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Srdelić, Leonarda

Source / Izvornik: IPF Notes, 2024, 17, 1 - 18

Journal article, Published version Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

https://doi.org/10.3326/in.2024.139

Permanent link / Trajna poveznica: https://urn.nsk.hr/urn:nbn:hr:242:327830

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Download date / Datum preuzimanja: 2024-09-01



Repository / Repozitorij:

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#139 31 July 2024

Environmental taxes in Croatia and the European Union

Leonarda Srdelić

According to Eurostat data published in early July, revenues from environmental taxes in Croatia increased from EUR 0.6 billion in 1995 to EUR 2.3 billion in 2022, growing at an average annual rate of 5.8%. The majority of this growth has been generated by taxes on energy products, while taxes on transport, pollution and natural resources contribute to only a smaller share. The share of revenues from environmental taxes in GDP equalled 3.3%, which is one of the highest shares in the Union, exceeded only by Greece and Bulgaria. These trends suggest that the process of separating economic growth from demand for fossil fuels in Croatia is much slower than the EU average. Namely, a high share of revenues from environmental taxes in GDP, especially those related to energy products, reflects continued dependence on fossil fuels. This fact implies that measures for promoting energy efficiency and transition to renewable energy sources have not been implemented to the desired levels of efficiency or range compared to other EU members.

Environmental taxes are a key fiscal instrument directed at products and activities with a negative impact on the environment, in line with Regulation (EU) No 691/2011. Their objective is to alter production and consumption patterns that are harmful to the environment by promoting economically efficient practices and generating income for financing green projects. In addition, taxes are an important source of funding for green projects that are aligned with the objectives of the

European Green Deal, including the reduction of greenhouse gas emissions by 55% by the year 2030 and reaching climate neutrality¹ by 2050.

The key document in the context of fiscal policy and regulation of environmental taxes within the EU is the proposal to revise the Directive on the taxation of energy products and electricity which was submitted on July 14, 2021. This Directive defines differentiated taxation rates for energy products by introducing excise duties on energy products used as motor fuel, heating fuel and fuel for the generation of electricity. Taxation rates for renewable energy sources such as biofuels, solar and wind power plants and hydropower are substantially lower in order to encourage the use of renewable energy sources and reduction of greenhouse gas emissions.

Apart from excise duties on energy products that have been harmonised at the EU level, many member states implemented additional specific national measures that add to or even go beyond the framework of harmonised tax policies. Names of all environmental taxes can be found in the National Tax Lists (NTL), where they have been classified into three tax categories in line with the guidelines provided by the European system of national and regional accounts (ESA2010). The three categories are: Taxes on production and import (D2), Current income taxes (D5) and Capital gain taxes (D91).

For analytical reasons, all environmental taxes listed in the National Tax Lists have been classified into four main Eurostat categories. These are taxes on energy products, transport, pollution and natural resources. Taxes on energy products include the harmonised excise duties and, for the most part, carbon taxes as it is often hard to distinguish between the two. If possible, these two taxes are isolated and reported on separately, as is the case in Denmark, Estonia, France, Slovenia and Sweden (as presented in Table D1 in Appendix). Taxes on transport include taxes on vehicle registration and ownership, taxes on specific CO₂ emissions from vehicles based on the vehicle's features, taxes on traffic and road tolls. Taxes on pollution and natural resources cover greenhouse gas emissions, water pollution, waste management, exploitation of natural resource and commercial water use.

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¹ Climate neutrality is the state in which greenhouse gas emissions have been reduced to the lowest possible levels, while other emissions have been balanced by removing such gases from the atmosphere.

Dynamics and structure of environmental taxes in Croatia and the European Union

The latest Eurostat data shows that total revenues from environmental taxes in Croatia increased from EUR 0.6 billion in 1995 to EUR 2.3 billion in 2022 (Graph 1a), which equals an average annual growth rate of 5.8%. The majority of this amount is accounted for by taxes on energy products, while taxes on transport, pollution and natural resources contribute to only a smaller share (Graph 1c).

