Introduction

The following document provides background information on taxes on energy use and greenhouse gas (GHG) emissions in the 79 countries covered in the Carbon Pricing and Energy Taxation (CPET) database - formerly Taxing Energy Use (TEU) - that is the basis for the report titled *Pricing Greenhouse Gas Emissions 2024: Gearing Up to Bring Emissions Down*. Additionally, it provides information on energy use subsidies in countries not covered by the OECD Inventory of Support Measures for Fossil Fuels[1] (please see Annex A for source by country). The document also summarises country-specific assumptions made for the construction of the database. The general methodology behind the database is discussed in Chapter 1 of the report. Country-specific results are summarised in the online country notes.

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[1] https://www.oecd.org/en/topics/sub-issues/fossil-fuel-support.html

Argentina

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gases in Argentina, were the following:

- A Tax on Liquid Fuels and on Carbon Dioxide (*Impuesto sobre los Combustibles Líquidos y al dióxido de carbono*), which contains a carbon tax component for certain fuels.
    - The Tax on Liquid Fuels and Carbon Dioxide applies to liquid fuels, including gasoline, diesel, kerosene and fuel oil, and to solid fuels, including petroleum coke and coal, but not to natural gas:
        - The Tax on Liquid Fuels is expressed at a uniform rate of ARS 61.15 per litre on gasoline and naphtha-related fuels, and at a uniform rate of ARS 37.712 per litre on diesel and kerosene.
        - The executive branch may increase the Tax on Liquid Fuels by 25%, or decrease rates by 10%, based on political economy considerations.
        - The Tax on Liquid Fuels and on Carbon Dioxide is indexed to the Consumer Price Index (CPI).
        - Jet kerosene and aviation gasoline used for domestic aviation are taxed as regular kerosene and gasoline; aviation fuels are not subject to the Tax on Liquid Fuels when used for international flights.
    - The Carbon Tax, with a nominal rate of ARS 696/tCO_2e (EUR5.32/tCO_2e in 2022 exchange rates), applies to the fuels subject to the Tax on Liquid Fuels and on Carbon Dioxide, as well as to fuel oil, petroleum coke and mineral coal, but not to natural gas.
        - The executive branch may increase the Carbon Tax by 25% based on environmental or energy considerations.
- A uniform Surcharge on Natural Gas (*Recargo al Gas Natural*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to natural gas use at a rate of 5.44% of the price of natural gas charged at the point of entry into the distribution system.
- A Tax on Electricity (*Impuesto a la Energía Eléctrica*), classified as an electricity excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to electricity consumption at a uniform rate of ARS 0.00547 per kWh.

Argentina does not operate an emissions trading system for greenhouse gas emissions.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Based on domestic sources (Coordination Unit for Infrastructure Trusts (UCOFIN)), it is assumed that unleaded gasoline with more than 92 octanes (*naftas super* and *ultra*) represents close to 100% of total gasoline use, hence only its corresponding rate is included in the database.
- All fuels used for energy transformation purposes other than electricity generation and heating (e.g. coking coal to coke) are untaxed.
- Fishing fuels are not subject to the Tax on Liquid Fuels, nor to the Carbon Tax.
- The energy product coke oven coke is subject to the Carbon Tax applicable to coal products.
- For modelling purposes, the ad valorem surcharge on natural gas was transformed into an ad quantum rate of ARS 0.731[2] per cubic metre of natural gas.

[2] Using OECD 2022 period average exchange rate

- Due to data constraints, the following tax exemptions and reductions are not included in the database:
    - The tax exemption applied to liquid fuels used in Southern Argentina.
    - The differential tax rates on energy use benefiting the cities of Posadas and Clorinda which was in force from January 2017 to February 2018.

Australia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Australia were the following:

- The Excise Duty applies to gasoline and diesel, kerosene, fuel oil and other liquid petroleum-based products, propellant use of LNG and CNG, denatured ethanol (bio-gasoline) and biodiesel.
    - The Fuel Tax Credit (FTC), classified as a credit on fuel excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology, is equivalent to the full excise duty paid and available to eligible businesses for gasoline, diesel, LPG, heating oil, fuel oil, LNG and CNG used for business purposes.[3] FTCs also apply to gasoline and diesel consumed by heavy vehicles but are not available where they relate to the use of light vehicles on public roads.
- The Road User Charge (RUC), classified as a fuel excise tax according to the CPET methodology, applies to gasoline and diesel consumed by heavy vehicles travelling on public roads.

Australia does not levy an electricity excise tax, or a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

Australia operates the Safeguard Mechanism, effectively a rate-based emissions trading system for greenhouse gas emissions. The database includes top-down estimates of the system.

Excise rates on fuels and petroleum products (excl. aircraft fuels) are adjusted twice a year in line with the consumer price index (CPI).

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- In the off-road sector, fossil fuels' use outside of aviation benefits from the FTC, and hence appear as untaxed in CPET.[4] Aviation fuels (jet kerosene and aviation gasoline) are taxed when used for domestic aviation.[5]
- All fuels used for electricity generation benefit from a full FTC.
- In the agriculture and fishing sectors, all fossil fuels benefit from the full FTC, and are thereby untaxed.

[3] In line with previous vintages of CPET, it is assumed that all eligible entities have claimed and received these refunds. Notice that in CPET a full refund is treated as untaxed energy use.

[4] This inter alia applies to business use of fuel by a shipping operator transporting domestic cargo between Australian ports. Resident shipping operators are eligible to claim fuel tax credits for fuel used in voyages within Australian territorial waters, when transporting domestic cargo between Australian ports. When using resident shipping agents, non-resident shipping operators must claim their fuel tax credits through the resident agent. Alternatively, where a shipping agent has not been engaged to supply the fuel, the non-resident shipping operators must be registered (for GST and to receive fuel tax credits) to claim the fuel tax credits on the fuel acquired.

[5] Fuel tax credits cannot be claimed for aviation fuels, although petroleum or diesel used in an aircraft for business use may be eligible for fuel tax credits. Excise is not payable on fuel used for international travel.

- It is assumed that in the road sector, only non-heavy ("light") vehicles consume gasoline, and heavy vehicles ("rigid trucks" and "articulated trucks") represent 46% of total diesel consumption.[6]

[6] https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release

Austria

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use (*Energieabgaben*) in Austria were the following:

- A Mineral oil tax (*Mineralölsteuer*) applies to petrol, medium heavy oils (e.g. kerosene), gasoil, gaseous hydrocarbons (excl. natural gas), fuel oil and LPG. Excise tax rates vary by lead content, by biogenic substances content and by sulphur content. This tax is classified as "fuel excise tax" according to the Carbon Pricing and Energy Taxation (CPET) methodology.
- Energy taxes (*Energieabgaben*) apply to:
  - natural gas (*Erdgasabgabe*) and solid fossil fuels (*Kohleabgabe*), classified as "fuel excise tax" according to CPET methodology.
  - electricity (*Elektrizitätsabgabe*), classified as "electricity excise tax".

Energy taxes in Austria are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Austria does not yet levy a fuel-based carbon tax and does not tax greenhouse gas emissions directly. An emissions trading system has been introduced in 2022 with the eco-social tax reform.

Austria participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Austria launched its national ETS national emissions certificate trading system (*Nationales Emissionszertifikatehandelsgesetz* – NEHG 2022) for fossil fuel not already covered by the EU ETS in October 2022[7] with a fixed rate of EUR 35 per tonne of CO_2 in 2023.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to diesel used in residential, industrial and commercial sectors (for heating, for stationary combustion engines, for electricity generation and for CHP plants) is that of fuels *labelled, with a maximum sulphur content of 10 mg*. Labelled gas oil is at a reduced rate of EUR 98 per 1000 L, dedicated to heating and propulsion of systems. Diesel used for electricity generation and CHP plants benefits from a refund, bringing the rate to EUR 98 per 1000 L. All diesel consumed in the industry, residential and commercial sectors, and for electricity and CHP plants is assumed to be *labelled* and hence benefits from a reduced rate or partial refund.
- Fuel oil used for electricity generation is exempted. Coal, coke-related gases, and refinery gases used for electricity and CHP plants are exempted. Biogases[8], biodiesel, biogasoline and non-renewable wastes are under certain circumstances exempted. These circumstances are assumed to be always met in the model. Most use of biodiesel and biogasoline (bioethanol) takes place as blends with their fossil fuel equivalents. In this case, biofuels are taxed at the same rate as their fossil fuel equivalents at a reduced rate.
- Diesel used as propellant in the agriculture sector benefit from a temporary refund of EUR 0.07 per litre from May 2022 to June 2023.
- Natural gas and electricity consumption for all uses benefit from a reduced rate from May 2022 to December 2024.

[7] This encompasses gasoline, kerosene, diesel, fuel oil, natural gas, LPG and coal, in buildings, transport, agriculture, waste and small industrial plants sectors.

[8] Biogases in the IEA energy balances are principally gases arising from the anaerobic fermentation of biomass and the gasification of solid biomass (including biomass in wastes).

- All mineral oil used for commercial aviation and commercial navigation in the Danube, Lake Constance and Lake Neusiedl are assumed to be exempted[9]. This is assumed to cover all the fuel consumption for domestic navigation in the model.
- In the off-road sector, railway fuels (diesel) are taxed at the same rates as in road transport.
- In the industry sector, energy products used in transformation processes (other than heating) are not taxed.
- Electricity from industrial cogeneration is in principle subject to the general electricity tax (called "electricity excise tax" in CPET):
  - A tax exemption applies to electricity generators for self-produced and consumed energy up to an exemption limit of 5,000 kWh per year. Self-produced and consumed electricity from renewable sources by electricity producers are tax-free without a specific limit. It is assumed all self-generated electricity that is self-consumed is tax-exempt.
  - A tax exemption applies to electricity from renewable sources if the electricity is self-produced and consumed by railway companies for operating the rail transport. It is assumed all electricity consumed by railway fall under this case.

Due to data constraints, the following refunds or tax exemptions are not included in the CPET database:

- For the energy intensive manufacturing sector the paid taxes on electricity, gas, solid fossil fuels, mineral oil and liquid gas are partly refunded (not modelled in CPET due to data constraints). The paid taxes are refunded insofar as their sum exceeds 0.5% of the net production value and/or the minimum tax rates of the EU Energy Tax Directive are met. The refund occurs upon application.
- Fuels used in private pleasure craft and private planes are taxed (not modelled in CPET due to a lack of consumption data).
- A tax rebate applies to electricity consumed by railway companies for operating the rail transport.

[9] Mineral oil used in commercial aviation and navigation on the Danube, Lake Constance and Lake Neusiedl are tax exempt.

Bangladesh

Taxes on energy use and greenhouse gases

As at 1 April 2023, no taxes on energy use and greenhouse gas emissions in Bangladesh were identified.

A reform of fuel taxation was adopted for FY 2023/24, moving from an *ad valorem* custom duty to a *per unit* excise tax at the time of import.[10] Custom duties are not recorded in line with CPET methodology.

The VAT standard rate of 15% applies to fuel and electricity, with a reduced rate of 5% for LPG. VAT rates are provided for information but not included in the calculation of effective tax rates on energy use.

Bangladesh does not collect carbon taxes or taxes on other greenhouse gases emissions.

Bangladesh does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

Petroleum and electricity prices are set by the government.

The following subsidies on energy use were identified to be in operation in 2022:[11]

- Direct budget transfers are paid to the Bangladesh Power Development Board (BPDB), the state-owned electric utility, to compensate the prices set below the cost. This subsidy amounted to BDT 395 billion for 2022/2023 according to the annual reports of the BPDB.[12] Other kind of subsidies such as equity injections or loans by the government are not currently taken into account.
- Petrobangla received subsidies for imported LNG,[13] up to BDT 60 billion for 2022/2023,[14] which is assumed to be for purchasing LNG and not for infrastructure development. Prices for natural gas, as for electricity, will be gradually raised to decrease subsidies.[15]
- As of February 2023, no subsidy for the Bangladesh Petroleum Company was recorded for the fiscal year.[16]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The electricity subsidies have been computed by allocating the total amount of the subsidy across all electricity consumption, and the LNG subsidies across all natural gas consumption.

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[10] New rates: https://nbr.gov.bd/uploads/tariff_schedule/Chapter-274.pdf

[11] According to the budget speech, "the allocation for subsidy and incentives had to be increased to 1.83 percent of the GDP in the budget for the FY2022-23 due to excessive increase in the prices of fertilizers, fuel and gas in the international market. In the revised budget this allocation was increased to 2.2 percent of the GDP, whereas in the pre-war years allocation for subsidies and incentives was limited to an average of 1.0 percent of GDP.[11]" No more information on detailed subsidies for fuel and gas was fund.

[12] 2024-01-09-11-54-9f8a57197b00016ccc7cbf5301b83957.pdf (portal.gov.bd)

[13] https://cpd.org.bd/wp-content/uploads/2023/01/Volatile-Global-LNG-Market-and-Its-Impact.pdf

[14] https://observerbd.com/news.php?id=369214 ; https://cpd.org.bd/wp-content/uploads/2023/01/Volatile-Global-LNG-Market-and-Its-Impact.pdf

[15] IMF Country Report No. 23/409

[16] https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/f2d8fabb_29c1_423a_9d37_cdb500260002/Chapter-10%20%28English%29%202023.pdf ; https://www.elibrary.imf.org/view/journals/002/2023/409/article-A001-en.xml

Belgium

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Belgium were the following:

- The Excise Tax (*droit d'accise*) applies to gasoline, kerosene, gasoil, heavy fuel oil, LPG, natural gas, coal, coke and lignite and electricity. For natural gas, coal, coke and lignite and electricity the excise tax is zero.
- An Inspection Fee (*redevance de contrôle*) of EUR 10 per 1000 litres additionally applies to diesel consumed for heating purposes.
- The Special Excise Tax (*droit d'accise special*) additionally applies to the fuels listed above. For natural gas and electricity the special excise tax is zero.
- The Energy Contribution (*cotisation sur l'énergie*) also applies to the fuels listed above.[17] It is classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, unless for electricity when it is classified as an electricity excise tax.
- The stockholding fee (*contribution APETRA*), classified as a fuel excise tax according to CPET methodology, even if not considered as a fuel excise domestically, is levied on oil product sales by the national petroleum agency to finance stock regulation.

Energy taxes in Belgium are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Belgium does not levy a fuel-based carbon tax nor direct tax on GHG emissions.

Belgium participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline for automotive purpose is that of light oil with *a lead content does not exceed 0,013 g per and a low sulphur content.* [18]
- The rate applied to gas oil is that of gas oil with *a sulphur content equal of inferior to 10 mg/ kg.*
- The rate applied to LPG used for heating is assumed to be that of butane.
- Gas oil benefits from a refund of EUR 205.0665 (01/04/23 rate) when consumed for professional transport of merchandise or people. It is assumed this professional gasoil represents 40% of the total road gasoil consumption.
- It is assumed electricity supplied to an end-user connected to the network with a rated voltage > 1 kV, which is taxed at a zero rate, only concerns the industry sector. Non-industry sectors are assumed to be connected to the network with a rated voltage < 1kV.

[17] Natural gas and electricity consumption are additionally subject to a Federal Contribution (cotisation fédérale). In line with previous vintages of the database, this surcharge is not included in CPET.

[18] The Excise tax rates, the Special excise tax rates and the Energy contribution rates differ by lead content and by sulphur content.

- Natural gas consumed by firms covered by an "accord de branche" benefit from a lower statutory tax rate on the Energy Contribution compared to other firms. It is assumed the "accord de branche" covers 60% of the industry sector.
- Biogases are assumed to be taxed as natural gas.
- Biofuels are taxed at the same statutory rate as regular fossil fuels in the road sector.
- Waste, solid biofuels (woody products) and other renewables (hydro, solar photovoltaic, wind), as well as nuclear are in practice not taxed as inputs to electricity generation.
- It is assumed that the stockholding fee (*contribution APETRA*) is levied on all oil uses, including for electricity generation or for rail, unlike other excise taxes.

Main tax exemptions:

- All energy products and electricity used for electrolytic processes, chemical reduction, metallurgical processes and mineralogical processes are exempted.
- All energy products and electricity, except heavy fuel oil, coals, cokes and lignite, used for electricity generation are exempted.
- Energy products for commercial aviation and navigation are exempted, also from the stockpiling fee.
- Fuels and electricity are not taxed when used in combined heat and power (CHP) plants.
- Gasoil, kerosene and electricity used for rail transport are exempted.
- Electricity and fuels, used for agriculture and fishing are exempted. For electricity and natural gas, the exemption is limited to the Energy Contribution (*cotisation sur l'énergie*).
- Coal, coke and lignite consumed by households is exempted.
- Natural gas and LPG used as propellant are subject to a zero-tax rate.

Due to data constraints, the following tax or exemptions are not modelled:

- Tax on aviation and navigation fuel when non-commercial use.
- Tax exemption on natural gas and electricity use by low-income households.

Other instruments that were considered but are not modelled as taxes in CPET:

- The BOFAS fee (*Fonds d'assainissement des sols des stations-service*) on automotive diesel and gasoline which is equal to zero since 2018.
- The Social heating fund fee (*Fond social chauffage*), levied on heating gasoil and fuel.

Brazil

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Brazil, were the following:

- The CIDE-fuels *(Contribuição de intervenção no domínio econômico incidente sobre as operações realizadas com combustíveis)* tax, classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to liquid fuels, including ethanol, and natural gas in principle. In practice, the CIDE tax on liquid fuels currently only applies to gasoline.
- The CDE *(Conta de Desenvolvimento Energético)* tax, classified as an electricity excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to electricity consumption, and the rate differs by region and by voltage level.[19]

Brazil does not levy a fuel-based carbon tax and does not tax greenhouse gas emissions. Brazil does not currently operate an emissions trading system for greenhouse gas emissions but has recently adopted legislation towards establishing one.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Weighted average CDE rates are calculated based on the assumed electricity market shares by region,[20] and on the assumption that the high-level voltage rates apply to the industry sector, the low-level voltage rates apply to household consumption, and the medium-level voltage rates apply to all other economic sectors.
- Some other taxes in Brazil feature specific regimes for energy products, but are not included in the CPET database. For example, the Brazilian social security contributions (PIS/COFINS) are paid by companies on sales revenues, and most petroleum products are subject to a special PIS and COFINS regime. In addition, the Imposto Sobre Operações Relativas à Circulação de Mercadorias e Serviços de Transporte Interestadual de Intermunicipal e de Comunicações (ICMS), a tax on sales and services, applies to the movement of goods, transportation, communication services and other general supplying of goods. Due to the difficulty of assessing and comparing the impact of these differential rates on the prices of energy products, in particular when the differential rates also apply to other goods and services, these taxes are not included into the CPET database. Note that with tax reforms under discussion, the above taxes are envisaged to become components of a dual VAT system.
- Brazil has implemented RenovaBio, the National Biofuels Policy, through Law No. 13,576/2017. It aims to promote production and use of biofuels in the transportation sector. Biofuel producers receive decarbonisation credits and fuel distributors are obliged to buy such credits according to individual targets. This system is not covered in CPET.

[19] The Agência Nacional de Energia Elétrica (ANEEL) updated the CDE after a public consultation that was concluded at the end of April 2021.

[20] Based on 2015 data, it is assumed the N/NE and the S/SE/CO represent 21.5% and 78.5% of the electricity market, respectively.

Bulgaria

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Bulgaria, were the following:

- Excise duty on energy products (*Акцизните вър*), classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, kerosene, fuel oil, natural gas, LPG, coal and coke.
    - Tax rates for LPG and natural gas used as propellants were set to 0 from 9 July 2022 to 30 June 2025 in response to the soaring energy prices. The anti-crisis measure was repealed as of 1 August 2023.
- An excise tax on electricity consumption (per MWh), classified as an electricity excise tax according to the CPET methodology, applies to business uses.

Energy taxes in Bulgaria are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Bulgaria does not levy carbon taxes or taxes on other GHG emissions.

Bulgaria participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:[21]

- Capped electricity prices benefitting households, firms and grid operators.
- Discounts on purchases of motor fuels.
- Natural gas price compensation for residential users, commercial and public services.

Due to limited fiscal size and data constraints the following measures are not modelled:

- Subsidies for electricity expenses of students.

The following measures are out of CPET scope as subsidies: VAT tax measures, renovation, energy efficiency investment and infrastructure measures, cash transfers which are unconditional and non-proportional to domestic energy use (e.g., one-off allowance to vulnerable households for heating), non-energy-related income support. Note that energy excise tax measures (e.g., reductions, refunds and exemptions) are already captured with the prevalent excise tax rates.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Diesel used for railways is taxed at the propellant rate.
- Biodiesel and biogasoline in road transport (blends) are treated as their fossil fuel equivalents. Biodiesel and biogasoline as a pure form, are untaxed.
- Fuels used in commercial aviation and navigation are tax exempt. One exception is marine heavy fuel oil which is taxed, but no energy use is reported.
- Fishing fuels are tax exempt.
- Agriculture fuels are assumed to be subject to the same fuel excise rates as for other uses. CPET assumes that 50% of the liquid fuels (i.e., diesel) consumed in agriculture, are for

[21] OECD (2023), Energy Support Measures Tracker, "Aiming Better: Government Support for Households and Firms During the Energy Crisis", OECD Economic Policy Papers No. 32, OECD Publishing: Paris, https://doi.org/10.1787/839e3ae1-en

propellant purposes and the remaining for heating. Other fuels (like LPG and natural gas) consumed in agriculture are assigned the business heating rates.

- Non-renewable waste, and other renewables: hydro, solar, wind and biomass are not taxed.
- Gasoline used for road transport is assumed to be unleaded.
- Fuels used as input to electricity generation are untaxed. CPET assumes that all electricity inputs benefit from this provision.
- Fuels used as inputs to heat plants are taxed at their respective rates.
- Energy products used for the combined production of thermal and electrical energy, as CHP inputs, are untaxed (anti-crisis measure). The anti-crisis measure was repealed as of 1 August 2023.

When modelling the energy subsidies specified above to the corresponding base, the following country-specific assumptions were made:

- The scheme capping prices of electricity is modelled as an electricity output subsidy. It is assigned to all residential and business use, including energy industry own use. The total subsidy amount was taken from the OECD Energy Support Measures Tracker, summing up the duration-adjusted amounts for the measures numbered 97,105,107, resulting in approximately BGN 3.4 billion. One subsidy rate per MWh is calculated for all users.
- The motor fuels subsidy is modelled as a rate per litre (diesel, gasoline) and per kg (LPG, natural gas propellants), with simple arithmetic adjustment for the duration of the scheme (6 out of 12 months) and a further reduction of 40% for any non-qualifying sales, non-participating gas stations etc. The measure discount rate of BGN 0.25 is thus estimated at an annualised subsidy rate of BGN 0.075 per litre/kilogram.
- The subsidy on natural gas is modelled as a fossil fuel subsidy. It is assigned to the buildings sector, namely residential consumption, and commercial and public services. The subsidy amount was sourced from the OECD Energy Support Measures Tracker, (measure number 106), estimated at BGN 340 million. One subsidy rate per MWh is calculated among users.

