,533
→ Plug-in hybrids	0	0	0	0	92	263	1,050
Hybrid electric	28	2,436	251	50	1,762	4,617	12,698
Fuel cell	0	0	1	0	38	1	14
Natural gas (CNG)	8,438	8,212	10,163	8,246	10,608	14,263	11,786
Other (LPG + E85)	2,390	3,569	9,377	6,085	9,829	13,160	7,560

Source: ACEA

## KEY FINDINGS

- Between 2014 and 2020, the market for petrol vans increased by 18,624, to reach 49,056 units in 2020. However, this was almost half the amount sold in 2019.
- Sales of diesel vans increased by 231,555 units (to 1.3 million) over the same timeframe.
- The number of battery electric vans sold in the EU went up by some 20,600 over this seven-year period, to reach 27,533 BEV vans last year.
- 12,670 more hybrid electric vans were sold in 2020 than in 2014.
- 14 fuel cell electric vans were sold across the European Union last year.

## NEW VANS IN THE EU, BY FUEL TYPE (2020)



Source: ACEA

## KEY FINDINGS

- Overall in 2020, 92.4% of all new light commercial vehicles registered in the EU ran on diesel, a slight increase compared to 2019 (91.7%).
- Petrol accounted for 3.4% of all new vans sold last year (down from 5.1% in 2019).
- 4.2% of all new light commercial vehicles were alternatively-powered in 2020 (+1.1 percentage points on the previous year).
- 1.9% of all vans sold in 2020 were battery, 0.9% hybrid electric, while only 0.1% were plug-in hybrids.

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



Trends over time in the EU (market share, 2014-2020)

	2014	2015	2016	2017	2018	2019	2020	Change 14/20
Electrically-chargeable	0.6%	0.7%	0.8%	1.0%	1.2%	1.3%	2.0%	+1.4% points
→ Battery electric	0.6%	0.7%	0.8%	1.0%	1.2%	1.3%	1.9%	+1.3% points
→ Plug-in hybrids	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	+0.1% points
Hybrid electric	0.0%	0.2%	0.0%	0.0%	0.1%	0.3%	0.9%	+0.9% points
Fuel cell	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0
Natural gas (CNG)	0.7%	0.7%	0.8%	0.6%	0.6%	0.8%	0.8%	+0.1% points
Other (LPG + E85)	0.2%	0.3%	0.7%	0.5%	0.6%	0.8%	0.5%	+0.3% points

Source: ACEA (2018-2020), EEA (2014-2017)

### KEY FINDINGS

- The battery electric van market grew by 1.3 percentage points over the last seven years.
- During the same period, the share of hybrid electric vehicles increased by 0.9 percentage points.
- 0.8% of all vans sold in 2020 were natural gas-powered, or just 0.1 percentage points more than in 2014.

## MARKET SHARE OF ALTERNATIVELY-POWERED VANS, BY COUNTRY (2020)

	AT	BE	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU
BEVs	1.8%	0.6%	0.4%	0.0%	0.3%	1.5%	0.4%	1.0%	2.2%	3.2%	0.2%	0.6%
PHEVs	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.3%	0.1%	0.1%	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%
HEVs	0.1%	0.1%	0.0%	0.0%	0.0%	1.3%	0.0%	0.9%	0.6%	0.4%	0.3%	0.1%
NGVs	0.2%	1.4%	0.0%	0.0%	3.6%	0.0%	0.3%	0.5%	0.4%	0.3%	2.7%	0.4%
OTHER	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%

	IE	IT	LV	LU	NL	PL	PT	RO	SK	SI	ES	SE
BEVs	3.3%	0.7%	0.7%	1.4%	2.8%	0.4%	0.9%	0.6%	0.5%	0.3%	1.3%	6.4%
PHEVs	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	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%
HEVs	0.1%	3.3%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.0%	0.1%	2.0%	0.3%
NGVs	0.0%	3.0%	0.9%	0.0%	0.5%	0.1%	0.0%	0.0%	0.4%	0.0%	0.9%	2.4%
OTHER	0.0%	1.5%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.5%