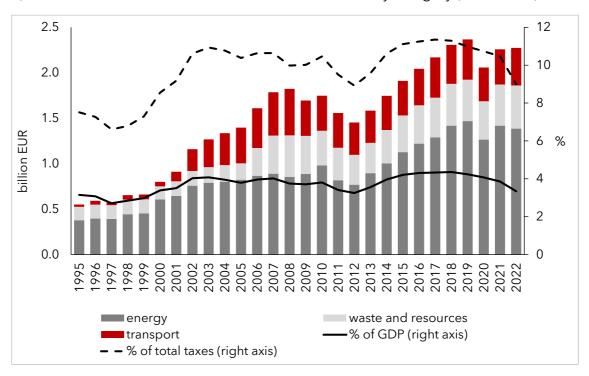
If we analyse individual categories of revenues, we observe that revenues from taxes on energy products increased from EUR 0.3 billion in 1995 to EUR 1.4 billion in 2022, growing at an annual rate of 5.4%. The same average annual growth rate has been recorded by taxes on pollution and natural resources, increasing from EUR 0.1 billion to EUR 0.5 billion. However, the most impressive growth rate has been recorded in the category taxes on transport, which has been growing by 14.9% per year on average, increasing from EUR 25.2 million in 1995 to EUR 413.2 million in 2022.

At the EU level, revenues from environmental taxes have been steadily increasing, with the years 2008 and 2020 being exceptions, when revenues decreased due to declines in economic activities caused by the financial crisis and COVID-19 pandemic respectively. In total, revenues from environmental taxes in the EU have been growing by 2.5% per year on average and increased from EUR 166.9 billion in 1995 to EUR 320.8 billion in 2022. Similar to the situation in Croatia, the majority of this growth can be attributed to taxes on energy products, which nearly doubled their revenues, from EUR 128.7 billion in 1995 to EUR 248.4 billion in 2022 (Graphs 1b and 1d).

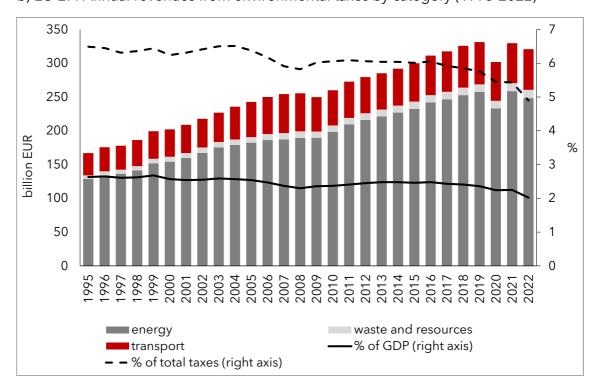
If we observe the trends in the most recent year, 2022, and compare them to 2021, we observe that the tax revenues from energy products decreased in both cases (by 2.4% in Croatia and by 4.0% in EU). Such trends are a direct consequence of the Russian aggression against Ukraine, which led the European Council to reach an agreement on banning almost 90% of all Russian oil imports by the end of 2022 and to adopt the Regulation on reducing the EU's gas needs, which led to restrictions in the use of energy products across the EU.

Graph 1. Overview of environmental taxes and their relative indicators in Croatia and EU-27 countries

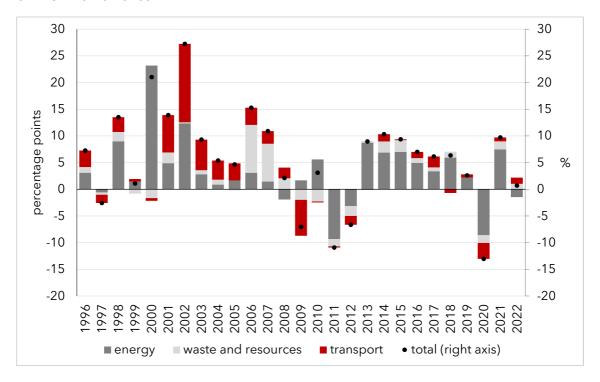
a) Croatia: Annual revenues from environmental taxes by category (1995-2022)



