

MARKET MONITOR

EUROPEAN VEHICLE MARKET AND CHARGING INFRASTRUCTURE DEVELOPMENT QUARTERLY: JANUARY-MARCH 2023



EUROPEAN PASSENGER CAR AND LIGHT COMMERCIAL VEHICLE REGISTRATIONS

New car registrations in Europe are up 17% in the first quarter of 2023 compared to 2022, with over 2,680,000 vehicles sold. The largest manufacturers and pools showed double-digit gains during this period. The Tesla-Honda-JLR pool continues to grow rapidly, with new registrations in the first quarter up 61% compared to 2022. At 13% of total new registrations, the average share of battery electric vehicles (BEVs) this quarter is down from 18% in the fourth quarter of last year. With the exceptions of Tesla-Honda-JLR and Volvo, up 11 and 4 percentage points, respectively, compared to 2022, there was a noteworthy drop in new BEV registrations in the first quarter of 2023. The share of plug-in hybrid vehicles (PHEVs) was also lower than in 2022, decreasing to an average of 7%, compared to 10% in 2022. The Mazda-Subaru-Suzuki-Toyota pool continues to have the lowest share of BEVs, at only 2% of total registrations, followed by Ford with 3%. Other than Volkswagen, with a minimal target gap of +2 g/km, all manufacturers are on track to reach their specific CO₂ targets for 2023, with average over-compliance of around 10 g/km.

Table 1. New passenger car registrations by manufacturer pool.

New car registrations				
	Q1/2023	vs. Q1/2022	2023 YTD	vs. 2022
Volkswagen	684,098	22%	684,098	22%
Stellantis	509,648	10%	509,648	10%
Renault-Nissan-Mitsubishi	348,436	25%	348,436	25%
Mazda-Subaru-Suzuki-Toyota	276,482	23%	276,482	23%
BMW	165,756	6%	165,756	6%
Mercedes-Benz	153,850	15%	153,850	15%
Ford	109,175	-1%	109,175	-1%
Hyundai	107,102	6%	107,102	6%
Kia	104,436	-1%	104,436	-1%
Tesla-Honda-JLR	102,879	61%	102,879	61%
Volvo	59,766	4%	59,766	4%
Other	59,069	112%	59,069	112%
ALL	2,680,697	17%	2,680,697	17%

Table 2. Share of plug-in hybrid and battery electric passenger cars by manufacturer pool.

Share of plug-in hybrid and battery electric cars						
	Q1/2023		2023 YTD		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Tesla-Honda-JLR	77%	7%	77%	7%	66%	5%
Volvo	33%	34%	33%	34%	29%	33%
Other	26%	19%	26%	19%	28%	23%
Mercedes-Benz	14%	18%	14%	18%	14%	22%
BMW	14%	15%	14%	15%	15%	19%
Hyundai	14%	5%	14%	5%	16%	8%
AVERAGE	13%	7%	13%	7%	13%	10%
Renault-Nissan-Mitsubishi	11%	2%	11%	2%	13%	4%
Volkswagen	10%	4%	10%	4%	12%	7%
Kia	10%	10%	10%	10%	13%	14%
Stellantis	9%	6%	9%	6%	11%	8%
Ford	3%	9%	3%	9%	5%	12%
Mazda-Subaru-Suzuki-Toyota	2%	3%	2%	3%	1%	4%

Table 3. New passenger car fleet average CO₂ emission level by manufacturer pool.

	Target gap	New car fleet average CO ₂ (in g/km)					
		Q1/2023	2023 YTD	Compliance credits	Status 2023	Target 2023	Target gap
		WLTP	WLTP	eco-innovations	WLTP	WLTP	WLTP
Tesla-Honda-JLR	-78%	30	30	0.2	30	136	-106
Volvo	-51%	65	65	0.2	65	132	-67
BMW	-12%	112	112	1.2	110	126	-16
Stellantis	-8%	111	111	1.4	110	119	-9
AVERAGE	-7%	111	111	1.0	110	120	-10
Mercedes-Benz	-5%	119	119	0.6	119	124	-5
Hyundai	-4%	108	108	0.4	107	112	-5
Mazda-Subaru-Suzuki-Toyota	-4%	113	113	0.6	113	117	-4
Kia	-3%	108	108	0.4	108	111	-3
Ford	-1%	123	123	1.5	122	123	-1
Renault-Nissan-Mitsubishi	-1%	111	111	1.0	110	110	0
Volkswagen	2%	125	125	1.0	124	122	2

Notes: All CO₂ values are estimates, see methodology section.