Due to data constraints, the following refunds are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- The refund (exemption) of electricity excise to producers which electricity represent more than 50 % of their unitary cost of production and consumers of electrical energy used for chemical reduction or in electrolytic, metallurgical, or mineralogical processes.

Burkina Faso

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Burkina Faso, were the following:

- A tax on petroleum products (*taxe sur les produits pétroliers (TPP*)), classified as a fuel excise tax according to the CPET methodology, applies on super gasoline and diesel, at a rate of 125 and 50 XOF per litre respectively.[22]
- A tax in support of audiovisual activities of the state (*Taxe de Soutien au Développement des Activités Audiovisuels de l'Etat* (TSDAAE))[23] and a tax of electricity development (*Taxe de Développement de l'Electricité* (TDE))[24,25], classified as electricity excise taxes, are levied on electricity consumption.

Additionally, a VAT of 10% applies to electricity bills above 5 000 XOF, which is out of CPET scope.

Burkina Faso does not levy a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

Burkina Faso does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

The prices of liquid and gaseous fuels in Burkina Faso are regulated monthly by the state via the interministerial committee CIDPH (*Comité Interministériel de Détermination des Prix des Hydrocarbures*).

The following subsidies on energy use were identified to be in operation in 2022:

- Electricity subsidies compensate the national electricity company y SONABEL for regulated, low tariffs that do not recover generation costs but also for the provision of fuels necessary for generation.[26] The amount of subsidies reached 390.5 billion XOF in 2023 according to data from the Institut National de la Statistique et de la Démographie (INSD).[27]
- An automatic pump price adjustment formula is in place. However, oil prices have not been fully adjusted for international prices. A loss of XOF 457.6bn was recorded on sales of petroleum products at the end of 2022, of which XOF 275.5bn was financed from the State's 2022 budget.[28] In addition, transfers of XOF 41.58 billion for oil and XOF 42.07 billion for butane gas were made in 2022.[29] The decrees detailing pump prices show these subsidies for super 91, diesel, fuel oil[30] and butane gas. [31]

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[22] https://dgi.bf/verification/CGI#_Toc139613760

[23] Art. 29 https://www.droit-afrique.com/upload/doc/burkina/Burkina-LF-2008.pdf

[24] Art. 37 https://www.ajb.bf/wp-content/uploads/Loi-059-portant-regime-juridique-de-la-radiodiffusion.pdf

[25] Temporarily suspended in response to the Covid-19 crisis

[26] Section 3.2 https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Burkina_Faso_AR-_Energy_Sector_Budget_Support_Programme__PASE_.pdf

[27] https://www.insd.bf/sites/default/files/2023-10/BTC_T1_2023.pdf

[28] https://www.elibrary.imf.org/view/journals/002/2023/343/article-A001-en.xml ; http://cns.bf/IMG/pdf/raport_sur_les_finances_publics_2022.pdf

[29] http://cns.bf/IMG/pdf/raport_sur_les_finances_publics_2022.pdf

[30] https://www.wakatsera.com/wp-content/uploads/2022/02/Arrete-conjoint-n%C2%B02022-01.pdf (February) ; https://www.commerce.gov.bf/fileadmin/user_upload/storage/fichiers/Arrete_Conjoint_10.PDF (May) ; https://www.commerce.gov.bf/fileadmin/user_upload/storage/fichiers/ARRETE_CONJOINT_N__2022-021.PDF (August)

[31] https://lefaso.net/IMG/pdf/arrete_conjoint_no2024-003_compressed_1pdf.io.pdf (February) ; https://www.aib.media/wp-content/uploads/2022/03/Arrete-Conjoint-N%C2%B02022-006-MDICAPME-MEFP.pdf (March) ; https://www.commerce.gov.bf/fileadmin/user_upload/storage/fichiers/ARRETE_CONJOINT_N__2022-021.PDF (August)

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Petrol and diesel are assumed not to be taxed outside the road transport and mining sectors. It is assumed that all petrol consumed for road transport is of the super type.
- Other petroleum products are assumed not to be taxed.[32]
- Charcoal and biomass are not taxed.
- Import duties on petroleum products and VAT are outside the scope of the report.
- Subsidies have been modelled by weighting the amounts indicated in the price structures for 2022 for petrol (super 91), diesel, fuel oil and LPG (butane gas).
- An average rate of CFA 2 per kWh has been used to model the TSDAAE. The total amount of electricity-related subsidies identified by the INSD is assumed to correspond to compensation subsidies (low prices) and subsidies for the fuels needed to produce electricity (50% respectively). The amount relating to fuels is attributed to fuel oil, the main fossil fuel consumed for electricity production in power plants.

[32] https://www.finances.gov.bf/fileadmin/user_upload/storage/fichiers/Rapport_DF_2022_VF.pdf

Canada

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gases in Canada were the following:

Taxes on Fuels

- At the subnational level, specific fuel taxes, classified as fuel excise taxes in Carbon Pricing and Energy Taxation (CPET), may be imposed by provinces and territories on gasoline, diesel and typically on LPG, aviation and other liquid fossil fuels.[33] [34]
- At the federal level, a fuel excise tax at the rate of CAD 0.10 per litre and CAD 0.04 per litre applies to gasoline and (taxable) diesel use, respectively.
    - In the off-road sector, diesel (including fuel oil and aviation fuel (kerosene)) and gasoline are taxed at the federal level, unless the fuels are used in international transport. Natural gas is untaxed at the federal level.
    - Diesel is not subject to federal excise taxes when used for heating or in power plants. The fuels used to generate electricity are generally not taxed.

Carbon Pricing

- A number of provinces and territories (subnational jurisdictions) have carbon pricing systems in place, including a carbon tax in British Columbia and a cap-and-trade system in Québec, classified as an emissions trading system (ETS) in CPET.
- Provinces and territories that do not have their own carbon pricing system are subject to the federal carbon pricing backstop system. The federal backstop system, which first applied in 2019 under the authority of the *Greenhouse Gas Pollution Pricing Act*, is composed of a regulatory charge on fossil fuels and an output-based pricing system (OBPS) for large industrial facilities. The backstop applies either in whole or in part in provinces and territories that requested it and in provinces and territories that did not enact carbon pricing systems which meet the federal benchmark. The regulatory charge component of the federal backstop is classified as a carbon tax according to the Carbon Pricing and Energy Taxation (CPET) methodology. The OBPS is classified as an ETS in CPET.

[33] https://www.nrcan.gc.ca/our-natural-resources/domestic-and-international-markets/transportation-fuel-prices/fuel-consumption-taxes-canada/18885#shr-pg0.

[34] Alberta suspended the collection of the provincial fuel tax on gasoline and diesel effective January 1, 2023 until the end of 2023. Ontario reduced the tax rates on gasoline and diesel by 5.7 cents per litre effective July 1, 2022 until December 31, 2023.

Multiple ETS' and carbon taxes/levies for greenhouse gas emissions exist in Canada. The following table summarises the subnational carbon taxes and ETS' in place in Canada as at 1 April 2023.[35]

State	Carbon Tax	1 April 2023 Nominal Carbon Tax Rate in CAD/tCO_2e	ETS
Alberta	☑	65	✓
British Columbia[36]	✓	65	
Manitoba	☑	65	☑
New Brunswick	✓	65	✓
Newfoundland and Labrador	✓	50*	✓
Nova Scotia			✓
Northwest Territories	✓	65	
Nunavut	☑	65	☑
Ontario	☑	65	✓
Prince Edward Island	✓	50*	☑
Quebec			✓
Saskatchewan	☑	65	✓
Yukon	☑	65	☑

Notes: In New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island, the federal fuel charge applies as of 1 July 2023 at a rate of CAD 65 per tCO_2e. Carbon pollution pricing systems in British Columbia, the Northwest Territories and Quebec, currently continue to meet the federal benchmark stringency requirements.

☑=Federal Backstop Carbon Tax/ETS

* Rate will increase to 65 from 1 July 2023.

Electricity

- No taxation of electricity consumption explicitly at subnational or federal level. Fossil fuels used in electricity generation are subject to subnational and federal carbon pricing systems, as described above.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- For comparability with other countries, the suspension of the federal fuel charge on heating oil, effective from 09/11/2023, is not modelled.[37]
- Biodiesel and biogasoline consumed in the road sector are taxed at the same statutory rates as their fossil fuel equivalents.
- In the agriculture and fishing sectors, diesel is subject to the same federal excise tax as in road transport when used in internal combustion engines but is untaxed if used for heating purposes. CPET assumes that 50% of diesel use is for propellant purposes, and the other half for heating purposes.
- In the residential and commercial sector diesel used for heating purposes is not subject to the federal fuel excise tax.
- CPET assumes that all industrial diesel use is consumed for heating or electricity generation and therefore untaxed.

[35] https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/fcrates/fuel-charge-rates.html.
[36] GGIRCA will cover LNG facilities once operational.
[37] https://www.canada.ca/en/department-finance/news/2023/10/lowering-energy-bills-for-canadians-across-the-country.html

- Fuel oil is taxed at same rate as diesel when used as a propellant but untaxed when used for heating.
- Small facilities that do not participate in the subnational ETS would generally be covered by the subnational carbon tax where it applies. As their share in total emissions is rather small, CPET assumes for simplicity that the entire sector is covered by the respective ETS. Such an assumption is not necessary in British Columbia and the Northwest Territories where only the carbon tax is in place. In Quebec only the cap-and-trade ETS operates.
- Certain surcharges and reductions apply at the local level on gasoline and diesel.
    - To model local surcharges on motor fuel taxes, it is assumed that the Vancouver and Victoria areas represent 50% and 10% of provincial motor fuel consumption, respectively. The Montreal area is assumed to account for 50% of provincial gasoline use in the road sector. Reduced motor fuel excise rates that apply in certain remote areas of Quebec, the Northwest Territories and Nunavut are not modelled as the corresponding energy base is negligible.
- In British Columbia, a 0.4% tax applies on the purchase price of a number of energy products to raise revenue for the Innovative Clean Energy (ICE) Fund. This tax is not covered in CPET.

Chile

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in Chile were the following:

- The Specific Tax on Fuels (*Impuesto específico a los combustibles, IEC*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to road fuels (gasoline, diesel, liquified petroleum gas and compressed natural gas). It is expressed in UTM (*Unidad Tributaria Mensual*[38]) per m^3. The excise tax was converted from UTM to CLP so as to reflect tax rates as at 1 April 2023, using data from *Servicio de Impuestos Internos (SII*). It is composed of:
    - A fixed base of tax rates, determined by the Specific Tax on Fuels.
    - A variable component determined by the Stabilisation Mechanism of Fuel Prices (*Mecanismo de Estabilización de Precios de los Combustibles, MEPCO*). It has been implemented to mitigate international oil price fluctuations for domestic consumers through increases and decreases to the fixed base of the Specific Tax on Fuels.
- As part of the Green Tax, a CO_2 tax applies to CO_2 emissions at a uniform rate of USD 5 per tonne of CO_2. The tax, which is classified as an explicit carbon tax in CPET, applies to facilities of which the total thermal power capacity of boilers and turbines is at least 50 MWth.[39] There is no tax on emissions from fixed sources for which the primary source of energy is biomass.[40]
- Although not a tax by law, Chile adopted the Stabilization Fund for Petroleum Prices *(Fondo de Estabilización de Precios del Petróleo*, FEPP), which impact energy prices. The fund also serves to smooth price fluctuations for domestic consumers of residential kerosene use. FEPP values may vary on a weekly basis.

Chile does not directly tax other GHG emissions (such as F-gases or N_2O gases).

Chile does not operate an emissions trading system for GHG emissions from energy.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline for automotive purpose is the average of the rates for Gasoline 93 and Gasoline 97.
- There is a full refund of diesel used for non-road activities.
- Emissions from fuels used to generate electricity are taxed but final consumption of electricity is not taxed.
- Fuel use data in the IEA energy balances is not linked to facilities. Due to this data limitation, CPET assumes that all consumption of coal and other solid fossil fuels as well as natural gas in the industry and electricity and fishing sectors is subject to the explicit carbon tax, whereas other energy use, especially diesel, LNG and CNG is not concerned by the tax. This assumption that was made by the OECD Secretariat due to data limitations; it was not suggested by Chile. The rationale is that the latter fuels tend

[38] Official unit of account whose value is adjusted monthly based on the consumer price index.

[39] Participation thresholds have been changed by the approved tax reform with law 21 210 in 2020. The green tax will apply to entities that emit more than 25,000 tCO_2 and/or 100 tonnes of particulate matter due to combustion processes per year from 2023 onwards.

[40] The Green Tax also applies to PM, NO_X, and SO_2 emissions which are not GHG and therefore out of CPET scope.

to be used in smaller installations that are likely to fall below the threshold of the carbon tax.

- The Specific Tax on fuels is partially refunded for freight transport companies, which own or lease with option to purchase, trucks with a weight equal or higher than 3 860 kg (Law 19 764).

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Stabilisation Fund for Petroleum Prices.
- Exemption of carbon tax if facilities are below the threshold for inclusion (cf. approximation described above).

China

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in China, were the following:

- The Refined Oil Excise Tax (精炼产品消费税), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, naphtha, solvent and lubricating oil at a uniform rate of CNY 1.52 per litre, as well as to diesel, and fuel oil at a uniform rate of CNY 1.2 per litre.[41] Revenues are earmarked for transport funding and green purposes.
    - Aviation kerosene is not taxed. The main fuels used to generate electricity are not taxed. Diesel and fuel oil are taxed but their relative consumption for electricity generation is negligible.

China does not levy an electricity excise tax nor a fuel-based carbon tax and does not tax greenhouse gas (GHG) emissions directly.

China has been operating a national emissions trading system (ETS) that came into effect in February 2021 and initially covers the electricity sector. Regional ETSs have been operating in Beijing, Chongqing, Fujian, Guangdong, Hubei, Shanghai, Shenzhen and Tianjin. They cover CO_2 emissions from varying sectors, most commonly industry and electricity which is however covered by the national ETS since 2021. Depending on the specific system, additional GHG gases and sectors like buildings, transport and aviation may be covered.

Environmental protection taxes apply to air and water pollutants, solid wastes and noise in China. These taxes that may be partially correlated with energy use or greenhouse gas emissions are out of the scope of CPET and are therefore not modelled.

[41] Table products categories have been expanded in 2021 and 2023 to include among other certain blended fuels. Due to data limitations, this is not modelled.
https://www.chinatax.gov.cn/chinatax/n360/c5206999/content.html

Colombia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in Colombia were the following:

- The National Gasoline Tax (*Impuesto Nacional a la Gasolina*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel and all other liquid motor fuels that are used in vehicles and in stationary combustion engines. The tax is adjusted annually to inflation.
- The Surcharge on Gasoline and Diesel (*Aceite Combustible Para Motores – Sobretasa a la Gasolina y al ACPM*), classified as a fuel excise tax according to the CPET methodology applies to the same fuels subject to the National Gasoline Tax.
- The National Carbon Tax (*Impuesto Nacional al Carbono*) is set to a nominal rate of COP 17660 (~EUR 4) per tonne of CO_2, which is adjusted annually to inflation plus one percentage point. The tax applies to liquid fossil fuels and LPG that are used as propellant, in stationary combustion engines, or as heating fuels (excludes LPG). It does not apply to coal and other solid fossil fuels nor to natural gas unless used by refineries or in the petrochemical industry. Emitters have the option to meet their carbon tax liability by using offset credits generated from domestic projects.

Colombia does not tax on other GHG emissions (such as F-gas or N_2O gas).

Colombia does not operate an emissions trading system for GHG emissions.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to fuel oil is that of *ACPM*.
- The rate applied to kerosene, LPG and naphtha are that of *gasolina extra*, and for the surcharge in *municipal y distrital*.
- Diesel and gasoline used for commercial navigation ("marine") are taxed. Fuels for commercial aviation pay the carbon tax only.
- LPG is subject to the carbon tax if it is sold to industrial users. Natural gas is subject to the carbon tax if it is used by refineries or in the petrochemical industry. Otherwise, LPG and natural gas are not taxed.
- Diesel and gasoline consumed in the agriculture and fisheries sector are taxed at the usual rates.
- Solid fossil fuels such as coal and coke and other fossil fuels, such as crude oil and refinery gas, are not taxed.
- Pure liquid biofuels and solid biofuels are not taxed., except for biodiesel where new rates are introduced for different percentages of mixtures.
- The final consumption of electricity is not taxed either.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Reduced rate for taxation of blended diesel with biofuel (from 2% to 10%).
- Variable rates depending on geographical location (reduced rate of surcharge on gasoline, exemption of carbon tax for border area etc.).
- Variable rates for the surcharge on gasoline depending on the geographical location.

- Exemption of carbon tax for gasoline and diesel (ACPM) in Guainía, Vaupés and Amazona.
- The deduction of the tax on gasoline from the income tax as CPET generally does not cover tax expenditures or subsidies that operate through the income tax system.

Costa Rica

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Costa Rica were the following:

- The Flat Tax per Fuel Type (*impuesto único por tipo de combustible*) is a fuel excise tax that applies to petroleum products and other fossil fuels. Statutory rates vary by fuel type.
- A regulation fee (*canon de regulacion)* applying to fuel supply in the national territory is set at CRC 0.46 /litre. It is classified as a fuel excise tax according to the CPET methodology.
- A public lighting charge (*Costo Alumbrado Publico*) is levied on electricity consumption. As it is charged per kWh, the fee is classified as an electricity excise tax according to the CPET methodology.
- Electricity consumption is subject to a 1.75% levy on the price in favour of the Costa Rican Fire Department. The levy is classified as an electricity excise tax according to the CPET methodology.

Costa Rica does not levy taxes on carbon or other GHG emissions, nor does it operate a GHG emissions trading system.

Energy use subsidies

Costa Rica provides subsidies on different petroleum products the fishing and industry sector. In 2023, petroleum use in fishing received CRC 0.13 /litre and industrial petroleum consumption received CRC 12.29 /litre.[42] As this support takes the form of a cross-subsidy, it is not modelled in the CPET database.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The gasoline consumption for automative purpose is assumed to be split between 48% of *gasolina regular* and 52% of *gasolina super*.
- Diesel consumed is assumed to be of the regular type (diesel 50) as, according to Recope, domestic use of heavy diesel oil use is limited.
- Fuels used for commercial fishing are exempted.
- Use of coal, liquid biofuels, biogases and biomass is not taxed.
- The electricity cost in April 2023 is assumed to be equal to the tariff of the Instituto Costarricense de Electricidad (ICE), T-RE, Bloc > 371 kWh which is set at CRC 120.42 /kWh.

Due to data constraints, the following taxes are not modelled:

- Taxation of asphalt, asphalt emulsion, heavy diesel and naphtha; in addition, as there is no recorded natural gas according to the IEA energy balances, taxes on natural gas could not be modelled.
- Taxation of fuels used for fishing as a leisure activity.
- Exemption of the 1.75% electricity levy for electricity consumption above 1750 kWh and exemption for consumers whose monthly consumption is equal to or less than 100 kWh.
- The exemption from fuel tax for embassies and the Red Cross, as well as for construction, the fire department, and certain other institutions.

[42] ALCANCE N°1 A LA GACETA N°1, 08 Enero 2024

Côte d'Ivoire

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy consumption in Côte d'Ivoire were the following:

- The single specific tax ("taxe spécifique unique" - TSU) on petroleum products, classified as an "excise duty on fuels" according to the report's methodology, is levied on gasoline, diesel and fuel oil.
- Several taxes are classified as "excise duties on electricity": the municipal tax on residential and commercial electricity consumption, as well as the tax on electricity consumption and a rural electrification fee.

Côte d'Ivoire does not operate an emissions trading scheme and does not levy a carbon tax.

A VAT rate of 9% applies to all petroleum products (kerosene, diesel, fuel oil, gasoline) unless they are used for electricity generation ("HVO, fuel oil and natural gas for thermal power plants"). A VAT rate of 18% applies to the consumption of electricity and natural gas. Butane is exempt. These VAT rates are recorded in the model for information purposes but are not used to calculate the effective rates on energy consumption.

Customs duties (entry fees, statistical fees) are also not taken into account.

Table 1. Energy taxes on petroleum products in Côte d'Ivoire

Rates in FCFA per litre	Diesel (auto motive)	Diesel (other)	Fuel oil	Gasoline (super carburant)	Kerosene	Jet kerosene	Natural gas	LPG
Single specific tax	50.32	45	10	75.32	0	0	0	0

Source: Arrêté interministériel n°114 du 03 avril 2023 portant modification du tarif de la TSU sur les produits pétroliers[43]

Energy use subsidies

The following subsidies were identified as being in effect in 2022:

- Packaged butane is sold at a price set by order and receives a subsidy. "During 2022, the subsidy on sales of butane gas to households amounted to approximately 215,158 billion CFA francs", according to the Yearbook of Hydrocarbon Statistics.[44] This subsidy is supposed to be covered by the state budget and not a cross-subsidy involving higher prices charged on other products as compensation.
- The subsidy for petroleum products is estimated at about 147 billion CFA francs. This corresponds to the 725 billion CFA francs in subsidies announced,[45] less half corresponding to tax expenditures,[46] minus the LPG (butane) subsidy mentioned above.

[43] https://apisite.dgh.ci/Files/Prix_maxima_%C3%A0_la_pompe,_Base_Taxable_et_TSU/Taxe_Sp%C3%A9cifique_Unique/642ad64e6fbeb.pdf

[44] https://apisite.dgh.ci/Files/Annuaire_des_Statistiques_des_Hydrocarbures_en_C%C3%B4te_d'Ivoire/655c96a2526a3.pdf

[45] https://www.gouv.ci/_actualite-article.php?recordID=14666

[46] These estimates are consistent with the figures put forward by the IMF in its Country Report No. 23/204, which estimates subsidies for petroleum products at 1.6% of GDP in 2022, half of which are tax expenditures.