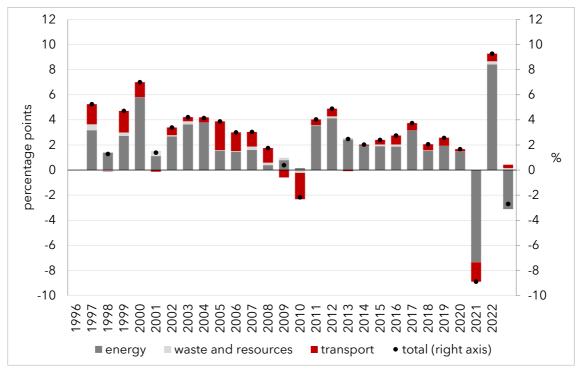
b) EU-27: Annual revenues from environmental taxes by category (1995-2022)



c) Croatia: Contributions of individual categories to the annual change rates of environmental taxes



d) EU-27: Contributions of individual categories to the annual change rates of environmental taxes



Source: Eurostat, https://doi.org/10.2908/ENV_AC_TAX (accessed on 3 July 2024)

If we observe the share of total environmental taxes in GDP by individual EU member states, we can notice geographical trends where countries in the south and east such as Grece, Bulgaria and Croatia have slightly higher relative shares of environmental taxes in GDP compared to countries in the west and north such as Ireland and Luxembourg (Graphs 2a and 2b). With its 3.3% share in GDP, Croatia is highlighted as one of the countries with the highest share of revenues from environmental taxes in the EU, surpassed only by Greece (5.6%) and Bulgaria (4.8%).² In addition, if we compare the trends in the share of revenues from environmental taxes in GDP, we notice that in Croatia this share has been increasing, while at the EU level it dropped from 2.6% in 1995 to 2.0% in 2022.

From an analytical perspective, higher share of revenues from environmental taxes in GDP can be the result of one of three potential scenarios: decrease in total GDP, increase of environmental tax rates or growth in demand for goods or services that are taxable (under the assumption that other economic conditions remained unchanged). In the Croatian context, taking into account that the tax rate has not substantially changed and that the GDP has been growing during the observed period, the growth of share of revenues from environmental taxes in GDP is primarily the consequence of higher demand for energy products, fossil fuels in particular. Therefore, a high share of revenues from environmental taxes in GDP, especially those related to energy products, implies continued dependence on fossil fuels and suggests that measures for promoting energy efficiency and transition to renewable energy sources have not been implemented as successfully as compared to other EU members.

To further illustrate these dynamics, it is interesting to monitor the intensity of CO₂ emissions. This measure calculates the amount of CO₂ emitted per unit of produced energy and signals the level of dependence of the economy on fossil fuels. Lower intensity of CO₂ emissions per unit of energy implies higher share of energy generated from renewable sources, while higher intensity of CO₂ emissions signals higher dependence on fossil fuels. The analysis presented in Srdelić (2024) demonstrates that intensity of emissions in Croatia shows substantial variations. Between 1996 and 2008, CO₂ emissions per unit of produced energy have been rising as a consequence of increased economic activity and growing demand for fossil fuels. After this, between 2008 and 2010 emissions dropped, only to increase again after this period, signalling that the demand for fossil fuels in the observed