Registration shares of BEVs and PHEVs were the highest in Norway (90%) in the first quarter of 2023, followed by Iceland (57%), Sweden (56%), Finland (50%), the Netherlands (40%), Denmark (39%), Belgium (33%) and Luxembourg (28%). In contrast, Germany saw a significant drop in new BEVs and PHEVs in the first quarter of 2023, with BEV registration shares of 14% (down from 18% in 2022) and PHEV shares of 6% (down from 14% in 2022). This substantial change occurred after the reduction of government subsidies for BEVs and phaseout of subsidies for PHEVs at the end of 2022.

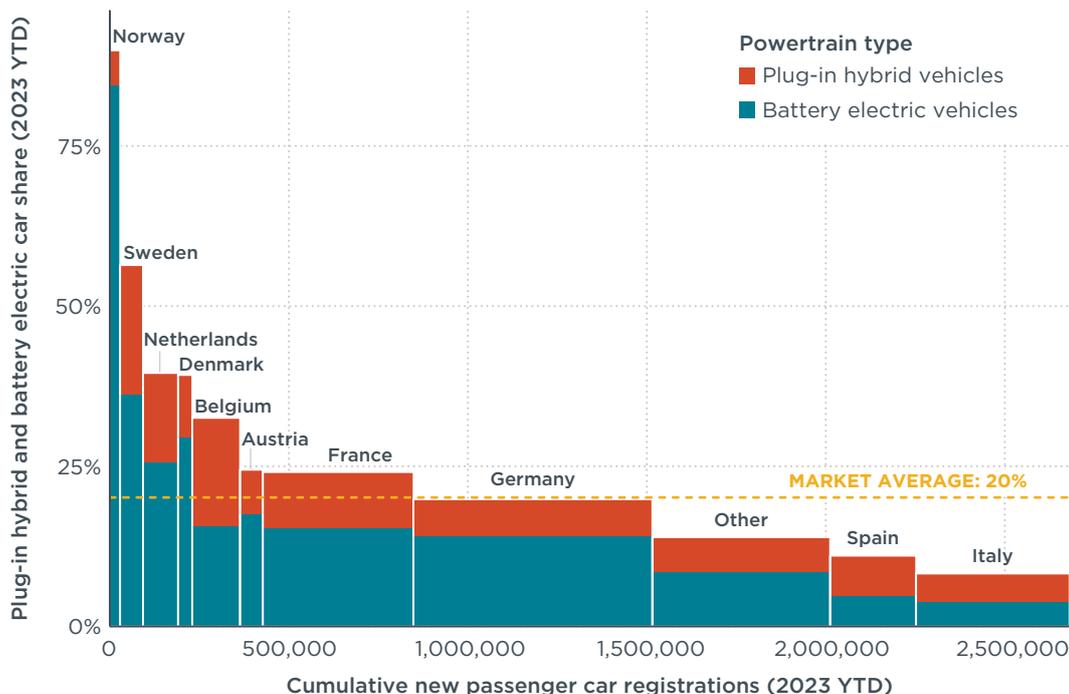


Figure 1. Share of plug-in hybrid and battery electric vehicles, by country, including information on market size (cumulative car registrations).

Table 4. New passenger car registrations by country.

New car registrations				
	Q1/2023	vs. Q1/2022	2023 YTD	vs. 2022
Germany	666,818	7%	666,818	7%
Italy	428,440	26%	428,440	26%
France	420,887	15%	420,887	15%
Spain	240,357	43%	240,357	43%
Belgium	133,255	27%	133,255	27%
Poland	123,131	21%	123,131	21%
Netherlands	98,059	25%	98,059	25%
Austria	63,925	19%	63,925	19%
Sweden	63,599	-9%	63,599	-9%
Czechia	56,341	19%	56,341	19%
Other	385,885	17%	385,885	17%
ALL	2,680,697	17%	2,680,697	17%

Table 5. Share of plug-in hybrid and battery electric passenger cars by country (EU only).

