



Using green tax reform to steer the Spanish corporate fleet

From oil-burning laggard to electrified leader

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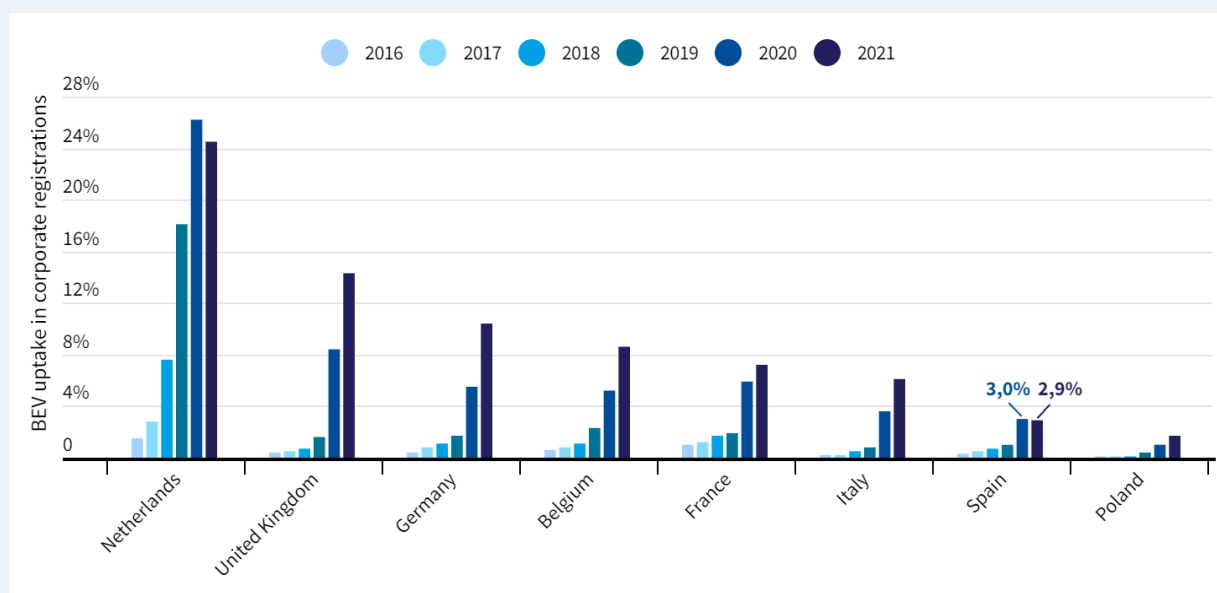
Summary

The fleet of corporate cars is one of the largest sources of oil consumption and carbon emissions in Spain. Often overlooked as a source of road transport emissions, corporate registrations account for over half (57 %) of new passenger car registrations each year and continue to grow. Since they travel twice as many kilometres per year as passenger cars, corporate cars are responsible for over two-thirds (72%) of CO₂ emissions from newly registered cars, i.e. 2% of total emissions of carbon emissions in Spain. A solution to reduce these emissions is at hand – electrification – and tax reform can steer corporate fleets toward this change.

There is also an important socio-economic rationale for focusing on corporate cars in the zero-emission transition. Corporate entities, which benefit from favourable taxation on the purchase of capital assets, are typically better positioned to purchase new vehicles. After an average ownership period of four years, corporate cars are typically sold to private consumers through the second-hand market. This short holding period in the corporate fleet means that the electrification of corporate cars generates a large market of affordable BEVs for low and middle-income consumers, who typically purchase cars second-hand.

The magnitude of the potential impact is clearly significant, and so too is the possibility that this impact could be achieved. Whereas consumers tend to focus on the sticker price of a new car, corporate purchases focus on the total cost of ownership, which favours battery electric vehicles (BEVs) due to their lower fuel and maintenance costs. The fact that corporate cars are driven twice as much as private cars further compounds this advantage. As the low hanging fruit of transport emissions, corporate cars are ripe to be picked.

The latest information reveals that the opportunity to electrify the corporate fleet is passing Spain by. In 2021, as uptake of BEVs surged ahead in most markets, the BEV uptake in the Spanish corporate fleet bucked the trend with a slight decrease to 2,9%. This places Spain behind the Netherlands, the UK, Germany, Belgium, France, and Italy, and only ahead of Poland among the major European markets.



Spain's slow electrification of the corporate fleet is not inevitable but the result of a half-hearted policy approach. The comparative performance of European neighbours Portugal and France clearly indicate that geography, income, and other barriers can be overcome with good policy. Fiscal reforms that have proven to be successful in other countries offer particular promise, and the fact that Spanish drivers pay the lowest tax per vehicle compared to European peers shows the potential that can be seized.

To assess this potential, T&E has modelled four tax reforms:

- A phase-out of depreciation write-offs for combustion vehicles (ICE & PHEV) from 2024-2028.
- A phase-out of VAT deductions for combustion vehicles from 2024-2028.
- An increase in the registration tax (IEDMT) and the number of thresholds.
- A reduction in benefit-in-kind taxation for employees opting for a BEV as a salary car.

The results of our fiscal policy modelling confirms the power of these policy levers to shape corporate registrations and the associated impacts. When combined, the implementation of all four reforms will lead to 1,1 million new BEVs registered in the true fleet between 2024 and 2030 with 38 % of these attributable to the policy reforms (this includes all registrations to companies excluding certain categories such as short-term rentals and demo vehicles). This outcome could be delivered while also improving the fiscal balance by €3,7 billion and significantly reducing oil consumption and emissions. The reduction of oil consumption of 1,3 Mtoe over the period, of which 0,3 Mtoe occurs in 2030, is approximately one-third of the annual Spanish imports of crude oil from Russia.

The introduction of tax reforms, like those recommended in this report, would rapidly shift corporate purchases towards electric vehicles and position Spain as a leader in the transition to a zero-emission transportation system.

Abbreviations

| | |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BEV | Battery electric vehicle |
| BiK | Benefit-in-kind |
| EV | Electric vehicle (In this report, this stands for vehicles propelled by an electric motor: battery electric vehicles, fuel cell electric vehicles and plug-in hybrid electric vehicles) |
| ICE | Internal combustion engine |
| IEDMT | Impuesto Especial sobre Determinados Medios de Transporte |
| IVTM | Impuesto sobre Vehículos de Tracción Mecánica |
| PHEV | Plug-in hybrid electric vehicle |
| TCO | Total cost of ownership |
| VAT | Value added tax |

1. The corporate fleet is a major driver of Spanish road emissions

When a new car is purchased it must be registered by the buyer — an individual in the case of private registrations or a legal entity in the case of corporate registrations. While corporate registrations may convey a certain image, they include cars as diverse as holiday rentals, police cars, demo cars at dealerships, salary perks, and private cars that are leased from a company.

As a group of vehicles, it is important to differentiate corporate cars because corporate entities have different purchasing and use behaviours. Corporate registrations are also influenced by different tax policies and incentives. Most importantly of all, due to their large numbers, corporate cars have a major impact on Spain's roads, air quality, climate commitments, oil imports, and public finances.

1.1. Corporate registrations are the majority of new registrations

In Spain, as in Europe as a whole, the majority of new cars are sold as corporate registrations. Of the 858.000 cars registered in Spain in 2021, 486.000 (57%) were registered by corporate entities. This share has been growing over time, with corporate registrations passing private registrations in 2018 (Figure 1).¹

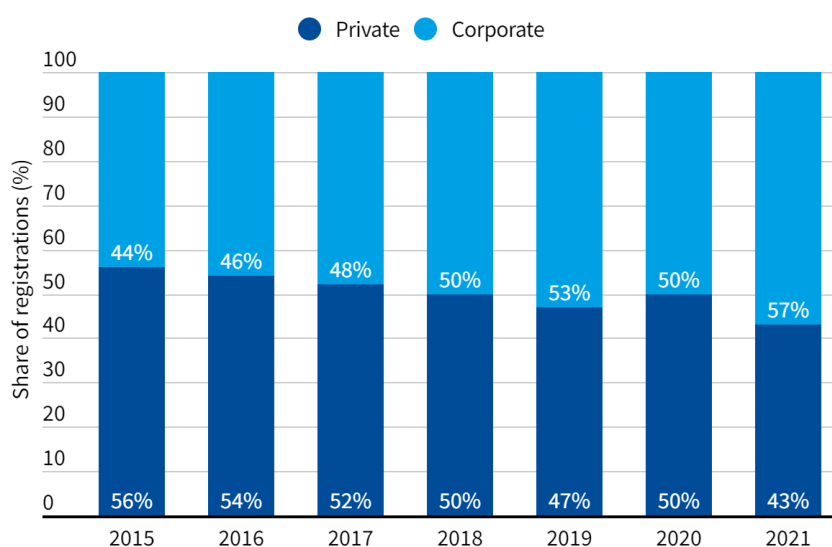


Figure 1: Share of new passenger car registrations over time

Of the corporate registrations, roughly one-third (33%) are registered to the leasing and long-term rental sector which may lease to corporate or private customers.² Due to Spain's large tourism sector, another third (31%) comes from rent-a-car companies and the final third (18% and 17% respectively) comes from dealers and manufacturers and the true fleet,³ which includes all other cars registered to the corporate channel including the public sector (see Figure 2 for fleet composition indicated as a share of all new registrations).

¹ Authors' calculations based on Dataforce (2022). New passenger car registrations.

² Ibid.

³ Ibid.

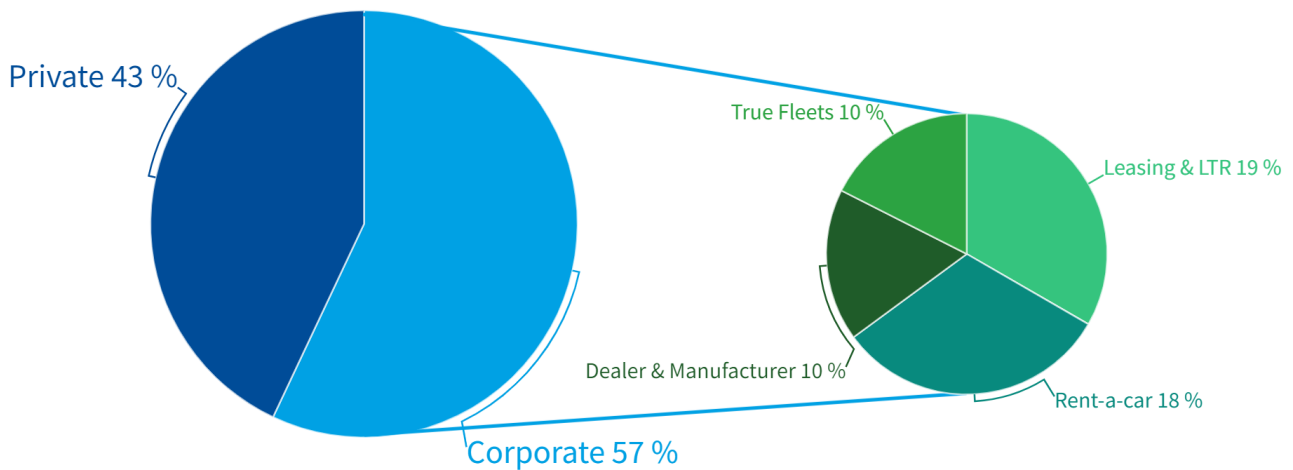


Figure 2: Share of new passenger car registrations and corporate subsegments

1.2. Corporate registrations are driven more

corporate cars are driven twice as many kilometres in a year compared to private cars.⁴ This extra distance increases the CO₂ emissions of corporate cars to such a degree that they account for 72% of the CO₂ emissions of newly registered vehicles — well above the 57% of new registrations that they represent (Figure 3)⁵. This disproportionate share of emissions puts corporate cars under the spotlight for their contribution to - and potential to reduce - Spanish greenhouse gas emissions.