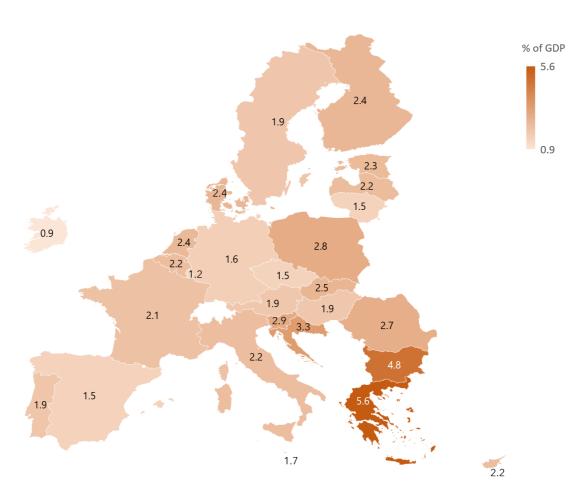
 2 Information about the share of environmental taxes in total tax revenues is provided in Graph 2c.

period was not related to fiscal policy but rather primarily depended on levels of economic activity.

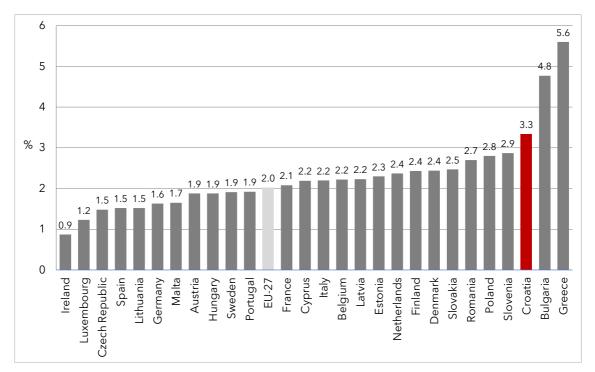
Conversely, the Eurozone shows a stable trend of reducing CO₂ emissions per unit of produced energy, which implies a more successful implementation of policies aimed at increasing energy efficiency and more widespread use of renewable energy sources. This also suggests certain shortcomings of Croatian energy and environmental policies which failed to produce similar results. In the context of further improvements to energy efficiency and reducing dependence on fossil fuels, one of the obvious key tools is the introduction or reform of the carbon tax.

Graph 2. Overview of share of revenues from environmental taxes in GDP and in total tax revenues by EU country in 2022

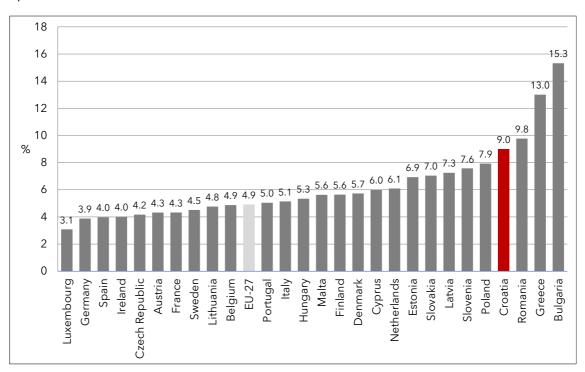
a) Share of environmental taxes in GDP in EU countries in 2022



b) Share of environmental taxes in GDP for EU countries in 2022



c) Share of environmental taxes in total tax revenues in EU countries in 2022



Source: Eurostat, https://doi.org/10.2908/ENV_AC_TAX (accessed on 3 July 2024)