Share of plug-in hybrid and battery electric cars						
	Q1/2023		2023 YTD		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Sweden	36%	20%	36%	20%	33%	23%
Netherlands	26%	14%	26%	14%	23%	11%
Other	19%	7%	19%	7%	20%	8%
Austria	18%	7%	18%	7%	16%	6%
Belgium	16%	17%	16%	17%	10%	16%
France	15%	9%	15%	9%	13%	8%
Germany	14%	6%	14%	6%	18%	14%
AVERAGE	13%	7%	13%	7%	13%	10%
Spain	5%	6%	5%	6%	4%	6%
Italy	4%	4%	4%	4%	4%	5%
Poland	3%	2%	3%	2%	3%	2%
Czechia	2%	2%	2%	2%	2%	2%

New registrations of light commercial vehicles (vans) by manufacturer pool increased on average 8% compared to 2022. The average share of battery electric vans increased slightly to 6% in the first quarter, up from 5% in 2022, while France was the country among the largest markets with the highest share (6%). All manufacturers are on track to reach their 2023 CO₂ targets, with average overcompliance of 24 g/km. Stellantis is leading in overcompliance, currently set to surpass its 2023 CO₂ target by 36 g/km.

Table 6. New van registrations by manufacturer pool.

New van registrations				
	Q1/2023	vs. Q1/2022	2023 YTD	vs. 2022
Stellantis	110,987	-3%	110,987	-3%
Renault-Nissan-Mitsubishi	65,778	15%	65,778	15%
Ford	51,506	23%	51,506	23%
Volkswagen	44,013	23%	44,013	23%
Mercedes-Benz	36,642	8%	36,642	8%
Other	46,328	0%	46,328	0%
ALL	355,254	8%	355,254	8%

Table 7. Share of plug-in hybrid and battery electric vans by manufacturer pool.

Share of plug-in hybrid and battery electric vans						
	Q1/2023		2023 YTD		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Other	9%	0%	9%	0%	9%	0%
Stellantis	8%	0%	8%	0%	7%	0%
AVERAGE	6%	0%	6%	0%	5%	0%
Volkswagen	6%	0%	6%	0%	3%	0%
Renault-Nissan-Mitsubishi	5%	0%	5%	0%	5%	0%
Mercedes-Benz	5%	0%	5%	0%	5%	0%
Ford	3%	0%	3%	0%	1%	1%

Table 8. New van fleet average CO₂ emission level, by manufacturer pool.

	Target gap	New van fleet average CO ₂ (in g/km)					
		Q1/2023	2023 YTD	Credits	Status 2023	Target 2023	Target gap
		WLTP	WLTP	eco-innovations	WLTP	WLTP	WLTP
Stellantis	-18%	162	162	0.2	162	198	-36
Volkswagen	-13%	178	178	0.4	178	203	-25
AVERAGE	-12%	180	180	0.2	180	204	-24
Ford	-10%	195	195	0	195	216	-21
Mercedes-Benz	-5%	215	215	0	215	227	-12
Renault-Nissan-Mitsubishi	-5%	187	187	0.3	187	196	-9

Table 9. New van registrations, by country (EU only).

New van registrations				
	Q1/2023	vs. Q1/2022	2023 YTD	vs. 2022
France	87,235	-3%	87,235	-3%
Germany	62,734	9%	62,734	9%
Italy	44,488	8%	44,488	8%
Spain	31,625	36%	31,625	36%
Other	129,172	10%	129,172	10%
ALL	355,254	8%	355,254	8%

Table 10. Share of plug-in hybrid and battery electric vans by country.

Share of plug-in hybrid and battery electric vans						
	Q1/2023		2023 YTD		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Other	8%	0%	8%	0%	6%	0%
AVERAGE	6%	0%	6%	0%	5%	0%
France	6%	0%	6%	0%	5%	0%
Spain	5%	0%	5%	0%	3%	0%
Germany	5%	0%	5%	0%	8%	0%
Italy	4%	0%	4%	0%	3%	0%

CHARGING INFRASTRUCTURE DEVELOPMENT

By the end of March 2023, there were around 566,000 publicly accessible electric vehicle charging points in Europe. This represents an 11% increase over the end of 2022. There was an average of 3.3 22 kW-equivalent publicly accessible charging points installed per thousand passenger cars and vans on the road after the first quarter of 2023, up from 2.6 at the end of 2022. This represents a 26% increase since last year. Norway (30) and the Netherlands (12) continue to lead in publicly accessible charging points per thousand vehicles, while the large markets of Italy (1.6) and Spain (1.3) are lagging below the European average. In terms of the total number of publicly accessible charging points installed in Europe, DC charging achieved the most growth, having almost doubled since March of 2022. The greatest increases in total DC charging points since March of 2022 were in France (+222%), Denmark (+178%) and Spain (+166). In the same time period, Belgium (+111%) and Spain (+100%), followed closely by Denmark (+99%), exhibited the largest increases in AC charging points installed.