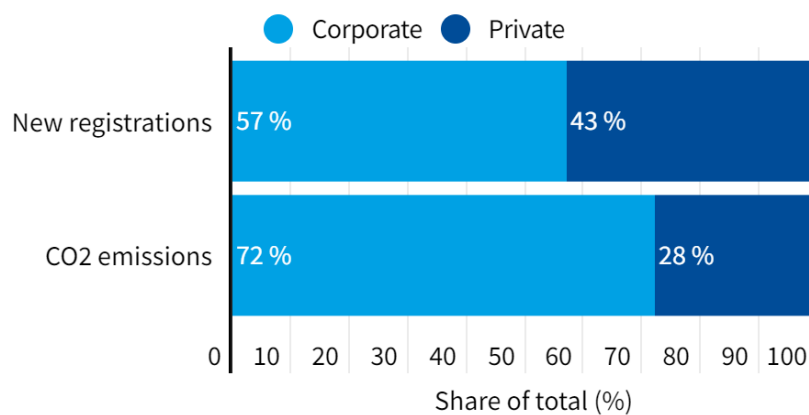


Figure 3: Share of new passenger car registrations and emissions

⁴ Authors' calculations based on 12.000 kilometres a year for private cars and 27.000 kilometres a year for corporate cars from Dataforce (2020). Company car report. Retrieved from: https://www.transportenvironment.org/wp-content/uploads/2021/06/2020_10_Dataforce_company_car_report.pdf Dealer and manufacture category assumed equal to private usage.

⁵ Authors' calculations based on Dataforce (2020) and Dataforce (2022).

Based on a total corporate fleet of just over 1 million cars, and using emissions from new corporate cars in 2021,⁶ it is estimated that the Spanish corporate fleet currently emits 3,7 million tonnes of CO₂ per year.⁷ This estimate increases by 21% to reach 4,5 million tonnes of CO₂ when applying real-world measurements of CO₂ emissions from vehicles rather than test measurements in the laboratory (see section 5.2).⁸ This is equivalent to 11% of all Spanish domestic transport emissions.⁹ If Spain is going to reach the objective 5 million EVs by 2030 as set out in the Plan Nacional Integrado de Energía y Clima, then new registrations of combustion engine corporate cars cannot continue.

1.3. Corporate registrations steer the second-market

After an average ownership period of four years,¹⁰ corporate cars are then sold onto the second-market market. With corporate registrations constituting the majority of new registrations and only a short holding period, the corporate fleet directly determines the type of cars that flow into the second-hand market and the Spanish fleet as a whole. In this sense, any policies that influence corporate registrations adjust the filter through which most vehicles flow into the Spanish market.

This short holding period also means that electrifying the corporate fleet generates a large market of affordable BEVs for lower-income consumers, who tend to purchase second-hand vehicles. There is thus an important socio-economic rationale for focusing on corporate cars in the zero-emission transition. This may appear counterintuitive as corporate car drivers, particularly those receiving a company car as a salary perk, are wealthier than average, but the electrification of corporate registrations in Spain would mean lower-income consumers would benefit through the second-hand market, sometimes with only one-year old car, such as those sold by rent-a-car companies that frequently update their fleet.

2. The corporate fleet is well-suited for electrification

The previous section outlined the key reasons why corporate cars are a prime target to bring about zero-emission road transport. The corporate channel represents the majority of newly registered cars, meaning the corporate channel is a filter through which the majority of cars pass through to reach the second-hand market. Furthermore, because corporate cars are driven more, they are particularly

⁶ Author's calculations based on Dataforce (2022) using a one-year ownership period for dealer and manufacturers and rent-a-car companies and a four-year ownership period for leasing and long-term rental and true fleets.

⁷ Author's calculations based on Dataforce (2022) with emissions measured by WLTP.

⁸ Author's calculations based on Dataforce (2022) with emissions measured by real-world driving emissions. Adjust factors sourced from ICCT (2019.) From laboratory to road, Figure 26. Retrieved from:

https://theicct.org/wp-content/uploads/2021/06/Lab_to_Road_2018_fv_20190110.pdf and ICCT (2022).

Real-world usage of plug-in hybrid electric vehicles: A 2022 update on fuel consumption, electric driving, and CO₂ emissions; Table 3. Retrieved from:

<https://theicct.org/wp-content/uploads/2022/06/real-world-phev-use-jun22-1.pdf> Note that the PHEV adjustment factor for corporate registrations is based on company cars in Germany and Austria due to data availability.

⁹ Author's calculations based on European Environment Agency. (2021). Approximated estimates for greenhouse gas emissions. 2020 GHG proxies. Retrieved from:

<https://www.eea.europa.eu/data-and-maps/data/approximated-estimates-for-greenhouse-gas-emissions-2>

¹⁰ Dataforce (2020).

important to target as a zero-emission corporate car would reduce emissions even more than a zero-emission private car. Finally, because of their position as the first point of sale in the Spanish market, corporate registrations steer the second-market and bring electric vehicles to families of average incomes all across Spain.

The scope of impact is clearly significant, but so too is the ability to have an impact. This is because the unique characteristics of corporate cars mean that they are particularly well-suited for electrification.

2.1. Corporate entities consider the total cost of ownership

While EVs have a higher sticker price than ICE (international combustion engine) cars, with each year of usage the total cost of ownership (TCO) shifts in favour of EVs, particularly BEVs, as the costs to power an EV are lower (electricity is cheaper than petrol or diesel per kilometre driven) and maintenance costs are lower (no oil changes, fewer parts to repair or replace). For a car produced today, an EV is now competitive with an ICE car across most segments.¹¹

Despite the advantages of EVs from a TCO perspective, many consumers remain hesitant to purchase an EV due to the higher sticker price — although even the sticker price is quickly declining towards parity. This focus on sticker price is a fundamental difference in consumer psychology, however, with individuals purchasing cars for ‘consumption’ and corporate entities purchasing cars as investment. Existing policies, such as the ability of companies to classify cars as a capital asset and therefore to write-off the depreciation of the asset overtime, reflects this difference between individual consumption and corporate investment. Corporate entities are thus inherently attuned to the costs and returns of their investment over the whole ownership period of the car and already apply a TCO perspective to their purchasing decisions, putting EVs in stronger consideration than in the private market.

2.2. Corporate EVs have a stronger TCO

The high usage of corporate cars — approximately twice as many kilometres in a year as private cars (see Section 1) — means that not only are corporate purchases more attuned to the TCO, the TCO of corporate purchases is even more favourable to BEVs. This combination of TCO focus and a stronger TCO is why BEV uptake is higher among corporate registrations than private registrations in most countries, including Spain.¹² Taken together, the case for corporate fleet electrification under a TCO perspective is both stronger and more relevant.

2.3. Responsive to tax change

Because of this sensitivity to TCO and much more calculated approach to vehicle purchases, corporate purchasing decisions are acutely aware of relevant tax policies and very responsive to any policy changes. This means that a change to one line of tax code could almost immediately catalyse a higher uptake in corporate BEVs.

¹¹ Leaseplan (2021). Car Cost Index 2021. Retrieved from:

<https://www.leaseplan.com/en-ix/blog/tco/car-cost-index-2021/>

¹² Fiscal policy targeting corporate or private registrations also has a large influence on whether BEV uptake is higher among corporate or private registrations.

This rapid response time from corporate purchases is mirrored on the policy side as well with small, quick changes to the tax code. Unlike other incentives to spur on BEV uptake that involve large investments and changes to infrastructure, many tax policies can be adjusted through Royal Decrees which modify the already existing fiscal laws.

Taken together, a rapid response to a rapid change to tax policy offers a powerful combination to quickly boost BEV uptake. This is evidenced through many examples including the spike in BEV registrations in the UK in April 2020 as the benefit-in-kind tax rate for employees receiving a BEV company car was lowered,¹³ and the spikes in BEV registrations in the Netherlands in December 2020 and December 2021 in anticipation of the benefit-in-kind tax rate for employees receiving a BEV company car being raised.¹⁴

Identifying policy options that can deliver a rapid increase in BEVs is particularly important in the coming years as the car CO₂ standards, which drove BEV uptake in 2020 and 2021, will have little to no impact until 2025, when the standard is still quite low. Whereas EU policy through the CO₂ standards boosted the initial EV uptake in Europe, it is now national policy, particularly through fiscal policy, that must take over.

3. The Spanish corporate fleet is lagging on electrification

Given the importance of the corporate fleet for Spanish transport emissions and the fact that the corporate fleet is particularly well-suited for electrification, it is a case of wasted potential that Spain lags behind the other major European markets in BEV uptake among corporate registrations. In 2020, the Spanish corporate fleet had a BEV uptake of just 3,0%, putting Spain behind the Netherlands, the UK, Germany, Belgium, France, and Italy, and only ahead of Poland among the major European markets. In 2021, as the BEV uptake surged ahead in most markets, the BEV uptake in the Spanish corporate fleet bucked the trend by decreasing slightly to 2,9% (Figure 4).¹⁵

¹³ Autocar (2020). New tax rules herald EV sales boom. Retrieved from:

<https://www.autocar.co.uk/car-news/industry/new-tax-rules-herald-ev-sales-boom>

¹⁴ ICCT (2021). Small but mighty: The Netherlands leading role in electric vehicle adoption. Retrieved from:

<https://theicct.org/small-but-mighty-the-netherlands-leading-role-in-electric-vehicle-adoption/>

¹⁵ Author's calculations based on Dataforce (2022).

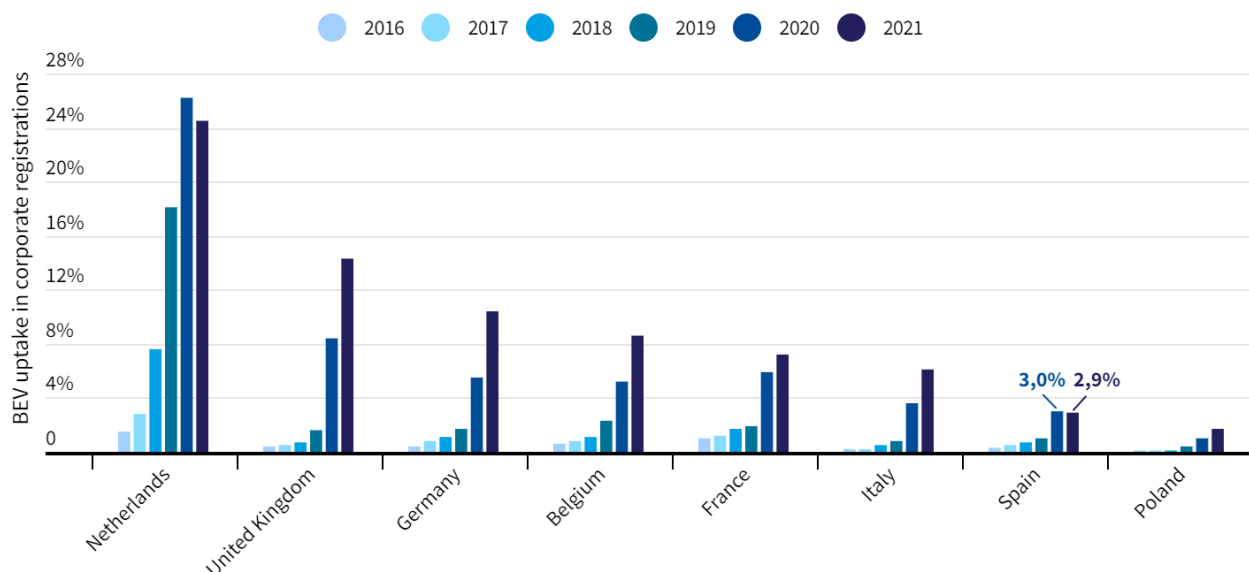


Figure 4: Evolution of BEV uptake in new registrations for major European corporate fleets

There is no inherent reason why the Spanish corporate fleet should lag behind European neighbours. In 2017, as the electrification transition kicked-off, the Spanish corporate fleet was at a similar level of BEV uptake as Germany and the UK but with all three countries lagging behind France which had an early lead. Yet prioritisation in government and key policy reforms have led the UK and Germany to take a commanding lead over Spain and even pass France. The ability of countries to electrify their corporate fleets is therefore shaped by strong policies aimed at tackling the major barriers to electrification. The next section explores the most relevant barriers to the electrification of corporate cars in the Spanish market.