BEVs = Battery-electric  
PHEVs = Plug-in hybrid

HEVs = Hybrid electric  
FCEVs = Fuel cell

NGVs = Natural gas (CNG/LNG)  
OTHER = Other alternatively powered (LPG+E85)

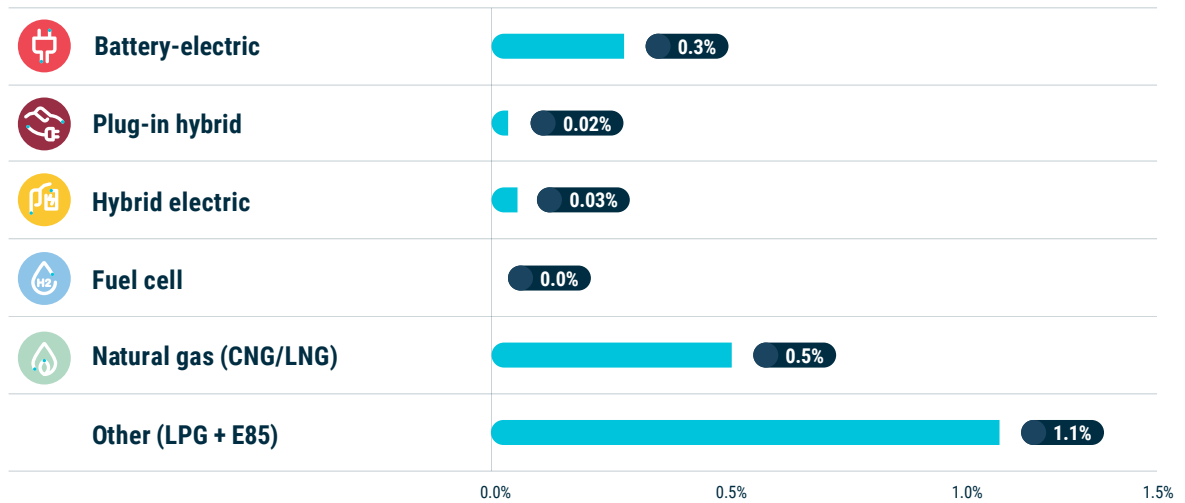
Source: ACEA

### KEY FINDINGS

- Battery electric vans have a market share of over 2% in only five EU countries.
- 15 member states have a battery electric van market share of 1% and under.
- Italy, Spain and Denmark are the only countries with a market share of hybrid electric vans of above 1%.
- Almost 75% of sales of vans running on natural gas are concentrated in four countries: Italy (4,756 units), France (1,546), Spain (1,468) and Belgium (990).

1.B.3. VANS ON THE ROAD<sup>3</sup>

## SHARE OF ALTERNATIVELY-POWERED VEHICLES IN THE EU VAN FLEET (2019)<sup>3</sup>



Source: ACEA

### KEY FINDINGS

- 0.3% of all light commercial vehicles on EU roads today are battery electric.
- 0.02% of all vans in circulation in the EU are plug-in hybrid.
- Hybrid electric vehicles make up 0.03% of all vans in the European Union.
- Vans fuelled by natural gas account for 0.5% of the total EU van fleet.