- The electricity sector benefits annually from a balancing subsidy from the general budget, which amounted to 21 billion CFA francs.[47] In addition, the Treasury's special accounts describe the following taxes allocated in anticipation for 2022:[48] a share of VAT allocated to the electricity sector of 37.9 billion CFA francs, a transfer from TSU-SIR to the Ivorian Refining Company (Société ivoirienne de raffinage) at 91.4 billion CFA francs. In the absence of additional information on the nature of these subsidies, they were not included.
- Finally, the fuel oil (HVO) used to generate electricity traditionally benefits from a subsidy, which is however displayed as null in 2022.[49]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Diesel used as fuel for cars ("gasoil") is less taxed than diesel used in other sectors ("DDO", assumed to be used in the industrial, maritime, agricultural, commercial and residential sectors).
- The subsidy on petroleum products of 147 billion CFA francs is assumed to concern gasoline and diesel.
- The consumption of gas oil for fishing, as well as for the production of electricity, is exempted.
- Gasoline consumed as fuel for road transport is assumed to be "super carburant" only. The taxation of "motor gasoline" is therefore not modelled, only that due to lack of data on the percentage of use.
- The consumption of fuel oil and gasoline ("super carburant") is assumed to be taxed uniformly regardless of use.
- The consumption of kerosene ("pétrole lampant") and aviation fuels (jet fuel and aviation gasoline) are exempt.
- The subsidy for butane consumption is distributed evenly over all consumption in the residential and commercial sectors.
- Solid biofuels (biomass) are not taxed, nor is coal.

[47] https://www.dgbf.ci/wp-content/uploads/2023/12/ANNEXE-3-Documents-de-Programmation-Budgetaire-et-Economique-Pluriannuelle-DPBEP-2024-2026.pdf
[48] https://www.dgbf.ci/wp-content/uploads/2024/01/Loi-Reglement-Pour-lannee-2022.pdf
[49] P. 13 https://www.cie.ci/ebook/rapport_annuel_cie_2022/

Croatia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Croatia, were the following:

- Excise duty on energy products (*Trošarina na energente i električnu energiju*), classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, kerosene, fuel oil, natural gas, LPG, coal and coke. [50]
    - Tax rates were reduced since April 2022 in response to the soaring energy prices.
- An excise tax applies on electricity consumption (per MWh), classified as an electricity excise tax according to the CPET methodology.

For information, as VAT is generally out of CPET scope, Croatia collects a standard VAT of 25% on goods and services, with a reduced rate of 13% for natural gas, district heating, electricity, and solid fossil fuels. The rate for natural gas and electricity was reduced in April 2022 (from 25%). Until 31 March 2024, the VAT on natural gas and heating was reduced further to 5%.[51]

Energy taxes in Croatia are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Croatia levies a fee on carbon dioxide from fossil fuel and non-renewable waste combustion in stationary sources that emit more than 30 tons of CO_2 per year.[52] Due to data constraints on the affected base, this instrument is not modelled. Note that its rate was last set at HRK 11.1 or ca 1.5 EUR/tCO_2 A fee also applies to imports of F-gases, intended to cover the cost of collection, recovery and destruction of these substances.[53] As this fee does not apply on emissions, it is out of CPET scope.

Croatia participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022[54,55]:

- Capped electricity prices for residential users, commercial and public services estimated at a combined cost of EUR 545 million.
- Capped thermal energy prices for a cost of EUR 84 million.
- Reduced natural gas prices for residential users, commercial and public services at a combined cost of ca EUR 55 million.

Due to limited fiscal size and data constraints the following measures are not modelled:

Diesel subsidy for public transport, regulated LPG prices, discounted firewood.

The following measures are out of CPET scope as subsidies: VAT tax measures, renovation, energy efficiency investment and infrastructure measures, cash transfers to various groups (farmers, airlines, etc.) which are unconditional and non-proportional to domestic energy use (e.g., energy supplement to

[50] https://narodne-novine.nn.hr/clanci/sluzbeni/2022_12_156_2521.html
[51] https://taxsummaries.pwc.com/croatia/corporate/other-taxes
[52] https://www.fzoeu.hr/hr/naknade-oneciscivaca-okolisa/1397
[53] https://www.fzoeu.hr/hr/naknada-za-unistavanje-kontroliranih-tvari-i-ili-fluoriranih-staklenickih-plinova/1429
[54] OECD (2023), Energy Support Measures Tracker, "Aiming Better: Government Support for Households and Firms During the Energy Crisis", OECD Economic Policy Papers No. 32, OECD Publishing: Paris, https://doi.org/10.1787/839e3ae1-en
[55] Vlada Republike Hrvatske - Predstavljen paket mjera za ublažavanje rasta cijena energenata vrijedan 4,8 milijardi kuna (gov.hr)

pensioners), non-energy-related income support. Note that energy excise tax measures (e.g., reductions, refunds and exemptions) are already captured with the prevalent excise tax rates.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumption was made:

- Biodiesel and biogasoline in road transport are treated as their fossil fuel equivalents.
- Solid fossil fuels (coal and coke) consumed in the industry sector are taxed. They are also taxed when used for heating in the buildings sector.
- Diesel consumed in agriculture, fishing is in practice untaxed (tax exempted or fully refunded). Diesel used in railways or as a commercial propellant, benefits from a reduced rate. It is assumed that 50% of diesel in road transport is for commercial propellant purposes. Diesel consumed in industry or buildings is taxed at the regular rate.
- Natural gas used in industry is taxed at the same rate as heating for business use.
- Fuels used in the agriculture and fisheries sector are practically untaxed.
- LPG is taxed at the same rate when used as road propellant and for heating in the industry and buildings sector.
- In the off-road sector, marine fuels used for domestic navigation and kerosene for commercial aviation are untaxed.
- Fuels used as input to electricity generation are untaxed. CPET assumes that all electricity inputs benefit from this provision.
- Fuels used as inputs to heat plants (including cogeneration plants) are taxed at their respective (heating) rates.

When modelling the energy subsidies specified above to the corresponding base, the following country-specific assumptions were made:

- The measure capping prices of electricity is modelled as an electricity output subsidy. It is assigned to the buildings sector, namely residential consumption and commercial and public services. The total subsidy amount was taken from the OECD Energy Support Measures Tracker, summing up the amounts for the measures numbered 343, 353 resulting in approximately EUR 545 million. One subsidy rate per MWh is calculated for all users.
- The measure capping prices of thermal energy is modelled as a heat output subsidy. It is assigned to the buildings sector, namely residential consumption and commercial and public services. The subsidy amount was taken from the OECD Energy Support Measures Tracker. One subsidy rate per MWh is calculated for all users.
- The reduced prices of natural gas are modelled as fossil fuel subsidies. They are assigned to the buildings sector, namely residential consumption, commercial and public services. According to data provided by the Ministry of Economy and Sustainable Development, ca EUR 39 million benefitted residential users, and EUR 16 million benefitted commercial users.

Cyprus

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in the Republic of Cyprus were the following:

- Excise duties, classified as fuel excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology, apply to gasoline, diesel, kerosene, fuel oil, natural gas[56], LPG when used as motor fuel and coal used for heating.[57]
- An excise tax applies on electricity consumption (per MWh), classified as an electricity excise tax according to the CPET methodology.

Energy and carbon taxes in Cyprus are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Cyprus does not levy carbon taxes or taxes on other GHG emissions. Cyprus participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Energy use subsidies

Energy end-user prices are fully liberalised.[58] No subsidies on energy use were identified to be in operation in 2018 and 2020.[59]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Fuels used as input for electricity generation are tax exempt.[60] CPET assumes that all electricity inputs benefit from this provision.
- In agriculture, CPET assumes that all LPG use is for heating purposes.
- Fuels used for cement production are tax exempt. CPET assumes that 50% of kerosene, diesel and fuel oil consumed in the non-metallic minerals industrial subsector[61] are for cement production.
- Fuels used for shipping and aviation are tax exempt.[62]
- Biodiesel is taxed at the fossil fuel equivalent rate when used as motor fuel or for heating (reduced diesel rate).
- Charcoal, waste, biogases and solid biofuels are untaxed.

[56] However, according to the IEA energy balances there is no domestic consumption of natural gas.

[57] https://www.mof.gov.cy/mof/customs/customs.nsf/All/A2C3593B5465A799422577D6002FEAC4?OpenDocument

[58] https://www.iea.org/reports/energy-prices-overview

[59] Figure 2-11 estimates fossil fuel subsidies supporting energy demand per capita at 0 euro for Cyprus in 2018. https://data.europa.eu/doi/10.2833/546611

[60] https://www.mof.gov.cy/mof/customs/customs.nsf/All/A2C3593B5465A799422577D6002FEAC4?OpenDocument

[61] The non-metallic minerals IEA energy balances consumption flow correspond to Division 23 of the ISIC Rev. 4 classification and include besides cement, glass, ceramic, etc.

[62] Fuels used in private pleasure craft and private planes are taxed (not modelled in CPET due to a lack of consumption data).

Czechia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Czechia were the following:

- The Mineral Oil Tax (*daň z minerálních olejů*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to oil products.
- The Natural Gas Tax and Certain Other Gases Tax (*daň ze zemního plynu a některých dalších plynů*), classified as a fuel excise tax according to the CPET methodology, applies to natural gas and manufactured gases.
- The Solid Fuel Tax (*daň z pevných paliv*), classified as a fuel excise tax according to the CPET methodology, applies to coal and coke.
- The Electricity Tax (*daň z elektřiny*), classified as an electricity excise tax according to the CPET methodology, applies to electricity consumption.

Energy and carbon taxes in Czechia are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Czechia does not levy a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

However, Czechia participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made[63]:

- Diesel and kerosene taxes have increased by 1500 CZK/1000 l from 1/8/2023 but for comparability with other countries, the rates applicable at 1/4/2023 are recorded.
- In the off-road sector, fuels used for domestic navigation and commercial aviation are untaxed. Fuels used in private pleasure craft and private planes are taxed (not modelled in CPET due to a lack of consumption data).
- Natural gas used for storing and transporting natural gas ("pipeline transport") is exempted.
- Bioethanol and biodiesel used for propellant purposes, typically blended together with fossil fuels, are taxed at the same rates as their fossil fuel equivalents.[64]
- There is a refund for diesel heating, bringing the tax to 660 CZK/1000 l.
- In agriculture, CPET assumes all LPG consumed is for heating and therefore untaxed, while all natural gas is used for heating and taxed at the business rate.
- Diesel used in agriculture benefits from partial tax refunds. The refund is larger for diesel used for livestock farming, combined production with high livestock intensity or highly sensitive crop production. CPET assumes that 80% of diesel use in agriculture attracts the former rate based on estimates provided by the Czech administration.
- Fossil fuels are generally not taxed when used for energy transformation, in mineralogical and metallurgical processes, as inputs in combined heat and power (CHP) plants (with the

[63] At the time of data collection, there is a legislative proposal to tax aviation fuels as well as mineralogical and metallurgical processes from 2024.

[64] Applicable rates may vary depending on the share of biofuels in the blends, as well as the extent to which biofuels meet sustainability criteria. CPET used the 1 April 2023 rate for E85 where 70 % to 85 % of ethanol meets the sustainability criteria in blend as an upper bound estimate of the applicable rate.

exception of diesel that is taxed at the heating rate[65]), or as inputs in autoproducer electricity plants[66].

- Renewable waste and non-liquid biofuels are not taxed. Electricity produced by autogeneration plants with a capacity of more than 2 MW are subject to electricity excise taxes under the same conditions as main-producer electricity plants[67].
- Natural gas is taxed for business use but is untaxed if used by households.
- All energy sources used to generate electricity are untaxed. Electricity consumption, on the other hand, is subject to an electricity excise tax (per MWh), unless when it is used in electrolytical, mineralogical and metallurgical processes, or in rail transport.
- For uses other than CHP, minerals & metals where they are untaxed, biogases are assumed to be taxed at the same rate as LPG.

[65] This tax exemption for cogeneration only applies to generators with a minimum efficiency and on condition that the heat is delivered to households. CPET assumes that all CHP plants reported by the IEA comply with these requirements.
[66] Certain small auto producer plants may not be eligible for this exemption (see next footnote).
[67] Electricity produced from taxed natural gas or taxed solid fuels is exempt from the electricity excise tax when such electricity is consumed directly within the facility or is supplied through the grid in which only such electricity is supplied, on condition that the installation's capacity does not exceed 2 MW.

Denmark

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Denmark were the following:

- A Mineral Oil Tax (*Mineralolieafgift*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to mineral oils, including tar, refinery gas, lubricating oils, methanol and other petroleum-based products.
- A Gas Tax (*Gasafgift*), classified as a fuel excise tax according to the CPET methodology, applies to natural gas, as well as on biogas used for heating purposes.
- A Coal Tax (*Kulafgift*), classified as a fuel excise tax according to the CPET methodology, applies to specified uses of coal and coke products and on non-renewable waste used for heating.
- A Carbon Tax (CO_2-*afgift*), with a nominal rate of DKK 181.7 per tonne of CO_2e applies to energy carrieers that are liable to the Mineral Oil Tax, the Coal Tax, the Electricity Tax and the Gas Tax. It includes a Methane tax (*Metanafgift*), also classified as a carbon tax according to the CPET methodology, on the use of biogas for stationary engine combustion.[68]
- An F-gas tax (*Cfc-afgift*), classified as a carbon tax according to the CPET methodology, applies to HFCs, PFCs and SF_6 with a nominal minimum rate of DKK 150 and maximum rate of DKK 600 000 per tonne of CO_2e.
- The Nitrogen Oxide Tax (*Kvælstofoxiderafgift*) applies to emissions of nitrous oxide (N_2O), which is classified as a carbon tax according to the CPET methodology.
- The Electricity Tax (*Elafgift*) is an excise tax on electricity consumption. Since 2021, the rate for residences with electric heating (of a consumption above 4 MWh per year) and VAT-registered businesses is DKK 0.008 /kWh. To shield consumers from high prices, the rate for other electricity consumption was reduced from DKK 0.9 /kWh in 2021 to DKK 0.008 /kWh between 01 January 2023 and 30 June 2023. From July 2023 it increased again to DKK 0.697 /kWh.

The following taxes and related policy instruments fall outside the scope of CPET as they are not considered taxes on energy use or greenhouse gas emissions:

- The Sulphur Tax that applies to fuels with sulphur content above 0.05% in mass.
- The PSO surcharge on electricity.

Energy taxes in Denmark are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

All excise tax rates on energy use are indexed since 2016 to net retail prices. Rate adjustments are based on the annual average net retail price two years prior to the calendar year during which the rates apply. Indexing was introduced in Denmark as part of the 2009 Spring Package 2.0 (Forårspakke 2.0) tax reform.

Denmark participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Facilities that are covered by the ETS do not to pay the carbon tax (or receive a full refund). Heat inputs into district heating plants are, however, subject to the CO_2 tax, irrespective of whether they are also covered by the EU ETS.

[68] It applies to biogas consumed as motor fuel in stationary piston engine systems with an input power of more than 1 000 kW.

Country-specific assumptions

- The electricity tax rate applied is the one, which was valid on 01 April 2023, DKK 0.008 /kWh.
- The Mineral Oil Tax rate applies to gasoline for automotive purposes is that of lead-free gasoline (lead content not more than 0.013 g per litre) with 4.8% bio-gasoline, the Mineral Oil Tax rate applied to diesel for automotive purposes is that of sulphur-free gas oil (sulphur content not more than 0.001%) with 6.8% biodiesel.
- Bio-gasoline and biodiesel are taxed at the Mineral Oil Tax rate of the respective road transport fossil fuel but are exempt from the carbon tax.[69]
- Fishing fuels benefit from a full refund if fishing vessels have a gross tonnage of 5 tonnes or more. It is assumed the entire fishing industry meets this benchmark.
- Diesel motor fuels for navigation and domestic commercial aviation are untaxed.
- The industry, agriculture and electricity sectors are largely composed of VAT-registered companies.
- Refinery gas and LPG used in the industry and the residential and commercial sectors are taxed at the same statutory rate (Mineral Oil Tax of DKK 2.941 per kilogramme).
- Kerosene consumed as heating fuel in the residential and commercial sector is taxed at the same rate as diesel for heating and stationary motors.
- The electricity heating rate has been assumed to apply to 10% of electricity consumption in the residential and commercial sector. As rates electric heating and other electricity consumption are the same as at 1 April 2023, this share is not relevant for the 2023 Vintage.
- Non-renewable municipal waste is tax exempt.
- Due to data constraints, the following tax exemptions and allowances are not included in the Database:
    - The Nitrogen Oxide Tax (Kvælstofoxiderafgift).
    - CHP/District heating (electricity used for heat production);
    - VAT-registered companies that benefit from a partial refund on heating inputs in combined heat and power (CHP) generators.
    - Tax exemptions on electricity generated in power plants, which capacity is less than 150 kW, such as emergency power plants, electricity produced in trains, ships, aircraft or other means of transport, as well as electricity from renewable sources if it is consumed directly by the producer.
    - The exemptions from the Carbon Tax where it applies to non-renewable, industrial waste used for heat generation.
    - A tax on process use of non-renewable, industrial waste.

[69] Diesel vehicles are, however, charged a balancing tax. In line with the CPET database methodology, this tax is not included in the database.

Dominican Republic

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in the Dominican Republic were the following:

- A Special Excise Tax on Fuel (SFT) (*Impuesto Sobre Combustible - ISC*) applies to petroleum products as stipulated by the Law of Hydrocarbons 112-00. Gasoline, diesel, fuel oil, natural gas, kerosene and aviation fuel are subject to the SFT.
- Additionally, a special tax of Dominican Pesos (DOP) 2 is levied on gasoline regular and premium as well as on diesel as stipulated by art. 20 of the Law No. 253-12[70], in order to promote road development and renovation of vehicle fleet for public transports and carriers.

The Dominican Republic does not collect carbon taxes or taxes on other greenhouse gases emissions.
The Dominican Republic does not have a GHG emissions trading system.

There is no specific tax on electricity consumption.

Other related taxes beyond the scope of CPET include:

- A vehicle registration tax, based on CO_2 emissions per kilometre, is levied at the time of registration of motor vehicles.
- A 16% ad valorem tax also applies for most fuels; the rate for aviation gasoline is 6.5%. However, these taxes are not specific taxes on energy use, but apply to a wide range of goods.

Table 2. Energy taxes on petroleum products in the Dominican Republic

Expressed in Dominican Pesos (DOP) per product gallon.

Rates in DOP per gal	Diesel	Diesel Super	Fuel oil	Gasoline	Gasoline Super	Kerosene	Aviation Kerosene	Natural Gas (m^3)	LPG
SFT	28.06	34.53	17.99	63.83	71.85	17.99	6.3	0.8	0

Note: The tax rate unit for natural gas is cubic meters.
Source: MICM[71]

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- In accordance with the budget execution documents of the General Budget Office (DIGEPRES), the amounts of current transfers to the electricity sector are recorded to cover subsidies for electricity and fuel.
- In 2022, the electricity subsidies towards public electricity entities represented 1.3 % of Dominican Republic's GDP[72], or approximately DOP 81 billion.
- In electricity residential tariffs, the state compensates distribution companies for the difference between the monthly regulated tariffs and the generation costs through the Tariff Stabilization Fund (*Fondo de Estabilización de la Tarifa Eléctrica - FETE*).[73]

[70] 253-12.pdf (dgii.gov.do)
[71] Res._No.069-2023_PRECIOS_DE_GAS_NATURAL_DEL_01_AL_07_ABRIL_2023.pdf (micm.gob.do), Res._No.068-2023_PRECIOS_DE_COMBUSTIBLES_LIQUIDOS_Y_GLP_DEL_01_AL_07_ABRIL_2023.pdf (micm.gob.do)
[72] IMF Country Report No. 23/225.
[73] SIE-105-2022-TF-Fij.-TF-Ref.-y-Trans.-UR-EDES-Oct.-Dic.-2022.pdf p.13.

- Finally, the government also grants subsidies for access of low-income households to (i) LPG (*bono gas*) DOP 6,269 million in 2022 and (ii) electricity (*bono luz*) DOP 2,954 million in 2022.[74]
- Currently, fuel subsidies are given through the General State Budget. However, Decree No. 625-11, which establishes some amendments to the Regulations of Law No. 112-00, provides for the creation of a Fuel Price Stabilisation and Compensation Fund (FECOPECO), with the objective of minimizing the impact of fluctuations in oil prices and its derivatives on the country's economy. Resolution 214-22 formalized a subsidy-smoothing mechanism through the FECOPECO fund.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Gasoline consumed outside road transport (industry and rail) is assumed to be solely of type regular and attracts the standard tax rate. Consequently, gasoline in the road sector is estimated to be 62% type premium and 38% regular type for 2021.
- Diesel consumption of type super (*Gasoil Optimo*) is assumed to occur exclusively in the road sector. Adjusting for the use of regular diesel in other sectors (industry, electricity etc.) using IEA Balances data for 2021, the split between diesel super and regular diesel in the road sector has been estimated at 33% and 67%, respectively.
- The electricity subsidy provided for regulated tariff through the Tariff Stabilization Fund has been allocated to all residential consumption in previous vintages, but no such amounts are recorded past 2021.[75] It is assumed to be 70% of the total subsidies to the electricity sector. The rest has been allocated through all electricity consumption.
- *Bono gas* and *bono luz* subsidies have been allocated to residential LPG and residential electricity consumption respectively.
- Prices for fuels are those from the MICM valid on 1 April 2023.
- Fuels used for electricity generation are exempted from ISC[76], and assumed to be also exempted from the additional DOP 2 tax on gasoline and diesel. Other exemptions, such as in free trade area, are not computed due to lack of data.

[74] https://transparencia.superate.gob.do/datos-abiertos/nomina-de-componentes-de-subsidios-bonoluz-bonogas-y-alimentate

[75] https://sie.gob.do/sobre-nosotros/direcciones/direccion-de-regulacion/informe-mensual-calculo-del-subsidio/

[76] MINISTERIO DE HACIENDA Gastos Tributarios en República Dominicana

Ecuador

Taxes on energy use and greenhouse gases

As at 1 April 2023, no specific tax on energy use in Ecuador was identified.

- A specific tax on consumption applies to product categories like tobacco and beverages, but it does not cover petroleum or other energy. However, it is worth mentioning that certain environmental related taxes are in force such as vehicle taxes and taxes on plastic bottles.

For reference, a 12% VAT was in force in 2023, applicable also to oil products, but not electricity.[77] The President of Ecuador is at the time of writing proposing a bill to raise VAT to 15%. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Ecuador does not collect carbon taxes or taxes on other greenhouse gases emissions.