4. Barriers to the electrification of the Spanish corporate fleet

Economies of scale and advances in battery technology are generating a positive feedback loop whereby cheaper BEVs induce strong consumer demand and increased production leads to cheaper BEVs. Based on market developments alone it is clear that BEVs will steadily grow in number and replace ICE vehicles over the next few decades. However, without political support, market developments will not be sufficient to achieve the electrification of the corporate fleet quickly enough to meet the climate objectives of the Spanish government including the objective of 5 million EVs by 2030.

This gap between ambition and reality is starkly clear in the ‘EV Readiness Index’ developed by Leaseplan (the third largest car leasing company in Europe) where Spain ranks 17th out of 22 countries in Europe for its readiness to usher in the EV transition.¹⁶ With this low ranking, Spain stands in stark contrast to its western European neighbours which top the index.

¹⁶ Leaseplan (2022). EV Readiness Index 2022. Retrieved from: https://www.leaseplan.com/corporate/~/_media/Files/L/Leaseplan/documents/120422%20EV%20Readiness%20Index%20Release%202022%20-%20Report.pdf

EV Readiness score, per country

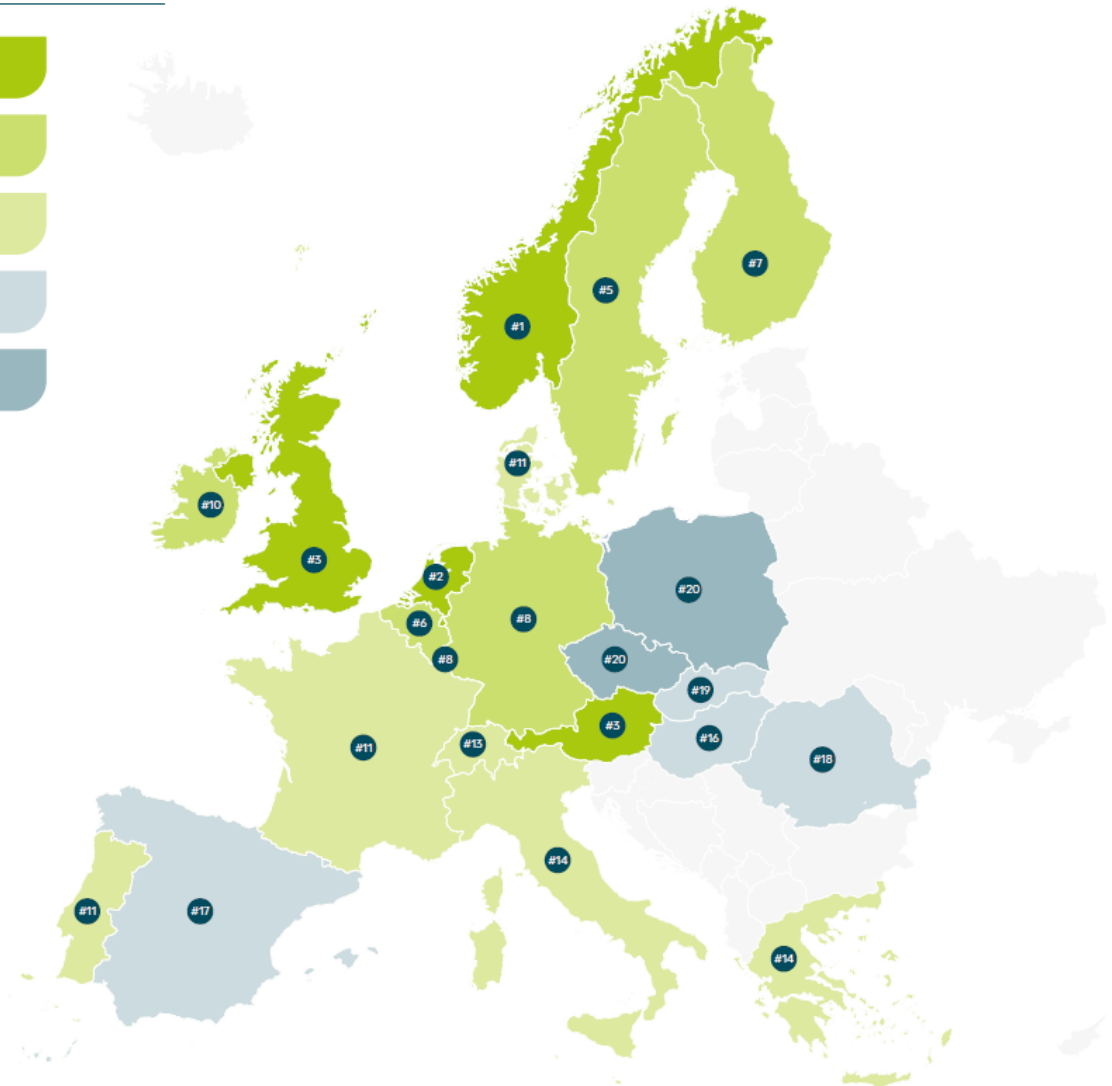
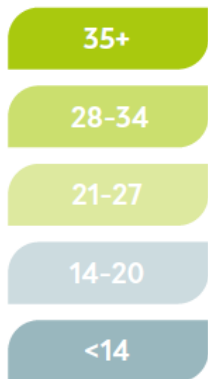


Figure 5: Country ranking from the Leaseplan EV Readiness Index 2022

Source: Leaseplan (2022). EV Readiness Index 2022.

The poor performance in Spain in the EV Readiness Index and other international rankings¹⁷ is the result of many factors including those of importance to the widespread electrification of the corporate fleet: the low rate of BEV uptake in the leasing segment, the strong growth of PHEVs, and the lack of green taxation. The following section considers these factors in turn.

¹⁷ See, for example, The Economist's rEV Index where Spain ranks 9th out of 9 countries.

4.1 Leasing companies in Spain are slow in BEV uptake

The low level of BEV uptake in the Spanish corporate fleet is an average across the various subsegments. From highest to lowest, BEV uptake is 6,0 % in true fleets, 4,6 % in dealers and manufacturer fleets, 1,8 % in leasing and long-term rental fleets, and 1,4 % in rent-a-car fleets (Figure 6).¹⁸

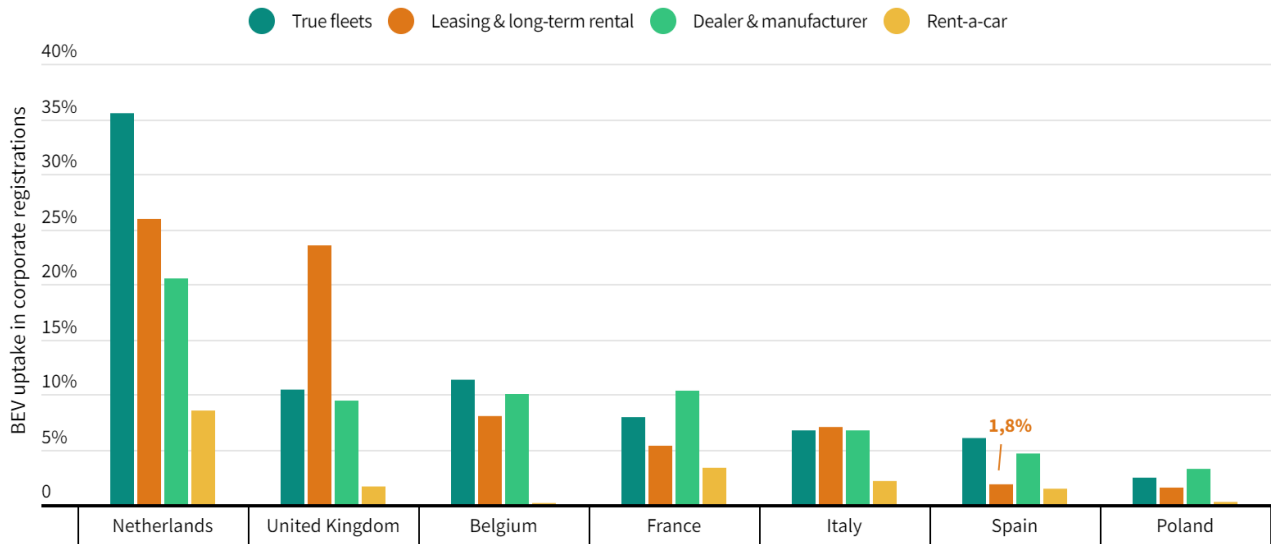


Figure 6: BEV uptake in corporate registrations across major European car markets

This low level of BEV uptake in rent-a-car fleets is typical of all countries due to the unfamiliarity of the charging situation among tourists, but the low level of BEV uptake in Spanish leasing and long-term rental fleets is very atypical compared to the other major European car markets. In most other countries, the BEV uptake in leasing and long-term rental fleets is well above rent-a-car fleets and in the UK and Italy the leasing and long-term rental fleets have the highest level of BEV uptake of any of the corporate segments. The low level of BEV uptake among leasing and long-term rental fleets in Spain is therefore not inevitable. It is, however, a major problem, especially as leasing cars continues to increase in popularity for both private and corporate customers.

4.2 PHEVs are displacing BEVs in the EV market, but are a false solution

Plug-in hybrid electric vehicles (PHEVs), which are either powered by fossil fuel or a charged battery, compose the majority of EVs in the Spanish corporate fleet (69% in 2021). This evolution has changed rapidly over time, with PHEVs only passing BEVs in 2020 but increasing in sales dramatically at the same time as BEV sales growth slows (Figure 7). This divergence in growth rates suggests that PHEVs are displacing BEVs in the EV market and explains the low BEV growth in Spain in recent years (Figure 4).

¹⁸ Author's calculations based on Dataforce (2022).