# AFFORDABILITY

## 2.1. NATIONAL INCOME AND ELECTRICALLY-CHARGEABLE CARS



### ELECTRIC CAR SALES AND NATIONAL INCOME

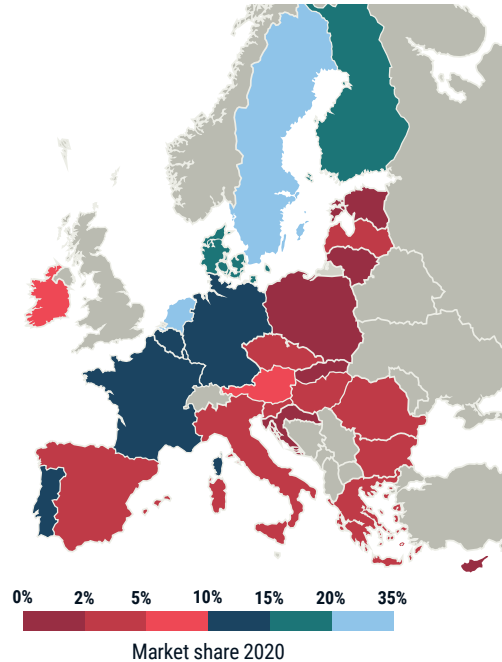
Electric cars < 3% of total sales  
= average GDP < €17,000

Electric cars > 15% of total sales  
= average GDP > €46,000

73% of all electric cars are sold in just  
4 countries (with some of the highest GDPs)

#### Top 5: Lowest market share in 2020

Cyprus	Lithuania	Estonia	Croatia	Poland
<b>0.47%</b>	<b>1.13%</b>	<b>1.82%</b>	<b>1.86%</b>	<b>1.89%</b>
42 ECVs	453 ECVs	425 ECVs	676 ECVs	8,099 ECVs
GDP €23,580	GDP €17,460	GDP €20,440	GDP €12,130	GDP €13,600



'Electric car' = electrically-chargeable vehicles (battery electric vehicles + plug-in hybrid electric vehicles)  
Source: ACEA, EUROSTAT

#### Top 5: Countries with the **LOWEST** ECV market share in the EU (and their GDP), 2020

1. Cyprus – 0.5% (GDP of €23,580)
2. Lithuania – 1.1% (GDP of €17,460)
3. Estonia – 1.8 % (GDP of €20,440)
4. Croatia – 1.9% (GDP of €12,130)
5. Poland – 1.9% (GDP of €13,600)

#### Top 5: Countries with the **HIGHEST** ECV market share in the EU (and their GDP), 2020

1. Sweden – 32.2% (GDP of €45,610)
2. Netherlands – 25.0% (GDP of €45,790)
3. Finland – 18.1% (GDP of €42,940)
4. Denmark – 16.4% (GDP of €53,470)
5. Germany – 13.5% (GDP of €40,070)

## **KEY FINDINGS**

- The market uptake of electrically-chargeable vehicles (ECVs) is directly correlated to a country's GDP per capita, showing that affordability remains a major barrier to consumers.
- Across the EU, 10.5% of all new cars registered in 2020 were electrically-chargeable.
- However, 10 EU member states still have an ECV market share lower than 3%.
- Countries with a total ECV market share of less than 3% have an average GDP of below €17,000, including new EU member states in Central and Eastern Europe, but also Greece.
- 73% of all electric car sales are concentrated in just four Western European countries with some of the highest GDPs.
- On the other end of the spectrum, in Cyprus only 42 electric cars were sold in 2020 (representing a market share of 0.5%).
- 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.

# INFRASTRUCTURE AVAILABILITY



## 3.1. – ELECTRICALLY-CHARGEABLE VEHICLES

Both types of electrically-chargeable vehicles (ECVs) require appropriate charging 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 (by country plus percentage of EU total, 2020)

Austria	8,071	3.6%	Italy	13,073	5.8%
Belgium	8,481	3.8%	Latvia	291	0.1%
Bulgaria	194	0.1%	Lithuania	174	0.1%
Croatia	670	0.3%	Luxembourg	1,061	0.5%
Cyprus	70	0.0%	Malta	96	0.0%
Czech Republic	1,200	0.5%	Netherlands	66,665	29.7%
Denmark	3,254	1.5%	Poland	1,691	0.8%
Estonia	399	0.2%	Portugal	2,470	1.1%
Finland	3,728	1.7%	Romania	493	0.2%
France	45,751	20.4%	Slovakia	924	0.4%
Germany	44,538	19.9%	Slovenia	610	0.3%
Greece	275	0.1%	Spain	7,407	3.3%
Hungary	1,291	0.6%	Sweden	10,370	4.6%
Ireland	990	0.4%			
<b>EU TOTAL = 224,237</b>					

