

EUROPEAN MARKET MONITOR QUARTERLY

EUROPEAN CAR AND VAN MARKET AND CHARGING INFRASTRUCTURE DEVELOPMENT: JANUARY-DECEMBER 2023

PASSENGER CAR REGISTRATIONS

New car registrations in Europe increased an average of 13% in 2023, with a 4% increase in the fourth quarter compared with the same period the previous year. Tesla stood out with an 80% increase in registrations in 2023, followed by Volkswagen (+17%). Registrations of Ford (-3%) and Stellantis (+2%) largely stagnated in 2023. The average European market share of battery electric vehicles (BEVs) in 2023 was about 15%, with a 17% market share in the fourth quarter, four percentage points higher than the 2022 average. Both Ford (6%) and the Subaru-Suzuki-Toyota pool (2%) continued to lag in shares of BEV registrations.¹ The average plug-in hybrid electric vehicle (PHEV) share remained below 2022 levels in 2023 by about two percentage points. All manufacturers were able to meet their specific CO₂ emissions targets for 2023, with an estimated average over-compliance of about 14 g CO₂/km.

TABLE 1
New passenger car registrations by manufacturer pool

New car registrations				
	Q4/2023	vs. Q4/2022	2023	vs. 2022
Volkswagen	673,071	6%	2,764,685	17%
Stellantis	416,803	-6%	1,875,793	2%
Renault-Nissan-Mitsubishi	353,892	8%	1,388,089	16%
Subaru-Suzuki-Toyota	233,874	10%	919,106	15%
BMW Group	198,220	11%	727,326	14%
Mercedes-Benz	163,063	0%	625,103	10%
Hyundai	110,252	7%	435,684	2%
Kia	104,030	-2%	444,271	3%
Ford	87,842	-17%	402,396	-3%
Tesla	80,026	16%	306,496	80%
Volvo	72,206	-10%	251,965	10%
Other	144,187	20%	537,847	41%
ALL	2,637,466	4%	10,678,761	13%

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

Share of plug-in hybrid and battery electric cars						
	Q4/2023		2023		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Tesla	100%	0%	100%	0%	100%	0%
Volvo	32%	28%	33%	32%	29%	33%
Other	27%	10%	22%	14%	15%	18%
BMW Group	26%	15%	20%	15%	15%	19%
Mercedes-Benz	19%	22%	18%	19%	14%	22%
AVERAGE	17%	8%	15%	8%	13%	10%
Kia	16%	12%	13%	11%	13%	14%
Hyundai	14%	5%	15%	5%	16%	8%
Volkswagen	14%	8%	13%	6%	12%	7%
Stellantis	12%	7%	12%	7%	11%	8%
Renault-Nissan-Mitsubishi	11%	1%	11%	1%	13%	4%
Ford	6%	12%	4%	11%	5%	12%
Subaru-Suzuki-Toyota	2%	4%	2%	3%	1%	3%

¹ Several manufacturing pools have changed since the previous quarter. For further details, see pool definitions at the end of this document.

TABLE 3

New passenger car fleet average CO₂ emissions level by manufacturer pool

	Target gap	New car fleet average CO ₂ (in g/km)					
		Q4/2023	2023	Compliance credits	Status 2023	Target 2023	Target gap
		WLTP	WLTP	Eco-innovations	WLTP	WLTP	WLTP
Tesla	-100%	0	0	0	0	115	-115
Volvo	-50%	73	67	0.4	66	134	-68
BMW Group	-21%	93	103	1.4	102	128	-26
Mercedes-Benz	-14%	104	110	0.6	110	127	-17
Stellantis	-12%	106	107	1.7	105	120	-15
AVERAGE	-12%	104	107	1.2	106	120	-14
Kia	-10%	97	102	0.4	101	112	-11
Subaru-Suzuki-Toyota	-9%	109	110	0.9	109	120	-11
Hyundai	-6%	107	107	0.6	106	113	-7
Ford	-5%	115	120	2.0	118	124	-6
Volkswagen	-4%	115	120	1.4	118	123	-5
Renault-Nissan-Mitsubishi	-2%	109	110	1.7	109	111	-2

