ESTUDIOS JURÍDICOS

INNOVACIÓN Y COMPETITIVIDAD SOSTENIBLE EN LA EMPRESA: INSTRUMENTOS REGULATORIOS Y FISCALES PARA EL SECTOR DE LA ENERGÍA

Directores:
MARTA VILLAR EZCURRA
ÁLVARO ANTÓN ANTÓN
SARA GONZÁLEZ SÁNCHEZ
ANTONIO LÓPEZ ÁLVAREZ

Instituto de Estudios Fiscales

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

PID2023-150137OB-I00 financiado por MCIU/AEI/10.13039/501100011033 y por FSE+

INNOVACIÓN Y COMPETITIVIDAD SOSTENIBLE EN LA EMPRESA: INSTRUMENTOS REGULATORIOS Y FISCALES PARA EL SECTOR DE LA ENERGÍA

Directores

Marta Villar Ezcurra

Álvaro Antón Antón

Sara González Sánchez

Antonio López Álvarez

Raquel Álamo Cerrillo
Susana Aldeia
Antoni Bergas Forteza
Carmen Calderón Patier
María del Carmen Cámara Barroso
Raúl C. Cancio Fernández
Ángela Casals Fernández
Edgardo Héctor Ferré Olive
Jorge Galán Sosa
Miguel Gimeno Ribes
Marta González Aparicio
Sara González Sánchez
Juan Ignacio Gorospe Oviedo
Miguel de Haro Izquierdo
Rebeca Judith Ibáñez García
Katarzyna Kokocinska
María Gabriela Lagos Rodríguez
Giuseppe Lanfranchi
Adela M. Aura y Larios de Medrano
Antonio López Álvarez
Roque Martínez Olmos
Ana Montoro López
Carlos Moreno Morón
Marta Patricia Moya-Angeler Pérez-Mateos
Sergio Luis Náñez Alonso
Carmen Navarro Leach
Marta Núñez Sánchez
Alfonso Ortega Giménez
Begoña Pérez Bernabeu
María Pont Esteban
Antonio José Ramos Herrera
María del Carmen Salazar Navarro
Eva María Sánchez Sánchez
Alicia Madeira Schneider
María del Carmen Ruiz Hidalgo
Arantxa Serrana Cañadas
Konrad Pawel Slowinski
Marta Villar Ezcurra

GOBIERNO DE ESPAÑA · MINISTERIO DE HACIENDA · Instituto de Estudios Fiscales

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES · Cofinanciado por la Unión Europea · AGENCIA ESTATAL DE INVESTIGACIÓN

PID2023-150137OB-I00 financiado por MCIU/AEI/10.13039/501100011033 y por FSE+

Madrid, 2026

© Instituto de Estudios Fiscales

Todos los derechos reservados. No está permitida la reproducción total o parcial de este libro, ni su tratamiento informático, ni la transmisión de ninguna forma o por cualquier medio, ya sea electrónico, mecánico, por fotocopia, por registro u otros métodos, sin el permiso previo y por escrito del editor.

En esta publicación se ha utilizado papel reciclado libre de cloro de acuerdo con los criterios medioambientales de la contratación pública.

Las opiniones expresadas pueden no coincidir con las del Instituto de Estudios Fiscales.

Diseño de portada: Miguel Ángel Aguilar Martín

Catálogo de publicaciones de la Administración General del Estado:
http://cpage.mpr.gob.es

I.S.B.N.: 978-84-8008-441-3
N.I.P.O.: 228-26-014-9

Edita: Instituto de Estudios Fiscales
Avda. Cardenal Herrera Oria, 378
C. P. 28035 Madrid (España)
Tel.: 91 339 89 02
www.ief.es

CAPÍTULO 20

TAXATION OF CLEAN MOBILITY: COMPARATIVE STUDY OF VAT AND CORPORATE INCOME TAX APPLICABLE TO NON-POLLUTING VEHICLES IN SPAIN, PORTUGAL, AND ITALY

Sergio Luis Náñez Alonso

Researcher at DEKIS-Digital Economy, Knowledge and Information Society.

Faculty of Social and Legal Sciences. Department of Economics.

Catholic University of Ávila, Ávila, Spain.

Email: sergio.nanez@ucavila.es

Susana Aldeia

Researcher at REMIT – Research on Economist, Management and Information Technologies

Department of Economics and Management at Universidade Portucalense, Porto, Portugal.
Email: saldeia@upt.pt

Giuseppe Lanfranchi

Post-Doctoral Researcher in Technology and Innovation Management

Department of Mathematics, and Computer Science, Physical Science and Earth Science.

University of Messina and Visiting Researcher at Bayes Business School - City St George, University of London. Email: gilanfranchi@unime.it

1. Introduction. 2. Taxation of non-polluting vehicles in VAT and Corporate Income Tax. 2.1. Taxation of Non-Polluting Vehicles in Spain: Corporate Income Tax and Value Added Tax. 2.1.1. Spanish Corporate Income Tax: incentive for non-polluting vehicles. 2.1.2. Spanish Value Added Tax: tax rate and deductibility for businesses. 2.1.3. Regulatory comparison between technologies (electric, plug-in hybrid, and hydrogen) 2.2. Taxation of Non-Polluting Vehicles in Portugal: Corporate Income Tax and VAT. 2.2.1. Institutional and Regulatory Background. 2.2.2. Corporate Income Tax: Deductibility of Vehicle-Related Costs. 2.2.3. Portuguese Value Added Tax: Tax Rate and Deductibility for Businesses. 2.2.4. Regulatory Comparison Between Technologies. 2.3. Taxation of Non-Polluting Vehicles in Italy: Corporate Income Tax and VAT. 2.3.1. Institutional and Regulatory Background. 2.3.2. Corporate Income Tax: Deducibility of Vehicle-Related Costs. 2.3.3. Levels of Deducibility According to Use. 2.3.4. Cost Ceilings and Forms of Acquisition. 2.3.5. Value Added Tax (VAT): Rate and Deductibility. 2.3.6. Electric Recharging and Charging Infrastructure. 3. Comparative analysis, limitations and future research. 4. Conclusion. References.