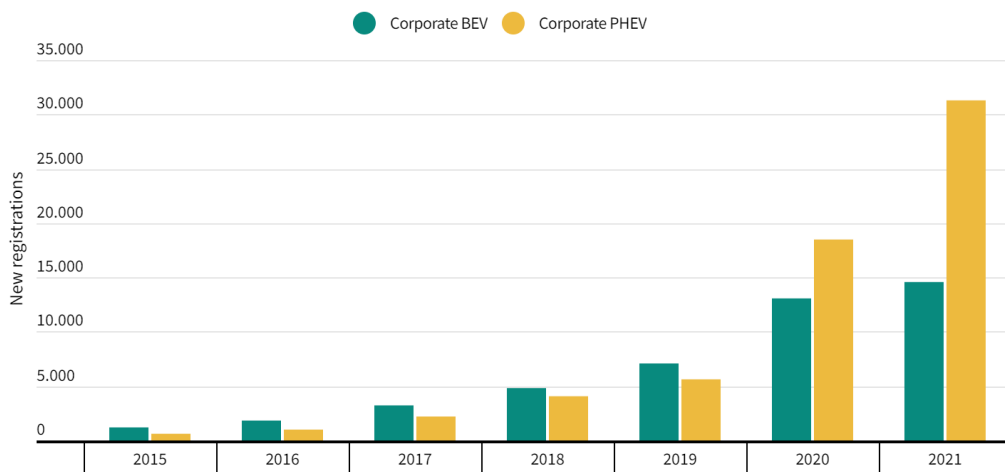


Figure 7: New registrations of BEVs and PHEVs in the Spanish corporate fleets

This dominance of PHEVs in the corporate EV market in Spain is not typical of other European markets. The PHEV share of the EV market is higher in Spain than any of the major European car markets and the third highest - after Greece and Finland - when considering all European countries (Figure 8).¹⁹

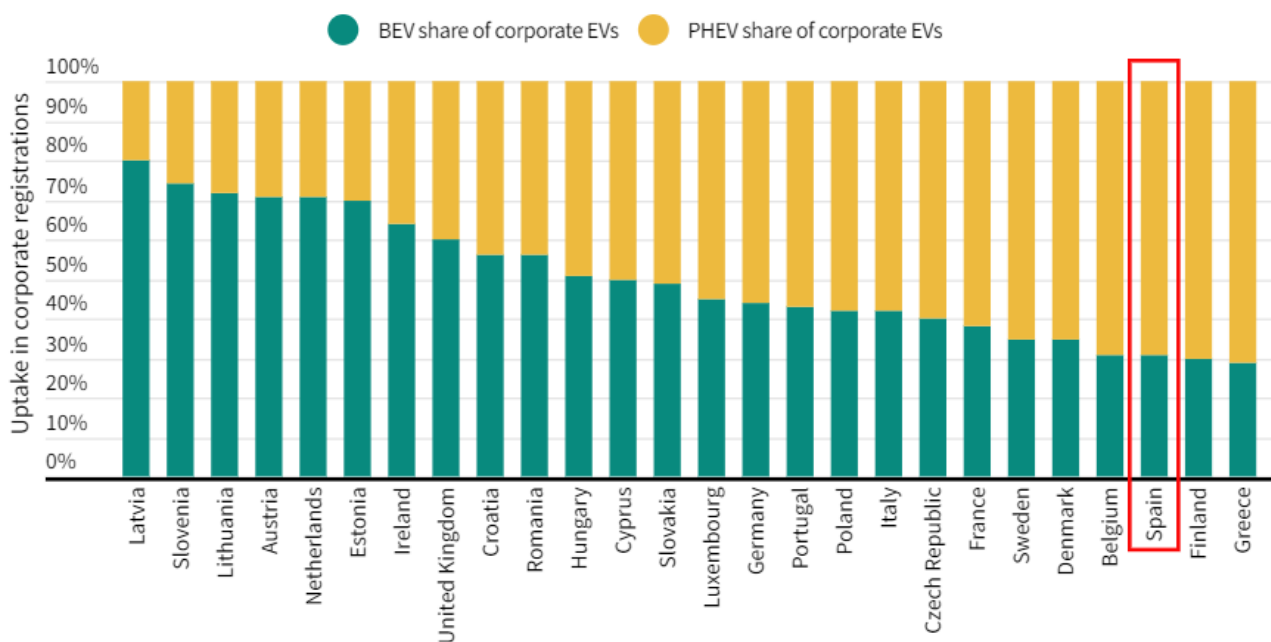


Figure 8: BEV and PHEV uptake in corporate registrations by country

Much of this PHEV popularity in the corporate channel is driven by the first barrier, the leasing and long-term rental fleet, where PHEV uptake is particularly high (9,1%) and BEV uptake is particularly low (1,8%) (Figure 9). This popularity of PHEVs in the Spanish corporate fleet does not extend to private

¹⁹ Ibid.

registrations, however, where PHEV uptake is only 3,2%.²⁰ As a result, more than 72% of new PHEV registrations in Spain go to the corporate channel.²¹

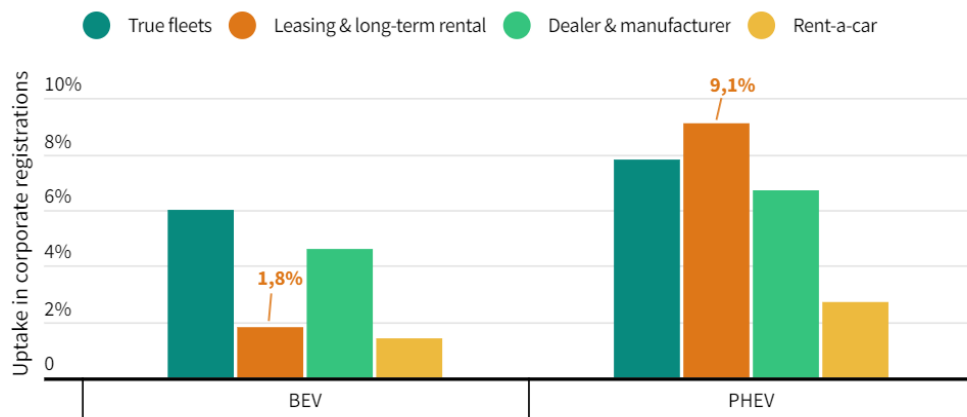


Figure 9: BEV and PHEV uptake in corporate registrations by subsegment

But while PHEVs have proven to be a popular corporate car, their real-world emissions call their increasing use — and the policies that incentivise them — into question.

4.2.1 Real world PHEV emissions are approximately four times higher than test-cycle emissions

PHEVs are typically advertised with test-cycle emissions in the range of 30-60g CO₂/km, but analysis of charging behaviour and real-world world emissions has revealed that PHEV corporate cars have CO₂ emissions approximately five times as high as stated by the test-cycle.²² The result is that real-world CO₂ emissions from PHEVs, particularly PHEV corporate cars, are higher than a conventional ICE car.

This enormous gap between test-cycle and real-world emissions is explained by several factors that have been extensively studied in other reports.

- First, there is a fundamental design problem of PHEVs where the small e-motor is ineffective when accelerating at pace and the ICE is often activated. Many models also lack fast charging capabilities, requiring long charging times even for the smaller PHEV battery.
- A second factor pushing up real-world emissions is driving behaviour as testing has shown that PHEVs are being driven with greater acceleration and on longer trips before charging than under test-cycle conditions. This driving behaviour is particularly problematic for the corporate fleet as the cars are driven further and charged less.

²⁰ Ibid.

²¹ Ibid.

²² ICCT (2022).

- Third, PHEVs tend to be larger and heavier vehicles than the average ICE car. This is especially true for corporate cars where luxury cars and SUVs are among the most popular PHEV models.
- Fourth, all cars powered by an ICE — PHEVs included — continue to demonstrate a gap between test-cycle and real-world performance despite improvements in testing procedures. Taken together, these factors yield an emissions profile that more closely resembles that of a typical ICE vehicle rather than a zero emissions vehicle.

While best practices such as daily charging provided by workplace charging can mitigate these factors, modelling has revealed that even with daily charging real-world emissions from the corporate fleet would still be twice as high compared to the WLTP values due to the high mileage and average trip length of those vehicles.²³

4.2.2 Spanish policy incentivises PHEVs

In Spain, PHEVs are incentivised through two main policies: a subsidy upon purchase and reduced benefit-in-kind taxation.

Purchase subsidies in Spain differ depending on whether the registration is private or corporate and, if it is a corporate registration, on the size of the business. They are only available for cars with a purchase price under €45,000. For small and medium-sized enterprises the PHEV subsidy (cars with an electric range of 30-90km) is €1,700 and €1,600 for large companies.²⁴ These subsidies are relatively high compared to other major European car markets and compared to the BEV purchase subsidy of €2,900 and €2,200 respectively.²⁵ In the UK and France, PHEV support has been phased out completely (while a purchase subsidy for BEVs remains) and in Poland a purchase subsidy was never introduced for PHEVs (while one exists for BEVs). Spain's continued purchase subsidies for PHEVs thus conflicts with the latest evidence on their real world emissions as well as the policy approach taken by other European car markets.

Spain's approach to benefit-in-kind taxation is even more advantageous for PHEVs. Whereas salary cars are generally taxed in Spain at a rate of 20% of the car value, for both PHEVs and BEVs there is a 30% reduction, bringing the benefit-in-kind tax rate to 14%. This equal taxation of PHEVs and BEVs stands in stark contrast to the approach used in the other major car markets like the UK, Germany, France, where the benefit-in-kind tax reduction for BEVs is at least twice the rate for PHEVs.

²³ Institut für angewandte Ökologie, Transport & Environment, Institut für Energie- und Umweltforschung Heidelberg. (2020). Plug-in hybrid electric cars: *Market development, technical analysis and CO₂ emission scenarios for Germany*. Retrieved from:

<https://www.oeko.de/uploads/oeko/oekodoc/PHEV-Report-Market-Technology-CO2.pdf>

²⁴ Gobierno de España (2021). Programa MOVES III. Retrieved from:

<https://www.idae.es/ayudas-y-financiacion/para-movilidad-y-vehiculos/programa-moves-iii>

²⁵ Ibid.

From these policies it is clear that PHEV support could be much better spent on alternative measures to reduce car emissions. The same level of support, had it been directed to BEV new corporate registrations, could have supported truly zero emission vehicles.

4.3 Spain is failing to utilise green taxation

Green taxes - those levied on activities that are harmful to the environment - provide a powerful incentive for behavioural change and are one of the primary tools governments can use to reach environmental objectives. They can also raise significant funds for governments and ensure that polluters pay for the damages they cause.

The use of green taxes across sectors and geographies has increased as the positive impact of these policies have become clear.²⁶ Spain, however, is letting the opportunity pass by. As the IMF recently concluded in the country report on Spain: “Despite multiple taxes, environmental tax collection as a share of total revenues (5 percent) and as a share of GDP (1.8 percent), and the implicit tax rate on energy, are relatively low compared to other European countries.”²⁷

Perhaps the most extreme example of this failure of the Spanish government to utilise the potential of green taxation is in road transport - a sector where Spanish emissions continue to increase while reductions are being made elsewhere. In the IMF comparison of fiscal revenues from road transport, Spain ranks 29th out of 29 countries in terms of fiscal revenues raised as a percentage of GDP (just under 1%).²⁸ This is also true in terms of the tax burden at the vehicle level. The European Automobile Manufacturers' Association ranks Spain 13th of the 13 largest EU markets by annual tax revenue per motor vehicle (an average of €1.068).²⁹

²⁶ IEEP (2021). Green taxation and other economic instruments. European Commission. Retrieved from: https://ec.europa.eu/environment/news/environmental-pollution-new-study-finds-polluters-do-not-pay-damage-they-cause-2021-11-12_en

²⁷ IMF(2022). Spain: Selected Issues. IMF Country Reports 22/046, pp 28. Retrieved from: <https://www.imf.org/en/Publications/CR/Issues/2022/02/15/Spain-Selected-Issues-513181>

²⁸ Ibid, pp 40.