Ecuador does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- Fossil fuel subsidies affect a wide range of energy products (gasoline, diesel, fuel oil, aviation fuel, LPG, natural gas) and sectors (road, aviation, agriculture & fishing, generation, residential and commercial). They are less widespread in industry and super gasoline consumed in road transport is one of the few market-priced oil products in the country. The Energy and Mines Observatory calculates the subsidies as the opportunity cost of marketing fuels in Ecuador under regulated prices versus international prices. Note that there have been ongoing efforts to limit oil subsidies and their fiscal burden.
- Several electricity subsidies are financed by the government:[78]
    - In electricity, a subsidised tariff (*subsidio de la tarifa de la dignidad - STD*) of 0.013 USD/kWh benefits a large fraction of residential customers who consume less than 110kWh/month in the Sierra region and 130kWh/month in those of the Coast / East / Insular regions.
    - Another programme relieves registered residential users from the cost of electricity used for cooking up to 80kWh and sanitary water heating up to 20kWh per month (*incentivo Tarifario de la Tarifa Residencial para el Programa - PEC*).
    - People with disabilities (*subsidio de la ley organica de las personas adultas mayores – LOPAM*) and senior citizens above 65 years of age (*Rebaja de la Ley Orgánica de Discapacidades - LOD*) also receive a 50% discount.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Per unit subsidies are from December 2022.[79]
- Gasoline consumed for road transport is of type extra.
- Diesel consumption is of ‘type 2’.
- Data on several types of electricity consumption subsidies have been included. These relate to the: i) dignity tariff; ii) senior citizens; iii) incapacitated citizens; (iv) citizens benefitting from PEC. We use the total amount of electricity subsidies throughout 2022.[80] It is mentioned that

[77] Value Added Tax VAT - intersri - Internal Revenue Service
[78] https://www.controlrecursosyenergia.gob.ec/wp-content/uploads/downloads/2023/07/Inf-DRETSE-2022-0039.pdf
[79] https://www.eluniverso.com/noticias/economia/por-un-galon-de-diesel-se-paga-en-ecuador-tres-veces-menos-que-lo-que-cuesta-en-estados-unidos-nota/
[80] Informe… (controlrecursosyenergia.gob.ec)

37% of residential customers benefit from the dignity rate. However, the interaction of this group with the senior and incapacitated citizens is unknown and so is the consumption distribution by residential customers. Due to these constraints, the total amount of the electricity subsidies is uniformly applied on the consumption of dignity tariff residential users.

Egypt

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Egypt were the following:

- The Table Tax Law 67 (2016) introduced fuel excise taxes on different petroleum products, including diesel and gasoline (80,90,92,95).
- Development fees applying to all types of gasoline (EGP 0.3 per litre) and diesel (EGP 0.25 per litre) are levied in addition to the fuel excise taxes since May 2020. These taxes have been classified as fuel excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology.
- The Stamp Duty Law (1980) and its amendments stipulate specific taxes on the industrial and non-industrial consumption of natural gas and electricity. These taxes have been classified respectively as fuel excise and electricity excise taxes according the CPET methodology.

Egypt does not levy a direct tax on GHG emissions and does not operate an emissions trading system (ETS).

Energy use subsidies

Egypt implemented between 2014 and 2019 a wide-ranging reform of its longstanding fossil fuel subsidies. Since 2019, the Fuel Automatic Pricing Committee (FAPC) has the mandate to regulate prices of petroleum products (i.e., diesel, gasoline, and fuel oil (except for fuel oil for bakeries and electricity generation)) on a quarterly basis through a fuel price indexation mechanism within the limit of a +/-10% change. The following subsidies on energy use were identified to be in operation in 2023:

- Fuel oil for bakeries & electricity generation.
- Residential LPG consumption.

Egypt's Ministry of Finance reports that subsidies on petroleum products amounted to EGP 59.8 billion in FY 2021/2022, up from EGP 18.7 billion in FY 2019/2020.

Between 2014 and 2019, Egypt undertook a comprehensive power sector reform to restructure electricity price setting mechanisms which led to a series of electricity tariff increases, strongly reducing electricity subsidies. Residential tariffs are divided into multiple blocks with the intention to cross-subsidise vulnerable customers with a low electricity consumption. According to the Egyptian administration, the difference between the planned economic tariff and average selling price was estimated to be EGP 0.68 /kWh in FY 2021/2022.[81] Applied to the Egypt's electricity consumption of residential and commercial buildings, industry and agriculture, this results to an estimated amount of EGP 11 billion.

[81] EgyptERA (2023), Electricity Tariff Subsidy Reduction. https://erranet.org/wp-content/uploads/2023/02/03_Zoheir_Case-study-Egypt_WB_Tashkent_April_2023_eng_final.pdf

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Assumptions regarding the shares of gasoline types consumed in the road transport sector are presented in the table below. They were provided by the Egyptian administration and refer to FY 2016/2017.

Gasoline (92)	Gasoline (80)	Gasoline (96), imported	Gasoline (95), domestic
33.7%	54%	11.6%	0.2%

- Diesel is taxed at the standard rates when used for electricity generation.
- With input from the Egyptian administration, 85% of the total subsidy amount is estimated to affect LPG residential consumption and the remaining 15% fuel oil for electricity generation. The amounts of subsidies for fuel oil for bakeries and kerosene are negligible.
- Due to data limitations, exemptions from the excise taxes as stipulated in Art.98 of the Stamp Duty Law (1980) which concern for example places of worship, orphanages or hospitals have not been modelled.

Estonia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Estonia, were the following:

- An Excise Duty on Fuels (*Kütuseaktsiis*) applies to coal and coke, diesel, gasoline, light heating oil, heavy fuel oil, kerosene, LPG, natural gas, oil shale and liquid biofuels used as propellant or for heating purposes.
- Estonia levies a carbon tax of EUR 2 per tonne of CO_2, which applies to all CO_2 emissions from thermal energy producers, with the exception of biofuel emissions.
- An Excise Duty on Electricity (*Elektriaktsiis*) also applies to electricity output.

Energy taxes in Estonia are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Estonia does not levy taxes on other greenhouse gas emissions.

Estonia participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Liquid biofuels are taxed at the same rate as their fossil fuel equivalent.
- Solid biofuels are untaxed.
- Aviation fuels are untaxed when used for commercial aviation, private use is being taxed. Maritime fuels used for EU navigation are untaxed, private use and use inside Estonian territorial waters is being taxed. The excise duty rate differs whether the fuel is used as propellant or for heating purposes. Diesel marked with a fiscal marker (an excise is lower compared with standard rate) is allowed to use in agriculture, professional fishing inside Estonian waters and in oil shale mines.
- Fuels used for electricity generation (an input) are not taxed because electricity is taxed. Fuels used for the production of heat in CHP plants are taxed.
- Municipal and industrial waste used for heat generation are not submitted to excise tax, except renewable municipal waste and industrial waste used by thermal producers, which are subject to the carbon tax.

Due to data constraints, the following tax exemptions or refunds were not modelled:

- The tax exemption on natural gas used for the operation of the natural gas network.
- As no diesel consumption for fishing is reported, the exemption is not modelled.

Ethiopia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Ethiopia, were the following:

- A 30% *ad valorem* tax is levied on import prices of gasoline, naphtha and jet kerosene, as mentioned in proclamation 307/2002 and 1186/2020.[82] It is classified as a "fuel excise tax" according to Carbon Pricing and Energy Taxation (CPET) methodology.
- A Road maintenance fuel levy (RMFL), classified as a "fuel excise tax" is levied on gasoline and diesel.[83]

Taxes not included:

Additionally, a municipality fee is also levied on petroleum products,[84] which is not modelled. A surtax is levied in addition to the excise duty but is null for petroleum products.[85] Excise tax rates on fuels was reduced to 15% as of 27 April 2023,[86] which is not modelled here as it happens after the cut-off date.

It is worth noting that a standard 15% VAT rate applies to energy products, except for electricity, kerosene and LPG ("fuel gas") which are exempted.[87] VAT rate is registered for information but not included in the calculation of effective tax rates.

No tax on electricity consumption has been identified.

Ethiopia does not collect carbon taxes or taxes on other greenhouse gases emissions.

Ethiopia does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- Targeted subsidies for buses, taxis and trucks have been implemented from July 2022.[88] These targeted subsidies benefited 240 000 vehicles for a total of ETB 24.3 billion from July 2022 to September 2023.[89]
- Prices were gradually raised to phase out subsidies, beginning by a 30% increase[90] in July 2022 alongside the introduction of the targeted subsidy. The monthly deficit linked to low prices decreased to ETP 5 billion per month for the end of 2022,[91] and ETP 3 billion per month starting from 2023.[92]

[82] http://ecc.gov.et/web/ecc/proclamations/-/document_library/fIrbyLVlmPJq/view_file/761522?
[83] https://chilot.files.wordpress.com/2011/01/proc-no-66-1997-road-fund-establishment.pdf ; https://www.taxdev.org/sites/default/files/2021-11/Green_Motor_Tax_Report.pdf
[84] https://www.taxdev.org/sites/default/files/2021-11/Green_Motor_Tax_Report.pdf
[85] https://www.mofed.gov.et/media/filer_public/75/62/7562def7-79b2-49ec-a658-6740a3ca561e/tax_expenditure_ethiopia_2021_22.pdf
[86] https://www.ey.com/en_gl/tax-alerts/ethiopia-issues-excise-tax--amendment--proclamation--2023#:~:text=Ethiopia%20has%20amended%20its%20Excise,goods%20exempt%20from%20excise%20tax.
[87] Microsoft Word - supplies of goods or services.doc (amhaacctaudasso.com)
[88] From July 2022 subsidies for gasoline and diesel were respectively ETB 6 and 8, increasing to ETB 15 and ETB 17 starting from September.
[89] https://twitter.com/addisstandard/status/1720734199819145511 ; https://ethiopianmonitor.com/2022/11/18/govts-monthly-loss-to-fuel-subsidy-drops-to-4-billion-birr/
[90] https://www.undp.org/sites/g/files/zskgke326/files/2023-03/QEPE%20JULY%202022.pdf
[91] https://m.facebook.com/photo/?fbid=560370772769275&set=ecnf.100063890712382
[92] https://www.ethiopianreporter.com/115321/

- Electricity tariffs are also below the cost.[93] A lifeline tariff is partially cross-subsidised with higher pricing for other consumption blocks.[94] This is not modelled due to lack of further information.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The ad valorem tax is applied to retail prices with VAT removed, except for gasoline in 2021 where it is applied to CIF value.
- Fossil fuel subsidies are estimated for FY 2022/2023, based on monthly estimates for the generic subsidies and by estimating the yearly amount for the targeted subsidy for fuels.
- The subsidies were allocated proportionately to the energy base of each fuel, i.e. one GJ is subsidised equally independently of the petroleum product combusted to produce it.
- The excise tax rates effectively levied have been assumed to be 9% instead of 30% for 2023, as the previous years[95]. Indeed, excise tax rates levied effectively are usually much lower[96], due to numerous exemptions[97]. They are applied to retail prices, less 30% as an estimate of CIF prices.
- No excises duties are levied on coal and coke products, LPG, diesel, kerosene, fuel oil.
- Excise tax on gasoline, naphtha and biogasoline is assumed to be levied at the same rate for all type of consumption, whether in the road, residential, commercial, or industrial sectors.

[93] https://mecs.org.uk/wp-content/uploads/2022/02/MECS-EnDev-Ethiopia-eCooking-Market-Assessment.pdf ; https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281

[94] https://rise.esmap.org/data/files/library/ethiopia/Electricity%20Access/Ethiopia_Tariff%20guideline%20and%20methodology.pdf

[95] p. 48 'Green' motor taxation: issues and policy options in sub-Saharan Africa (taxdev.org)

[96] https://openknowledge.worldbank.org/server/api/core/bitstreams/99e11ac4-354d-5a7d-bf64-373fb4518228/content

[97] https://www.mofed.gov.et/media/filer_public/75/62/7562def7-79b2-49ec-a658-6740a3ca561e/tax_expenditure_ethiopia_2021_22.pdf

Finland

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use energy use and GHG emissions in Finland, were the following:

- An Energy Content Tax (*Energiasisältö-vero)* has a fuel excise tax component that applies to diesel, gasoline and their biofuel equivalents, coal and coke, fuel oil, kerosene, LPG, natural gas, peat.
- The Energy Content Tax also contains an electricity excise tax component that applies specified forms of electricity consumption. The electricity excise applies irrespective of the primary energy source from which the energy is generated. Electricity consumed by industry and agriculture have a lower tax rate compared to electricity consumed by residential and commercial users. Electricity consumed in railway transport is exempt.
- A Security of Supply Payment (*Huoltovarmuus-maksu*) applies to the same fossil fuels (other than peat) and electricity consumption. The component of the Payment that applies to fossil fuels is classified as a fuel excise tax in CPET. The component applying to electricity consumption is classified as an electricity excise tax.
- A Carbon Tax (*Hiilidioksidi-vero*) applies to biogasoline, coal and coke, diesel, fuel oil, gasoline, kerosene, LPG and natural gas at a rate of EUR 62 per tCO_2e for transport fuels and EUR 53 per tCO_2e for other fossil fuels. These nominal rates refer to the full lifecycle emissions of the fuels.[98] Apart from this fuel-based carbon tax, Finland does not levy specific tax on greenhouse gas emissions.

Energy taxes in Finland are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

None of the taxes effectively apply to fuel use for electricity production, commercial aviation and commercial navigation on waterways, as well as fishing fuels. Fuels used for energy transformation processes other than heating are untaxed as well.

Finland participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

The Oil Waste Fee (*Öljyjätemaksu*) was repealed in 2020 and collection of the Oil Pollution Fund (*öljysuojarahaston*) was suspended on March 1, 2020, as the capital of the oil protection fund has exceeded EUR 10 million since the beginning of this year. The fee will only be collected again when the fund's capital has fallen below EUR 5 million.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Peat products are taxed when used in a power or heating plants for heat production or more than 5 000 MWh per year. It is assumed peat products are only taxed when used by industry.

[98] As a consequence, the effective carbon rate when calculated based on the combustion approach followed in CPET is higher than the nominal rate in Finland that is based on a lifecycle approach.

France

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in France according to Carbon pricing and energy taxation (CPET) methodology, were the following:

- The Excise tax on energy, which is divided into several categories, following the reform enacted in 2021[99]:
  - The fraction levied on coal, which refers to the former Excise Tax on Coal, Coke and Lignite (*Taxe intérieure de consommation sur les houilles, lignites et cokes* (*TICC*)), classified as a fuel excise tax, applies to such fossil fuels.
  - The fraction levied in mainland France on energy products other than natural gas and coal[100], which refers to the former Excise Tax on Energy Products (*Taxe intérieure de consommation sur les produits énergétiques* – (*TICPE*)), classified as fuel excise tax, applies to liquid and gaseous fossil fuels and biofuels. As part of this fraction, a surtax fixed at local level is levied on diesel and gasoline, which is not included.
  - The fraction levied on natural gas, which refers to the former Excise Tax on Natural Gas (*Taxe intérieure de consommation sur le gaz naturel* (*TICGN*)), classified as fuel excise tax, applies to natural gas when used as a propellant[101] and for heating.
  - The fraction levied on electricity, which refers to the former Excise Tax on Final Electricity Consumption (*Taxe intérieure sur la consommation finale d'électricité* (*TICFE*), is classified as an electricity excise tax. As part of this fraction, a surtax fixed a local level is levied on electricity use. This surtax replaces the former Departmental Excise Tax on Final Electricity Consumption (*Taxe départementale sur la consommation finale d'électricité*-(TDCFE) and Communal Excise Tax on Final Electricity Consumption (*Taxe communale sur la consommation finale d'électricité*-(TCCFE))[102]
- The Carbon Charge Component (*composante carbone*, also known as *Contribution Climat-Énergie*), classified as a carbon tax, applies to all fossil fuel use at a nominal rate of EUR 44.6 per tCO_2, which has remained unchanged since 2018. Note it is not a separate tax but forms part of each fraction of the excise tax on energy.
- A transport tariff contribution (*Contribution Tarifaire d'Acheminement*) is additionally levied as a percentage of electricity and natural gas prices, respectively classified as electricity excise tax and fuel excise tax, to finance pension rights for transport network companies' staff. This contribution is not included in CPET.

Apart from this fuel-based carbon tax, France does not levy taxes on greenhouse gas emissions.

Energy taxes in France are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

France participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Facilities that are covered by the

[99] ordonnance n° 2021-1843 du 22 décembre 2021

[100] Rates of the Fraction levied in overseas France on energy products other than natural gas and coal are not modelled.

[101] The TICGN now also applies to natural gas used as a propellant. The conversion rate from kWh to m^3 is assumed to be 11.08 kWh/m^3, based on a weighted average dependent on the technical specifications of both gases entering networks, as determined by the *Ministère de la Transition écologique*.

[102] In accordance with art. 54 from law n°2020-1721 du 29 décembre 2020 de finances pour 2021.

ETS do not pay the carbon tax (or receive a full refund). Heat inputs into district heating plants are, however, subject to the CO_2 tax, irrespective of whether they are also covered by the EU ETS.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Estimations are partly based on the ELFE model from CGDD (Commissariat Général au Développement Durable).

- Regarding fossil fuel consumed in the road transport sector**,** diesel consumption in the road transport sector is assumed to be 3% for buses, 14% for heavy duty vehicles (N2 or N3, and total weight >= 7.5 t) and 83% for other vehicles.
- Automotive diesel and gasoline excise tax rates are modelled without the local surcharge.
- Automotive biodiesel and biogasoline are assumed to be respectively Gazole B100 and Superéthanol E85.

- Regarding fossil fuel and natural gas consumed in industrial sector, energy-intensive industries, which are ETS-covered or subject to international competition pay reduced tax rates on coal, fuel oil, kerosene, LPG and natural gas. The share of fuel consumption in industry subject to the reduced rate for ETS-covered facilities is modelled using the share of ETS-covered facilities from CPET 2023 publication. The share of fuel consumption in industry subject to the reduced rate due to international competition is assumed to be 30%, and the rest to be subject to the standard rate if not covered by ETS. Reduced rates for fuel oil, kerosene and LPG are temporary[103] and cover smaller amount, thus are not modelled.
- Fuels used for dual use (i.e. for chemical reduction, electrolysis, metallurgical processes) or for the production of non-metallic minerals are untaxed. There are assumed to represent around 70% of energy consumption in the dedicated sectors (Chemical, Non-ferrous metals, Iron and steel and Non metallurgical) and thus benefit from exemption. The remaining ca. 30% are taxed according to the previous point.

- Regarding electricity consumption, a "bouclier tarifaire" has been decided for 2022, and extended to 2023, in response to energy prices rise. It reduces the electricity excise tax rates to EUR 1/MWh for households and EUR 0.5/MWh for firms.
- Exemption for small autoproducers generating electricity for own use generated from renewables was mapped to all auto produced electricity from wind and solar.
- Electricity consumption by rail benefits from a low rate of 0.5 €/MWh. Since 2021, this rate extends to use by "*métro, tramway, câble, autobus hybride rechargeable ou électrique et trolleybus*". For simplicity, CPET associates the reduced rate to all transport electricity consumption.

- Regarding the carbon tax, it has been assumed to be levied on all fossil fuel charged at standard rate, in case of standard rate greater than the value of the carbon tax. No carbon tax has been computed for reduced rate linked to energy intensive industries, agriculture and fishing, coaches, and heavy goods vehicles.
    - Note: for coal and coke (non-ETS standard rate), LPG (heating, stationary motors) and natural gas (propellant), the carbon tax is assumed to equate fully the legal rate (otherwise the CPET estimate of the carbon tax component was slightly higher than the legal rate).

[103] According to planned legislation they will not be in force in 2024.

- Due to data constraints, the following excise tax rate reductions and exemptions are not included in the Database:
    - A full energy excise tax rate refund on fuels used for the extraction and production of natural gas.
    - Exemption for small autoproducers generating electricity for own use.
    - A lower energy excise tax rate on gasoline and diesel consumed by taxis.
    - The full energy excise tax refund on coal and coke products used for their extraction and production; on coal and coke products used for biomass recovery and development by ETS-covered industries.
    - Some of the reduced rates for fossil fuels (coal, natural gas) and electricity consumed by an energy-intensive company exposed to international competition or covered by ETS and (only one of the reduced rates is modelled as illustration).
    - The reduced rates for fuel oil, kerosene and LPG consumed in facilities covered by ETS or exposed to international competition are new and will disappear as of 2024. Due to the small amount of energy consumed at stake, these rates were not modelled.
    - Miscellaneous reduced energy excise tax rates for data centres, naval construction, aerodromes etc.[104]
    - TGAP on incineration of waste.[105]

[104] For further details on TICFE in France see https://www.ecologie.gouv.fr/sites/default/files/guide%20fiscalit%C3%A9%20energie%202021.pdf https://www.ecologie.gouv.fr/fiscalite-des-energies

[105] https://www.ecologie.gouv.fr/fiscalite-des-dechets

Germany

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Germany, were the following:

- The Energy Tax (*Energiesteuer*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to specified uses of coal and other solid fossil fuels, gasoline, diesel and their biofuel equivalents, fuel oil, kerosene, LPG and natural gas. Fuels that are used in industrial processes are not taxed if the conditions for non-taxation of the EU Energy Tax Directive are fulfilled (electricity generation, electrolytic processes, etc.). Fuels are untaxed when used for commercial navigation on waterways or commercial aviation.
- The Electricity Tax (*Stromsteuer*), classified as an electricity excise tax according to the Carbon Pricing and Energy Taxation methodology, applies to specified forms of electricity consumption. User-specific rate reductions and exemptions may apply.

Energy taxes in Germany are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Germany does not have a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

However, Germany participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

In 2021, Germany additionally launched its National Emissions Trading System (nETS) for heating and transport fuels to complement the EU ETS. The nETS targets CO_2 emissions that are out of scope of the EU ETS and contains provisions to avoid a double compliance burden for installations covered by the EU ETS. For 2021 and 2022, the nETS coverage is limited to gasoline, including aviation gasoline, kerosene, excluding jet kerosene, diesel, fuel oil, natural gas, LPG, NGL (propane, ethane, butane). The coverage was extended to include CO_2 emissions from coal in 2023 and further to include CO_2 emissions from waste incineration from 2024 onwards. For 2023, the allowance price per tonne of CO_2 is fixed to EUR 30 in 2023, increased in 2024 to EUR 45 and is scheduled to further increase to EUR 55 in 2025.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Due to data constraints, the following exemptions were not modelled: A reduction of EUR 54.02 per 1000 litres on diesel consumed for short-distance railway transport (where total travel distance is less than 50km or total travel time is less than 1 hour).