1. **INTRODUCTION**

The transition to low- and zero-emission mobility models is one of the central challenges for European Union public policy in the context of climate change and environmental sustainability (Creutzig *et al.*, 2015). The transport sector, due to its significant contribution to greenhouse gas emissions, has been the subject of a growing number of regulatory and economic interventions (European Commission). These interventions aim to promote the adoption of cleaner technologies, namely electric vehicles, plug-in hybrids, and, in certain national regulatory frameworks, hydrogen-powered vehicles.

Among the instruments mobilized to accelerate this transition, taxation plays a particularly important role. In addition to their classic function of generating revenue, taxes are used as economic policy instruments for extra-fiscal purposes (Lapatza *et al.*, 2013), guiding the behavior of companies and individuals towards choices considered socially environmentally friendly (EEA, 2023). In the field of sustainable mobility, the link between indirect and direct taxes, in particular value added tax (VAT) and corporate income tax, has a significant influence on the overall cost of purchasing and using non-polluting vehicles for businesses.

However, the effectiveness of tax incentives in this area is not limited to reducing the initial purchase price of vehicles. The tax options adopted by states can also influence subsequent decisions related to vehicle use, including financing methods (purchase, leasing, or renting), maintenance costs, tax treatment of energy used for charging, and the framework for associated infrastructure. Thus, the technical consistency of tax regimes and the legal certainty provided by legislation and administrative and jurisprudential interpretation are decisive for the success of policies to promote clean mobility.

Despite the growing body of legislation and literature dedicated to promoting sustainable mobility, there remains a significant gap in the integrated analysis of the role of taxation in the transition to low- and zero-emission vehicles.

In this context, this chapter develops a comparative analysis of the tax regimes applicable to non-polluting vehicles in Spain, Portugal, and Italy, focusing specifically on VAT and corporate income taxes. The study has three main objectives: to identify the tax mechanisms that encourage or condition the adoption of low- or zero-emission mobility solutions in the three legal systems; to assess the internal consistency of these mechanisms in light of the phases of vehicle acquisition and use; and to compare the practical effects of relevant limits, ceilings, and interpretative criteria, including those of an administrative and jurisprudential nature.

From a methodological point of view, the research is based on a comparative legal-doctrinal analysis, based on current tax legislation on VAT and income tax, as well as on administrative doctrine and relevant case law.

The chapter is structured in four main parts. After this introduction, the second section develops a substantive analysis of the taxation of non-polluting vehicles, focusing on value added tax and income tax, from a comparative perspective between Spain, Portugal, and Italy. The third section provides a cross-sectional comparison of the regimes analyzed, identifying convergences, divergences, regulatory limitations, and practical effects resulting from the different tax models. Finally, the fourth chapter presents the conclusions of the study, summarizing the main results.

2. TAXATION OF NON-POLLUTING VEHICLES IN VAT AND CORPORATE INCOME TAX

2.1. TAXATION OF NON-POLLUTING VEHICLES IN SPAIN: CORPORATE INCOME TAX AND VALUE ADDED TAX

In Spain, environmental protection is a constitutional mandate, a principle that is enshrined in the nation's legal framework. Article 45 of the Spanish Constitution of 1978 acknowledges the right to a suitable environment while concurrently obliging public authorities to guarantee the prudent utilization of natural resources, founded upon the imperative of collective solidarity (Spanish Constitution, 1978, art. 45). In the domain of mobility, this necessity is exemplified by the shift to lower-emission vehicles and, more specifically, to propulsion technologies devoid of direct carbon dioxide emissions.

Taxation, therefore, assumes a dual role in this context. The initial step in this process is revenue collection. The second step is extra-fiscal, and it involves guiding behavior through incentives or disincentives that are consistent with environmental objectives. This instrumental use of taxation is part of the logic of public policies that are also conditioned by the European framework for reducing emissions from the vehicle fleet (Regulation (EU) 2023/851). In relation to the aforementioned points, it is important to note that the Spanish tax system allows for the pursuit of purposes other than mere revenue generation. This feature enables the incorporation of environmental considerations into the design of tax instruments or the modulation of their essential elements. In practice, vehicle-related taxation combines indirect instruments (e.g., Value Added Tax) with specific direct or property tax measures and incentives linked to business investment. In this paper, the analysis is limited to the state regulations on Corporate Income Tax and Value Added Tax, as requested by the scope.

2.1.1. *Spanish Corporate Income Tax: incentive for non-polluting vehicles*

State corporate income tax regulations include a direct incentive for business investment in certain non-polluting vehicles through accelerated depreciation. This mechanism does not modify the nominal tax rate or constitute a tax credit; its effect

is to bring forward the deduction of the acquisition cost for tax purposes, thereby reducing the tax base in the initial years and thus enhancing the entity's liquidity.

Specifically, the eighteenth additional provision of Law 27/2014 stipulates the allowance for the free depreciation of investments in new vehicles utilized for economic activities that commence operation in the tax periods beginning in 2024 and 2025 (Law 27/2014, additional provision 18.1). The regulation cites the definition in Annex II of the General Vehicle Regulations to delineate the vehicles included (Royal Decree 2822/1998, Annex II).

The categories included in the incentive are fuel cell electric vehicles, fuel cell hybrid electric vehicles, battery electric vehicles, extended-range electric vehicles, and plug-in hybrid electric vehicles (Law 27/2014, additional provision 18.1; State Tax Administration Agency, 2025). Consequently, the incentive encompasses both battery-based and hydrogen-based (fuel cell) technologies, as well as intermediate solutions, such as plug-in and extended-range hybrid vehicles.

From a tax policy perspective, the incentive is designed to be technologically inclusive within the regulatory scope of «electric vehicles» under the General Vehicle Regulations, with no gradation by emission levels within these categories. The predominant practical discrepancy between technologies does not originate from tax treatment; rather, it stems from the acquisition cost and the utilization pattern. A higher initial investment enables, in absolute terms, a greater temporary adjustment of the tax base under the freedom of amortization. The tax authorities have reiterated this framework by expressly referring to the eighteenth additional provision as an incentive applicable to the automobile market (Secretariat of State for Relations with the Courts and Constitutional Affairs, 2025).