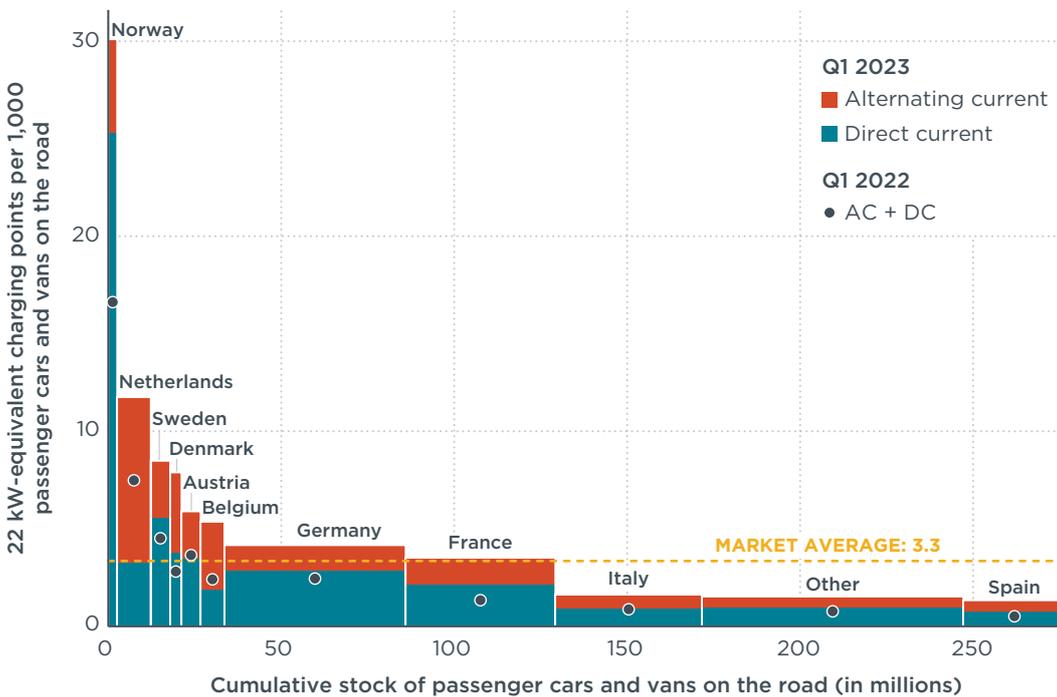


Figure 2. 22 kW-equivalent publicly accessible charging points installed per thousand passenger cars and vans on the road, by type of power output and country by the end of the first quarter of 2023. The width of the bar provides information on vehicle stock size. 22 kW-equivalent is used to take into account different power outputs while allowing for comparison among countries. E.g., two 11kW alternating current (AC) chargers would be shown here as one 22 kW-equivalent charger, while one 50 kW direct current (DC) charger would equate to 2.3 22 kW-equivalent chargers.

Table 11. Number of publicly accessible charging points installed, by country and type of power output.

Number of charging points installed						
	Q1/2023		vs. Q4/2022		vs. Q1/2022	
	AC	DC	AC	DC	AC	DC
Netherlands	126,103	4,282	13%	28%	41%	58%
Germany	73,886	19,380	1%	22%	28%	71%
France	73,166	14,484	13%	51%	64%	222%
Italy	35,410	6,468	7%	34%	40%	68%
Belgium	28,612	1,622	26%	45%	111%	98%
Norway	18,426	9,983	0%	26%	16%	73%
Sweden	23,272	4,511	2%	42%	36%	103%
Spain	21,608	5,638	5%	9%	100%	166%
Austria	20,286	3,334	2%	10%	17%	66%
Denmark	12,729	1,537	27%	50%	99%	178%
Other	45,496	15,323	8%	17%	49%	84%
Total	478,994	86,562	9%	27%	46%	96%