Carbon tax

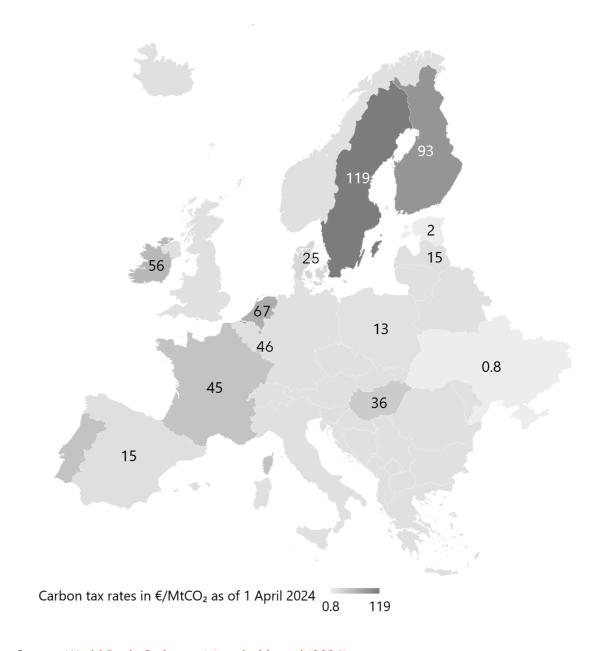
Carbon tax is a fiscal measure aimed at reducing greenhouse gas emissions by charging a levy on carbon dioxide that is emitted during the process of fossil fuel combustion. Finland was the first country in the world to introduce carbon tax in 1990, followed by Sweden the following year. Their example was soon followed by other countries, including Poland, Denmark, Latvia, Slovenia, Estonia, Ireland, France, Portugal, Ukraine, Netherlands, Spain, Luxembourg and Hungary (Graph 3). The highest carbon tax rates are in force in Nordic countries, with Sweden (119 €/MtCO₂) and Finland (93 €/MtCO₂) on top, while the lowest rates are recorded in Ukraine and Estonia (both 2 €/MtCO₂), Poland (13.3 €/MtCO₂), Spain and Latvia (15 €/MtCO₂). The average carbon tax rate in the EU stands at 40 €/MtCO₂.

For countries such as Croatia, showing fluctuations in CO₂ emissions that are closely related to economic activity, carbon tax can be a methodological approach that can lead to more stable and more predictable emission reduction. Revenues generated through this tax can be reinvested in green projects or used for enhancing infrastructure and developing technologies that are less reliant on fossil fuels. Analysis of impact of such tax on local economies, environment and society can provide valuable insight that could contribute to defining policies that would be efficient and sustainable at the same time.

In this context, introducing carbon tax in combination with the current EU Emissions Trading System (ETS) could prove a crucial fiscal instrument aimed at reducing greenhouse gas emissions and promoting sustainable development. Namely, carbon tax and EU ETS represent key mechanisms for defining the overall carbon price. Carbon tax defines the carbon price directly by charging a fixed amount per each ton of emitted CO₂, while EU ETS operates on the cap-and-trade principle, setting an upper limit on total emissions and enabling emission rights to be traded at the market. With the aim of enhancing measures for reducing CO₂ emissions in the European Union, the new emissions trading system - ETS2 - has been announced, which should come into operation in 2027. The aim of this system is to reduce emissions by 42% by the year 2030 compared to 2005 levels, covering sectors that have not been included in the original EU ETS, including fuel combustion in buildings and road traffic. Similar to EU ETS, it also operates on the cap-and-trade principle, with the key difference being that emissions are regulated on the level of suppliers. This means that fuel suppliers are responsible for monitoring and reporting their emissions, rather than end users such as households or drivers. All revenues collected from auctioning emission permits will be directed to supporting

vulnerable households and micro-enterprises through the Social Climate Fund, while the remaining funds will be used for financing climate actions and social measures in member states.

Graph 3. Carbon tax rates in EUR per MtCO₂ as of 1 April 2024



Source: World Bank, Carbon pricing dashboard (2024)

Conclusion

The analysis of environmental taxes in Croatia and EU suggests a substantial growth of revenues, especially revenues from taxes on energy products, which account for the largest share of revenues from environmental taxes. The analysis has also shown that with its 3.3%, Croatia is one of the countries with the highest share of revenues from environmental taxes in GDP in the EU and that in Croatia this share has been rising whereas at the EU level it has been on the decline. This general trend of growing revenues from environmental taxes in GDP suggests that the process of separating economic growth from demand for fossil fuels in Croatia is somewhat slower.

In order to meet its commitments as an EU member state following the adoption of the European Climate Law, Croatia needs to enhance its energy efficiency policies and increase their implementation by moving to renewable energy sources. This law sets a legally binding requirement to reach climate neutrality by the year 2050.