2.1.2. *Spanish Value Added Tax: tax rate and deductibility for businesses*

With regard to the Spanish Value Added Tax, the acquisition of vehicles is typically subject to taxation at the prevailing rate of 21 percent, as stipulated in Law 37/1992. The potential for the implementation of reduced rates is constrained by European harmonization, which delineates the eligible goods and services to those enumerated in Annex III of Directive 2006/112/EC, as amended by Directive (EU) 2022/542 (Directive 2006/112/EC; Directive (EU) 2022/542). In this regard, the government has confirmed that the directive does not provide for reduced rates for the supply of vehicles, regardless of their propulsion technology, which must be taxed at the standard rate (Secretariat of State for Relations with the Courts and Constitutional Affairs, 2025). Consequently, the pivotal tax element in VAT for companies and professionals is not the applicable rate (which is identical for electric, plug-in hybrid, and fuel cell vehicles), but rather the scope of the right to deduct input tax. Article 95 of Law 37/1992 stipulates restrictions when the goods are not utilized directly and exclusively for the designated activity (Law 37/1992, art. 95.1). For passenger cars and similar vehicles, it is presumed that 50% of the vehicle's use is for business or pro-

fessional activity, a presumption that allows for the presentation of evidence contradicting this assumption (Law 37/1992, arts. 95.3.2.ª and 95.3.4.ª).

Furthermore, the regulation itself stipulates circumstances under which 100% use is presumed (e.g., mixed-use vehicles utilized for the transportation of goods, vehicles employed for the transportation of passengers for compensation, or vehicles employed in tests or sales promotions by manufacturers), which may be pertinent for specialized company fleets (Law 37/1992, Art. 95.3.2.ª, letters a–f). The criterion employed is once again functional in nature, as opposed to technological. The deduction is based on the intensity of business use, rather than on the «non-polluting» nature of the vehicle.

2.1.3. *Regulatory comparison between technologies (electric, plug-in hybrid, and hydrogen)*

A comparison of the technologies reveals that, in the state regulations examined, the differentiation is not based on Value Added Tax and manifests exclusively in Corporate Income Tax. This is evidenced by the limitation of the freedom of amortization to categories designated as «electric vehicles» in the General Vehicle Regulations (Table 1).

TABLE 1
Tax treatment of non-polluting vehicles in Spain

Propulsion technology	Fit into the depreciation allowance (IS)	VAT rate on purchase	VAT deduction
Battery electric	Included (battery electric vehicle category)	21% (general rate)	50% presumption if tourism; evidence must be provided for 100% deduction according to use.
Plug-in hybrid	Included (plug-in hybrid electric vehicle catego-ry)	21% (general rate)	50% presumption if tourism; evidence must be provided for 100% deduction according to use.
Hydrogen fuel cell	Included (fuel cell electric vehicle).	21% (general rate)	50% presumption if tourism; evidence must be provided for 100% deduction according to use.

Source: Own elaboration.

Accordingly, as illustrated in the regulations outlined in the aforementioned table, a clear delineation of hierarchy is conspicuously absent within the framework of Corporate Income Tax and Value Added Tax with respect to batteries, plug-in hybrids, and hydrogen, in regard to Value Added Tax rates or deduction regulations. The salient distinction pertains to corporate income tax, wherein the incentive is triggered by the vehicle's classification within the authorized regulatory categories.

The Spanish tax system utilizes a temporary incentive applicable to the tax base in corporate income tax: freedom of amortization. This initiative is designed to promote business investment in select non-polluting vehicles, namely battery electric vehicles, plug-in hybrids, and hydrogen fuel cell vehicles (Law 27/2014, additional provision 18; Secretary of State for Relations with the Courts and Constitutional Affairs, 2025). However, with regard to value-added tax (VAT), the acquisition of vehicles continues to be subject to the general rate. This is due to the limitations imposed by the harmonized framework. Consequently, the primary focus of tax planning shifts to substantiating the extent to which the vehicles are utilized for business purposes. This is done to maximize, where applicable, the deduction of input tax (Law 37/1992, art. 95; Directive 2006/112/EC).

2.2. TAXATION OF NON-POLLUTING VEHICLES IN PORTUGAL: CORPORATE INCOME TAX AND VAT

2.2.1. *Institutional and Regulatory Background*

Article 66 of the Portuguese Constitution - *Constituição da República Portuguesa* (CRP) provides for the right to the environment and quality of life. It states that everyone has the right to a humane, ecologically balanced living environment. Accordingly, the State and public entities must therefore prevent and control pollution and ensure citizen participation in environmental protection. Mobility is an essential area in promoting the environment. Incentives for cleaner means of transport are one of the most effective tools for promoting sustainability.

Over the last decade, Portuguese lawmakers have been promoting sustainability through various fiscal instruments. The Green Tax Reform approved tax mechanisms such as taxes, benefits, fees, and incentives (Governo de Portugal, 2016). These instruments were introduced to guide economic behavior towards environmental protection and sustainability. These measures follow European guidelines, namely the objectives of the European Green Deal and Regulation (EU) 2023/851. The green tax reform is based on the polluter pays principle, according to which those who pollute must bear the associated environmental costs (Aldeia, 2023).

It is therefore a public policy strategy that uses the tax system to achieve the extra-fiscal objective of encouraging environmentally responsible practices. Several measures have been adopted with the aim of encouraging sustainable behavior, particularly in the areas of the circular economy, energy efficiency, and electric mobility.

2.2.2. *Corporate Income Tax: Deductibility of Vehicle-Related Costs*

In the area of income tax, the deductibility of the costs of purchasing non-polluting vehicles is addressed by Article 34(1)(e) of the corporate income tax - *Imposto sobre o Rendimento das Pessoas Coletivas* (IRC), which refers to Ordinance No. 467/2010 of July 7 (Portaria n.º 467/2010 de 7 de Julho). In this context, the Portuguese legis-

lator also opts for a more restrictive approach by imposing limits on the deduction of the costs of these assets. These limits are related to the use of the vehicle by the company.