Ghana

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Ghana were the following:

- The Special Petroleum Tax (SPT) applies to gasoline, diesel, kerosene, LPG and natural gas.[106]
- The Road Fund Levy (RFL) applies to gasoline and diesel consumed in the road sector.
- The Energy Debt Recovery Levy (EDRL) applies to all petroleum products with the exception of kerosene. It was introduced to help pay off the debt of the sole, state-owned refinery.
- The Energy Fund Levy (EFL) applies to gasoline, diesel, kerosene and fuel oil.
- The Price Stabilization and Recovery Levy (PSRL) applies to gasoline, diesel and LPG and aims at equalising transport costs throughout Ghana.
- A Public Lighting Levy (PLL) and a National Electrification Scheme Levy (ESL), at respectively 3% and 2% of the price of the kWh (classified as electricity excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology), applies to electricity consumption as dictated by the Energy Sector Levies Act (ESLA) of 2015.
- The Sanitation and Pollution Levy (SPL) applies to gasoline and diesel since May 2021. It intends to help to pay capacity charges and feedstock in the energy sector.
- The Energy Sector Recovery Levy (ESRL) which applies to gasoline, diesel and LPG since May 2021. It intends to finance sanitation and air quality investments.

The Unified Petroleum Price Fund (UPPFL) levy, which applies to all petroleum products except fuel oil, is out of the scope of CPET as it is a margin used to pay for the freight for transporting products from Storage Depots to Retail Outlets.

It also worth noting that Ghana levies several sales taxes:[107] VAT at a rate of 15% (gasoline, diesel and LPG are exempted), National Health insurance levy at a rate of 2.5%, GETFund levy at a rate of 2.5% and starting from 1 May 2021 a 1% COVID-19 levy. These measures are, however, out scope of the CPET database.

Ghana does not collect carbon taxes or taxes on other greenhouse gases emissions. Ghana does not have a GHG emissions trading system.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- Lifeline residential consumers of electricity. In 2022, subsidies to lifeline consumer in the revised budget was GHS 169,686,511.[108] Following COVID-19, the government was also covering 50% of the electricity bills of all other consumers, but this measure was not prolongated.
- Payment of GHS 52 094 495 power utility debts via the management of the Energy Sector Levies and Accounts.[109]
- Fuel oil (RFO) and gasoline for fishing (premix) are sold at below market prices, this being financed with the Price Stabilisation and Recovery Levy under the ESLA.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

[106] Specified as « natural petroleum gas » in the legislation.
[107] VAT Standard – GRA
[108] 2022-Mid-Year-Fiscal-Policy-Review_5.pdf (mofep.gov.gh)
[109] Final_ 2022-Annual-ESLA-Report.pdf (mofep.gov.gh)

- Aviation kerosene, natural gas, biogases, charcoal and solid biofuels are assumed to be untaxed.
- The rate used for gasoline in the is the one for gasoline premium.
- Gasoline used for fishing is exempted from all taxes.
- The only tax for natural gas is assumed to be the Special Petroleum Tax (SPT), which applies also for natural gas used for electricity generation.
- The PLL and NESL electricity tax was converted from an ad-valorem to a specific rate for residential and other consumers using the maximum residential and non-residential tariff published by PURC[110];
- Lifeline consumers have been assumed to account for 40 % of residential consumption according to budget documents, to which GHS 169,686,511 have been allocated.
- The payment of power utility debts of GHS 52 094 495 was assumed to cover operational losses and benefits, and interpreted as a general subsidy for electricity output.
- Per litre subsidies of fuel oil and gasoline for fishing are the ones from NPA prevailing on 16/12/2022[111] and benefit all fuel oil and all premix.

[110] 705636-20230124100135.pdf (purc.com.gh), p.3
[111] https://npa.gov.gh/price-build-up-2/ December 2022 subsidies

Greece

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Greece, were the following:

- The Special Consumption Tax ((SCT) – *Ειδικός Φόρος Κατανάλωσης* (*Ε.Φ. Κ.*)) classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to liquid fuels including biodiesel, biogasoline, LPG, natural gas and coal. Fossil fuels that are used in industrial processes are not taxed if the conditions for non-taxation of the EU Energy Tax Directive are fulfilled (electrolytic processes, etc.). Commercial aviation and marine fuels (commercial navigation) are not subject to the SCT.
- The Special Consumption Tax also applies to specified forms of electricity consumption, classified as an electricity excise tax according to the CPET methodology in this case. User-specific rate reductions and exemptions may apply.

Energy taxes in Greece are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Greece does not have a fuel-based carbon tax and does not tax GHG emissions directly.

However, Greece participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- In road transport, biodiesel is taxed at the same rate as its fossil fuel equivalent. LPG is taxed when used as a motor fuel, although natural gas is not.
- Railway transport fuels are taxed as motor fuels.
- Diesel and kerosene used in private pleasure craft and private planes are taxed (not modelled in CPET due to a lack of consumption data).
- Refinery gas is not taxed when the consumption takes place within the curtilage of an establishment producing energy products.
- Diesel used for stationary combustion engines of industries, hotels, hospitals and welfare institutions benefit from a refund of EUR 125 per 1000 litres compared to motor diesel.
- Natural gas consumed in stationary combustion engines is subject to excise taxes that differ by annual consumption level in gigajoules. The unweighted average of the applicable excise tax rates is estimated as EUR 0.6 per gigajoule as the rate applied to natural gas consumed for such purpose in the database.
- Diesel used for fishing purposes is not taxed.
- During the winter period in Greece (October 15th through April 30th each year), a reduced rate of EUR 280 per 1000 litres is applied to diesel and kerosene used for heating purposes. It is assumed that practically all diesel for heating consumption is taxed at this rate.
- Electricity is untaxed when used for agriculture and fishing purposes or for certain energy intensive industrial processes like chemical reduction, electrolytic and metallurgical processes.
- The SCT on electricity output for high and medium-voltage business consumers is applied at a reduced rate to industry users that exceed 10.000 MWh of consumption. Due to lack of consumption data, CPET assumes that 10% of business and 50% of industrial electricity consumption are in the medium-high voltage over 10,000MWh per year band.
- Coal products and natural gas are not taxed when used to generate electricity, but fuel oil, diesel (including biodiesel) and LPG are taxed.

- Biogasoline is taxed as its fossil fuel equivalent when consumed as propellant, for heating and in stationary motors.

Other instruments that were considered but are not modelled as taxes in CPET:

- The Supply Security Levy (Τέλος Ασφάλειας Εφοδιασμού) is an ad-valorem (1.2%) charge on the refinery price contributing to the storage fund for oil products but is not modelled due to data constraints.
- The Special Duty on natural gas, electricity and liquid fuels at 5‰ is not modelled due to data constraints.

Guatemala

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Guatemala were the following:

- The Tax on the Distribution of Crude Oil and Petroleum Derived Fuels (TDOPDF) (*Impuesto a la Distribución de Petróleo Crudo y Combustibles Derivados del Petróleo*) in accordance with Decree 38-92. It applies to gasoline (super, regular and aviation), diesel and gas oil, naphtha, kerosene, jet kerosene and LPG.
- Public lighting fees are imposed on electricity consumption and set by the local municipalities. Due to variable rates between regions, these have not been modelled.

Guatemala does not collect taxes on carbon or other GHG emissions, not does it operate a GHG emissions trading system.

In addition, the standard 12% VAT rate applies to energy products (including biofuels) and the electricity tariff (both, standard and social) in accordance with Decree 27-92. The TDOPDF does not form part of the VAT base. VAT rate are collected for information but not included in the calculation of effective tax rates on energy use.

Table 3. Energy taxes on petroleum products in Guatemala

Rates (GTQ /gal)	Gasoline (super)	Gasoline (regular)	Diesel	Kerosene	LPG	RFO
TDOPDF	4.7	4.6	1.3	0.5	0.5	-

Note: One gallon (gal) is equivalent to 3.785 litres.
Source: Decree 38-92.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2023:

- Social electricity tariffs exist for residential user of a monthly consumption between 89 and 125 /kWh per month. An estimated 2.4 million households benefit from this programme. Its costs are paid by the National Electrification Institute (INDE) with occasional contributions by the central government, as it was the case between 2020 and 2023. Through Decree 1-2023, the government provided GTQ 557 million as a compensation of the financial cost to INDE[112].

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- All super gasoline is assumed to be consumed in the road sector and the split between regular and super is established using consumption data from the year 2021 (52% for regular gasoline). Regular gasoline is assumed to be consumed in other uses;
- The public lighting fees on electricity consumption have not been included due to data constraints;
- The social tariffs electricity subsidy is shown as a subsidy affecting all residential consumption due to lack of more granular data. Additionally, only the central government's transfer to INDE for partial compensation of the financial cost (GTQ 557 million in 2023).

[112] Guatemala (2023-01): MINFIN garantiza recursos para subsidio a la tarifa eléctrica.

The remaining financial burden is not interpreted as a subsidy since INDE can recover the cost with operating revenues for its generation activities.

Hungary

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Hungary were the following:

- Excise taxes (jövedéki adó) on energy products (energiatermékek) apply to liquid, gaseous and solid fossil fuels, as well as blended liquid biofuels and to electricity.
- The Strategic Stockpiling Fee (tagi hozzájárulás a Magyar Szénhidrogén Készletező Szövetség részére) additionally applies to gasoline, kerosene, diesel, fuel oil and natural gas use.

Energy and carbon taxes in Hungary are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Hungary participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

In July 2023, Hungary announced a EUR 40/tCO_2e carbon tax covering EU ETS participants that receive an important amount of free allowances. This carbon tax should apply from the tax year beginning in January 2023 and a reduced rate by 50% applies in certain instances. Due to data constraints, the carbon tax, which apples partially and on top of the EU-ETS, primarily in industry, is not modelled.

From January 2023, Hungary introduced a tax on aviation, differentiated based on the CO_2 emissions of the given aircraft and the destination. This instrument which correlates but is not proportional to emissions is out of CPET scope.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rates applied to fuel are the ones in the case of world market price of crude oil exceeding US $ 50 (USD)/ barrel.
- The Strategic Stockpiling Fee used for natural gas is the “normal” member one, compared to the reduced “special” member one.
- Diesel used in agriculture, forestry and aquaculture is subject to excise taxes with an 82 % refund on diesel tax up to 97 litres per hectare per year; diesel used for fishing (other than for private pleasure purposes) is untaxed.
- Biodiesel is taxed at the same rate as regular diesel. Bioethanol in E85 benefits from a reduced rate, otherwise bioethanol is taxed as an alcohol product at the normal tax rate.
- Diesel is untaxed when used for commercial navigation, commercial aviation (no reported use), or rail.
- Natural gas and coal used for residential heating are not taxed; LPG is exempted in case of residential and non-residential heating.
- Coal and coke-related gases are not taxed. In accordance with the Council Directive 2003/96/EC (Energy Tax Directive) natural gas used in pipeline transport is not taxed.
- Solid biofuel, biogases, other renewable and non-renewable waste are not taxed.
- Fossil fuels that are used in certain industrial processes are not taxed if the conditions for non-taxation of the EU Energy Tax Directive are fulfilled.
- In accordance with the Energy Tax Directive the fuels used to generate electricity are not taxed, but the electricity sector is covered by the EU ETS; Additionally, as a general rule, the electricity produced is taxed.
- Electricity used by households is exempted. Certain industrial process use (mineralogical process etc.) are also exempted. The use of electricity by businesses, on the other hand, is

generally subject to an electricity tax. Electricity from industrial cogeneration is subject to the general electricity tax.

Due to data constraints, the following taxes, refunds or tax exemptions are not modelled:

- Diesel and kerosene used in private pleasure craft and private planes are taxed.
- The refund of HUF 103 per litre from the tax on diesel fuel used in floating machinery pursuant to the Water Transport Act for a person registered as an operator.
- Reduced rate for natural gas used in public transport and for the purpose of transport in direct connection with discharging public service function.

Iceland

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Iceland were the following:

- The Oil tax (*olíugjald*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to all automotive fuels, except for gasoline.
- The General Excise Tax on Fuel (*almennt vörugjald af eldsneyti*) and the Special Excise Tax on Fuel (*sérstakt vörugjald af eldsneyti*) apply to gasoline.
- The Carbon Tax (*kolefnisgjald*) applies to mineral oils and natural gas but does not apply to coal and other solid fossil fuels.
- A tax on fluorinated gas (*Skattlagning flúoraðra gróðurhúsalofttegunda*), classified as a carbon tax according to the CPET methodology, is levied on all fluorinated greenhouse gases (HFCs, PFCs and SF6) in proportion to their Global Warming Potential (GWP).

A tax on hot water sold (*Skattur af heitu vatni*) applies at a rate of 2% of the retail sales price is out of CPET scope.[113]

Iceland participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Energy use that is subject to the EU ETS is exempt from the carbon tax.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline for automotive purpose is that of unleaded petrol.
- The rate of the F-gases tax is approximately ISK 2500 per tCO_2e, levied on a base of F-gas emissions of 0.32 million of tons of CO_2e.[114]
- Biofuels and biogases are not taxed.
- Coal and other solids fossil fuels are untaxed.
- Geothermal and other renewables are not taxed.
- Mineral oils are submitted to excise tax only if used as propellants; fuels used for fishing and tractors are exempt from the excise tax, but the exemption for tractors is not modelled due to data constraints.
- On the contrary, carbon tax applies to mineral oils, LPG and natural gas for all uses except for activities covered by EU ETS. It is assumed that 10% of food industry and all the non-ferrous industry are covered by EU ETS.
- Aviation and navigation fuel are fully exempted from both carbon and fuel excise tax, but flights can be subject to the EU ETS.
- Fossil fuels used to generate electricity are subject to the carbon tax, but their consumption is negligible. The electricity sector is also covered by the EU ETS. The consumption of electricity is not taxed.

Due to data constraints, the following exemptions are not included:

[113] This tax may correlate with energy use but as not imposed directly on the energy product and without fixed relationship to fuel volume (like an emissions-based carbon tax for example) it is out of CPET scope.
[114] CAIT data: Climate Watch. 2023. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions

- Fuel excise tax exemption for fuel used in special vehicles (fire trucks etc.).

India

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in India, all classified as fuel excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology, were the following:

- As part of the central excise regime, the Basic Excise Duty (BED) applies to crude petroleum, aviation turbine fuel, petrol, diesel, natural gas and compressed natural gas.
- A Special Additional Excise Duty (SAED) and Additional Excise Duties (Road and Infrastructure Cess and Agriculture Infrastructure and Development Cess) additionally apply to gasoline and diesel fuel.
- All fuels subject to the BED, SAED, the Road and Infrastructure Cess and Agriculture Infrastructure and Development Cess are not subject to the Goods and Services Tax (GST) regime.[115] VAT/GST regimes are outside the scope of CPET.
- In 2017, the Government of India enacted the Integrated Goods and Services (IGST) Tax Act with the aim to simplify the tax code pertaining to the taxation of the inter-state supply of goods and services and of imports. However, this GST tax is not modelled because it is out of the scope of CPET.
- A GST Compensation Cess on coal, lignite and peat consumption replaced the Clean Energy (Environment) Cess in 2017,[116] but maintained the same rate of Rs. 400 per tonne. It applies across all sectors, including when these fuels are used for electricity generation.
- Electricity consumption is untaxed at the federal level, with responsibility for the structure and level of taxation lying at the state level.[117]

India does not levy a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

India does not operate an emissions trading system for greenhouse gas emissions.[118] India plans to establish an ETS and published in June 2023 a notice for a Carbon Credit Trading Scheme[119].

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Concerning aviation turbine fuel, the BED is reduced to 2% (from 14%) when used for supply to schedule commuter airlines (SCA) from the regional connectivity scheme (RCS) airports. The lower ad-valorem rate is included in the database. An estimation of the rate per unit of fuel is based on the unweighted average price of aviation fuel used by domestic (in April 2023, amounting to Rs. 98.9 per litre).

[115] All BED, SAED, Road and Infrastructure Cess, Agriculture Infrastructure and Development Cess and IGST rates can be found online at https://ppac.gov.in/prices/central-excise-and-customs-rate-on-major-petroleum-products

[116] IISD. (n.d.). The Evolution of the Clean Energy Cess on Coal Production in India. https://www.iisd.org/system/files/publications/stories-g20-india-en.pdf

[117] Not modelled due to data constraints.

[118] Gujarat state implemented a particulate emissions trading scheme in 2019 in Surat, and another one in 2023 in Ahmedabad. However, as particulate matter emissions are not directly proportional to energy use or greenhouse gas emissions, this trading system does not fall within the scope of CPET 2024.

[119] https://beeindia.gov.in/sites/default/files/CCTS.pdf

- Concerning CNG, an estimation of the rate per unit is based on the unweighted average price of CNG (in April 2023, amounting to Rs. 81.2 per kilolitre).
- It is assumed that CNG is only consumed in the road sector and is the only type of natural gas used in the road sector.

Indonesia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in Indonesia, were the following:

- A provincial Motor vehicle fuel tax (*Pajak Bahan Bakar Kendaraan Bermotor* – PBBKB), classified as a fuel excise tax according to the Carbon pricing and energy taxation (CPET) methodology, applies to premium gasoline (RON 88) and to diesel (diesel Solar) used in motorised vehicles. The PBBKB is levied as an *ad-valorem* rate capped at 10% of the sale prices of motor fuels (by presidential decree). The majority of provinces applies a rate of 5%.

In addition, district governments levy the Street Lighting Tax on households, which corresponds to an electricity excise tax. In line with the CPET methodology, this subnational tax is not included in this database as it falls below the revenue threshold for subnational taxes.

Indonesia also levies a VAT at a standard rate of 10% on diesel and gasoline consumed for transport. Following the CPET methodology, this is not included in the tax profile.

Indonesia does not levy a fuel-based carbon tax and does not tax GHG emissions directly.

Indonesia launched an intensity-based emissions trading system (ETS) in February 2023, covering main coal-fired power plants, estimates of which are included in the database.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- North Sumatra increased their PBBKB rate on non-subsidised fuels from 5% to 7.5% in 2021, but due to data limitations at the regional level, a rate of 5% is applied on all motor fuel use. North Sumatra's population - a proxy for energy use - accounts for 5.48% of the national population.[120]
- Reduced rate for automotive fuel consumed by public transport, which is variable according to provinces, is not modelled.
- Provinces also appears to have specific rates for certain sectors, mainly mining sector and forestry, industrial sector, and freight transportation,[121] which are not modelled.

[120] https://www.bps.go.id/id/publication/2023/02/28/18018f9896f09f03580a614b/statistik-indonesia-2023.html

[121] https://bapenda.jabarprov.go.id/pajak-bahan-bakar-kendaraan-bermotor/#toggle-id-3 ; https://bapenda.jatimprov.go.id/p/pembayaran-pbb-kb

Ireland

Taxes on energy use and greenhouse gases

As at 1 April 2023, the excise duty on energy use in Ireland, were the following:

- The Mineral Oil Tax (MOT) applies to hydrocarbon oils, liquefied petroleum gas (LPG), natural gas used as a propellant[122], additives, and substitute fuels, i.e. any other liquid products used as fuel for motor or heating purposes including biofuels. MOT is composed of two components:
  - a non-carbon component, classified as a fuel excise according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to all fuels subject to MOT. Currently there is no non-carbon component applied to kerosene and LPG used for non-propellant purposes.
  - a carbon component ("carbon tax"), applies to all fuels subject to MOT. On 1 April 2023, the carbon component on auto-fuels is based on charging EUR 41.00 per tonne of CO_2 emitted.
- Natural Gas Carbon Tax (NGCT) applies to natural gas consumption when used for non-propellant purposes. The NGCT rate is based on charging EUR 41.00 per tonne of CO_2 emitted when natural gas is combusted (April 2023), increasing to EUR 48.50 on 1 May 2023.
- Solid Fuel Carbon Tax (SFCT) applies to coal, coke and peat products' (solid fuels) consumption. The SFCT rate is based on charging EUR 41.00 per tonne of CO_2 emitted when solid fuel is combusted (April 2023), increasing to EUR 48.50 on 1 May 2023.
- The Electricity Tax, classified as an electricity excise tax according to the CPET methodology, applies to electricity consumption.

Energy taxes in Ireland are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products and electricity in member states.
Ireland participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Industries that participate in the EU ETS are eligible for:

- A partial relief from NGCT, or
- A full relief from the carbon component of MOT, or
- A full relief from SFCT on peat, and a partial relief from SFCT on coal.

as further discussed below.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Diesel used for railway transport, industry and agriculture is taxed at the rate of marked gas oil (MGO).
- Mineral oil used as fuel for commercial sea navigation, including sea fishing, and aviation kerosene used for commercial air navigation are relieved from MOT.
- Aviation gasoline used for commercial purposes benefits from a partial refund on the Non-Carbon Component of MOT.
- Biofuel is subject to a relief from the carbon component of MOT.
- Natural gas supplied through pipelines is subject to NGCT, except for natural gas used a propellant which is subject to MOT.
- In the industry sector, EU ETS participants can claim:
  - a partial relief on the SFCT paid on coal and coke products, and a full relief on SFCT paid on peat products,
  - a partial relief on the NGCT paid on natural gas,

[122] As of 1 January 2017, natural gas used for propellant purposes (vehicle gas) is subject to MOT, not NGCT.

    - a relief on the carbon component of MOT paid on mineral oils.
- Solid fuels, natural gas, and mineral oils used in chemical reduction, electrolytic and metallurgical processes benefit from a full tax relief.
- A partial relief from SFCT applies to biomass products. Any solid fuel product with a biomass content of 30 per cent or more is entitled to a partial relief depending on the biomass portion of the product. CPET assumes that the biomass content is relieved.
- The portion of solid fuels and natural gas used to generate electricity in High Efficiency Combined Heat and Power (HE CHP) cogeneration plants benefits from a full tax relief (CPET assumes all CHP are HE).
- The portion of mineral oils used to generate electricity in HE CHP cogeneration plants is subject to a relief from the carbon component of MOT but no such use in CHP is reported in IEA balances.
- In the electricity sector, reliefs from fuel excise and carbon taxes apply to fuels used for electricity generation, but the sector is covered by the EU ETS.
- Electricity supply is taxed for business and non-business use (e.g. use by a public authority).
- Electricity consumption additionally benefits from a full tax relief when the electricity is:
    - for household use.
    - generated from renewable energy sources:
        - solar, wind, wave, tidal or geothermal origin of hydraulic origin
        - produced in a hydroelectric installation,
        - generated from biomass or from products produced from biomass,
        - generated from fuel cells.
    - comes from High Efficiency Combined Heat and Power cogeneration.
    - used for chemical reduction, electrolytic and metallurgical processes.
    - produced on board navigation vessels.
    - used for the production of electricity or connected to such production.
- Electricity used by the electricity industry (own use & distribution losses): Electricity supplied by a supplier, for own use, where the average quantity in a calendar year is under 50 megawatt hours is not subject to Electricity Tax; Distribution losses are not subject to Electricity Tax.