²⁹ ACEA (2021). Interactive map: Tax revenue per motor vehicle in major EU markets. Retrieved from: <https://www.acea.auto/figure/tax-per-motor-vehicle-major-eu-markets/>

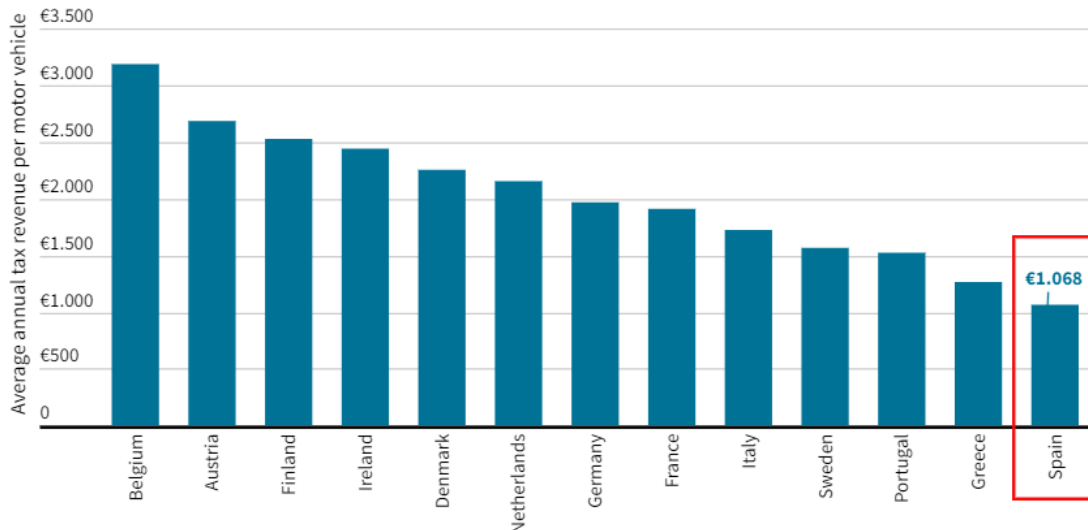


Figure 10: Tax revenue per motor vehicle in major EU markets

These results indicate not only that Spain has failed to seize the opportunity of green taxation in transport, but also that tremendous potential for ambition remains. Corporate cars are a particularly promising area due to ability to pay and the prominence of fiscal incentives in corporate planning and purchases.

4.3.1 Tax advantages for corporate cars have no environmental conditionality

Registering a car as a corporate expense has significant savings due to tax advantages. When a car is registered as a corporate expense it is considered as a capital asset and therefore its depreciation can be written off as a capital cost and reduce corporate taxation on business profits. With a corporate tax rate of 25% in Spain, this depreciation write-off results in a tax savings of €5,000 on a €30,000 car. The depreciation (and associated tax savings) are typically spread over a period of six to twelve years.³⁰

A second significant tax saving comes from registering a car as a corporate expense is the VAT deduction. In Spain, the full VAT payment can be deducted from corporate cars that are used exclusively for business purposes and half of the VAT payment can be deducted if also used privately. With a VAT rate of 21% in Spain, this VAT deduction amounts to an immediate tax savings of €4,200.³¹ To lower the environmental impact of corporate cars, Spain could exclude combustion vehicles from these corporate cars tax benefits.

This is precisely the approach that Belgium has recently taken with respect to depreciation. In May 2021, the Belgian government announced that from 2026 only zero-emission vehicles can benefit from depreciation write-offs. For combustion engine vehicles registered between July 1, 2023 and December 31, 2025, this policy will be phased-in, with 75% of the vehicle cost still tax deductible in 2025, 50% in 2026, 25% in 2027, 0% from 2028 onwards. This phase-out applies to all cars with a combustion engine,

³⁰ ACEA (2021). ACEA Tax Guide 2021. Retrieved from: <https://www.acea.auto/publication/acea-tax-guide-2021/>

³¹ Authors' calculations.

including PHEVs. Depreciation write-offs for BEVs will also be reduced, but to a lesser degree, stopping at 67.5% in 2031.³² In France a slightly different approach is used, where the percentage of depreciation is dependent on where the car is situated in four emission bands (0-20 g CO₂/km, 21-50 g CO₂/km, 50-160 g CO₂/km, 160+ g CO₂/km).³³

Austria, Portugal (for business use), Norway, and Slovenia have instead targeted VAT deductions, making this corporate car tax benefit only available to zero-emission vehicles.³⁴ Spain could follow a similar approach and even extend this policy to the second-hand market for an even broader incentive that would impact resale values.

Regardless of the system, it is clear that Spain's tax advantages for cars not only result in more cars (and associated economic, social, and environmental consequences) but that there are no zero-emission incentives for these vehicles.

4.3.2 No differentiation between BEVs and PHEVs for benefit-in-kind taxation

While it is the owner of a corporate registration that benefits from VAT deductions and depreciation write-offs, there are also important benefits for private users of corporate cars, called salary cars. Instead of taxing salary cars as direct income, in Spain the value of the car is taxed as a benefit-in-kind (BiK) at a general rate of 20%. This rate is reduced by 15% for Euro 6 vehicles (to 17%), by 20% for mild hybrids/LPG/CNG (to 16%), and by 30% for PHEVs and BEVs (to 14%).

These benefit-in-kind tax rates contrast dramatically with salary car tax policies in the other European countries (Figure 11), for example in the UK where the BiK rate increases with emissions from 2% for BEVs to 37% cars above 160 g CO₂/km or in Austria where the BiK rate is 0% for BEVs, 18% for low-emission vehicles (1-135 g CO₂/km), and 24% for high-emission vehicles (>135 g CO₂/km). Spain is one of the only countries that taxes BEVs and PHEVs at the same rate, thus explaining the dominance of PHEVs in the market (Figures 7 and 8).

³² ACEA (2021).

³³ Ibid.

³⁴ Ibid.

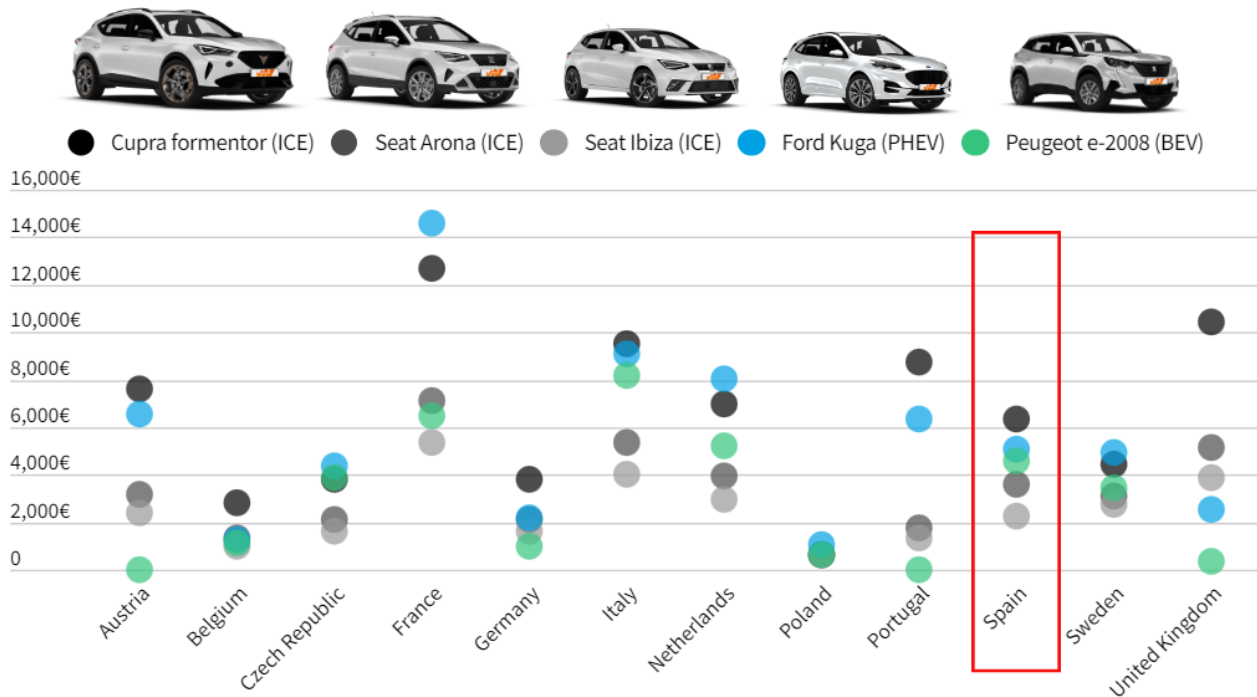


Figure 11: Benefit-in-kind taxation in the top twelve European corporate car markets

Notes: Vehicle models selected as a common corporate car in five broad emission categories. All five car models are manufactured in Spain. Countries selected as the top twelve European corporate car markets (Dataforce 2022). Source: Authors' calculations based on a compilation of government policies.

To provide incentives for corporate car electrification, especially for employees selecting a salary car, reforming benefit-in-kind offers great, unutilised potential.

4.3.3 The registration tax by emissions is only weakly differentiated

Spain, like most European countries, levies a registration tax on the purchase of new vehicles that progressively increases based on the emissions of the vehicle. The Special Tax (IEDMT, Impuesto Especial sobre Determinados Medios de Transporte) is levied as a share of vehicle price and increases based on four emission bands (Figure 12). These tax rates serve as a minimum, and regions can increase the rate, although only some regions have utilised this option and only to a limited extent. Furthermore, as there are only four bands and they are levied at a high level, only 1,1% of new registrations are in the fourth emission band and 5,9% in the third emission band.³⁵ This provides very little incentive for low and zero-emission vehicles.

³⁵ Authors' calculations based on Dataforce (2022).

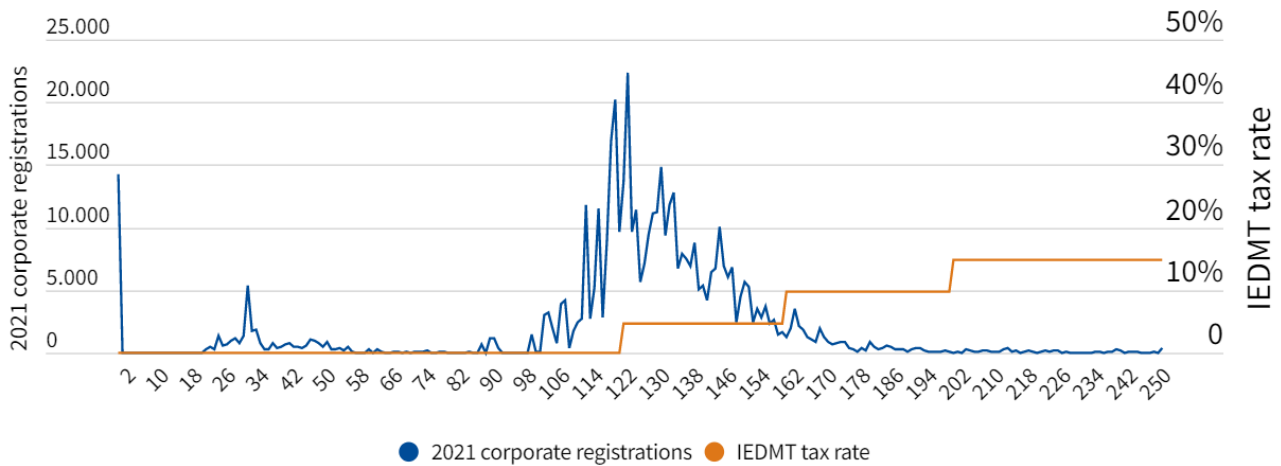


Figure 12: Distribution of new corporate registrations and registration tax band

To have a significant impact, these thresholds need to be applied at a lower rate, in greater number, and with a higher burden. Compared to other European countries, the tax burden in space is quite low (Figure 13). Calculating the tax burden of typical Spanish-manufactured and Spanish-sold cars in five broad emission categories reveals that there is only a small tax advantage from acquisition and ownership taxes in Spain.