Attention should be drawn to Article 88 of the IRC, which determines the incidence of autonomous taxation. Autonomous taxation is an additional tax levied on certain types of expenses incurred by the entity, regardless of whether the company makes a profit or a loss. Vehicle expenses are covered by this provision (Mesquita & Morais, 2014).

Levels of deductibility of acquisition costs, according to the use of the vehicle

In corporate income tax, the incentive involves differentiating depreciation limits. Portuguese lawmakers differentiate the incentive according to the type of vehicle use, i.e., transport of goods or passengers.

For electric, plug-in, or hydrogen vehicles used to transport goods for the company's business, depreciation is allowed in full under Article 23 of the IRC (Nabais, 2021). There is no monetary limit on the purchase cost of the vehicles. However, the full deduction is subject to a depreciation rate. For the purposes of calculating the deduction, a rate between the maximum rate (25%) and the minimum rate (12.5%) should be considered, assuming a useful life of the vehicle of 4 to 8 years.

Passenger vehicles or mixed-use vehicles (transporting goods and passengers) have some specific features in terms of the deduction of the acquisition cost for tax purposes. It is therefore important to take into account the limits imposed by Ordinance No. 467/2010 of July 7. This limitation stems from the fact that the Tax Authority is unable to assess the use of these assets for personal purposes.

Maximum cost limits and forms of acquisition

The amounts indicated as limits refer to the purchase price of the vehicle, specifically €62,500 and €50,000 for electric and plug-in vehicles, respectively. For example, the company will benefit from a 100% deduction on the depreciation of 100% electric vehicles, provided that the acquisition cost is up to €62,500. If the acquisition cost exceeds €62,500, the excess amount will not be accepted for tax purposes.

However, Ordinance No. 467/2010 does not expressly mention hydrogen vehicles. Therefore, the acquisition of hydrogen vehicles does not have its own limit defined in the Ordinance, unlike electric or plug-in vehicles.

These limits also apply to leasing or renting. From a tax perspective, there may be no significant difference between the forms of purchase; the advantage may arise from cash flow management, for example.

Therefore, these limits only serve to limit the depreciation accepted for tax purposes; they do not prevent the full accounting of depreciation, with the excess being added to taxable income.

2.2.3. *Portuguese Value Added Tax: Tax Rate and Deductibility for Businesses*

In Portugal, vehicles are generally subject to the standard *Imposto sobre o valor Acrescentado* (IVA) rate, which is currently set at 23%. The difference may lie, for example, in the purchase of used vehicles, to which the second-hand goods regime may apply.

The issue of tax deductibility is relevant in this regard and, once again, depends on the type of vehicle (transport of goods, people, or mixed). IVA deduction on goods vehicles in Portugal is, as a rule, fully permitted. The deduction of input IVA depends on the vehicle being classified as a goods vehicle for tax purposes and meeting the legal requirements for use in business activities.

In this context, the full deduction of the tax incurred on the purchase, leasing, renting, repairs, and maintenance is allowed, provided that they are used exclusively for professional purposes. Diesel fuel for plug-in vehicles is 50% deductible (Lima, 2003).

A different situation applies to passenger vehicles. In this case, the provision of Article 21.2.f) of the IVA applies. This rule also refers to Article 34.1.e) of the IRC, reinforcing the role of the limits established in Ordinance No. 467/2010 of July 7. In this context, the deduction is subject to the purchase cost limits set out in this ordinance.

The tax incentive lies in the possibility of deducting tax on electric vehicles whose acquisition cost is equal to or less than €62,500, and on plug-in vehicles whose acquisition cost is equal to or less than €50,000 (Roriz, 2025). For hydrogen vehicles, considering that the ordinance does not expressly establish a limit, deduction will not be possible.

2.2.4. *Regulatory Comparison Between Technologies*

The tax framework applicable to different propulsion technologies reveals significant differences in the tax treatment granted by the Portuguese legislator in the context of Corporate Income Tax and Value Added Tax. Although the regulatory framework is based on the principle of technological neutrality and the pursuit of environmental objectives, a comparative analysis of the regimes applicable to electric, plug-in hybrid, and hydrogen vehicles reveals different levels of tax incentives. These differences are particularly evident in the limits on the deductibility of depreciation, the possibility of recovering input IVA, and the clarity of the regulatory framework applicable to each technology, reflecting tax policy choices that ultimately favor electric mobility more consistently (Table 2).

TABLE 2
Tax treatment of non-polluting vehicles in Portugal

Propulsion technology	Corporate Income Tax Deduction	VAT rate on purchase	VAT deduction
Battery electric	Deductible up to a pur-chase cost limit of €62,500.	23% (standard rate)	Deductibility conditioned on purchase cost equal to or less than €62,500
Plug-in	Deductible up to a purchase cost limit of €50,000.	23% (standard rate)	Deductibility conditioned on purchase cost equal to or less than €50,000
Hydrogen	Not deductible	23% (standard rate)	Not deductible

Source: Own elaboration.

In summary, electric vehicles benefit from the most comprehensive and clear tax regime, with limits expressed in both corporate income tax and IVA, functioning as the technology most favored by the legislator. Plug-in vehicles have a similar framework, but with lower monetary limits and a partial deduction of IVA on fossil fuels. Hydrogen vehicles, although aligned with environmental objectives, reveal regulatory gaps, particularly in terms of IVA, which results in a less effective tax incentive. This comparison shows that, despite the declared technological neutrality, the Portuguese tax system more consistently favors electric mobility over other clean technologies.

2.3. TAXATION OF NON-POLLUTING VEHICLES IN ITALY: CORPORATE INCOME TAX AND VAT

2.3.1. *Institutional and Regulatory Background*

In the Italian legal system, environmental protection has progressively assumed a central role, both as a constitutional value and as a guiding principle for public policy. Following the constitutional reform enacted in 2022, environmental protection has been explicitly incorporated into Article 9 of the Italian Constitution, alongside the protection of cultural heritage, while Article 41 now subjects economic initiative to the safeguarding of the environment, biodiversity, and ecosystems. These amendments have strengthened the legal basis for environmental and climate-oriented public interventions, including those affecting mobility and transport choices (Italian Constitution, Articles 9 and 41, as amended in 2022).