In this context, the joint implementation of the new emissions trading system with potential introduction of a carbon tax can provide a double mechanism for promoting the reduction of greenhouse gas emissions in order to meet the emission reduction target of 55% by the year 2055.



Appendix

Table D1. List of environmental taxes in EU countries

Country	Environmental taxes	Tax type	In force from	Category of environmental tax
Austria	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Austria	Motor vehicles tax - Tax 2	Other indirect	01 January 2024	transport
Austria	Motor vehicles tax - Duty on vehicles based on standard fuel consumption	Other indirect	01 January 2024	transport pollution/resources
Belgium	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Belgium	Motor vehicles tax - Eurovignette	Other indirect	01 January 2024	transport
Belgium	Motor vehicles tax - Tax on the entry into traffic service	Other indirect	01 January 2024	transport
Belgium	Motor vehicles tax - Tax on traffic circulation	Other indirect	01 January 2024	transport
Bulgaria	Motor vehicles tax - Transport vehicles tax	Other direct	01 January 2024	transport
Bulgaria	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 July 2024	energy products
Cyprus	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 July 2024	energy products
Cyprus	Motor vehicles tax - Circulation licenses for public use vehicles	Other indirect	01 January 2024	transport
Czechia	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products transport
Czechia	Levy on electricity from solar radiation	Other indirect	01 January 2024	energy products
Czechia	Motor vehicles tax - Motor vehicle entry fees	Other indirect	01 January 2024	transport
Czechia	Motor vehicles tax - Road tax (commercial)	Other indirect	01 January 2024	transport
Denmark	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products transport pollution/resources
Denmark	Insurance tax - Tax on third-party insurance for motor vehicles	Other indirect	01 January 2023	transport
Denmark	Excise duty - Water in pipelines	Other indirect	01 January 2024	pollution/resources

Denmark	Excise duty - Carbon dioxide tax on certain	Other indirect	01 January 2024	energy products
Denmark	energy products Motor vehicles tax - Green tax on passenger cars	Other indirect	01 January 2024	transport
Denmark	Road tax - Road user charge (Eurovignette)	Other indirect	01 January 2024	transport
Denmark	Excise duty - Sealed NiCad-batteries	Other indirect	01 January 2024	pollution/resource
Denmark	Excise duty - Sulphur	Other indirect	01 January 2024	pollution/resource
Denmark	Excise duty - Tax on certain packaging, disposable tableware, and PVC filmwrapping and certain bags of paper or plastic etc.	Other indirect	01 January 2024	pollution/resource
Denmark	Motor vehicles tax - Motor vehicle registration duty	Other indirect	01 January 2024	transport
Denmark	Excise duty - Nitrogen	Other indirect	01 January 2024	pollution/resource
Denmark	Motor vehicles tax - Weight tax on motor vehicles	Other indirect	01 January 2024	transport
Denmark	Excise duty - PVC and phtalates tax	Other indirect	01 January 2024	pollution/resource
Denmark	Excise duty - Pesticides	Other indirect	01 January 2024	pollution/resource
Denmark	Excise duty - Wastewater	Other indirect	01 January 2024	pollution/resource
Denmark	Excise duty - CFC, HFC, PFC and SF6	Other indirect	01 January 2024	pollution/resource
Estonia	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Estonia	Pollution charge (Carbon tax)	Other indirect	01 January 2024	pollution/resource
Finland	Excise duty - Energy products (EU harmonised); Carbon tax	Energy products and electricity	01 January 2024	energy products
Finland	Motor vehicles tax - Vehicle tax	Other indirect	01 January 2023	transport
Finland	Motor vehicles tax - Car tax	Other indirect	01 January 2023	transport
Finland	Landfill tax	Other indirect	01 January 2024	pollution/resource
Finland	Excise duty - beverage packages	Other indirect	01 January 2024	pollution/resource
France	Excise duty - Energy products (EU	Energy products and	01 July 2023	energy products