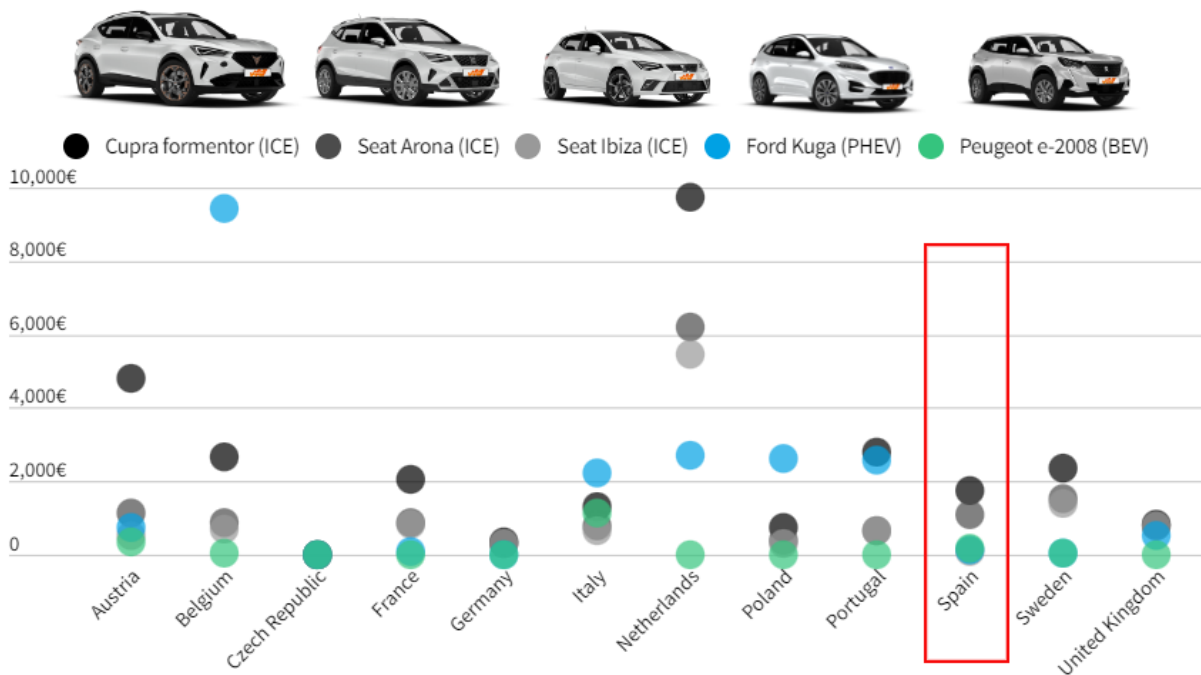


Figure 13: Four-year tax burden of acquisition and ownership taxes in the top twelve European corporate car markets

Notes: Vehicle models selected as a common corporate car in five broad emission categories. All five car models are manufactured in Spain. Countries selected as the top twelve European corporate car markets (Dataforce 2022).

Source: Authors' calculations based on a compilation of government policies.

4.4 Charging infrastructure

Another barrier to corporate electrification in Spain is the slow rollout of the national charging network. This is further compounded by the distribution of population with long distances between large urban areas. Whereas most of the high-speed chargers are deployed in these large urban areas, many drivers of corporate vehicles will need to conduct inter-city travel. The lack of high-speed chargers, particularly in more rural areas and along transport corridors, thus presents a barrier to BEV adoption as some trips become unviable. Spain ranks near the bottom of European countries, only above Greece and Luxembourg, in the number of high speed chargers per 100km of highway.³⁶

To address this issue, the government should focus on improving the high-speed charging infrastructure (at least 50 kW DC) within less populated municipalities where current demand makes it unattractive for the private sector to invest. This can be achieved through government funding for the capital costs and a tendering procedure for the operation of the charge points. This initiative is in addition to the Alternative Fuels Infrastructure Regulation (AFIR) at the EU level which targets the deployment of chargers along the main transport corridors. Ensuring at least one charging point in the 2.260 municipalities in which the population surpasses 2.000 inhabitants (with a higher number of charging points for larger municipalities) would partially cover the remnant charging power required to be deployed by AFIR, help in a faster transition to electric vehicles outside large urban areas, and create a more friendly charging ecosystem in the country.

5. Results from modelling potential tax reforms

The possibility of writing off vehicle depreciation to face lower corporate taxes, deducting VAT from car costs, offering salary cars which are taxed less than income through benefit-in-kind, and car registration tax are four key fiscal instruments that influence the purchase and use of corporate cars. The following analysis reveals what effects an ambitious ecological orientation of these taxation instruments could have on BEV registrations, emission reductions, and tax revenues in Spain. The scenarios are described in Table 1 below.

Table 1: Overview of the central assumptions of the modelled tax reforms

| Policy lever | Reference scenario | Corporate Fleet Fiscal Policy Model scenario |
|-------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Depreciation write-offs | Current policy of 100% write-off of vehicle cost over a five year period | For new registrations of combustion engines: <ul style="list-style-type: none">● 2024: 80%● 2025: 60%● 2026: 40%● 2027: 20%● 2028: 0% |

³⁶ Leaseplan (2022).

| | | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VAT deductions | <p>Current policy for new registrations of combustion engines:</p> <ul style="list-style-type: none"> • 100% deduction for cars used exclusively for business • 50% deduction for cars used partially for private purposes | <p>For new registrations of combustion engines used exclusively for business / partially for private purposes:</p> <ul style="list-style-type: none"> • 2024: 80% / 40% • 2025: 60% / 30% • 2026: 40% / 20% • 2027: 20% / 10% • 2028: 0% / 0% |
| Benefit-in-kind taxation | <p>Current policy of:</p> <ul style="list-style-type: none"> • ICE cars: 20% • Euro 6 cars (<€25.000): 17% • Mild hybrid/CNG/LNG (<€35.000): 16% • PHEV/BEV (<€40.000) 14% | <p>Proposed reform (2024):</p> <ul style="list-style-type: none"> • ICE cars including Euro 6, Mild hybrid/CNG/LNG: 20% • PHEV, BEV (>€40.000): 14% • BEV (<€40.000): 10% |
| Registration taxes | <p>Current policy of:</p> <ul style="list-style-type: none"> • 0-120 g CO₂/km: 0% • 121-159 g CO₂/km: 4,75% • 160-199 g CO₂/km: 9,75% • 200+ CO₂/km: 14,75% | <p>Proposed reform (2024):</p> <ul style="list-style-type: none"> • 0 g CO₂/km: 0% • 1-25 g CO₂/km: 2,75% • 25-50 g CO₂/km: 4,75% • 50-80 g CO₂/km: 6,75% • 80-100 g CO₂/km: 8,75% • 100-120 g CO₂/km: 10,75% • 120-140 g CO₂/km: 14,75% • 140-160 g CO₂/km: 16,75% • 160-180 g CO₂/km: 18,75% • 180-200 g CO₂/km: 20,75% • 200+ g CO₂/km: 22,75% |

In order to model the effects of taxation instruments on commercial fleets, T&E commissioned the consulting firm Revnext to create a total cost of ownership model that was expanded to include policy levers. The resulting Corporate Fleet Fiscal Policy Model shows the ecological and fiscal policy effects of a reform of the tax xdzz

The scope of application covers true fleets, which currently number 1,08 million vehicles - covering 82 % of all corporate cars. For simplicity, fleets of automobile manufacturers and dealers as well as rental car companies for short-term rentals are not considered in the model because the composition of the company car market in these categories differs greatly from that of the true fleet (holding time, total operating costs, mileage). In addition, the proportion of privately used company cars in the fleets of automobile manufacturers and dealers as well as rental car companies is significantly lower. The modelled scenarios have hardly any steering effect in this area and, on the other hand, are greatest in the area of true fleet, which is why the modelling is limited to this vehicle market.

The model takes into account both the purchase decision of companies on the basis of their total cost of ownership and the decision on the type of drive for classic company cars by employees who want to keep

their costs for the private use of company cars as low as possible through BiK. The consideration of the financial incentives of BEV, PHEV and combustion engine models is carried out for the vehicle segments A-E (cit compact I cars to executive cars) on a national level. The results are calibrated with an S-curve that relates the financial benefits to vehicle sales from 2018 to 2021 and forecasts sales to 2030. The results of the modelling are compared with the developments if there is no reform of the taxation instruments. A detailed description of the Corporate Fleet Fiscal Policy Model is attached.

5.1. Results from the combined policy reforms

Compared to current and announced policies, the four policy reforms will result in 9 % more BEVs in 2024, 33 % more BEVs in 2028 (the maximum value), and 20 % in 2030 (Figure 14).

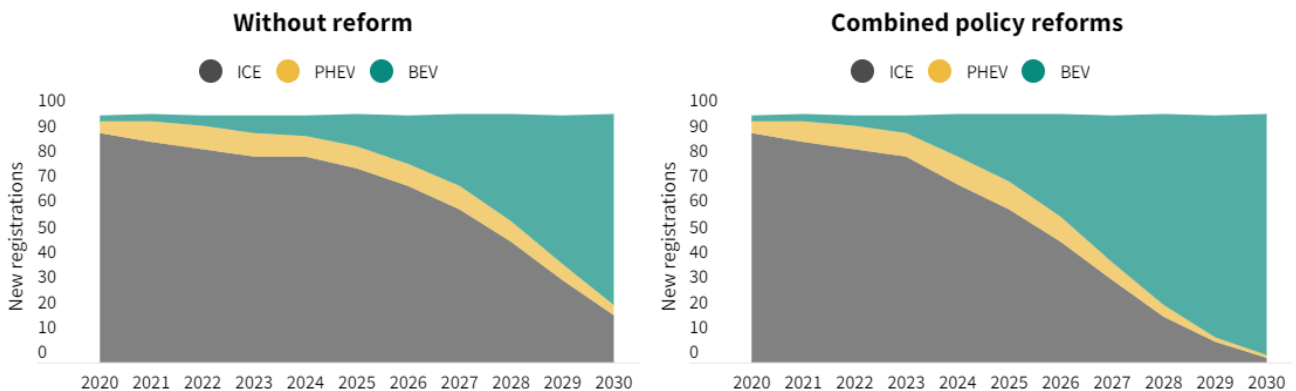


Figure 14: Composition of new corporate car registrations by drivetrain without reform (left) and under the combined policy reforms (right)

From 2024 to 2030, a total of 410.000 additional BEVs will be generated from this reform, equivalent to an increase of 62 % (Figure 15). The peak policy impact is 87.000 additional BEVs in 2028.