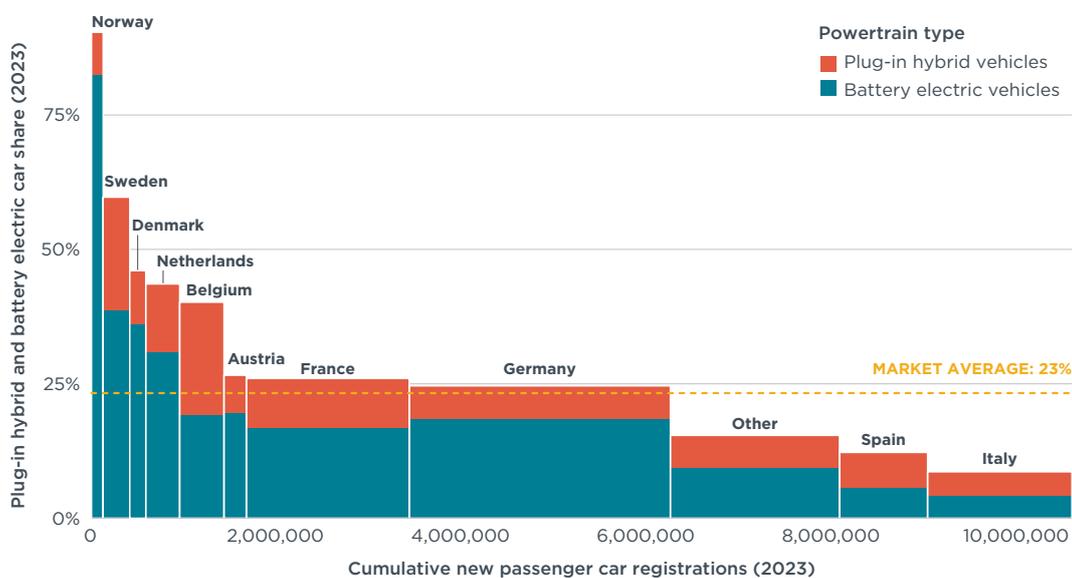
Note: All CO₂ values are estimates. See the methodology section for details.

PASSENGER CAR REGISTRATIONS BY COUNTRY

BEV and PHEV market shares averaged 23% in Europe in 2023. Norway (90%), Iceland (61%), Sweden (60%), and Finland (55%) all had shares above 50%, while Denmark (46%), the Netherlands (44%), and Belgium (40%) also had well above average BEV and PHEV market shares for Europe. Among the largest markets, the largest increase in BEV registrations occurred in Belgium, where shares increased 9 percentage points in 2023 compared with 2022. In the Netherlands, new BEV sales reached an all-time high of 35% in the fourth quarter of 2023. Of the major markets, 2023 PHEV registration shares were the highest in Belgium and Sweden (both 21%).

FIGURE 1

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



THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION [THEICCT.ORG](https://www.theicct.org)

TABLE 4

New passenger car registrations by country

New car registrations				
	Q4/2023	vs. Q4/2022	2023	vs. 2022
Germany	706,543	-10%	2,844,609	7%
France	486,099	17%	1,774,723	16%
Italy	391,017	14%	1,571,820	19%
Spain	241,449	11%	960,214	16%
Poland	124,884	21%	475,730	13%
Belgium	102,584	20%	482,411	30%
Netherlands	83,138	-5%	369,777	18%
Sweden	79,792	-4%	290,386	0%
Austria	56,956	9%	242,936	11%
Czechia	53,858	12%	221,422	15%
Other	311,146	-5%	1,444,733	9%
ALL	2,637,466	4%	10,678,761	13%

TABLE 5

Share of plug-in hybrid and battery electric passenger cars by country

Share of plug-in hybrid and battery electric cars						
	Q4/2023		2023		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Sweden	39%	23%	39%	21%	33%	23%
Netherlands	35%	11%	31%	13%	23%	11%
Other	26%	9%	22%	8%	20%	8%
Belgium	24%	23%	19%	21%	10%	16%
Austria	22%	7%	20%	7%	16%	6%
Germany	19%	7%	18%	6%	18%	14%
France	19%	10%	17%	9%	13%	8%
AVERAGE	17%	8%	15%	8%	13%	10%
Spain	7%	7%	6%	7%	4%	6%
Italy	5%	4%	4%	4%	4%	5%
Poland	4%	3%	4%	3%	3%	2%
Czechia	4%	3%	3%	3%	2%	2%

VAN REGISTRATIONS

Almost 1,470,000 new vans were registered in Europe in 2023, a 15% increase over 2022. Volkswagen (+28%) had the largest gains last year, while Mercedes-Benz van registrations only slightly increased (+4%). On average, battery electric vans represented 8% of new van registrations in 2023, up from 5% in 2022. While most manufacturers had above-average BEV market shares, Ford battery electric van shares averaged only 3% in 2023. The market share of battery electric vans stagnated at 8% in Germany in 2023, while the share in France increased to 7%, up from 5% in 2022. All manufacturers were able to meet their CO₂ targets for 2023, with average overcompliance of 2 g CO₂/km.