Within this framework, the transition toward low- and zero-emission mobility has become a key objective of national policies, largely in alignment with European Union strategies aimed at reducing greenhouse gas emissions from the transport sector. Fiscal instruments play a role in this process, although their function in the Italian system is predominantly indirect. Italian vehicle taxation primarily operates through limitations

and conditions linked to the use of vehicles in economic activities, rather than relying on explicit tax incentives targeted at specific propulsion technologies. As a result, taxation influences firms' decisions regarding vehicle acquisition and utilization not by differentiating among electric, plug-in hybrid, or hydrogen vehicles, but by regulating the extent to which related costs may be deducted for income tax and value-added tax purposes. This use-oriented approach reflects a policy choice focused on controlling private use and safeguarding tax neutrality, rather than actively steering technological preferences through the tax system.

2.3.2. *Corporate Income Tax: Deductibility of Vehicle-Related Costs*

The tax treatment of company vehicles under Italian corporate and personal income taxation is governed primarily by Article 164 of the Consolidated Income Tax Act (Testo Unico delle Imposte sui Redditi, TUIR - Presidential Decree No. 917/1986, Article 164). This provision establishes the general principle that expenses related to motor vehicles are deductible only within predefined limits, reflecting the presumption that such assets are frequently subject to mixed business and private use. Differently from systems that employ tax incentives to promote investment in environmentally friendly vehicles, the Italian framework is characterized by a restrictive logic. Article 164 TUIR does not provide specific benefits linked to the environmental performance or propulsion technology of vehicles. Instead, it conditions deductibility on the functional role of the vehicle within the economic activity and on the category of taxpayers involved. Consequently, electric vehicles, plug-in hybrid vehicles, and hydrogen fuel cell vehicles are treated in the same manner as conventional vehicles for corporate income tax purposes, insofar as the applicable deductibility regime depends exclusively on use-related criteria rather than technological characteristics.

2.3.3. *Levels of Deductibility According to Use*

Article 164 TUIR differentiates the deductibility of vehicle-related costs according to the manner in which the vehicle is employed in economic activity. The first category comprises vehicles that are used exclusively as instrumental assets in the business activity or that are subject to public-use regimes. In these cases, costs are fully deductible, reflecting the absence of any presumed private use. A second category concerns vehicles granted in mixed use to employees for the greater part of the tax period. For such vehicles, the legislator allows a higher level of deductibility, set at 70%, acknowledging their functional role within the employment relationship. A specific regime also applies to vehicles used by agents and commercial representatives, for which deductibility is increased to 80%, in recognition of the essential role of mobility in their professional activity (Presidential Decree No. 917/1986, Article 164).

For all other company vehicles that do not fall within these specific categories, deductibility is limited to 20% of the relevant expenses. This general rule applies irrespective of the vehicle's propulsion system and constitutes the default treatment for most company cars used in ordinary business contexts.

2.3.4. *Cost Ceilings and Forms of Acquisition*

In addition to percentage limitations, Article 164 TUIR imposes quantitative ceilings on the cost base eligible for deduction. These ceilings vary depending on the form of acquisition, purchase, leasing, or rental, and further constrain the fiscal relevance of vehicle-related expenditures. For purchased or leased passenger vehicles, the deductible cost is capped at fixed monetary thresholds, while specific annual limits apply to rental and long-term leasing arrangements. These quantitative constraints often lead firms to favor leasing or rental solutions, which allow for greater flexibility in managing cash flows and tax deductions over time. However, such effects are incidental rather than intentional from an environmental policy perspective. The applicable ceilings are uniform across propulsion technologies and do not distinguish between electric, hybrid, or hydrogen vehicles. Accordingly, the Italian income tax framework does not incorporate any form of accelerated depreciation or enhanced deductibility aimed at encouraging investment in non-polluting vehicles, in contrast to the approach adopted in other jurisdictions.

2.3.5. *Value Added Tax (VAT): Rate and Deductibility*

For value-added tax purposes, the acquisition of motor vehicles in Italy is subject to the standard VAT rate, which applies uniformly regardless of the vehicle's propulsion technology. This uniform treatment reflects the constraints imposed by the harmonized European VAT framework, which limits the scope for differentiated rates and does not include motor vehicles among the categories eligible for reduced taxation based on environmental considerations (Directive 2006/112/EC).

The most significant VAT-related provision affecting company vehicles in Italy concerns the right to deduct input VAT. As a general rule, VAT incurred on the purchase, leasing, rental, and maintenance of passenger vehicles used for both business and private purposes is deductible only up to 40% (Presidential Decree No. 633/1972, Article 19-bis1; Council Implementing Decision (EU) 2025/2529). This limitation is grounded in a derogation authorized at the European level, allowing Italy to apply a flat-rate restriction in order to simplify administration and reduce disputes over the actual extent of business use. The derogation has been recently extended, ensuring the continued application of the 40% limitation for the coming years. Importantly, the limitation applies irrespective of the vehicle's environmental performance. Electric and other non-polluting vehicles are subject to the same deductibility cap as conventional vehicles, confirming the technology-neutral character of the Italian VAT regime in this domain.

Full VAT deductibility is permitted only in cases where the vehicle is used exclusively for business purposes or falls within specific categories, such as vehicles intended for resale, rental, or passenger transport services. In such cases, the taxpayer bears the burden of demonstrating the absence of private use through appropriate documentation and organizational arrangements. This evidentiary requirement introduces a degree of legal uncertainty, as the assessment of exclusive business use is often

subject to scrutiny by tax authorities. As a result, many firms opt to apply the standard 40 % deduction even where a higher level of deductibility might theoretically be justified (Italian Revenue Agency, 2020; Italian Revenue Agency, 2019).

2.3.6. *Electric Recharging and Charging Infrastructure*

With regard to electric recharging, the Italian tax system does not provide specific VAT or income tax incentives linked directly to the consumption of electricity for vehicle charging. Electricity supplied for charging purposes is subject to the ordinary VAT regime, and related costs follow the same deductibility rules applicable to vehicle expenses more generally. Support for the diffusion of charging infrastructure has instead been pursued mainly through subsidy schemes and investment grants, such as bonuses for the installation of private or corporate charging stations (MIMIT, 2024; Invitalia, 2024). These measures operate outside the core VAT and income tax framework and therefore fall at the intersection between fiscal policy and industrial or energy policy. This separation reinforces the fragmented nature of incentives for electric mobility in the Italian context, where taxation plays a limited and indirect role compared to direct public support instruments.