Due to data constraints, the following partial tax relief schemes from MOT are not included in the database: The Diesel Rebate Scheme; The partial repayment on heavy oil used in horticulture.

Israel

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Israel, were the following:

- Excise taxes (דלק על הבלו) apply to gasoline, diesel LPG, coal, fuel oil and natural gas. They are classified as fuel excise taxes, according to Carbon Pricing and Energy Taxation (CPET) methodology.

Israel reduced the tax rate on coal and coke (from ISL 103.81 in 2021 to ILS 1.06 in April 2023). The tax reduction was introduced in 2022 as a temporary measure until February 2023 and then extended until the end of 2023.[123]

In 2021, Israel announced the introduction of a carbon tax in 2023, however, adoption was only adopted in September 2024 and thus was not included in the database due to the 1 April 2023 cutoff date but was noted in text. In September 2024, the Israeli government voted for a carbon tax, starting at a rate of ILS 17 /tCO_2 in 2025 and gradually increasing to a standard rate of ILS 223 /tCO_2 and a reduced rate of ILS 69 /tCO_2 for natural gas and took in September 2024 further steps towards its implementation.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- A refund is granted for diesel at a rate equivalent to 25% of the excise rate for trucks and buses, 50% for agriculture and building, and 69% for industry and fishing boats; which leads to effective rates of respectively 75%, 50% and 31% of the standard rate. The total amount refunds for diesel amounted to ILS 2808 million in 2022.
- Energy use other than from gasoline, diesel, kerosene, LPG, coal or petroleum coke, fuel oil and natural gas is exempted from the fuel excise tax.
- Jet kerosene, refinery gas, biogas, solid biofuels and other renewables are not taxed.
- The fuels used to generate electricity are taxed at the same general rates as the fuels used in other sectors. Electricity consumption is not taxed.
- Energy use from industrial or municipal waste is assumed to be untaxed.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Diesel reductions for commercial drivers, including trucks and buses, as well as agriculture and building; Liquid biofuels taxed at reduced rates (biogasoline M15 or locally produced biodiesel) are not modelled as no biofuel consumption is reported in the IEA energy balances.

[123] https://www.gov.il/en/departments/news/press_23012023

Italy

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in Italy were the following:

- An excise tax on energy, classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to diesel, gasoline, fuel oil, LPG, natural gas and coal and coke. Fuels used to generate electricity are also taxed, but at substantially lower rates.
    - Gasoline and diesel in road transport are taxed at the highest rates per unit of energy and gasoline is taxed at a higher rate than diesel.
    - Bio-gasoline and biodiesel are taxed at the rate of the respective road transport fossil fuel.
    - Fuels used in agriculture pay lower rates while fuels used for EU navigation ("marine"), including for fishing purposes, and aviation are not taxed, in line with the EU framework set in the Energy tax Directive (96/2003).
- In addition, electricity consumption is in principle subject to an electricity excise tax (per MWh).

Energy taxes in Italy are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates, exclusions and exemptions for the taxation of energy products in member states.

Italy does not levy a fuel-based carbon tax and does not tax GHG emissions directly. However, Italy levies a tax on nitrogen oxides (NOx)[124] and sulphur dioxide (SO_2) emissions, which is out of CPET scope.[125]

Italy participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

In 2022, the VAT and excise rates on fuels were reduced in Italy to respond to the soaring prices[126]. These reductions are no longer in use, with the exception on the VAT rate reduction on natural gas for business and non-business heating.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumption were made:

- In electricity, the rate is generally higher for non-business use, and lower for business use. Large business users additionally benefit from lower rates for higher consumption volumes. These reduced rates for large users are not modelled due to data constraints.
- Large-scale residential electricity consumption, with a power capacity exceeding 3 kW and monthly consumption greater than 150 kWh, is assumed to apply to 56% of total residential electricity consumption. Small-scale residential electricity consumption is untaxed.
- The taxation of natural gas use by households in Italy is differentiated by consumption level. CPET models these rates based on 2022 consumption data provided by the Italian Customs and Monopolies Agency (including reduced rates paid by households in Southern Italy).

[124] While N_2O is a direct GHG, it is assumed to not be covered by the tax.
[125] At the rates of € 209 per tonne/year and € 109 per tonne/year respectively foreseen by the law 26/12/2007, n. 244, art. 2, co. 385. The tax was established by law no. 449 and must be paid on the emissions of these substances emitted by combustion plants with rated thermal power equal to or greater than 50 MW.
[126] Decree-law of 27 January 2022, Decree Law No. 38 of May 2, 2022, Perma | www.gazzettaufficiale.it

- Since 2022, the reduced excise tax rate granted to diesel used in rail transportation has been terminated.
- Households in areas not connected to the gas grid benefit from reduced rate of LPG and diesel for heating.
- Reduced rates of transport fuels exist for taxis and ambulances. Diesel for freight and passenger transport also benefits from a refund under certain conditions.

Due to data constraints, the following tax exemptions and allowances are not included in the Database:

  - Exemptions of energy products used to drain lands in flooded areas or reclaimed rustic areas for cultivation.
  - Exemptions and reduced rates for the armed forces.

Jamaica

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Jamaica were the following:

- The Special Consumption Tax (SCT) applies to certain petroleum products. It also covers alcoholic beverages and most tobacco products. More specifically, gasoline, diesel, kerosene, fuel oil, LPG and natural gas are subject to SCT. The SCT on oil products comprises a specific and an ad valorem rate. Only the specific rates are taken into account.

For reference, the standard GCT rate in 2023 in Jamaica is 15% since April 2020.[127] The GCT rate is imposed on the price inclusive of the SCT. The GCT is imposed on residential electricity unless consumption is below 150 kWh per month,[128] in which case no rate would be charged. Note that petroleum products are exempt from GCT but tobacco and alcohol, which also attract SCT specific rates, are not. GCT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Jamaica does not collect carbon taxes or taxes on other greenhouse gases emissions.
Jamaica does not have a GHG emissions trading system.

Table 4. Energy taxes on petroleum products

Expressed in JMD per product L, except for Natural Gas where it is JMD per MMBtu. [2]

Rates in JMD per L	Diesel (road)	Diesel (non-road)	Fuel oil	Gasoline 87	Gasoline 90	Aviation gasoline	Kerosene	Natural Gas	LPG
SCT	32.485	38.115	9.361	37.776	38.149	63.571	17.415	4.99	5.906

Source: Revenue measures 2017-2018, PwC-Jamaica-Budget-2017-18-Newsletter.pdf

Energy use subsidies

No subsidies on energy use within scope were identified to be in operation in 2022.

In the revenue measures 2023/2024, the government announced that lithium-ion batteries imported for solar panels applications will be exempted from paying the GCT, and an income tax credit of 30% of the purchase price of a solar panel system would be provided to taxpayers, up to 4M JMD.[129] However, these subsidies are outside the scope of CPET.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The specific rates of the Special Consumption Tax (SCT) have been recorded. The ad valorem part of the SCT on oil products is treated as a general, not differential, tax and are therefore not taken into account.
- Gasoline consumed in agriculture, industry and residential uses is assumed to be gasoline 87 (octanes) and attract the same tax rate as in the road sector. All gasoline 90 is assumed to be consumed in the road sector and account for 39.4% of its consumption, with gasoline 87 comprising the rest. The share is derived, after adjusting for non-road consumption the 2021

[127] revenue-measures-2020-2021.pdf (mof.gov.jm)
[128] PwC-Jamaica-Budget-2017-18-Newsletter.pdf
[129] SKME32_C360230307155600-1_230307_162242-9.pdf (mof.gov.jm)

share of gasoline 87, according to data from the Ministry of Science, Energy and Technology (published in 2022).[130]

Due to data constraints, the following tax rates or subsidies are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Exemption for gasoline consumed in fishing (no energy use reported in the IEA energy balances).

[130] Jamaica-Energy-Statistics-2021.pdf (mset.gov.jm)

Japan

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and GHG emissions in Japan were the following:

- The *Petroleum and Coal Tax* applies to fossil fuels, consisting of crude oil, coal, oil products imported, and hydrocarbon-based gases, including those fuels used for electricity generation. The Tax has a carbon tax component (Tax for Climate Change Mitigation) with a nominal tax rate of JPY 289 (~EUR 2.20) per tonne of CO_2. Japan does not levy other taxes on greenhouse gas emissions.
- The *Diesel Oil Delivery Tax*, classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation methodology, additionally applies to the purchase of diesel oil, mainly used in road transport.
- The *Gasoline Tax* and the *Local Gasoline Tax*, classified as fuel excise taxes according to the Carbon Pricing and Energy Taxation methodology, additionally apply to gasoline used in road transport.
- The Oil Gas Tax, classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation methodology, additionally applies to LPG used in road transport.
- The Aircraft Fuel Tax, classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation methodology, additionally applies to aviation fuels used domestically.
- The Power Development Promotion Tax, classified as an electricity excise tax according to the Carbon Pricing and Energy Taxation methodology, additionally applies to electricity sold.

Japan operates Emissions trading systems (ETS) at the subnational level.

In May 2023, Japan adopted the "Green Transformation (GX) Promotion Act". The Act implements parts of the "Basic Policy for the Realization of GX", a roadmap introduced in February 2023 to promote the decarbonisation of Japan's economy. The GX Promotion Act introduces two new measures:

- A *Specified Business Emissions Allowance System*, which can be classified as a form of an ETS. The GX League, a forum of more than 600 Japanese companies launched its voluntary ETS, the GX-ETS in April 2023. It shall gradually be more formalised to full-scale operation from around FY 2026/27 and the introduction of allowance auctioning for power plant operators is envisaged for 2033.
- The *GX-surcharge (fossil fuel levy)* shall be introduced in FY 2028/29 on fossil fuel mining operators and importers such as refiners, trading houses and electricity utilities.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The reduction on aviation fuel tax consumed in Okinawa was not modelled due to data constraints.
- Imported coal is exempt from the petroleum and coal tax, if it is used in power generation in the Okinawa prefecture. Due to data limitations, these exemptions are not modelled in CPET.

Kazakhstan

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Kazakhstan were the following:

- An excise duty (АКЦИЗДЕР) is levied on diesel and gasoline consumption. Crude oil and condensate are also subject to excise duty in principle but benefit from a zero rate.
- An emissions trading system is in place, which covers CO_2 emissions from the power and heating sector, as well as from extractive industries and manufacturing.

No tax on electricity consumption have been identified.

VAT standard rate of 12% applies to petroleum products, other products being exempted. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Kazakhstan does not collect carbon tax yet but is considering its implementation.

Kazakhstan does not levy taxes on other greenhouse gases emissions but operates and emissions trading system (ETS). It covers CO_2 from power and industry installations and allowances are allocated through output benchmarking.

Table 5. Energy taxes on petroleum products in Kazakhstan

Rates in KZT per 1000 kg	Diesel (all)	Gasoline (all)	Lubricants	Coal and coke	Natural Gas	LPG
Excise duty	35 726	38 134	0	0	0	0

Source: art. 462 and 463 of the Tax Code[131]

Energy use subsidies

- Electricity and fuel subsidies have been approximated from the IMF dataset on Fossil Fuel Subsidies.[132]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Gasoline and diesel are assumed to be sold at the same rate (cf. table) for all sectors (industry, road, residential, electricity production, fishing and agriculture).
- Biogasoline is assumed to be taxed as gasoline.

[131] And for further modifications: https://adilet.zan.kz/kaz/docs/P2200000786

[132] https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281

Kenya

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Kenya were the following:

- The excise duty on petroleum products as set out in the Excise Duty Act of 2015 applies to several product categories like alcohol, cigarettes, cosmetics, motor vehicles and fuels. The duty on petroleum products covers diesel, gasoline, aviation gasoline, fuel oil, kerosene and jet kerosene.
- The Road Maintenance Levy (RML) applies to automotive gasoline and diesel as stipulated in Road Maintenance Levy Fund Act of 1993.
- The Petroleum Development Levy (PDL) and Petroleum Regulatory Levy (PRL) are charges that apply to all petroleum products at the same flat rates.
- The Energy Regulatory Commission Levy (ERCL) is levied on each kWh of consumed electricity and is passed to ERPA (formerly ERC). It is set to KES 0.03 /kWh.
- The Rural Electrification Projects Levy (REPL) is passed on to the Rural Electrification Authority (REA). It is set to 5% of the electricity's consumption costs.

Table 6. Energy taxes on petroleum products in the Kenya as of 1 April 2021

KES / 1000L (LPG: /t)	Automotive gasoline	Aviation gasoline	Kerosene	Automotive diesel	Industrial diesel	Fuel oil	LPG
Excise duty	21 953	21 953	11 371	11 371	4 083	331	✗
Road maintenance levy	18 000	✗	✗	18 000	✗	✗	✗
Petroleum development levy	5 400	5 400	400	5 400	5 400	400	400
Petroleum regulatory levy	250	✗	250	250	250	✗	✗

Source: EPRA pump prices; Legal notice n° 194 of 2020 (excise); legal notice n° 174 of 2020 (PDL); legal notice n°162 of 2018 (PRL); legal notice n° 123 of 2016 (RML)

Several other taxes apply to energy products but are not modelled:

- An anti-adulteration levy of KES 18 /litre on illuminating kerosene, imported for home use was introduced with the 2018 Finance Act. Kerosene and diesel have comparable prices in international markets but the differential tax treatment in Kenya, before the levy, resulted in a lower price for kerosene, which led to fraudulent mixing of kerosene with diesel, particularly in road transport. This tax is not included in CPET.
- A Railway Development Levy (RDL) was adopted with the Miscellaneous Fees And Levies Act No. 29 (2016, 2020). It is levied as a percentage (2% in 2021) of the customs value of goods imported into the country in line with the Miscellaneous Fees and Levies Act, 2016 (MFLA). As an ad-valorem levy contingent on prevailing prices and covering a broad range of products, it is not in the scope of the methodology.
- It is worth noting that the VAT rate on petroleum products increased from 8% to the standard rate of 16% in July 2023, while LPG continues to be exempted.[133] In the electricity sector, a

[133] Republic of Kenya, 2024 Budget Policy Statement

16% VAT applies on the total amount of the bill. VAT rates are collected for information but not included in the effective tax rates on energy use.

- A Merchant Shipping Levy of KSH 0.03 per litre and an Import declaration fee of 2% also apply to fossil fuels products but are not covered. These taxes not included in CPET.
- Regarding electricity, others charges are not included, such as the Fuel Cost Charge, which was set to KES 4.21 /kWh in 2022.

Kenya does not collect carbon taxes or taxes on other greenhouse gases emissions. Kenya does not operate a GHG emissions trading system.

Energy use subsidies

The following subsidy on energy use was identified to be in operation in 2020:

- An LPG subsidy program targets low-income households with the aim of reducing dependence on kerosene, firewood and charcoal and promote access to clean cooking. According to budget documents the distribution of petroleum and gas had an estimated expenditure of KES 531 000 in FY 2021/2022.[134]

It is worth noting that the government has budgeted for rural electrification and connection of public facilities, for the national street lightning programme and extending a connectivity subsidy. As these cannot be directly linked to energy use, they were not included.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- It is assumed that all gasoline consumed in the road transport sector is of type premium. Regular gasoline is consumed in the remaining uses.
- Diesel used for railway is assumed to be taxed as diesel for road, except it is not concerned by road maintenance levy.
- The REPL of 5% is levied as a percentage on the cost of the units of power consumed by a customer. It is assumed that the REPL accounts for 2.5% of the electricity tariff, for which, a weighted average, differentiated by residential/ commercial and industrial consumers and applicable in March 2023, was applied.
- The subsidy per unit of LPG was calculated by allocating the total amount in financial year 2020-2021 energy use data across all residential consumption.
- LPG (liquefied propane or butane) is subject to the Petroleum development levy and VAT at the standard rate of 16%, beginning from 1 July 2021.

[134] Republic of Kenya 2022/2023 Programme Based Budget Book (treasury.go.ke)

Korea

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in Korea were the following:

- The Individual Consumption Tax (*개별소비세* – ICT), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to kerosene, heavy fuel oil, propane gas, butane gas and natural gas. Bituminous coal used for electricity generation is also subject to this tax while solid fossil fuels used for other purposes are untaxed. Butane gas benefited from a tax cut since November 2021. From July 2022 to February 2024, the tax cut was of 37% (KRW 176.4 instead of KRW 275 per kilogramme)[135].
- The Transportation-Energy-Environment tax (*교통·에너지·환경세* –TEET), classified as a fuel excise tax according to the CPET methodology, applies to gasoline and diesel at uniform rates of KRW 529 per litre and KRW 375 per litre, respectively. Temporary tax cuts in place until February 2024 (25% tax cut for gasoline and 37% for diesel) were aimed to ease the burden of fuel costs on the citizens[136]. These rates are specified by Presidential Decree. Biodiesel is untaxed.
- The Education Tax, classified as a fuel excise tax according to the CPET methodology, applies to kerosene, heavy fuel oil and butane gas at a rate of 15% of the ICT tax on liquid fuels and 30% of the ICT tax on gaseous and solid fuels. The Education tax also applies to gasoline and diesel at a rate of 15% of the TEET.
- The Local Automobile Tax (*자동차세*) also applies to gasoline and diesel at a rate of 26% of the TEET rate.
- Korea does not levy a tax on electricity output, but natural gas and bituminous coal used to generate electricity are taxed. Natural gas used to generate electricity is taxed at a lower rate than when used for other purposes.

Korea does not levy a carbon tax on GHG emissions.

Korea operates a national emissions trading system (ETS) for GHG emissions.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The excise tax rate applied to LPG for propellant purposes is that of butane gas (which is subject to the Education tax), whereas the excise tax rate applied to LPG consumed for all other purposes is that of propane gas (which is not subject to the Education tax).
- The excise tax rate on bituminous coal used for electricity generation differs according to its net calorific value. The unweighted average of all available rates is included in the database (KRW 46 per kilogramme of bituminous coal).
- A reduced ICT rate of 8.4 won/kg also applies to natural gas rate for electricity generation consumed by integrated energy suppliers, new and renewable energy suppliers and persons setting up electric installations for private use but is not modelled due to data constraints.

[135] FILE_20221209085229_2.pdf (moef.go.kr), South Korea extends automotive fuel tax cuts until Aug to support consumer confidence | S&P Global Commodity Insights (spglobal.com)
[136] Press Releases (moef.go.kr), South Korea extends automotive fuel tax cuts until Aug to support consumer confidence | S&P Global Commodity Insights (spglobal.com)

Kyrgyzstan

Taxes on energy use and greenhouse gases

As at 1 April 2023, there was a single specific tax on energy use in Kyrgyzstan:

- The excise duty (акцизный налог) applies to gasoline, diesel, fuel oil, jet kerosene, and since 2020 to lubricant.
- No tax on electricity consumption was identified.
- In addition, it is worth noting that there is a standard 12% VAT rate applies to energy products, except for residential electricity. VAT rate is registered for information but not included in the calculation of effective tax rates.

Kyrgyzstan does not collect carbon taxes or taxes on other greenhouse gases emissions.

Kyrgyzstan does not operate an emissions trading system for greenhouse gas emissions.

Table 7. Energy taxes on petroleum products in 2023

Tax Rates	Gasoline	Diesel	Fuel oil	Jet kerosene	Lubricant
Rates in KGS per 1000 KG	10000	2000	2000	2000	2000

Source: Tax code, art. 236, https://cbd.minjust.gov.kg/112340?refId=1286441.[137]

Energy use subsidies

Electricity and fuel subsidies have been estimated from the IMF dataset of Fossil Fuel Subsidies.[138]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Coal, natural gas and LPG are not explicitly mentioned in the tax code under section X on excise duty. There are assumed to be untaxed. The taxation of natural gas condensate has not been modelled so far as it could not be linked directly to a category in IEA energy balance.
- Excise tax is assumed to be levied at the same rate for all type of consumption, whether in the residential, commercial, industrial or energy and heat generation sectors. No exemptions were recorded.

[137] Previous source: art. 287 https://cbd.minjust.gov.kg/202445?refId=1121015

[138] https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281

Latvia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Latvia were the following:

- Excise taxes (*akcīzes nodoklis*) apply to mineral oils and natural gas. Certain uses benefit from reduced rates or are tax exempt as further discussed below.
- The procedure of taxation applicable for coal**,** coke and lignite is prescribed by the *Natural Resources Tax Law*. In CPET this tax is classified as a fuel excise tax. Coal utilised for electricity production and combined heat-power production is tax exempt.
- The electricity tax (*elektroenerģijas nodoklis*) applies to electricity consumption. The carriage of goods and public carriage of passengers, including on rail transport and in public carriage of passengers in towns, household users, and street lighting services are tax exempt.
- The taxation procedure of CO_2 emissions in combustion installations that fall below the threshold for inclusion in the EU emissions trading system (ETS) is prescribed by the *Natural Resources Tax Law* (see below). Such are taxed at a rate EUR 15 per tonne of CO_2, unless installations are using renewable energy or peat. In CPET this tax is classified as an explicit carbon tax.
- Taxation applicable for the use of water for electricity production in hydropower plants (HPP). All HPP are taxed at a rate of 0.00853 EUR per 100 m^3 water flow through the hydro technical construction. However, as it was not possible to translate this tax into a rate per unit of energy use, it was decided, in consultation with country delegates, to not include the tax in CPET.
- Taxation of volatile organic compounds and other hydrocarbons (C_nH_m) prescribed by the *Natural Resources Tax law* is assumed not to cover methane emissions.

Energy and carbon taxes in Latvia are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Latvia participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Latvia also taxes the extraction of local natural resources, in particular peat. In line with the CPET methodology, such taxes are not included. Note that peat production in Latvia is minimal.

Latvia levies car-registration and car-circulation taxes, the rate of which is based on their CO_2 emissions or motor volume for older cars. These taxes are outside the scope of CPET and not included. Taxes on waste disposal are also out of CPET scope.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Fuels used for commercial navigation (“marine”) and commercial aviation (no use reported) are untaxed.
- Fishing fuels are not taxed.
- Natural gas is taxed if used as propellant, but there is a reduced rate if used in the agriculture sector for providing heat for greenhouses, industrial scale henhouses/sheds and incubators. CPET assumes that all natural gas use in the agricultural sector benefits from the reduced rate.
- Pure biodiesel and blended biogasoline (E85) benefit from a reduced rate.
- Solid biofuels and biogases are not taxed.
- Fossil fuels are generally not taxed when used by households for non-transport purposes.
- Combustion installations that are not part of the EU ETS are additionally subject to the CO_2 tax. The CO_2 tax applies to all fossil fuels except peat and renewable energy.