DEFINITIONS, DATA SOURCES, METHODOLOGY, AND ASSUMPTIONS

Manufacturer pools: Automakers are allowed to form pools to jointly comply with CO₂ targets. For this factsheet, the definition of pools according to the European Commission, “M1 pooling list”, version of 13 January 2023 applies (main brands listed here): BMW Group (BMW, Mini), Ford (Ford), Hyundai (Hyundai), Kia (Kia), Mazda-Subaru-Suzuki-Toyota (Lexus, Mazda, Subaru, Suzuki, Toyota), Mercedes-Benz (Mercedes-Benz, Smart), Renault-Nissan-Mitsubishi (Dacia, Mitsubishi, Nissan, Renault), Stellantis (Alfa Romeo, Citroën, Fiat, Jeep, Lancia, Opel, Peugeot), Tesla-Honda-JLR (Honda, Jaguar, Land Rover, Tesla), Volkswagen (Audi, Cupra, Porsche, SEAT, Škoda, VW), and Volvo (Volvo). For light commercial vehicles, the “N1 pooling list”, version 12 January 2023, applies: Ford (Ford), Mercedes-Benz (Mercedes-Benz, Mitsubishi Fuso), Renault-Nissan-Mitsubishi (Mitsubishi, Nissan, Renault), Stellantis (Citroën, Fiat, Opel, Peugeot), Volkswagen (MAN, Volkswagen).

Abbreviations: AC = alternating current; CO₂ = carbon dioxide emissions; DC = direct current; g/km = grams per kilometer; YTD = year to date.

Technical scope: This factsheet focuses on new passenger car and light commercial vehicle registrations. Electric vehicles here include battery electric (BEV), plug-in hybrid electric (PHEV), and fuel cell vehicles.

Geographic scope: The European CO₂ regulation for vehicle manufacturers applies to all countries of the European Economic Area (EEA). This includes the 27 Member States of the European Union, plus Iceland, Liechtenstein, and Norway. Data for new car registrations and shares of electric vehicles in this factsheet cover all of these countries, with the exception of Bulgaria, Liechtenstein, and Malta. Data for CO₂ emission levels additionally omit Hungary, Lithuania, Poland (until April 2020), Portugal, and Romania (together less than 10% of the total market). Charging infrastructure data are presented for the 27 EU members plus the 4 EFTA countries (Iceland, Liechtenstein, Norway, Switzerland).

Data sources: Dataforce (new vehicle registrations), Eco-Movement (charging points).

Results may change over time: Registrations and/or CO₂ data may be retrospectively updated by some of the national type approval authorities. Similarly, charging infrastructure data may also be retrospectively updated by Eco-Movement. Historical values are regularly updated to reflect all latest data available.

Test procedures: CO₂ values are provided according to the *Worldwide harmonized Light vehicles Test Procedure* (WLTP).

Flexible compliance mechanisms: To facilitate meeting their CO₂ targets, manufacturers can make use of a number of compliance mechanisms. Manufacturers can reduce their CO₂ level by up to 7 g/km by deploying eco-innovation technologies. To incentivize eco-innovations, CO₂ savings from eco-innovations per passenger car and light commercial vehicle are amplified by multipliers in the years 2021, 2022 and 2023. For 2023, the multiplier is set to 1.5. As a conservative estimate, we apply the 2021 level of eco-innovation CO₂ emission reductions per manufacturer¹.

Mass-based targets: For each manufacturer pool, a specific 2023 CO₂ target value applies, depending on the average mass of the new cars registered. For this factsheet, we assume the average mass per manufacturer pool to remain constant with respect to the market situation in 2021.²

Charging point: As defined in the Alternative Fuel Infrastructure regulation proposal, a charging point “means a fixed or mobile interface that allows for the transfer of electricity to an electric vehicle, which, whilst it may have one or several connectors to accommodate different connector types, is capable of recharging only one electric vehicle at a time, and excludes devices with a power output less than or equal to 3.7 kW the primary purpose of which is not recharging electric vehicles.”

- 1 Applying the methodology outlined in: Uwe Tietge, Peter Mock, and Jan Dornoff, *Overview and evaluation of eco-innovations in European passenger car CO₂ standards*, (ICCT: Washington, DC, 2018), <https://theicct.org/publications/eco-innovations-european-passenger-car-co2-standards>.
- 2 Uwe Tietge, Jan Dornoff, Peter Mock, and Sonsoles Díaz, *CO₂ emissions from new passenger cars in Europe: Car manufacturers' performance in 2021*, (ICCT: Washington, DC, 2022), <https://theicct.org/publication/co2-new-passenger-cars-europe-aug22/>.

Contact: Peter Mock, +49 30 233 268 410, peter@theicct.org

2023 © INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION

BEIJING | BERLIN | SAN FRANCISCO | SÃO PAULO | WASHINGTON

www.theicct.org

communications@theicct.org

[twitter @theicct](https://twitter.com/theicct)


THE INTERNATIONAL COUNCIL
ON CLEAN TRANSPORTATION