France	Road tax - Tax payable by motorway operators	Other indirect	01 January 2024	transport
France	Motor vehicles tax - Annual tax on company cars	Other indirect	01 January 2024	transport
France	Pollution tax (Carbon tax)	Other indirect	01 January 2024	pollution/resources
Greece	Motor vehicles tax - Road tax on motor vehicles	Other direct	01 January 2024	transport
Greece	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Greece	Motor vehicles tax - Car registration tax	Other indirect	01 January 2023	transport
Croatia	Motor vehicles tax - Tax on road motor vehicles	Other direct	01 January 2024	transport
Croatia	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Croatia	Motor vehicles tax - Special tax on motor vehicles	Other indirect	01 January 2024	transport
Ireland	Excise duty - Energy products (EU harmonised); Carbon tax	Energy products and electricity	01 January 2024	pollution/resources energy products
Ireland	Plastic bag levy	Other indirect	01 January 2024	pollution/resources
Ireland	Motor vehicles tax - Vehicle registration tax	Other indirect	01 January 2024	transport
Ireland	Landfill levy	Other indirect	01 January 2024	pollution/resources
Ireland	Motor vehicles tax - Vehicle duties	Other indirect	01 January 2024	transport
Italy	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	energy products
Italy	Tax on emissions of sulphur dioxide (S02) and nitrogen oxides (N02)	Other indirect	01 January 2022	pollution/resources
Italy	Motor vehicles tax - Regional motor-vehicle taxes	Other indirect	01 January 2024	transport
Italy	Regional special tax on landfill dumping	Other indirect	01 January 2024	pollution/resources
Italy	Provincial environmental protection tax	Other indirect	01 January 2024	pollution/resources
Italy	Motor vehicles tax - Public motor vehicle register tax	Other indirect	01 January 2024	transport

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Netherlands	Malta	Motor vehicle	Other indirect	•	transport
On heavy motor vehicles Excise duty - Energy products (EU harmonised); Carbon tax Cother indirect O1 January 2024 Portugal	Malta	act (Cement)	Other indirect	•	pollution/resources
products (ÉU harmonised); Carbon tax Netherlands Tax on tap-water Other indirect 01 January 2024 Netherlands Waste tax Other indirect 01 January 2024 Netherlands Motor vehicles tax - Registration tax on passenger cars and motor bicycles Netherlands Motor vehicles tax Other indirect 01 January 2024 Netherlands Motor vehicles tax Other indirect 01 January 2024 Germany Motor vehicles tax Other indirect 01 January 2024 Germany Motor vehicles tax Other direct 01 January 2024 Germany Excise duty - Energy 2024 Energy 2024 Energy 2024 Energy 2024 Energy 2024 Energy 2024 Germany Nuclear fuel tax Other indirect 01 January 2024 Energy 2024 Germany Aviation tax Other indirect 01 January 2024 Energy 2024 Ene	Netherlands		Other direct	•	transport
Netherlands Waste tax Other indirect O1 January 2024	Netherlands	products (EU harmonised); Carbon	products and	,	energy products
Netherlands Motor vehicles tax - Registration tax on passenger cars and motor bicycles Netherlands Motor vehicles tax Other indirect 2024 Germany Motor vehicles tax Other direct 2024 Germany Excise duty - Energy products and harmonised) Fortugal Excise duty - Cars Circulation tax Portugal Excise duty - Energy products (EU harmonised) Fortugal Excise duty - Energy products and electricity Fortugal Excise duty - Energy products (EU harmonised); Carbon tax Fortugal Excise duty - Energy products (EU harmonised); Carbon tax Fortugal Excise duty - Energy products and electricity	Netherlands	Tax on tap-water	Other indirect		pollution/resources
Registration tax on passenger cars and motor bicycles Netherlands Motor vehicles tax Other direct Other direct Other indirect Other indi	Netherlands	Waste tax	Other indirect		pollution/resources
Germany Motor vehicles tax Other direct 01 January 2024 Germany Excise duty - Energy products (EU products and harmonised) electricity pollution/resources Germany Nuclear fuel tax Other indirect 2024 pollution/resources Germany Aviation tax Other indirect 2024 pollution/resources Germany Aviation tax Other indirect 2024 pollution/resources Poland Motor vehicles tax - Transport vehicles Transport vehicles 2024 pollution/resources Poland Excise duty - Energy products and harmonised); Carbon tax Portugal Motor vehicles tax - Circulation tax Portugal Excise duty - Alcoholic beverages (EU harmonised) Excise duty - Energy products and electricity harmonised) Excise duty - Representation tax Portugal Excise duty - Bergy products and electricity harmonised) Excise duty - Alcoholic beverages (EU harmonised) Excise duty - Energy products and electricity Energy anamary transport Energy products and electricity Energy anamary transport Energy products and electricity Energy anamary energy p	Netherlands	Registration tax on passenger cars and	Other indirect	,	transport
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density plastic bags 2024 Portugal Motor vehicles tax Other indirect 01 January transport	Portugal	products (EU harmonised); Carbon	products and	-	energy products
Portugal Motor vehicles tax Other indirect 01 January transport	Portugal		Other indirect		pollution/resources
	Portugal	• • • • • •	Other indirect		transport