- Natural gas is exempted for dual use and mineralogical processes; It is taxed when used for electricity generation. Coal and coke and mineral oils are exempted if used in combined heat and power plants.
- Fossil fuels used to generate electricity for sale generally benefit from exemptions from excise taxes and the Natural Resources Tax Law. However, the electricity sector is covered by the EU ETS.
- The use of electricity is subject to a tax if the electricity is used by businesses. Electricity from autonomous producer plants is generally subject to the electricity tax. Electricity used by households is not taxed. As is standard, electricity exports are not subject to the electricity tax in Latvia but may be subject to electricity taxes elsewhere.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Fossil fuels used in private pleasure aviation or navigation are taxed but not modelled in CPET due to a lack of consumption data.

Lithuania

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Lithuania were the following:

- Excise duties, classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology apply to liquid, and solid fossil fuels, including lubricating oils, LPG and natural gas.
- A levy on electricity consumption by end users, classified as an electricity excise tax according to the CPET methodology.

Energy taxes in Lithuania are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Lithuania participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline for automotive purpose is that of unleaded gasoline.
- Biofuels complying with the applicable European Standards (EN 14214 and CEN/TS 15293) benefit from an excise duty exemption.[139] As of April 2023, all biodiesel is taxed and 99% of biogasoline are taxed whereas 1% is E85 petrol and therefore untaxed. The latter exemption is not applicable anymore as 2024.
- Fuel used for commercial aviation and navigation is exempted. Diesel used in non-commercial aviation or navigation is taxed but not modelled in the database due to a lack of consumption data.
- Municipal waste, solid biofuels and other renewables are not taxed.
- Diesel used in the agriculture and fisheries benefit from a reduced excise duty.
- Fossil fuels that are used in industrial processes are not taxed if the conditions for non-taxation of the EU Energy Tax Directive are fulfilled.
- LPG for domestic purposes (heating) has been exempted from excise duty untaxed until December 2023. In January 2024, the excise duty at a rate of EUR 304.1 per tonne applied which was reduced to EUR 13 per tonne in March 2024.
- Natural gas supplied to households and aid receivers, used as propellant, as well as used in combined heat and power (CHP) plants is exempt from the excise duty. Due to data constraints, the exemption for aid receivers' natural gas consumption is not modelled. In commercial and public sectors, 6% of the consumption is assumed to be at the non-business rate, which leads to an overall share of 1% of natural gas effectively taxed at non-business rate.
- The fuels used to generate electricity are not taxed, but the electricity sector is covered by the EU ETS.
- The use of electricity is generally taxed. Electricity from industrial cogeneration is subject to the general electricity tax. In commercial and public services sector, the consumption is assumed to be taxed at 1% at the non-business rate and at 99% at business rate.
- Electricity is exempted for households' and aid receivers' consumption; for certain uses (chemical, electrolysis, metallurgical), and when produced from renewable sources. All electricity generated from wind, hydro, solar, solid biomass or biogas is therefore assumed to be untaxed.

[139] The excise duty rate of the blended fuel is reduced in proportion to the percentage of additives of biological origin in the product.

- As is standard, electricity exports are not subject to the electricity tax in Lithuania but may be subject to electricity taxes elsewhere.

Luxembourg

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Luxembourg were the following:

- The energy tax rates that applies to mineral oils, natural gas and coal. Mineral oils, bituminous coal and coke and LPG are subject to excise tax (*droit d'accise*) prescribed by Belgian law, plus autonomous excise tax (*droit d'accise autonome*) and additional autonomous excise tax (*droit d'accise autonome additionnel*) fixed by Luxembourg. Another excise duty applies to natural gas (*taxe sur la consummation de gaz naturel*). These taxes have been classified as fuel excise taxes according to the Carbon Pricing and Energy Taxation (CPET) methodology.
- Electricity consumption (*taxe sur la consommation d'électricité*) is taxed at a lower rate when used in the industry sector than when used in the residential sector.
- An explicit carbon tax (*taxe* CO_2) has been introduced starting from 2021 at a nominal rate of EUR 20 per tonne of CO_2e[140] and set to increase by EUR 5 in the two subsequent years. It is now as of April 2023 at EUR 30 per tonne of CO_2e. It applies to mineral oils, LPG and natural gas.

Energy taxes in Luxembourg are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Luxembourg does not levy a direct tax on other GHG emissions (such as F-gas or N_2O gas).

Luxembourg participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Luxembourg also levies a tax on electricity consumption for public service obligation compensation mechanism (*Mécanisme de compensation pour obligation de service public*). It compensates electrical companies for the obligation to purchase all electricity produced from renewable sources or high efficiency CHP units and considered outside CPET scope.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline and diesel for automotive purpose is that of gasoline and diesel with sulphur content equal to or less than 10 mg/kg; notice that a large part of energy use reported in the road sector is due to fuel tourism/transit traffic. A substantial share of fuel use in road transport is in reality consumed in neighbouring countries, but allocated to Luxembourg in the energy balances (and CPET) because Luxembourg is where the fuel is sold. Natural gas in road is tax exempt, but the IEA's extended world energy balances report no such use for the road sector in Luxembourg. In the road sector, biofuels are taxed at the same tax rates as their fossil fuel equivalents but exempt from the carbon tax.
- Biogases, waste, solid biofuels and other renewables are not taxed.
- Diesel consumed by railways is not taxed.
- Bituminous coal and coke products are taxed only for business heating.
- Autonomous excise taxes (including additional ones) and carbon taxes are levied on domestic aviation fuel. Note that only aviation gasoline use is reported in the IEA energy balances and this would be taxed at the rate of leaded petrol.
- All fossil fuel (including natural gas) and electricity consumption for agriculture are untaxed.

[140] The nominal rate for gasoline and diesel however is above EUR 30 per tCO_2e.
https://douanes.public.lu/content/dam/douanes/fr/accises/Taux-Accises-LU-2021-123.pdf

- The carbon tax does not apply to mineral oils, LPG and natural gas used in activities covered by ETS.
- Rates for natural gas vary depending on the consumption volume. However, since data on natural gas consumption volumes were not available, CPET assumes that Category C1 applies to all non-EU ETS business heating, and all non-EU ETS industry activities, in order to be comparable with the Category C1 bis which concerns all activities covered by ETS. Category A is assumed to apply to non-business heating.
- Fuels are not taxed when used: in combined heat and power (CHP) or auto-producer electricity plants; as electricity inputs.
- Electricity consumption is generally subject to an electricity excise tax (per MWh). Electricity produced by auto-generation plants are generally subject to electricity excise taxes under the same conditions as main-producer electricity plants. The rate is higher for non-business use, and lower for business use. However, both rates correspond to the minimum admissible under the Energy Tax Directive. Own use by the electricity industry is not taxed, and neither are exports, which may, however, be subject to electricity taxes in other countries.
- Rates for electricity vary depending on the consumption volume. However, since data on electricity consumption volumes was not available, CPET assumes that category B applies to all business use and category A to all non-business use.

Madagascar

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Madagascar were the following:

- The tax on petroleum products (*taxe sur les produits pétroliers -TPP*)[141] is levied on imports of aviation gasoline, motor gasoline, kerosene, jet kerosene, gas oil, fuel oil, GLP, and natural gas. It is classified as an "excise tax on motor fuels and combustibles" according to the Carbon Pricing and Energy Taxation (CPET) methodology.
- Several other taxes are levied on petroleum products and classified as "excise duties on motor fuels and combustibles":[142]
    - The tax for the environment fund and the fee for the Malagasy hydrocarbon office (*Office Malgache des Hydrocarbures - OMH*), levied on the consumption of butane, aviation gasoline, motor gasoline (supercarburant and gasoline), kerosene (*pétrole lampant*), jet kerosene, gas oil (gasoil), fuel oil and naphtha.
    - The tax for the road maintenance fund (FER), levied on the consumption of motor gasoline and diesel only.
- A fee for the National Sustainable Energy Fund is levied on electricity consumption at a rate of 1.25%. It is classified as an "excise duty on electricity".

Taxes not included:

- In addition, a standard VAT rate of 20% applies when selling energy products. Kerosene and propane are exempt, and butane has a reduced rate of 5%. VAT on petroleum products was reduced to 15% between July 2022 and January 2023.[143] VAT rates are collected for information purposes but are not included in the calculation of effective tax rates.
- Customs duties are levied on coal and hard coal at the standard rate. They are not levied on petroleum products.
- Several other local taxes are levied on electricity consumption: consumption tax, work fund surcharge, and sanitation tax. As they seem to vary according to location, they have not been included.
- Madagascar does not levy a fuel-based carbon tax or a tax on other greenhouse gas emissions. Madagascar does not operate an emissions trading system.

Table 8. Energy taxes on petroleum products in Madagascar as at 1 April 2023

Rate in MGA per litre	Gasoline (super carburant))	Kerosene (pétrole lampant)	Diesel	LPG	Fuel oil	Natural gas	Jet kerosene
Tax on petroleum products	503	10	228	123	128	120	118
Tax for the environment fund	1	1	1	1	1		1
Levy for OMH	8,6	8,6	8,6	8,6	8,6		8,6

[141] http://www.douanes.gov.mg/oopsovez/2024/01/Tarif-2023-APRES-LFI-2023.pdf

[142] ARRETE N° 16036 /2017 du 05 juillet 2017 relatif au mécanisme d'ajustement automatique des prix maxima affichés à la pompe

[143] Rapport du FMI n° 23/117

Tax for the road fund	288		129				

Source: tarif des douanes (TPP), Arrêté 26 avril 2018 fixant les modalités de perception et de recouvrement ainsi que le régime des droits et devances dus à l'OMH (taxes pour le fonds environnement et redevant OMH), arrêté N° 16036 /2017 du 05 juillet 2017 relatif au mécanisme d'ajustement automatique des prix maxima affichés à la pompe (taxe pour le FER).
Note: Rates are unchanged from 2018 and 2021.

Energy use subsidies

The following energy consumption subsidies have been identified to be in operation in 2022:

- The government sets price ceilings for motor gasoline (*premium fuel*), kerosene (*kerosene*) and diesel (*diesel oil*). This results in an implicit subsidy for the consumer, when selling prices are below real costs due to international prices. The government has therefore incurred payment arrears to the oil companies corresponding to this implicit subsidy, estimated at MGA 793 billion in 2022.[144] In addition, JIRAMA, a public electricity producing company, has benefited from requisitions of 415 billion MGA net. New issues of special treasury bills (BTS) have been carried out to clear the State's arrears to the oil companies.[145]
- Electricity production is also subsidised, due to the recurring deficit of JIRAMA, the state-owned company in charge of electricity. The government finances it directly through budgetary transfers (operating and investment subsidies) and indirectly by absorbing its debts in its capacity as shareholder.[146] A subsidy of MGA 309 billion is mentioned in the amending finance law for 2018.[147, 148] A grant of 500 billion MGA is mentioned in 2022.[149] These subsidies are used partly for electricity generation, including fuel payments,[150] and partly for water distribution. JIRAMA's liabilities have also been integrated into domestic debt in 2022.[151]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Half of the annual subsidy to JIRAMA (MGA 500 billion) is assumed to benefit its activity related to electricity production, a quarter financing the purchase of fuel (paired with the diesel

[144] IMF Report No. 23/117 "An agreement between the State and the Groupement des Pétroliers de Madagascar (GPM) on the clearance of all cross-debts at the end of 2021 and 2022 related to the administration of prices at the pump was concluded in December 2022. This agreement stipulates the payment by the State of its debt arising from the difference between the administered pump price and the market price (implicit subsidy) to the members of the GPM and the payment by the GPM of all its tax obligations to the State".
[145] P. 10 of the SDMT 2024-2026 http://www.tresorpublic.mg/?page_id=214&content=temp&type=sdmt
[146] World Bank Document
[147] LOI_N°2018-024_LFR2018.pdf (mefb.gov.mg)
[148] It seems that no transfers occurred then before 2021 JIRAMA - Unpaid suppliers amount to 1,000 billion ariary (laverite.mg)
[149] In the financial audits https://www.jirama.mg/etats-financiers-avant-audit-2020-2021-et-2022/ and in the finance bill https://www.mef.gov.mg/assets/vendor/ckeditor/plugins/kcfinder/upload/files/LFR%202022/LOI%20n%202022%20-%20012%20%20LFR%202022%20PROMULGUE%20AMPLIATION.pdf
[150] p. 443 https://www.mef.gov.mg/assets/vendor/ckeditor/plugins/kcfinder/upload/files/ARCEB/Etude%20Secteur%20Energie%20Rapport%20Final%20_%20Version%20finale%20Novembre%202022.pdf
[151] A la dette intérieure ont été intégrés les passifs de la JIRAMA et de la Compagnie Air Madagascar pour la période 2020-2022 https://www.mef.gov.mg/assets/vendor/ckeditor/plugins/kcfinder/upload/files/LFI_2024/TOME%202_LIVRE2%20-%20LOI%20N%C2%B02023-021.pdf

and fuel oil used by the main producers), the other quarter being a general electricity subsidy, and the rest going to water management.

- Subsidies for the purchase of fuel for electricity generation from JIRAMA have been distributed uniformly according to the energy consumption of diesel and fuel oil used by the main power producers.
- The implicit subsidy in 2022 corresponding to the MGA 793 billion in arrears to oil companies was distributed according to the energy consumption of gasoline (supercarburant), diesel, jet kerosene, kerosene (pétrole lampant), of fuel oil and LPG, for all uses, except electricity production by JIRAMA.
- Coal and coal are not explicitly mentioned in the law, so it is assumed that their consumption is not taxed.
- The tax on electricity consumption has been applied to JIRAMA's prices for the residential LV category PS <= 3 kW, T2, zone1 of the 1 April 2023.[152]
- Taxes on petroleum products are assumed to be levied in a similar way for any type of consumption, whether it is the residential, commercial, industrial sector, or even electricity generation. No exemptions were recorded.
- Due to data constraints, the following taxes or exemptions are not modelled:
- The exemption for fuels consumed by the chemical industry in accordance with Article 216 of the Customs Code on the "customs regime for exercised plants". [153]
- The exemption for fuels used by civil and military aviation for long distance or foreign flights.
- The integration of JIRAMA's liabilities into the domestic debt.

[152] Office de Régulation de l'Electricité (ore.mg)
[153] CODE-DES-DOUANES-apres-LFR-2021.pdf

Malaysia

Taxes on energy use and greenhouse gases

As at 1 April 2023, no excises taxes were levied on energy use in Malaysia.[154]

It is worth noting that Malaysia had a Goods and Service Tax (GST) in force until August 2018. Tax holiday with zero rates was declared in June and August 2018 as a transition period. In September 2018 GST was replaced with a Sales and Services Tax (SST). Under SST, specific quantity-based rates are imposed on certain petroleum products (diesel, gasoline, natural gas) instead of the standard 10% rate. Sales tax is imposed on gasoline, diesel and LPG at rates of RM 0.60 per litre, RM 0.40 per litre and RM 0.01 per kilogram respectively under Sales Tax (Rates of Tax) Order 2022.[155] However, those products are exempted from sales tax payments in accordance with provision 35(3) under Sales Tax (Goods Exempted from Tax) Order 2022. A 6% reduced rate of service tax is levied on residential electricity consumption.[156] This rate will be increased from 6 to 8% on 1 March 2024. Sales tax and services tax rates are registered for information but not included in the calculation of effective tax rates.

The surcharge for the renewable energy fund on electricity consumption is not included according to Carbon Pricing and Energy Taxation (CPET) methodology.[157]

Malaysia does not collect carbon taxes or taxes on other greenhouse gases emissions.

Malaysia does not operate an emissions trading system for greenhouse gas emissions. Nevertheless, Malaysia is currently considering implementing carbon pricing instruments.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- After elimination in December 2014, fuel subsidies were reintroduced in June 2018 for all consumers, regarding RON 95 and diesel. LPG consumption for household has always remained subsidised for 10 kg, 12kg and 14 kg cylinder. In 2022, according to the general audit report,[158,159] fuel subsidies went up to 23.1 billion for RON 95, 18.7 billion for diesel and 3.4 billion for LPG. The audit report mentions 23.1 billion for RON 95, 18.7 billion for diesel and 3.4 billion for LPG.
- Fuel subsidies are in place for fishing vessels. In 2021, the amounts were RM 472.8 million for diesel and RM 48.1 million for petrol.[160]
- Low-income households benefit from a discount on electricity bills up to RM 20 on electric bills.[161] In 2018, the total cost was RM 140 million[162] In 2022, the total amount of subsidies is estimated to RM 78 million.[163]

Due to lack of data, the following subsidies have not been modelled:

- Fuel subsidies in place for public transports (bus, taxi etc) for drivers with a fleet card.[164]

[154] PUA163.pdf (customs.gov.my)
[155] MySST (customs.gov.my), sales tax
[156] MySST (customs.gov.my), service tax
[157] https://www.tnb.com.my/kumpulan-wang-tenaga-boleh-baharu-kwtbb/
[158] https://paultan.org/2023/10/12/malaysia-government-petroleum-product-subsidies-2022/
[159] Budget document mentioned 52 billion, with an average subsidy per litre for RON95 is RM 1.34 and diesel is RM 1.29159.
[160] https://www.parlimen.gov.my/ipms/eps/2023-10-12/ST.191.2023%20-%20ST191.2023.pdf
[161] https://www.mytnb.com.my/residential/discount-rebates#:~:text=The%20Malaysian%20Government%20offers%20RM,individual%20street%20light%20(ISL).
[162] B.30_P.30.pdf — Malaysian Government Document Archives (sinarproject.org)
[163] https://belanjawan.mof.gov.my/pdf/belanjawan2023/perbelanjaan/Anggaran-Perbelanjaan-Persekutuan-2023.pdf
[164] Portal Rasmi KPDNHEP - Diesel Bersubsidi (Fleet Card)

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The amount of fishing fuel subsidies has been allocated to all the gasoline and diesel consumption reported for fishing.
- The untargeted subsidies for diesel, RON 95 and LPG, was equally allocated across, respectively all consumption of diesel (including diesel for electricity generation), of gasoline (except RON 97) and of LPG in the residential sector.
- Subsidy for public transport specifically in absence of information on the amounts is not modelled.
- Electricity subsidies targeted low-income households were distributed across all residential electricity consumption.
- The share of RON 95 consumed is assumed to be 93% of gasoline consumption reported.[165]

[165] ch=research&pg=research&ac=1088224&bb=1107561 (bursamarketplace.com)

Malta

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Malta were the following:

- Excise duty on energy (*Dazju tas-Sisa (fuq l-Energija)*), classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, kerosene, fuel oil, natural gas, LPG and coal used for heating. [166]
    - Diesel used as commercial propellant, attracts a higher rate.
- An excise tax applies on electricity consumption (per MWh), classified as an electricity excise tax according to the CPET methodology.

Energy taxes in Malta are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Malta does not levy carbon taxes or taxes on other GHG emissions.

Malta participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Energy use subsidies

No subsidies on energy use were identified to be in operation in 2022. [167]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Diesel in road transport is assumed to be consumed 50%, for commercial propellant purposes that attract a higher rate.
- Diesel consumed in agriculture is for propellant purposes and taxed at the associated rate.
- LPG consumed in agriculture and fishing is for propellant purposes and taxed at the associated rate. However, the associated consumption is negligible.
- Aviation kerosene use reported concerns private planes, where it is untaxed.
- Fuels used as input for electricity generation are tax exempt.[168] CPET assumes that all electricity inputs benefit from this provision.
- Electricity used for electrolytic processes, chemical reduction, metallurgical and mineralogical processes is untaxed.
- Diesel used for navigation benefits from a reduced rate, while diesel for fishing is untaxed.

Due to data constraints, the following tax or exemptions are not modelled:

- Exemption for diesel in navigation between Malta and Gozo.
- Reduced rate for kerosene in aviation between Malta and Gozo.

[166] However, according to the IEA energy balances there is no domestic consumption of coal or coke.
[167] No explicit subsidies according to "IMF Fossil Fuel Subsidies Data: 2023 Update." Working paper, IMF, Washington, DC.
Figure 2-9 fossil fuel subsidies at 0 euro for Malta in 2018. https://data.europa.eu/doi/10.2833/546611
[168] https://legislation.mt/eli/cap/382/20231017/eng

Mauritius

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Mauritius, were the following:

- An excise duty is levied on gasoline and diesel. Several Contributions are also levied on gasoline and diesel, and classified as "fuel excise duty" according to Carbon Pricing and Energy Taxation" (CPET) methodology: the contribution to the Road Development Authority, the contribution to Rodrigues Transportation and Storage, the contribution to the Construction of storage, facilities for petroleum product,
- The Maurice Ile Durable (MID) levy is levied on coal, kerosene, jet kerosene, LPG and fuel oil.

A charge to Fund to Price Stabilisation Account is also added to the price structure of gasoline and diesel, but not incorporated to CPET as it is directly for the Price Stabilisation Account which proceed to cross-temporal subsidies to smooth retail fuel prices.

The standard rate of VAT is 15%, in 2023 and applies to the same product as the excise duty. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Mauritius does not collect carbon taxes or taxes on other greenhouse gases emissions.

Mauritius does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- LPG for household ("gaz ménager") is subsidized. The lower prices are financed by the price structure on gasoline and diesel (not considered in CPET, as it represents a cross-subsidy), and transfers from government for the fiscal year 2021/2022.[169]
- The Price Stabilisation Account has had a growing deficit for several years,[170] including a deficit for the whole 2022 year,[171] after being positive for year 2021:
  - The deficit associated to diesel increased from MUR 1.8 to MUR 4.4 billion and has kept increasing until the beginning of 2024.[172]
  - As the deficit associated to gasoline (mogas) has been stable at the end of the year (from 0.6 billion at the end of December 2021 to 0.6 billion at the beginning of 2023 – with fluctuations during the year), no subsidy is considered for 2022 for gasoline.

Other subsidies not included according to the methodology:

- Transfers which are not documented: Payments of Scheme for companies under Industrial Electricity Tariff, in absence of other information on the nature of the transfer.[173]
- Cross-subsidies: cross-subsidisation of electricity tariffs between users, lower rates benefitting to households.[174] Cross-subsidies are not included.