Source: EAFO

## DISTRIBUTION OF ELECTRIC CAR CHARGING POINTS ACROSS THE EU

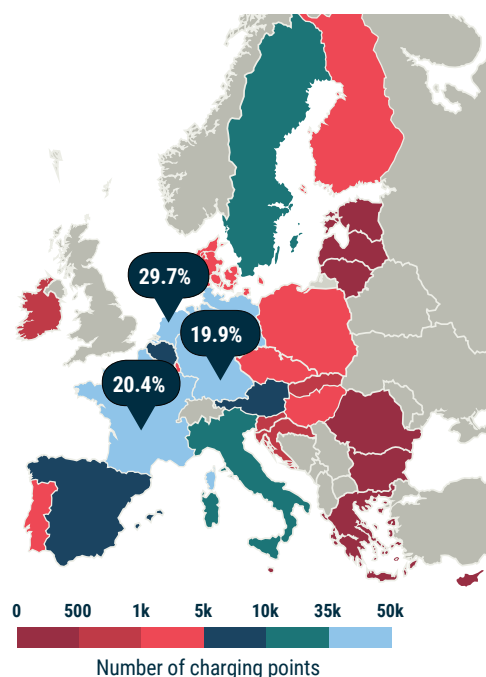
**70% of all charging points:  
Located in just 3 EU countries**

**29.7% Netherlands**      **20.4% France**  
**19.9% Germany**

**Top 5: Fewest charging points in 2020**

**Cyprus**      **Malta**      **Lithuania**  
**70**      **96**      **174**

**Bulgaria**      **Greece**  
**194**      **275**



'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 (66,665)
2. France (45,751)
3. Germany (44,538)
4. Italy (13,073)
5. Sweden (10,370)

### Top 5: Countries with LEAST ECV points

1. Cyprus (70)
2. Malta (96)
3. Lithuania (174)
4. Bulgaria (194)
5. Greece (275)

### Rollout of charging points for ECVs - Trend over time in the EU (2020)

	EU total	2014	2015	2016	2017	2018	2019	2020	% 14/20
ECV charging points		26,391	49,363	77,038	109,896	123,727	171,287	224,237	+750%

Source: EAFO

### KEY FINDINGS

- Although there has been a strong growth in the deployment of ECV infrastructure since 2014 (+750% from a low base), the total number of charging points available across the entire EU (less than 225,000) falls far short of what is required.
- Based on Commission calculations, a further decrease of car CO2 emissions to -50% in 2030 would require some 6 million publicly available infrastructure points. This translates into a 27-fold increase in less than a decade.
- Of the 224,237 charging points<sup>4</sup> available in the European Union today, almost 30% are located in the Netherlands (66,665), with another 20.4% in France (45,751) and 19.9% in Germany (44,538).
- The gap between Germany, the number three country, and number four (Italy at 5.8%) is wide, and the share of chargers decreases rapidly thereafter.
- The Netherlands – the country with the most infrastructure – has almost 1,000 times more charging points than the country with the least infrastructure (Cyprus, with 70 charging points).

### Normal and fast charging points (by country, 2020)

	Normal (≤ 22kW)	Fast (> 22kW)		Normal (≤ 22kW)	Fast (> 22kW)
Austria	6,724	1,347	Italy	11,842	1,231
Belgium	8,006	475	Latvia	56	235
Bulgaria	118	76	Lithuania	74	100
Croatia	483	187	Luxembourg	1,051	10
Cyprus	46	24	Malta	96	0
Czech Republic	590	610	Netherlands	64,236	2,429
Denmark	2,699	555	Poland	1,039	652
Estonia	223	176	Portugal	1,976	494
Finland	3,244	484	Romania	317	176
France	42,000	3,751	Slovakia	656	268
Germany	37,213	7,325	Slovenia	481	129
Greece	253	22	Spain	5,279	2,128
Hungary	1,008	283	Sweden	8,804	1,566
Ireland	736	254			
<b>EU TOTAL =</b>				<b>199,250</b>	<b>24,987</b>