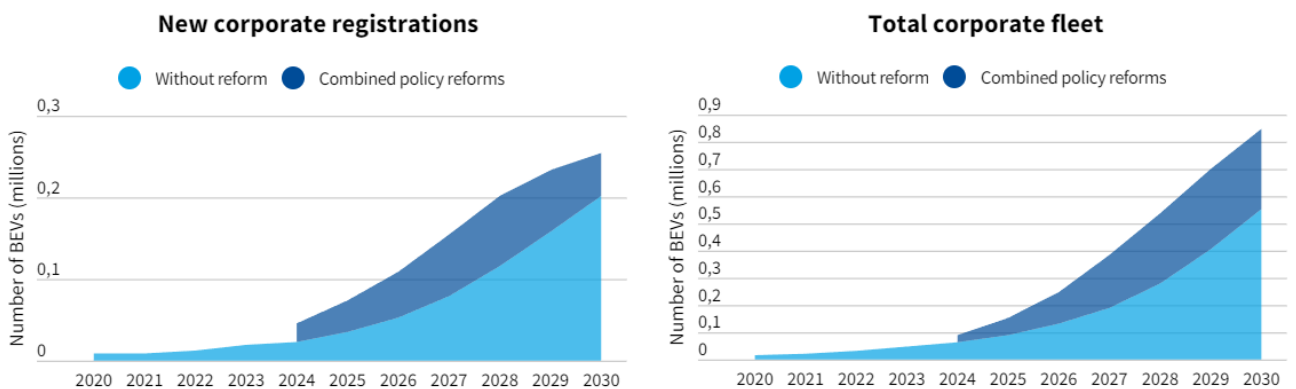


Figure 15: Number of BEVs in newly registered corporate cars (left) and the total fleet (right) without reform and under the combined policy reforms

The increasing proportion of BEVs among the new registrations of corporate cars leads to a tailpipe CO₂ reduction in the true fleet of 4,0 million tonnes compared to the development if no reform is carried out (Figure 16). Over the lifetime of these vehicles, the savings grow to 15,2 million tonnes. All calculations, including those for PHEVs, are based on real world vehicle emissions.

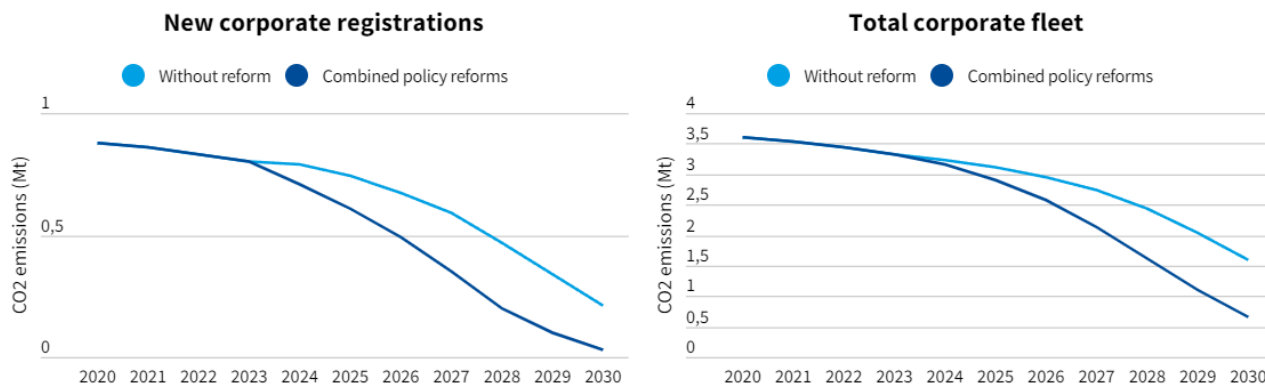


Figure 16: CO₂ emissions from new registrations (left) and from the existing fleet (right) without reform and under the combined policy reforms

In addition to reducing CO₂ emissions, the electrification of the corporate fleet has an important benefit in reducing oil consumption. This benefit has recently come into renewed focus as Russia’s invasion of Ukraine has prompted countries to consider ways of lowering oil demand and ceasing to fund Russia through payments for imported oil. The modelling shows that the increasing proportion of BEVs among the new registrations of corporate cars leads to reduction of oil consumption in the true fleet of 1,3 million tonnes of oil equivalent compared to the development if no reform is carried out (Figure 17).

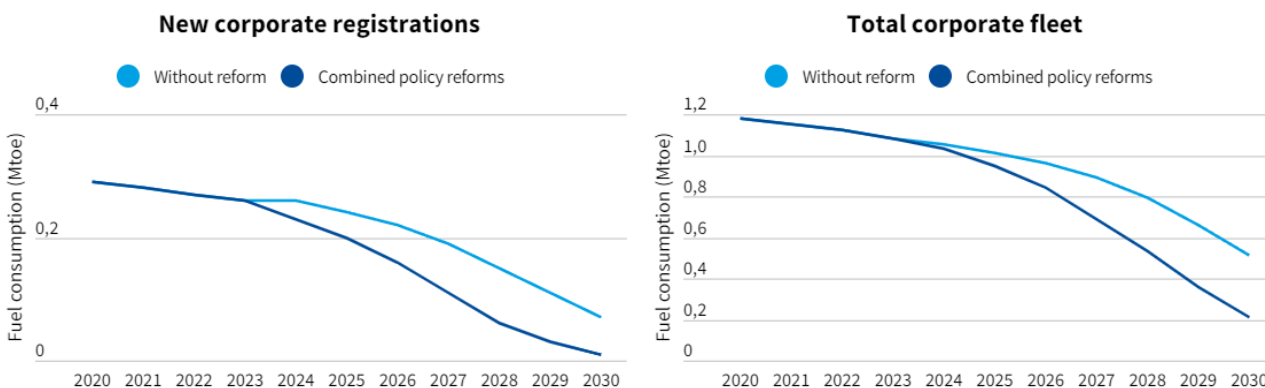


Figure 17: Fuel consumption from new registrations (left) and from the existing fleet (right) without reform and under the combined policy reforms

The combined policy reforms lead to an increase in government revenue, whereas without reform government revenues fall at a nearly consistent rate from 2024 to 2030. Over the period 2024 to 2030, the reform would lead to additional tax revenues of 3,7 billion euros (Figure 18a). From 2030, however, revenues from the combined reforms fall below the situation without reforms as the number of BEVs

increases, indicating that a longer-term vision for road transport taxation is needed in the 2030s and beyond.

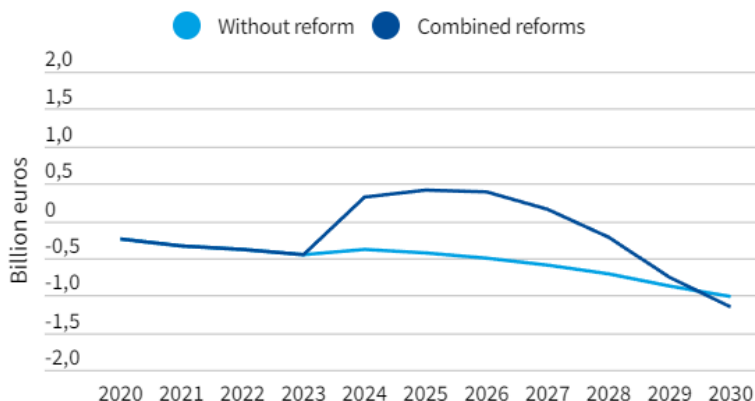


Figure 18a: Tax revenue from corporate cars without reform and under the combined policy reforms

The increase in revenues under the combined reforms comes from the phase-out of depreciation write-offs and VAT deduction for combustion vehicles as well as the increase in IEDMT. These revenues are reduced as the fleet undergoes electrification, as are the revenues from fuel taxes. The reform to benefit-in-kind, as it lowers the tax rate for BEVs, results in a loss of government revenues (Figure 18b). However, this reduction in tax revenue from additional BEVs is more than compensated for by the reduction in the depreciation allowance for combustion engines (Figure 18a).

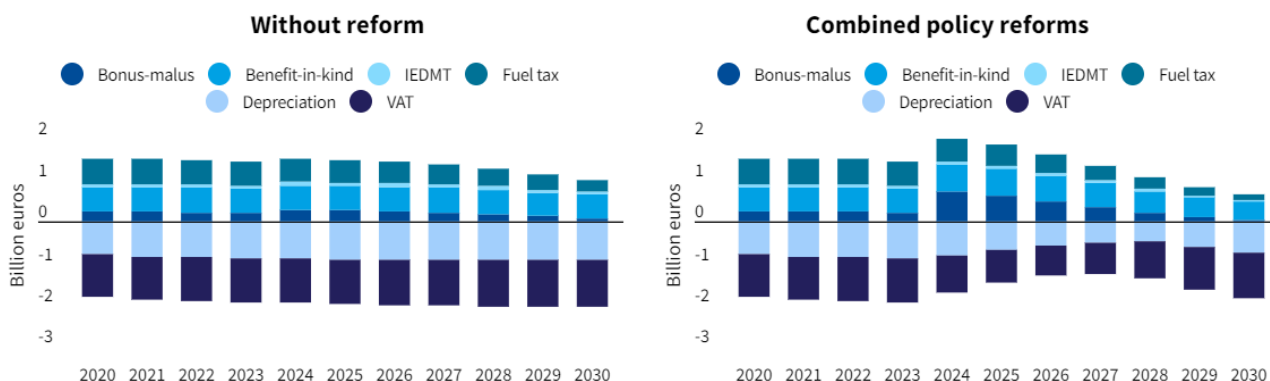


Figure 18b: Tax revenue by policy for corporate cars without reform and under the combined policy reforms

5.2. Summary of the effects: Reduced fuel use and CO₂ emissions without a fiscal loss

If the current regulations are retained, BEV registrations will increase compared to today and fuel consumption and CO₂ emissions will decrease as a result. A reform of corporate car taxation, however, would significantly speed up this process and amplify the effects.

All four tax reform scenarios are fairly similar in the magnitude of their effects, with the largest effects from the depreciation write-off phase-out scenario, particularly for tax savings (Table 2). This is mostly due to the fact that the benefit of depreciation write-offs can reach a high level (e.g. corporate tax at 25% is higher than VAT at 21% and the latter is only partly deductible).

Table 2 : Summary of the effects for the true fleet of corporate cars in the period 2024-2030³⁷

| Policy | 2030 BEV share | Change in BEVs (#) | Change in CO2 emissions (Mton) | Change in fuel use (Mtoe) | Change in fiscal balance (billion €) |
|-----------------------------------------------------|-------------------|--------------------|--------------------------------|---------------------------|--------------------------------------|
| No reform | 76% | 663.000 | 18,1 | 5,9 | -4,6 |
| Phase-out of depreciation write-offs for ICE & PHEV | 87% (+11 p.p.) | 156.000 (+24 %) | -1,3 (-7 %) | -0,4 (-7 %) | 2,4 (+52 %) |
| Phase-out of VAT deductions for ICE & PHEV | 84% (+8 p.p.) | 108.000 (+16 %) | -0,9 (-5 %) | -0,3 (-5 %) | 2,4 (+53 %) |
| Reduction in benefit-in-kind for BEV | 82% (+6 p.p.) | 126.000 (+19%) | -1,2 (-7 %) | -0,4 (-7 %) | -0,7 (-15 %) |
| Increase in the IEDMT | 83% (+7 p.p.) | 104.000 (+16%) | -1,1 (-6 %) | -0,4 (-6 %) | 1,8 (+40 %) |
| Combined policy reforms ³⁸ | 96% (+20 p.p.) | 410.000 (+62 %) | 4,0 (-22 %) | 1,3 (-22 %) | 3,7 (+81 %) |

The effects are especially large if the reform of the measures is pursued in parallel (as in figures 14-18), because the reduction of benefit-in-kind has a positive effect on the decision of employees for BEV salary cars, while the phase-out of depreciation write-offs and VAT deductions for combustion cars and the IEDMT increase affect companies' demand for BEVs.