Moreover, a comparison of propulsion technologies within the Italian VAT and corporate income tax framework reveals the absence of any explicit hierarchy among electric, plug-in hybrid, and hydrogen vehicles. For income tax purposes, all technologies are subject to the same deductibility percentages and cost ceilings established by Article 164 TUIR. Similarly, VAT applies at the standard rate, with input tax deductibility governed by the uniform 40 percent limitation in cases of mixed use. Accordingly, the Italian tax system does not differentiate between non-polluting vehicle technologies in either acquisition or use. Any differences in the economic attractiveness of such vehicles stem primarily from market factors or from non-tax subsidy schemes, rather than from the structure of VAT or corporate income taxation. Therefore, the Italian approach to the taxation of non-polluting vehicles can be characterized as predominantly restriction-based and use-oriented. The system relies on limitations designed to regulate private use and preserve tax neutrality. This approach results in a weak signaling effect with respect to environmental objectives and generates limited coordination between the taxation of vehicle acquisition and vehicle use (Table 3).

TABLE 3
Tax treatment of non-polluting vehicles in Italy

Propulsion technology	Corporate Income Tax deductibility	VAT rate on purchase	VAT deductibility
Battery electric	Art. 164 TUIR: use-based limits (20%, 70%, 80%, or 100%)	22% (standard rate)	40% standard; 100% only if exclusive business use
Plug-in hybrid	Art. 164 TUIR: use-based limits (20%, 70%, 80%, or 100%)	22% (standard rate)	40% standard; 100% only if exclusive business use
Hydrogen fuel cell	Art. 164 TUIR: use-based limits (20%, 70%, 80%, or 100%)	22% (standard rate)	40% standard; 100% only if exclusive business use

Source: Own elaboration.

As illustrated in the table above, the Italian VAT and corporate income tax framework does not establish any explicit hierarchy among non-polluting propulsion technologies. Tax treatment is entirely driven by the functional use of vehicles rather than by their environmental performance. As a consequence, the effectiveness of taxation as a driver of the transition toward low- and zero-emission mobility in Italy appears constrained, with a greater reliance on external subsidy schemes to achieve policy goals.

3. COMPARATIVE ANALYSIS, LIMITATIONS AND FUTURE RESEARCH

In the context of the European agreement on emissions reduction, the transition to zero/low-emission mobility is a regulatory priority (Regulation (EU) 2023/851). In this context, taxation is designed with a purpose that transcends the fiscal sphere, altering relative prices and guiding investment (fleet renewal and charging infrastructure) and consumption decisions. The three countries analyzed in this study support this approach in constitutional mandates: Spain (Spanish Constitution, 1978, art. 45), Portugal (CRP, art. 66), and Italy following the 2022 reform (Italian Constitution, arts. 9 and 41, as amended in 2022).

In this context, the comparison focuses on the combined effect of corporate income tax (IRC/TUIR) and value added tax (VAT) on the purchase and use of battery electric vehicles, plug-in hybrids and, where applicable, hydrogen vehicles.

TABLE 4
Comparative overview of tax regimes in Spain, Portugal and Italy

Aspect	Spain	Portugal	Italy
Main CIT incentive	Accelerated depreciation (free depreciation)	Monetary caps	Use-based percentage caps
VAT rate	21% (standard)	23% (standard)	22% (standard)
VAT deductibility	50% presumptive deduction for passenger cars (rebuttable presumption)	Conditioned on cost thresholds (€62,500/€50,000)	40% standard in mixed use (100% only for exclusively business use)
Hydrogen treatment	Included within accelerated depreciation	Regulatory gap; not expressly covered	Same treatment as other technologies
System characterization	Incentive-based	Incentive-based with caps	Restrictive
Technological differentiation	Only in CIT (by RGV categories)	Yes (differentiated caps)	No (uniform treatment)

Source: Own elaboration.

The results obtained in the study describe three models. In the Spanish context, the incentive focuses on direct taxation through depreciation allowances for new vehicles used for economic activities in periods beginning in 2024 and 2025, in accordance with the provisions of Law 27/2014, additional provision 18.1. This definition is included in Annex II of the General Vehicle Regulations, in accordance with the provisions of Royal Decree 2822/1998, Annex II. From a strictly academic perspective, the design of the measure can be considered as a stimulus of a predominantly "accounting-fiscal" nature. This incentive involves anticipating the recovery of the cost through the depreciation process, which in turn results in an increase in the taxpayer's liquidity without necessarily altering the nominal tax rate. This approach shifts the focus to business investment decisions (time of acquisition and allocation) and to proving material compliance with the requirements. In Value Added Tax (VAT), there is no differentiation between tax rates. A general rate of 21% is applied, and the practical relevance of the right to deduct is recognized, with a presumption of 50% in the case of passenger cars. However, this deduction may be challenged by evidence to the contrary, as established in Law 37/1992, Article 95. Consequently, the tax signal to the consumer or end user is not articulated by the rate, but by the intensity of the deduction, which depends on the accredited use.

In Portugal, financial restrictions are in place, setting a limit of €62,500 for electric vehicles and €50,000 for plug-in hybrids. These restrictions not only influence depreciation according to the IRC (art. 34.1.e) and Ordinance 467/2010, but also affect VAT deduction (general rate of 23%), with an additional differentiation based on use (e.g., freight transport without monetary limit). The convergence of direct and indirect taxation mechanisms gives rise to a "dual" and relatively consistent incentive, in which the economic eligibility criterion acts as a filter in two directions, enhancing the resulting behavioral effect. However, this approach leads to the introduction of discontinuities (threshold effect) that may steer the choice towards models below the cap, rather than towards the technology itself. Hydrogen, for its part, presents a regulatory gap as it is not expressly covered by the Ordinance, which has a disincentive effect, insofar as the absence of explicit coverage reduces predictability and increases the risk of interpretative dispute.