Source: EAFO

4. Includes all types of charging points, many not suitable for fast charging (eg ordinary, low-capacity power sockets).



## KEY FINDINGS

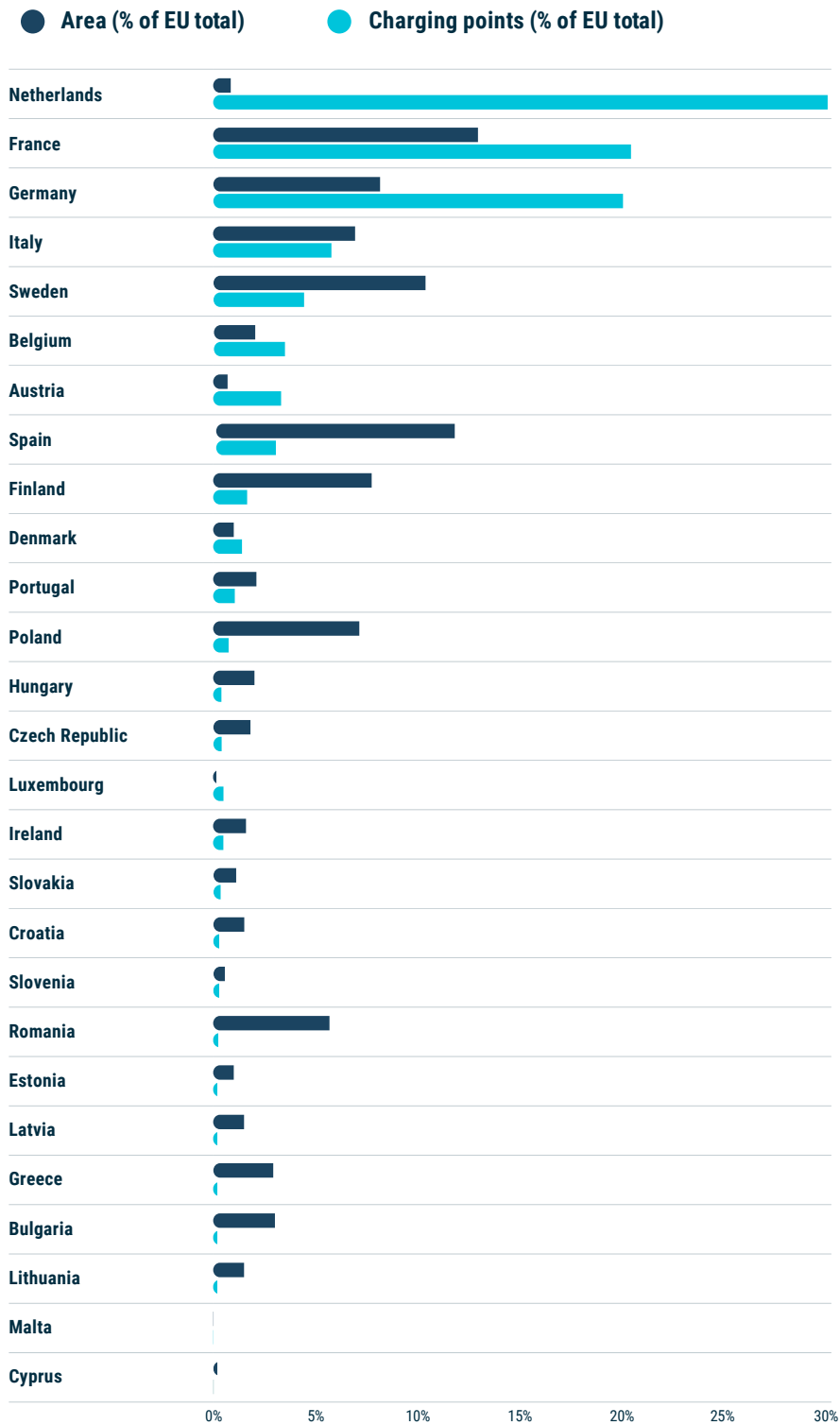
- Of the 224,237 charging points available across the EU today, only 24,987 are suitable for fast charging (with a capacity of > 22kW), while 'normal' points ( $\leq$  22kW) account for the vast majority (199,250).
- The so-called 'normal' charging points also include many common-or-garden, low-capacity power sockets that are not suitable for charging vehicles at an acceptable speed.
- Just 1 in 9 charging points in the EU is a fast charger today.