In combination, the implementation of all four reforms will lead to 1,1 million new BEVs registered in the true fleet between 2024 and 2030 with 38% of these attributable to the policy reforms (Table 2). This outcome could be delivered while also improving the fiscal balance by €3,7 billion and significantly

³⁷ All changes in the overview table are cumulative for the period 2022-2030. The absolute and relative change is given compared to the developments if the existing regulations are retained.

³⁸ The effects of the joint application do not correspond to the sum of the individual effects, because the effects can weaken or reinforce each other through a combination of financial incentives.

reducing oil consumption and emissions. The reduction of oil consumption of 1,3 Mtoe over the period, of which 0,3 Mtoe occurs in 2030, is about one-third of the annual Spanish imports of crude oil from Russia.³⁹

The modelled scenarios depict the effects for true fleets (1,08 million corporate cars), so not all commercial vehicles are included in the calculation. The effects would therefore be even greater for the entire commercial vehicle market.

Other policies, for example increasing the Impuesto sobre Vehículos de Tracción Mecánica (IVTM) annual registration tax or using the net car value (including IEDMT and purchase subsidies) rather than the gross car value in benefit-in-kind are not included here but would further increase the number of BEVs and reduce oil consumption and CO₂ emissions.

As corporate cars are typically held for a four-year period before being sold into the second hand market, the lifetime CO₂ reductions are much greater than the reductions in the corporate fleet alone. Using a 15 year car lifetime and average private usage, the additional 410.000 BEVs would save a total of 15,2 million tons of CO₂ emissions over their lifetime.

6. Summary of proposals

The corporate fleet does not garner the focus it deserves. As the majority of new car registrations in Spain are made in the corporate channel (57% and growing), policies that influence corporate purchasing decisions effectively steer the car market as a whole.

And corporate cars are well placed to lead on electrification. Whereas consumers tend to focus on the sticker price of a new car, corporate purchases focus on the total cost of ownership, which favours battery electric vehicles (BEVs) due to their lower fuel and maintenance costs. The fact that corporate cars are driven twice as much as private cars further compounds this advantage. As the low hanging fruit of transport emissions, corporate cars are ripe to be picked.

The latest information reveals that the opportunity to electrify the corporate fleet is passing Spain by. In 2021, as uptake of BEVs surged ahead in most markets, the BEV uptake in the Spanish corporate fleet bucked the trend with a slight decrease to 2,9%. This places Spain behind the Netherlands, the UK, Germany, Belgium, France, and Italy, and only ahead of Poland among the major European markets.

The reason for Spain's poor performance is clear. Corporate cars are creations of tax policy and benefit from corporate tax breaks like depreciation write-offs and VAT deductions. Spain, unlike other countries, has not used the tax system to incentivise electrification. In terms of tax per vehicle, Spain comes in at the bottom with the lowest tax use (an average of €1.068 per vehicle). There is also little tax differentiation in Spain. For salary cars, Spain is one of the only countries that taxes battery electric vehicles (BEVs) at the same rate as plug-in electric vehicles (PHEVs) despite real world emissions from PHEVs that can exceed a

³⁹ Eurostat (2022). Imports of oil and petroleum products by partner country. Retrieved from: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_ti_oil&lang=en

conventional petrol or diesel vehicle. Socio-economic and geographic factors are clearly secondary to government policy - particularly fiscal policy - as evidenced by the accelerating electrification of neighbours like Portugal and France.

The good news is that we know what works. Through the experiences of countries that are leading the way on electrification, coupled with the specifics of the Spanish market and policy landscape, there are already policies that have a track record of success and can be rolled out in Spain. We recommend:

1. **A phase-out of depreciation write-offs for combustion vehicles (ICE & PHEV) from 2024-2028.** This policy has been implemented in Belgium and is expected to lead to nearly 100% BEV corporate registrations at the end of their phase-in period (2026).
2. **A phase-out of VAT deductions for combustion vehicles from 2024-2028.** Similar to the phase-out of depreciation write-offs, this policy targets the other large subsidy for corporate cars. Currently there is 100% VAT deduction for cars used exclusively for business and 50% deduction for cars used partially for private purposes.
3. **A reduction in benefit-in-kind taxation for employees opting for a BEV as a salary car.** Benefit-in-kind taxation can be a powerful financial incentive for employees choosing a salary car, as evidenced by the surge in BEV sales after the UK changed its benefit-in-kind taxation to heavily favour BEVs. Currently Spain has a very lower reduction in taxation for electric vehicles and is one of the only countries that taxes PHEVs and BEVs at the same rate.
4. **An increase in the registration tax (IEDMT) and the number of thresholds.** Currently there are only four bands and they are levied at a high level, only 1,1% of new registrations are in the fourth emission band and 5,9% in the third emission band. This provides very little incentive for low and zero-emission vehicles.

The results of our fiscal policy modelling confirms the power of these policy levers to shape corporate registrations and the associated impacts. When combined, the implementation of all four reforms will lead to 1,1 million new BEVs registered in the true fleet between 2024 and 2030 with 40 % of these attributable to the policy reforms. This outcome could be delivered while also improving the fiscal balance by €3,7 billion and significantly reducing oil consumption and emissions. The reduction of oil consumption of 1,3 Mtoe over the period, of which 0,3 Mtoe occurs in 2030, is approximately one-third of the annual Spanish imports of crude oil from Russia.

The introduction of tax reforms, like those recommended in this report, would rapidly shift corporate purchases towards electric vehicles and position Spain as a leader in the transition to a zero-emission transportation system.

Further information

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Appendix: Model description

To model the impact of corporate fleet taxation policies, T&E commissioned a policy-extended total cost of ownership (TCO) model from the consultancy Revnext. The resulting Corporate Fleet Fiscal Policy Model translates proposed changes to corporate fleet fiscal instruments into environmental and fiscal impacts. The model covers Spain, France, Germany, and the Netherlands and will be expanded to cover Italy and Poland in the future.

The modelling process can be simplified into four distinct stages. The first stage, which forms the base of the model, is a TCO calculation for each of the major powertrains (ICE, BEV, PHEV) and car segment (A-E based on size). The TCO components that are included are typical of those in a TCO model: depreciation costs, fuel costs, repair and maintenance costs, insurance costs, and taxes and grants. These calculations reveal the current situation in one of the focus countries with respect to the TCO differential between powertrains within a car segment (i.e. a 10% TCO premium for PHEVs over ICE in the B segment).

The second stage in the modelling is related to the fact that for salary cars (a subset of corporate cars), vehicle selection can be influenced by the employer (such as the fleet manager), by the employee, or most likely some combination of both (e.g. the fleet manager could prepare a short list of vehicles that the employee selects from). This balance of decision-making power over salary car selection varies from country to country and is estimated for Spain, the Netherlands, France, and Germany. The result of the TCO from the employer's perspective is therefore weighted with the result of the BiK based calculation from the employee's perspective (i.e. 50% employer TCO, 50% employee BiK) to produce the estimated level of uptake. This stage of the modelling is particularly important for proposed changes to benefit-in-kind (BiK) taxation.

The third stage in the modelling is to calibrate the TCO calculations with historical sales data. This stage is necessary to determine what TCO cost differential leads to what level of purchases. The result is an s-curve of technological diffusion that relates TCO cost differentials to BEV or PHEV uptake based on historical data. Fitting the s-curve in Spain, France, and Germany is greatly helped by the experience of the Netherlands which is further along the s-curve (i.e. a higher level of BEV uptake).

The fourth and final stage of the model is to adjust corporate fleet fiscal policy instruments that change the TCO calculation and therefore change the uptake of different powertrains in different car segments. These policy levers include annual road taxes and purchase grants/registration taxes, depreciation write-offs of cars, and benefit-in-kind taxation. The outputs of the model include the number of cars registered by powertrain and as a share of the market as well as the associated change in CO₂ emissions and government finances (i.e. tax and spend). The modelled changes cover a period from 2024 to 2030. The model can therefore show how fiscal policy changes to incentivise EVs translate into EV uptake, CO₂ savings, and at what cost (or savings) to the government compared to a business as usual (BAU) scenario.

Annual road taxes and registration taxes/grants

As road taxes and registration taxes/grants are already incorporated into the basic TCO model, modelling these policy scenarios for these fiscal instruments is a straightforward matter of setting the new taxes, which then shifts the TCO, which then moves the national situation along the s-curve to a new level of uptake by powertrain and a new level of CO₂ emissions and government revenues compared to BAU. This assumes that the basis on which these taxes are applied (e.g. CO₂ emissions, vehicle weight, vehicle price) does not change in the proposal.

Benefit-in-kind taxation

A change to BiK taxation shifts the BiK which is combined with the TCO situation on the s-curve, weighted by the estimate of decision-making power, to a different level of uptake by powertrain and the associated CO₂ emissions and government revenues. One of the policy scenarios, where BiK is set based on CO₂ emissions of the vehicle as opposed to solely based on powertrain, presents a change to the modelling. With such a policy the BiK tax rates vary for ICE vehicles (as in the UK system) whereas in Spain, Germany, France, and the Netherlands vehicle price and powertrain are the only relevant criteria at present.

Depreciation write-offs

While car depreciation is already incorporated into the base TCO model, changing depreciation write-offs to incentivise BEV uptake presents a new policy approach (as opposed to simply changing the rates of an existing policy) for Spain. The structure of the model remains the same, however, with a reduction in depreciation write-offs for ICE vehicles shifting the TCO differentials, which then moves the national situation along the s-curve to a different level of uptake by powertrain and the associated CO₂ emissions and government revenues.

Baseline policies in Spain

The construction of a baseline policy scenario requires a forecast of the most relevant policies for the analysis over the duration of the model (2024-2030). While some of the policies have clear announcements about how they will apply over this period (e.g. expiration), for other policies assumptions need to be made about whether they will remain constant or change overtime (e.g. a continued tightening as in previous years). These assumptions are documented in Table A1.

Table A1: Baseline policies in France and their forecasted change

| Policy | Start date | End date | Forecasted policy change |
|-----------------|-------------------------|-----------|--------------------------|
| VAT | 2019 (model start date) | Undefined | Constant |
| Acquisition tax | 2019 (model start date) | Undefined | Constant |
| Bonus | 2019 (model start date) | 2023 | Expiration |
| Ownership tax | 2019 (model start date) | Undefined | Constant |

| | | | |
|------------------|-------------------------|-----------|----------|
| BiK discount | 2019 (model start date) | Undefined | Constant |
| Excise fuel duty | 2019 (model start date) | Undefined | Constant |

Passenger car prices

Current car prices in Spain are based on the listed prices for the base model of the top two models by Dataforce fleet segment and powertrain (e.g. for the PC Small segment the top two petrol models are the Audi A1 with 5.601 registrations and the Citroen C3 with 5.414 registration. In total, this approach provides 120 prices covering 121,000 registrations (25%).

The evolution of passenger car prices based on changing technology is based on previous Revnext analysis where the compound annual growth rate varies by powertrain and in the base of BEVs, by segment (Table A2).

Table A2: Annual growth rate in passenger car prices by powertrain and segment

| Segment | Petrol | Diesel | PHEV | BEV |
|---------|--------|--------|-------|-------|
| A | 0.8% | N/a | N/a | -2.0% |
| B | 0.8% | 0.8% | N/a | -2.4% |
| C | 0.8% | 0.8% | -1.0% | -1.7% |
| D | 0.8% | 0.8% | -1.0% | -1.4% |
| E | 0.8% | 0.8% | -1.0% | -1.2% |

Note: Growth rates are not applicable in segment A diesels and PHEVs or segment B PHEVs as no models are produced.