In contrast, Italy maintains a neutral position in terms of technology and adopts a restrictive approach. In its tax system, deductibility for Value Added Tax (VAT) purposes depends on the use of the goods (20%, 70%, 80%, or 100%) (Presidential Decree 917/1986, Art. 164). With regard to consumption tax (VAT), the general rate of 22% is limited to 40% for goods used in a mixed context, a restriction authorized at the European level (Presidential Decree 633/1972, Art. 19-bis1; Implementing Decision (EU) 2025/2529). The decisive parameter is not the "cleanliness" of the vehicle, but its effective link to the activity and the degree of business use, which shifts the incentive towards discipline of use and traceability. In this regard, Spain provides incentives through income tax, Portugal through coordinated income tax and VAT caps, and Italy controls use and refers part of the incentive to external aid for recharging (Mimit, 2024; Invitalia, 2024). In this regard, the contrast between models is evident in three areas: First, the intensity of the incentive must be considered, whether it is accelerated depreciation, coordination through caps, or limitations on use. Second, the degree of technological neutrality must be considered. Finally, compliance and testing costs must be considered, which tend to increase when the tax benefit depends on presumptive percentages or proof of mixed use.

The following three limitations of the study can be noted:

- The study adopts a comparative legal-doctrinal methodology (current legislation, administrative doctrine, and case law) and therefore does not incorporate empirical evidence on the actual effects on purchasing, leasing, or charging decisions.

- Its material scope is limited: it is restricted to VAT and corporate/business income tax, and in the case of Spain, it is limited to state regulations, excluding other transport taxes.

  The comparison focuses on the VAT-direct taxation pairing, while relevant public policy instruments (e.g., subsidies for recharging infrastructure in Italy) are treated as measures external to the fiscal core analyzed.

With a view to future lines of research, the study points, first, to a causal assessment of the impact of specific incentives (depreciation allowances, deductible VAT caps, and cost ceilings) on purchasing/leasing decisions and on the deployment of charging infrastructure. Secondly, distributional and sectoral analysis is a priority, given that the effects may differ depending on company size, fleet structure, and financing capacity. Finally, it is proposed to explore a revenue transition that integrates «green» incentives with usage-based tax reforms (road tolls and congestion charges) to offset the erosion of fuel-related tax bases.

4. **CONCLUSION**

The study aims to analyze, from a comparative legal perspective, the role of taxation in promoting zero/low-emission mobility in Spain, Portugal, and Italy, focusing on value-added tax and income tax regimes. The analysis allowed us to draw relevant conclusions regarding existing tax mechanisms, their internal consistency, and the practical effects resulting from the applicable limits and interpretative criteria.

As for the identification of tax mechanisms that encourage or condition the adoption of zero/low-emission mobility, it appears that the three countries analyzed use different instruments with varying intensity. In Spain and Portugal, income taxation plays a more active role, through mechanisms such as accelerated depreciation or differentiated limits on the deductibility of costs associated with non-polluting vehicles, seeking to reduce the tax cost of acquisition in the business context. On the other hand, VAT rates are largely conditioned by the European harmonization framework and do not, as a rule, distinguish between propulsion technologies at the time of purchase. In Italy, taxation is markedly neutral from a technological point of view, with no specific incentives linked to the environmental performance of vehicles, functioning mainly through limitations on the deductibility of costs and VAT depending on the use of the vehicles.

With regard to the assessment of the internal consistency of tax regimes, considering the phases of vehicle acquisition and use, the analysis shows significant fragmentation. In the three systems, the incentives or limitations applicable to acquisition are not always consistent with the tax treatment of use, maintenance, and energy charging. This disconnect is particularly visible in VAT, where the absence of technological differentiation in the rate contrasts with the importance attributed to it. The internal consistency of the regimes thus depends less on an integrated environmental logic and more on functional criteria and control of private use, which reduces the potential of taxation as a structuring instrument for the transition to clean mobility.

Finally, the study reveals that the effectiveness of tax mechanisms is strongly conditioned by factors such as deductibility ceilings, legal presumptions of mixed use, and the burden of proof imposed on taxpayers. In all the countries analyzed, the practical application of tax regimes depends on administrative interpretations and, in

certain cases, on case law guidance, which introduces varying levels of legal uncertainty. These elements tend to influence companies' economic decisions, often guiding them towards more predictable tax solutions, even when this is not the most efficient option from an environmental point of view.

In summary, the comparative legal-doctrinal analysis carried out shows that, although taxation plays an important role in promoting zero/low-emission mobility, its effectiveness is limited by the lack of internal coordination of the regimes and the prevalence of a logic of neutrality or control of private use over an integrated environmental logic. These results highlight the need for greater regulatory consistency and more consistent coordination between direct and indirect taxes in order to strengthen the role of taxation as an effective public policy instrument in the service of the transition to sustainable mobility.

References

Agencia Estatal de la Administración Tributaria (2025): «Libertad de amortización de vehículos eléctricos» (*Manual práctico de Sociedades 2024*), Sede electrónica. https://sede.agenciatributaria.gob.es/Sede/ayuda/manuales-videos-folletos/manuales-practicos/manual-sociedades-2024/capitulo-05-liquidacion-is-determinacion-imponible/bi-antes-reserva-capitalizac-compensac-00550/detalle-correcc-result-cuenta-perdidas-is/amortizaciones/libertad-amortizacion-determinados-vehiculos.html

Aldeia, S. C. R. (2023): «Environmentally friendly tax measures in the Portuguese jurisdiction: Enforcement of the polluter pays tax principle», *International Journal of Law and Management*, 65(6), pp. 511–522. https://doi.org/10.1108/ijlma-02-2023-0018

Consejo de la Unión Europea (2006): *Directiva 2006/112/CE, de 28 de noviembre de 2006, relativa al sistema común del impuesto sobre el valor añadido*, Diario Oficial de la Unión Europea, L 347, 11 diciembre 2006. https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX:32006L0112