Correlation ECV infrastructure and surface area (by country, 2020)

	% of total EU ECV points	% of total EU area		% of total EU ECV points	% of total EU area
Austria	3.6%	2.1%	Italy	5.8%	7.4%
Belgium	3.8%	0.8%	Latvia	0.1%	1.6%
Bulgaria	0.1%	2.7%	Lithuania	0.1%	1.6%
Croatia	0.3%	1.4%	Luxembourg	0.5%	0.1%
Cyprus	0.0%	0.2%	Malta	0.0%	0.0%
Czech Republic	0.5%	1.9%	Netherlands	29.7%	0.8%
Denmark	1.5%	1.0%	Poland	0.8%	7.7%
Estonia	0.2%	1.1%	Portugal	1.1%	2.3%
Finland	1.7%	7.6%	Romania	0.2%	5.8%
France	20.4%	13.7%	Slovakia	0.4%	1.2%
Germany	19.9%	8.7%	Slovenia	0.3%	0.5%
Greece	0.1%	3.2%	Spain	3.3%	12.5%
Hungary	0.6%	2.3%	Sweden	4.6%	10.2%
Ireland	0.4%	1.7%			

Source: EAFO, WORLD BANK

## ELECTRIC CAR CHARGING INFRASTRUCTURE VERSUS AREA, PER COUNTRY (2020)



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

Source: EAFO, WORLD BANK

ECV market share / charging points per 100km of road\* (by country, 2020)

	ECV share	Charging points per 100km		ECV share	Charging points per 100km
Austria	9.5%	6.1	Italy	4.3%	5.1
Belgium	10.7%	5.5	Latvia	2.7%	0.5
Bulgaria	-	0.8	Lithuania	1.1%	0.2
Croatia	1.9%	2.3	Luxembourg	11.4%	34.5
Cyprus	0.5%	0.5	Malta	-	3.4
Czech Republic	2.5%	0.9	Netherlands	25.0%	47.5
Denmark	16.4%	4.4	Poland	1.9%	0.4
Estonia	1.8%	0.7	Portugal	13.5%	14.9
Finland	18.1%	3.3	Romania	2.2%	0.5
France	11.2%	4.1	Slovakia	1.9%	2.0
Germany	13.5%	19.4	Slovenia	3.1%	1.6
Greece	2.6%	0.2	Spain	4.8%	1.1
Hungary	4.7%	0.6	Sweden	32.2%	5.0
Ireland	7.4%	1.0			

Source: ACEA, EAFO, ERF, EUROSTAT

\* Includes motorways, state, provincial and communal roads

### Top 5: MOST charging points per 100km of road

1. Netherlands (47.5)
2. Luxembourg (34.5)
3. Germany (19.4)
4. Portugal (14.9)
5. Austria (6.1)

### Top 5: LEAST charging points per 100km of road

1. Lithuania (0.2)
2. Greece (0.2)
3. Poland (0.4)
4. Latvia (0.5)
5. Romania (0.5)

## KEY FINDINGS

- Three countries covering 23% of the EU's total surface area – the Netherlands, France and Germany – account for 70% of all EV charging points in the EU.
- The other 30% of infrastructure is scattered throughout the remaining 77% of the region.
- A vast country like Romania – roughly six times bigger than the Netherlands – only counts 493 charging points, or 0.2% of the EU total.
- 10 countries do not even have 1 charging point for every 100km of road.
- These countries with less than 1 charging point per 100km of road have an ECV market share of under 3% (except for Hungary).