Romania	Motor vehicles tax - Environmental stamp duty	Other direct	01 January 2024	transport
Romania	Tax on domestic production of crude oil and natural gas	Other indirect	01 January 2020	pollution/resources
Slovak Republic	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 July 2024	energy products
Slovak Republic	Motor vehicles tax - Entry into and parking of a motor vehicle in a historical part of a city	Other indirect	01 January 2016	transport
Slovak Republic	Motor vehicles tax	Other indirect	01 January 2024	transport
Slovenia	Motor vehicles tax - Annual fee on the use of motor vehicles	Other direct	01 January 2024	transport
Slovenia	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 July 2024	energy products
Slovenia	CO_2 tax	Other indirect	01 January 2024	energy products pollution/resources
Slovenia	Motor vehicles tax	Other indirect	01 January 2024	transport
Slovenia	Tax on waste pollution	Other indirect	01 January 2024	pollution/resources
Spain	Motor vehicles tax - Tax on mechanically powered vehicles	Other direct	01 January 2024	transport
Spain	Excise duty - Energy products (EU harmonised); Carbon tax	Energy products and electricity	01 January 2024	energy products
Spain	Motor vehicles tax - Special tax on certain means of transport	Other indirect	01 January 2024	transport
Sweden	Excise duty - Energy products (EU harmonised)	Energy products and electricity	01 January 2024	pollution/resources energy products
Sweden	Excise duty - Carbon dioxide tax	Other indirect	01 January 2017	energy products
Sweden	Excise duty - Tax on natural gravel	Other indirect	01 January 2024	pollution/resources
Sweden	Motor vehicles tax	Other indirect	01 January 2024	transport
Sweden	Tax on pesticides	Other indirect	01 January 2024	pollution/resources
Sweden	Tax on thermal effect of nuclear power stations	Other indirect	01 January 2024	energy products
Sweden	Waste tax	Other indirect	01 January 2024	pollution/resources

Sweden	Insurance tax - Tax on traffic insurance premiums	Other indirect	01 January 2024	transport
Sweden	Excise duty - Sulfur tax	Other indirect	01 January 2024	pollution/resources
Sweden	Tax on chemicals in certain electronics	Other indirect	01 January 2024	pollution/resources
Sweden	Tax on air travel	Other indirect	01 January 2024	transport
Sweden	Tax on waste incineration	Other indirect	01 January 2024	pollution/resources
Sweden	Tax on plastic carrier bags	Other indirect	01 January 2024	pollution/resources

Source: Taxes in Europe Database v4, European Comission