TABLE 6

New van registrations by manufacturer pool

New van registrations				
	Q4/2023	vs. Q4/2022	2023	vs. 2022
Stellantis	116,536	22%	459,955	14%
Renault-Nissan-Mitsubishi	82,496	23%	284,632	17%
Ford	50,780	17%	197,760	14%
Volkswagen	46,117	17%	176,704	28%
Mercedes-Benz	37,786	-12%	149,986	4%
Other	54,819	21%	199,021	13%
ALL	388,534	17%	1,468,058	15%

TABLE 7

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

Share of plug-in hybrid and battery electric vans						
	Q4/2023		2023		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Volkswagen	10%	0%	7%	0%	3%	0%
Renault-Nissan-Mitsubishi	8%	0%	6%	0%	5%	0%
Mercedes-Benz	8%	0%	8%	0%	5%	0%
Other	8%	0%	9%	0%	9%	0%
Stellantis	8%	0%	9%	0%	7%	0%
AVERAGE	8%	0%	7%	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)					
		Q4/2023	2023	Credits	Status 2023	Target 2023	Target gap
		WLTP	WLTP	Eco-innovations	WLTP	WLTP	WLTP
Stellantis	-16%	168	163	0.3	163	194	-31
AVERAGE	-12%	183	180	0.6	180	203	-23
Renault-Nissan-Mitsubishi	-11%	179	183	1	182	205	-23
Mercedes-Benz	-10%	206	204	0.6	203	225	-22
Volkswagen	-9%	185	183	1.2	182	201	-19
Ford	-5%	207	200	0	200	212	-12

TABLE 9

New van registrations by country

New van registrations				
	Q4/2023	vs. Q4/2022	2023	vs. 2022
France	102,839	15%	374,902	8%
Germany	65,696	-2%	257,710	13%
Italy	53,946	40%	187,037	23%
Spain	38,099	29%	135,926	29%
Other	127,954	18%	512,483	15%
ALL	388,534	17%	1,468,058	15%

TABLE 10

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

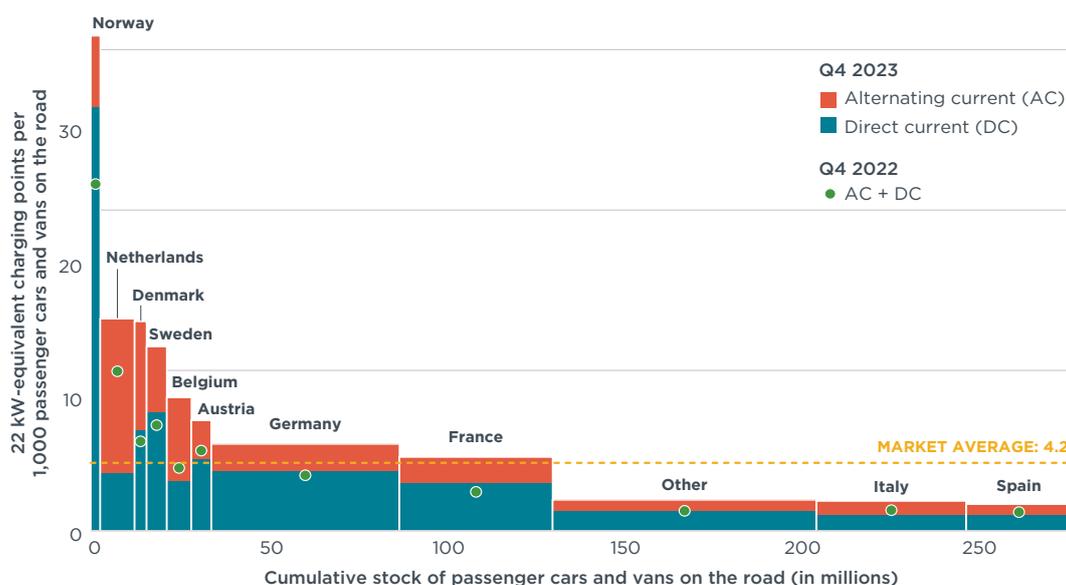
Share of plug-in hybrid and battery electric vans						
	Q4/2023		2023		2022	
	BEV	PHEV	BEV	PHEV	BEV	PHEV
Other	11%	0%	9%	0%	6%	0%
France	9%	0%	7%	0%	5%	0%
AVERAGE	8%	0%	7%	0%	5%	0%
Germany	5%	0%	8%	0%	8%	0%
Spain	5%	0%	4%	0%	3%	0%
Italy	2%	0%	3%	1%	3%	0%