### 3.2. FUEL CELL VEHICLES (HYDROGEN)

Hydrogen (H<sub>2</sub>) refuelling points (by country plus percentage of EU total, 2020)

Austria	5	4.0%	Italy	1	0.8%
Belgium	2	1.6%	Latvia	-	-
Bulgaria	-	-	Lithuania	-	-
Croatia	-	-	Luxembourg	-	-
Cyprus	-	-	Malta	-	-
Czech Republic	1	0.8%	Netherlands	5	4.0%
Denmark	6	4.8%	Poland	-	-
Estonia	-	-	Portugal	-	-
Finland	-	-	Romania	-	-
France	14	11.3%	Slovakia	-	-
Germany	83	66.9%	Slovenia	-	-
Greece	-	-	Spain	3	2.4%
Hungary	-	-	Sweden	4	3.2%
Ireland	-	-			
<b>EU TOTAL = 124</b>					

Source: EAFO

#### Top 5: Countries with MOST hydrogen points

1. Germany (83)
2. France (14)
3. Denmark (6)
4. Austria (5)
5. Netherlands (5)

Rollout of hydrogen (H<sub>2</sub>) refuelling points – Trend over time in the EU (2020)

	EU total	2014	2015	2016	2017	2018	2019	2020	%16/20
H <sub>2</sub> filling stations		0	0	35	39	39	113	124	+254.3%

Source: EAFO

#### KEY FINDINGS

- There were 124 hydrogen filling stations available across 10 EU countries in 2020.
- 17 EU member states did not have a single hydrogen filling station.
- More than two-third of all filling stations for fuel cell cars and vans (83) are located in Germany.



### 3.3. – NATURAL GAS VEHICLES (CNG + LNG)

CNG + LNG refuelling points (by country plus percentage of EU total, 2020)

Austria	147	3.7%	Italy	1,476	37.1%
Belgium	168	4.2%	Latvia	3	0.1%
Bulgaria	121	3.0%	Lithuania	6	0.2%
Croatia	4	0.1%	Luxembourg	2	0.1%
Cyprus	-	-	Malta	-	-
Czech Republic	211	5.3%	Netherlands	211	5.3%
Denmark	17	0.4%	Poland	28	0.7%
Estonia	20	0.5%	Portugal	23	0.6%
Finland	57	1.4%	Romania	3	0.1%
France	175	4.4%	Slovakia	16	0.4%
Germany	860	21.6%	Slovenia	6	0.2%
Greece	20	0.5%	Spain	155	3.9%
Hungary	22	0.6%	Sweden	221	5.6%
Ireland	2	0.1%			
<b>EU TOTAL = 3,974</b>					

Source: EAFO

#### Top 5: Countries with MOST CNG/LNG stations

1. Italy (1,476)
2. Germany (860)
3. Sweden (221)
4. Czech Republic (211)
5. Netherlands (211)

#### Top 5: Countries with LEAST CNG/LNG stations

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

Rollout of CNG + LNG refuelling points – Trend over time in the EU (2020)

	EU total	2014	2015	2016	2017	2018	2019	2020	%15/20
CNG + LNG stations	0	3,020	3,171	3,221	3,349	3,727	3,974	+31.6%	

Source: EAFO

#### KEY FINDINGS

- There are almost 4,000 natural gas filling stations across the EU, up 31.6% since 2015.
- Nearly 60% of all CNG and LNG filling points in the EU are concentrated in two countries alone: Italy (37.1%) and Germany (21.6%).
- Two EU member states do not have a single natural gas filling station (Cyprus and Malta).



DRIVING MOBILITY FOR EUROPE

ACEA  
European Automobile  
Manufacturers' Association

Avenue des Nerviens 85  
1040 Brussels, Belgium  
+32 2 732 55 50  
communications@acea.auto

[www.acea.auto](http://www.acea.auto)



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