Consejo de la Unión Europea (2022): *Directiva (UE) 2022/542, de 5 de abril de 2022, por la que se modifican las Directivas 2006/112/CE y (UE) 2020/285 en lo que respecta a los tipos del impuesto sobre el valor añadido*, Diario Oficial de la Unión Europea, L 107, 6 abril 2022. https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX:32022L0542

Council of the European Union (2025): *Council Implementing Decision (EU) 2025/2529 authorising Italy to apply a derogation from Articles 168 and 168a of Directive 2006/112/EC limiting the right to deduct VAT to 40%*, Official Journal of the European Union. https://eur-lex.europa.eu/eli/dec_impl/2025/2529/oj

Creutzig, F., Jochem, P., Edelenbosch, O., Mattauch, L., Van Vuuren, D., Mccollum, D., & Minx, J. (2015): «Transport: A roadblock to climate change mitigation?», *Science*, 350(6263), pp. 911–912. https://doi.org/10.1126/science.aac8033

European Commission: *Delivering the European Green Deal*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en

European Environment Agency (EEA) (2023): *The role of environmental taxation in supporting sustainability transitions.* https://www.eea.europa.eu/en/analysis/publications/the-role-of-environmental-taxation-in-supporting-sustainability-transitions

Governo de Portugal (2016): *Reforma da Fiscalidade Verde / Green Tax Reform.*

Invitalia (2024): *Incentives for electric vehicle charging infrastructure for companies and professionals.* https://www.invitalia.it/incentivi-e-strumenti/bonus-colonnine-imprese-e-professionisti

Italian Republic (1948): *Constitution of the Italian Republic,* Official Gazette of the Italian Republic, nº. 298, 27 December 1947. https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:costituzione

Italian Republic (2022): *Constitutional Law No. 1 of 11 February 2022 amending Articles 9 and 41 of the Constitution on the protection of the environment,* Official Gazette of the Italian Republic, nº. 44, 22 February 2022. https://www.gazzettaufficiale.it/eli/id/2022/02/22/22G00014/sg

Italian Revenue Agency (Agenzia delle Entrate) (2019): *Circular Letter No. 19/E of 31 October 2019 on the tax treatment of company vehicles.*

Italian Revenue Agency (Agenzia delle Entrate) (2020): *Reply to tax ruling request No. 631 of 29 December 2020.*

Jefatura de Estado (1992a): *Ley 37/1992, de 28 de diciembre, del Impuesto sobre el Valor Añadido,* Boletín Oficial del Estado, núm. 312, 29 diciembre 1992. https://www.boe.es/buscar/act.php?id=BOE-A-1992-28740

Jefatura de Estado (1992b): *Ley 38/1992, de 28 de diciembre, de Impuestos Especiales,* Boletín Oficial del Estado, núm. 312, 29 diciembre 1992. https://www.boe.es/buscar/act.php?id=BOE-A-1992-28741

Jefatura de Estado (2003): *Ley 58/2003, de 17 de diciembre, General Tributaria*, Boletín Oficial del Estado, núm. 302, 18 diciembre 2003. https://www.boe.es/buscar/act.php?id=BOE-A-2003-23186

Jefatura de Estado (2014): *Ley 27/2014, de 27 de noviembre, del Impuesto sobre Sociedades,* Boletín Oficial del Estado, núm. 288, 28 noviembre 2014. https://www.boe.es/buscar/act.php?id=BOE-A-2014-12328

Lapatza, J. J. F., Fernández, J. M., & Márquez, J. R. (2013): *Curso de Derecho tributario: Sistema tributario español,* Marcial Pons, Madrid.

Lima, E. V. (2003): *IVA: O imposto sobre o valor acrescentado, comentado e anotado,* 9ª ed., Porto Editora, Porto.

Mesquita, M. R. G. L. R., & Morais, R. D. (2014): *A tributação autónoma no IRC: A sua (in) coerência,* Universidade Católica Portuguesa.

Ministry of Enterprises and Made in Italy (MIMIT) (2024): *Incentives for the installation of domestic electric vehicle charging infrastructure (Bonus Colonnine Domestiche).* https://www.mimit.gov.it/it/incentivi/bonus-colonnine-domestiche

Ministerio del Interior (1998): *Real Decreto 2822/1998, de 23 de diciembre, por el que se aprueba el Reglamento General de Vehículos,* Boletín Oficial del Estado, núm. 22, 26 enero 1999. https://www.boe.es/buscar/act.php?id=BOE-A-1999-1826

Náñez Alonso, S. L. (2020): «The Tax Incentives in the IVTM and 'Eco-Friendly Cars': The Spanish Case», *Sustainability,* 12(8), 3398. https://doi.org/10.3390/su12083398

Nabais, J. C. (2021): *Direito Fiscal,* 11ª ed., Almedina, Coimbra.

Parlamento Europeo y Consejo de la Unión Europea (2023): *Reglamento (UE) 2023/851 de 19 de abril de 2023*, Diario Oficial de la Unión Europea, L 110, 25 abril 2023. https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX:32023R0851

President of the Italian Republic (1972): *Presidential Decree No. 633 of 26 October 1972 (Value Added Tax Act)*, Official Gazette of the Italian Republic. https://www.normattiva.it/uri-res/N2Ls?urn:nir:presidente.repubblica:decreto:1972-10-26;633

President of the Italian Republic (1986): *Presidential Decree No. 917 of 22 December 1986 (Consolidated Income Tax Act – TUIR),* Official Gazette of the Italian Republic. https://www.normattiva.it/uri-res/N2Ls?urn:nir:presidente.repubblica:decreto:1986-12-22;917

Rivas Nieto, E. (2023): «Los beneficios fiscales y financieros a los vehículos eléctricos y a los puntos de recarga», *Revista Catalana de Dret Ambiental,* 14(2), pp. 1–38. https://doi.org/10.17345/rcda3667

Roriz, F. (2025): *Atualização fiscal em IVA: aspetos práticos,* Ordem dos Contabilistas Certificados.

Secretaría de Estado de Relaciones con las Cortes y Asuntos Constitucionales (2025): *Respuesta del Gobierno a la pregunta escrita 184/20346 (Congreso de los Diputados)*. https://www.congreso.es/l15p/e6/e_0062841_n_000.pdf