CHARGING INFRASTRUCTURE DEVELOPMENT

Nearly 700,000 public charging points were installed in Europe by the end of 2023, up from around 650,000 at the end of September. For alternating current (AC) charging, this represents an increase of around 35% compared with the end of 2022. Direct current (DC) charging points showed even greater growth, increasing 61% over the end of 2022. Approximately 84% of Europe’s public charging points supply AC, while the remaining 16% supply DC. In addition to considerable shares of BEV registrations, Denmark also recorded the largest growth in terms of AC chargers in 2023 compared with 2022 (+109%) and the second-largest growth in DC chargers (+134%). Only Belgium (+154%) recorded a greater increase in DC charging points in the same period. There were on average about 4.2 22 kW-equivalent publicly accessible charging points installed per thousand passenger cars and vans on the road at the end of December 2023, up from 3.8 at the end of September. With nearly 31 22 kW-equivalent publicly accessible charging points per thousand passenger cars and vans, Norway continues to lead Europe in charging infrastructure expansion, followed by Iceland (17), the Netherlands (13), Denmark (13), and Sweden (11). Italy (1.9) and Spain (1.7) remain well below the European average.

FIGURE 2

22 kW-equivalent publicly accessible charging points installed per thousand passenger cars and vans, by type of power output and country by the end of December 2023



Note: The width of the bars provides information on 2023 passenger car and van stock size estimates. 22 kW-equivalent is used to account for different power outputs while allowing for comparison among countries.

TABLE 11

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

Number of charging points installed				
	Q4 2023		vs. Q4 2022	
	AC	DC	AC	DC
Netherlands	140,757	4,559	26%	37%
Germany	99,254	25,860	36%	63%
France	91,705	20,130	44%	116%
Italy	40,497	7,693	22%	59%
Belgium	42,034	2,836	84%	154%
Sweden	33,205	5,617	46%	77%
Spain	26,441	7,037	28%	36%
Norway	19,889	9,956	8%	26%
Denmark	21,003	2,408	109%	134%
Austria	19,122	3,909	—	29%
Other	56,165	19,570	33%	49%
Total	590,072	109,575	35%	61%

DEFINITIONS, DATA SOURCES, METHODOLOGY, AND ASSUMPTIONS

Manufacturer pools: Automakers are allowed to form pools to jointly comply with CO₂ targets. For this publication, the definition of pools according to the European Commission's "M1 pooling list," version of 7 January 2024, applies (main brands listed here): BMW Group (BMW, Mini), Ford (Ford), Hyundai (Hyundai), Kia (Kia), Mercedes-Benz (Mercedes-Benz, Smart), Renault-Nissan-Mitsubishi (Dacia, Mitsubishi, Nissan, Renault), Stellantis (Alfa Romeo, Citroën, Fiat, Jeep, Lancia, Opel, Peugeot), Subaru-Suzuki-Toyota (Lexus, Subaru, Suzuki, Toyota), Tesla (Tesla), Volkswagen (Audi, Cupra, Porsche, SEAT, Škoda, VW), and Volvo (Volvo). For light commercial vehicles, the "N1 pooling list," version of 7 January 2024, 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; **N/A** = not available; **YTD** = year to date.

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

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 and van registrations and shares of electric vehicles in this publication cover all of these countries, with the exception of Bulgaria, Liechtenstein, and Malta. Data for CO₂ emission levels additionally omit Hungary, Lithuania (until January 2021), Poland (until April 2020), and Romania (together less than 10% of the total market). Charging infrastructure data are presented for the 27 EU members plus the four European Free Trade Association countries (Iceland, Liechtenstein, Norway, and 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 2022 level of eco-innovation CO₂ emission reductions per manufacturer. For more on the methodology used see: 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>.

Mass-based targets: For each manufacturer pool, a specific **2023 CO₂ target value** applies, depending on the average mass of the new vehicles registered. For this publication, we assume the average mass per manufacturer pool to remain constant with respect to the market situation in 2022. For more on the methodology used see: Jan Dornoff, Víctor Valverde, and Uwe Tietge, *CO₂ emissions from new passenger cars in Europe: Car manufacturers' performance in 2022*, (ICCT: Washington, DC, 2024), <https://theicct.org/publication/co2-emissions-new-pv-europe-car-manufacturers-performance-2022-feb24/>.

Charging point: As defined in the Alternative Fuels Infrastructure Regulation, 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."



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