[169] https://www.stcmu.com/assets/pdf/AnnualReport2022.pdf
[170] https://www.stcmu.com/assets/pdf/archives/pr/2024/arc_pr__27Jan24.pdf
[171] https://www.stcmu.com/ppm/press-release
[172] https://www.stcmu.com/assets/pdf/archives/pr/2022/arc_pr_13Sep22.pdf
[173] https://budgetmof.govmu.org/documents/V_C2023_24AppendixC.pdf
[174] https://greenfiscalpolicy.org/wp-content/uploads/2020/07/Mauritius-Fiscal-Policy-Scoping-Study-Final.pdf

- Local subsidies: The subsidy for electricity (MUR 286 million), as well as for LPG and petroleum products (MUR 108 million, financed by taxes on LPG and petroleum products to cover especially the freight costs[175]), which is provided for the Rodrigues Island.[176]
- Subsidies which occurred in 2023: i) The transfer of MUR 200 million to refund the Price Stabilisation Account in 2023; ii) The subsidy of MUR 5 per litre of diesel distributed to specific small and medium enterprises has been implemented in October 2023,[177] for a total of MUR 1 million as a response to high energy prices. This is not included in this edition, as it occurred after 2022.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The subsidy for LPG was estimated up to MUR 996.3 million as the amount from Government from COVID-19 Solidarity Fund and the COVID 19 vaccination fund, plus the remaining subsidy requested from the Government multiplied by the share of LPG subsidy related to the total subsidy needed for LPG, rice, and flour.
- The subsidy granted to diesel over 2022 year was recorded as the per unit adjustment as of September 2022,[178] to reflect the increase of deficit over 2022. No subsidy was recorded for gasoline, as the deficit remain stable over 2022.
- Taxation is assumed to be identical across sectors. Especially, coal and fuel oil consumed for electricity generation are assumed to be taxed.

175 https://mroiti.govmu.org/Documents/Annual%20Reports/Annual%20Report%20on%20Performanance%20FY%202021-2022.pdf ; https://www.stcmu.com/assets/pdf/AnnualReport2022.pdf

176 Figures for FY 2022/2023 https://budgetmof.govmu.org/documents/V_B2023_24AppendixB.pdf

177 https://www.mra.mu/index.php/eservices1/financial-assistance/financial-assistance-diesel ; https://www.mazavaroo.mu/lessence-passe-a-rs-69-et-le-diesel-a-rs-63-95-le-litre/#:~:text=Le%20ministre%20des%20Finances%20a,de%20roupies%20%C3%A0%20cet%20effet.

178 https://www.stcmu.com/assets/pdf/archives/pr/2022/arc_pr_13Sep22.pdf

Mexico

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and GHG emissions in Mexico, were the following:

- According to the *Ley* del *Impuesto Especial sobre Producción y Servicios*[179], gasolines and diesel as automobile fuels are taxed with a federal quota (Artículo 2o., fracción I, inciso D), a local quota (Artículo 2o.-A, fracciones I, II y III) and a tax based on the carbon content of each fuel (Artículo 2o., fracción I, inciso H), and these are paid at the time of import or sale, regardless of the end use.
- The federal IEPS (*Impuesto especial sobre producción y servicios* – (IEPS)), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to automotive gasoline, automotive diesel and their biofuel equivalents.
- The local IEPS applies to gasoline and diesel, and is earmarked to states and municipalities.
- The carbon tax (*Impuesto al contenido de carbono en combustibles fósiles*) with a nominal rate of MXN 73/tCO_2e applies to gasoline, kerosene, diesel, gasoline, coal, coke, LPG, petroleum coke, aviation gasoline and aviation kerosene, including when these fossil fuels are used to generate electricity. Since its implementation in 2014, natural gas is zero-rated under the carbon tax.
- At the subnational level:
    - The states of Durango, Mexico, Querétaro, Yucatán and Zacatecas levy regional carbon taxes that apply to stationary sources at rates that range from MXN 43/tCO_2e in the state of Mexico to about MXN 580/tCO_2e in Querétaro but are on average about MXN 230/tCO_2e in the remaining states. [180]
    - The state of Guanajuato levies a carbon tax (MXN 250/tCO_2e) scheduled for June 2023 and is therefore not modelled for comparability, while the state of Jalisco is considering a carbon tax.
    - The Baja California carbon tax was abolished in 2021 as unconstitutional and the Tamaulipas carbon tax was suspended in 2022.

Mexico does not levy taxes on electricity consumption.

Mexico launched an emissions trading scheme (ETS) pilot in 2020, covering CO_2 emissions in the industry and electricity sectors. The ETS, due to become operational in 2024, is not modelled in the database.

Country-specific assumptions

Due to data constraints, when matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The unweighted average of federal IEPS rates on below 92 octane gasoline and above 92 octane gasoline is assumed to be the IEPS rate on automotive gasoline. The unweighted average of local IEPS rates on below 92 octane gasoline and above 92 octane gasoline is assumed to be the IEPS rate on gasoline for non-propellant use.
- The carbon tax applied to LPG consumption is assumed to be the sum of 90% of the carbon tax applied to propane gas and 10% of the carbon tax applied to butane gas.

[179] Ley Impuesto Especial sobre Producción y Servicio https://www.diputados.gob.mx/LeyesBiblio/ref/lieps/LIEPS_cant11_28dic22.pdf

[180] The World Bank. 2023. "State and Trends of Carbon Pricing 2023" (May), World Bank, Washington, DC. Doi: 10.1596/ 978-1-4648-2006-9 . License: Creative Commons Attribution CC BY 3.0 IGO

- Diesel for marine use benefits from a credit tax against Income Tax, The Federation Revenues Act of 2020 limited this benefit to companies with less than 60 million pesos of annual revenues. The OECD Secretariat assumes that all marine use falls below this threshold.
- Fossil fuels used in the industrial sector are also taxed. In the case of diesel, a tax credit is available for most industrial end uses. Similar tax credits are also available in the agricultural and fishing sectors. Since 2020, the benefit applies only to taxpayers with annual income of less than 60 million pesos. The resulting IEPS from diesel purchases is credited against the Income Tax. For simplicity the Secretariat assumes that 50% of industrial use does not qualify for the tax credit but all other aforementioned uses pay only for the carbon tax component. Agriculture and fishing may benefit from additional reductions. These additional reductions are not modelled due to data constraints.
- To model subnational carbon taxes, the OECD Secretariat uses estimates of energy use based on the share of GDP by state, uniformly applied across energy products and energy users.[181]
- CPET models the emissions-based carbon taxes levied at a subnational level to cover the emissions in the industry and electricity sector and assumes all facilities are above the threshold and regulated.

Due to data constraints, coverage of other GHG by the subnational carbon taxes are not modelled. Similarly, subnational carbon tax exemptions and reductions for facilities, which for instance have undertaken 20% of emissions reductions from the previous year (Zacatecas, Yucatán), are not modelled.

[181] Approximate estimates derived from Mexico's GDP by state. https://www.inegi.org.mx/programas/pibent/2013/#Tabulados

Morocco

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Morocco were the following:

- The Domestic Tax on Consumption (*Taxes intérieures sur la consommation - TIC)* applies to a range of product categories like energy beverages, wine, sugar and fuels. Specifically, the tax applies to coal and petroleum coke, fuel oil, diesel, gasoline, kerosene, LPG and natural gas.
- The tax for the promotion of the national audiovisual landscape (*Taxe pour la promotion du paysage audiovisuel national - TPPAN)* applies on electricity consumption of residential, commercial and public users.[182]

VAT is generally payable at 20%, however oil and gas hydrocarbons are subject to a VAT of 10% and electricity to a VAT of 14%. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Morocco does not levy a fuel-based carbon tax or a tax on other greenhouse gas emissions, however, the principle of a carbon tax was mentioned in a law adopted in July 2021[183]. A carbon tax is expected to be implemented in 2024.[184]

Morocco does not operate an emissions trading system.

Table 9. Energy taxes on petroleum products in the Morocco

Rates in MAD per 100 L or 100 KG	Diesel	Fuel oil	Gasoline	Gasoline super	Kerosene	Jet kerosene	Natural gas	LPG
TIC	242.2	101.78	357.2	376.4	44	0	0	4.6

Note: rates for fuel oil and LPG are per 100 KG
Source: Taxes Intérieures De Consommation (TIC) Applicables Aux Produits Pétrolier, Tarif des droits de douane[185]

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- A subsidy for passenger and freight transport services was introduced from March 2022[186] to limit the effect of rising fuel prices. It represented 4.4 billion Moroccan dirahms (MAD) in 2022.[187]
- The price of LPG (butane) is regulated, and the government compensates importing companies and filling centres for the difference from import prices, while it also

[182] https://www.haca.ma/fr/article-16-du-dahir-n%C2%B0-1-96-77-du-29-juin-1996-portant-promulgation-de-la-loi-de-finances-n%C2%B0-8-96
[183] https://www.droit-afrique.com/uploads/Maroc-Loi-2021-86-reforme-fiscale.pdf
[184] https://www.finances.gov.ma/Publication/db/2023/Rapport-execution-budgetairePLF2024.pdf
[185] https://www.douane.gov.ma/web/guest/rdii#https://www.douane.gov.ma/content/rdii/titres.jsf
[186] https://www.cg.gov.ma/fr/node/10822
[187] https://www.finances.gov.ma/Publication/db/2024/Document%20PBT%202024-2026%20%20VF%20Fr_oct_2023.pdf

reimburses transportation costs. The cost of the subsidy was MAD 21.8 billion in 2022.[188]

- In the electricity sector, a financial restructuring plan with consecutive tariff increases and a lump sum payment for the abandonment of fuel oil for production has boosted the profitability of the state-owned company ONEE. In 2022, MAD 5 billion was paid to ONEE to limit the rise in electricity prices linked to the increase in fuel prices.[189]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Fuel oil, petroleum coke, bituminous coal and natural gas used for electricity production are exempted.
- Fuel oil n°2 ("fuel oil lourd") is assumed to be the type of fuel oil used for all industrial consumption reported and fuel oil n°7 ("fuel oil léger") for households' consumption.
- All gasoline consumed is assumed to be regular gasoline.
- In electricity, charges related to meter maintenance and counter rental are payable by residential consumers but are not in the scope of the analysis. The audio-visual tax TPPAN applicable to residential, commercial and public users is modelled at an upper bound at the maximum rate per kWh due to data constraints on the consumption distribution.
- A per unit (100 KG) subsidy for LPG has been computed by allocating the total amount of the subsidy across all consumption of LPG (including agriculture, industry, residential, commercial and public services) using the 2021 IEA Energy Balances.
- It was assumed that the subsidy covered 50% of the energy consumption of diesel in the road sector (assumed to correspond to the share of consumption by freight transport vehicles, buses and a share of taxis), and 10% of the energy consumption of gasoline (assumed to correspond to the share of consumption of taxis).

Due to data constraints, the following tax rates or subsidies are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Exemption from TIC for fuels consumed in the Saharan provinces (no information on the share of consumptions located in this region).
- Exemption from TIC for fuels consumed domestically for fishing (no consumption reported in the energy base).
- Taxation of gasoline super ("supercarburant").

[188] https://www.finances.gov.ma/Publication/db/2024/Document%20PBT%202024-2026%20%20VF%20Fr_oct_2023.pdf ; https://www.finances.gov.ma/Publication/db/2024/Rapport-Compensation_Fr.pdf

[189] https://fr.le360.ma/politique/ou-sont-passes-les-40-milliards-de-subvention-debloques-par-le-gouvernement_MOZDSX6Q25DZ3JMHFBVL2DU7EA/; https://www.bladi.net/subventions-produits-alimentaires-cout-etat-marocain-2022,99587.html; https://www.jeuneafrique.com/1422751/economie-entreprises/eneo-senelec-onee-face-a-lenvolee-des-couts-de-lelectricite-le-dilemme-des-etats/

Netherlands

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas (GHG) emissions in the Netherlands were the following:

- The Coal Tax (*Kolenbelasting*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to coal and coke products.
- The Excise Duty, classified as a fuel excise tax according to the CPET methodology, applies to liquid fuels, including biodiesel and biogasoline.[190]
- The Energy Tax (*Energiebelasting*) applies to natural gas (classified as "fuel excise" in CPET) and electricity consumption (classified as an "electricity excise tax" according to the CPET methodology).[191]

Energy and carbon taxes in the Netherlands are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

The Netherlands participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Starting in 2021 the Netherlands implemented a new carbon levy in industry that adds a floating contribution on top of the EU ETS allowance price to yield a fixed price on Dutch emissions covered by the system. It sets out an ambitious price trajectory until 2030. In 2023, prevailing EU ETS permit prices have been above the carbon levy price floor set at EUR 51.12per tonne of CO_2e.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- In road transport, biofuels benefit from a partial refund on the statutory rate specified for their fossil fuel equivalents. Electricity used for charging Electric Vehicles (EVs) is taxed at a reduced rate.
- In the off-road sector, fossil fuels used for railway transport (mainly diesel) are taxed at their propellant rates. Fuels used for commercial domestic navigation ("marine") are not taxed. Fuels used for commercial aviation are not taxed either.
- In the industry sector, natural gas used in combined heat and power (CHP) generation is exempt. In addition, natural gas used in metallurgical processes and mineralogical processes benefits from a full refund. The energy industry's own use, e.g., for the extraction of natural gas, is not taxed. Other fossil fuels, mainly by-products of industrial processes, such as blast furnace gas and refinery gas, are generally not taxed.
- Fishing fuels (diesel) are not taxed.
- In agriculture, diesel use is taxed. LPG is taxed, and so is natural gas, although horticulture which accounts for most of the agricultural consumption, benefits from reduced rates.
- The fuels used to generate electricity are not taxed, but the electricity sector is covered by the EU ETS. Electricity used for chemical reduction and electrolytic and metallurgical processes

[190] In addition, the Strategic Stockpiling Fee (Voorraadheffing) of EUR 8.00 per 1000 litres applies to the same fuels subject to the excise duty, with the exception of fuel oil and biofuels.

[191] The taxation of natural gas and electricity output is based on a bracket system which provides a schedule of marginal rates that decrease with consumption volumes. The Sustainable Energy Surcharge (Opslag Duurzame Energie - ODE), previously a separate levy, became part of the energy tax. The energy base in CPET has been partitioned in accordance with the consumption volume shares of the respective user groups, according to Statistics Netherlands 2019 "Elektriciteit en aardgas naar energiebelastingschijf" https://www.cbs.nl/nl-nl/maatwerk/2019/14/elektriciteit-en-aardgas-naar-energiebelastingschijf

are not taxed. As is standard, electricity exports are not subject to the electricity tax in the Netherlands but may be subject to electricity taxes elsewhere. The electricity industry's own use, as well as transmission and distribution losses are not taxed either.

- Besides EU-ETS covered facilities, the industry carbon levy can cover waste incinerators and other facilities emitting large amounts of nitrous oxide. The aforementioned tax base is estimated at 882 $ktCO_2e$.[192]

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Fossil fuels used in private pleasure craft and private planes are taxed but not modelled in CPET due to a lack of consumption data.

[192] Nitrous oxide associated with the energy sector; CAIT data extracted 12/2023: Climate Watch. 2022. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions

New Zealand

Taxes on energy use and greenhouse gases

As at 1 April 2023,[193] the main taxes on energy use in New Zealand were the following:

- Excise taxes, earmarked to the National Land Transport Fund (NLTF), apply to gasoline, LPG and CNG, methanol when used for propellant purposes. There is a legislative framework for imposing local authorities fuel taxes on gasoline automotive diesel, biodiesel and ethanol. Auckland Council is the only local authority that has introduced such taxes. Gasoline and diesel used in the Auckland region is additionally subject to a surcharge of NZD 0.10 per litre (plus GST). However, the Government has announced that it will end regional fuel taxes on 30 June 2024.
- In addition, several levies apply at very low rates, compared to the excise taxes.
    - The Motor Vehicle (MV) levy additionally applies to gasoline when used for propellant purposes.
    - The Petroleum or Engine Fuel Monitoring (PEFM) levy additionally applies to gasoline, automotive diesel, biodiesel and ethanol.
    - The Gas Safety, Monitoring, and Energy efficiency (GSMEE) levy applies to natural gas used for purposes other than electricity generation and non-energy use in transformation processes (e.g. methanol production).

The Energy Resources Levy imposes a levy on the production of open-cast coal, and from natural gas produced from discoveries made before 1 January 1986, irrespective of where these fuels are consumed (domestically orabroad). As a supply-side tax, in line with CPET methodology and previous vintages, it is not covered in the database. Road user charges, based on distance travelled and the type and weight of the vehicle, apply to the consumption of diesel for road use. Since road user charges affect different behavioural margins than a tax on fuel use (e.g. distance-based charges do not create a direct incentive to economise on fuel use), they are not included in the CPET database and do not show in the energy tax profiles for New Zealand. From 1 April 2024, road user charges will apply to owners of electric vehicles and plug-in hybrid vehicles.

New Zealand does not levy a fuel-based carbon tax. Instead, New Zealand operates an emissions trading system that covers CO_2 and other greenhouse gas emissions from energy use, industrial processes, forestry, agriculture, and waste. Importers of HFC and PFC in goods and motor vehicles, who are not required to be participants in the ETS, pay the Synthetic Greenhouse Gas (SGG) Levy at a level updated annually to reflect prevailing ETS costs.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Based on population data, CPET assumes that 35% of energy use in the road sector takes place in the Auckland region, which has an additional fuel tax until 30 June 2024.
- Diesel used for railway transport is taxed. Diesel used for domestic navigation is subject to the PEFM. Jet fuel and aviation gasoline are not taxed.
- Fossil fuels used in the industry, residential and commercial sector are not taxed, with the exception of gasoline, which is subject to the PEFM levy and the LAF tax.[194]

[193] Changes to gasoline and diesel taxes after that date are not taken into account.

[194] Gasoline use benefits from a full refund on the excise tax and the MV levy, and is thereby only subject to the PEFM levy and the LAF tax (New Zealand Transport Agency, 2018).

- Fuel oil, coal and coke are not taxed.
- Solid biofuels and other renewables are not taxed. Biogasoline (methanol) is taxed at a lower rate, it is assumed all biogasoline consumed is methanol.
- LPG is not taxed except if used as a propellant for automotive purpose.
- No specific taxes on energy use apply in the electricity sector.
- For simplicity, CPET will illustrate SGG coverage under the New Zealand ETS.

Due to data constraints, the following taxes or tax exemptions are not modelled:

- The distance-based road user charges.
- The special rate for biogasoline composed of petrol and ethanol blend.

Nigeria

Taxes on energy use and greenhouse gases

As at 1 April 2023, there were no specific taxes on energy use in Nigeria.

Petroleum products, and fuels more generally, are not taxed and neither is electricity consumption.

Nigeria levies multiple taxes, which impact energy supply and use. They do not fall in the scope of the database methodology and are therefore not included.

- The *Petroleum Profits Tax Act* (1990) provides a legal framework for the taxation of extractive industries (i.e., oil and gas companies) in Nigeria.
- Nigeria adopted multiple policies for taxing and penalising gas flaring, a highly polluting activity during oil extraction. For instance, the *Flare Gas (Prevention of Waste and Pollution) Regulations 2018* introduced so-called Permits to Access Flare Gas, which operators need to purchase to obtain the right to emit. Permits per 28.3 m^3 methane flared cost of USD 0.5 for operators producing < 10 000 bbl/d and USD 2 for operators producing > 10 000 bbl/d. Further, the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) released the *Guidelines for Management of Fugitive CH_4 and GHG Emissions in the Upstream Oil and Gas Operations in Nigeria* (2022), which stipulate emissions monitoring requirements, operational and equipment standards and the obligation for operators to develop and submit GHG Management Plans.
- The standard VAT rate of 7.5% applies to electricity consumption but not to use of petroleum products or natural gas.

Nigeria does not collect taxes on carbon or other GHG emissions, not does it operate an emissions trading system.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2023:

- Electricity end-user tariffs that distribution companies are allowed to charge their customers fall short of end-user cost-reflective tariffs since multiple years. According to the Nigerian Electricity Regulatory Commission (NERC), subsidies payments by the government amounted to NGN 645 billion in 2023, a strong increase from NGN 144 billion in 2022. NERC estimates electricity subsidies to continue surging to NGN 1600 billion in 2024 with a spending of NGN 264 billion in January and February alone.[195]
- In June 2023, Nigeria removed its longstanding fuel subsidies on gasoline (Premium Motor Spirit, PMS). For the period of January to June 2023, the government budgeted NGN 3.36 trillion[196]. The government attempted since 2012 to reform national fuel subsidies to ease the financial burden on the federal budget, however, plans to remove the fuel price cap and allow for a marked-based pricing mechanism had been reverted and delayed multiple times.[197]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The shortfall in electricity tariffs is modelled as a subsidy across all electricity output without distinguishing between users or distribution companies due to consumption data constraints. The market (remittance) shortfall owing to non-payment by customers is not illustrated.

[195] Vanguard (2024-03-26). Electricity subsidy to hit N4.9trn in 10 years.
[196] KPMG (2023). 2023 Federal Government Of Nigeria Budget, Achieving Fiscal Consolidation in a Transition Year.
[197] IMF (2022), Nigeria Selected Issues. Nigeria's Fuel Subsidy Reforms: Developments, Reversals, and Lessons.

- The subsidies for gasoline have been allocated across all gasoline consumption reported.

Norway

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and GHG emissions in Norway, were the following:

- The Road Usage Tax on Engine Fuel (*Veibruksavgift på drivstoff*), classified as a fuel excise tax according to the CPET methodology, applies to biodiesel, bioethanol, diesel, gasoline, natural gas and LPG used in road transport.
- An Electricity Excise Tax (*Avgift på elektrisk kraft*) applies to electricity consumption.
- The Excise Duty on Power (High-Price Contribution) (*Avgift på kraftproduksjon (høyprisbidrag)*, classified as an electricity input tax according to the CPET methodology, applied from September 2022 to October 2023 to electricity generated by hydro and wind power plants of a monthly average price above NOK 0.7 /kWh.
- The Onshore Wind Power Tax (*Avgift på landbasert vindkraft*) of NOK 0.02 /kWh generated (2023) has been introduced in July 2022 and applies to wind power plant operators subject to licensing. It is classified as an electricity input tax according to the CPET methodology.
- A CO_2 Tax on Mineral Products (CO_2-*avgift på mineralske produkter*) applies to aviation gasoline and kerosene, diesel, fuel oil, gasoline, kerosene, LPG, mineral oil, natural gas at a general rate of NOK 952/tCO_2e.[198]
- A CO_2 Tax on Emissions from Petroleum Activities on the Continental Shelf (CO_2-*avgift I petroleumsvirksomheten på kontinentalsokkelen*) is levied on emissions from fuel combustion (covered by the EU ETS) at a rate of NOK 725 /tCO_2, and on emissions not covered by the EU ETS at a rate of NOK 952 /tCO_2e.
- An F-gas tax (*Avgift på HFK og PFK*), classified as a carbon tax according to the CPET methodology, applies to HFC and PFC emissions with a nominal rate of NOK 952 /tCO_2e.[199]
- A tax on Sulphur hexafluoride (SF_6) (*Avgift på SF_6*) was introduced in 2023 with a tax rate of NOK 952 /tCO_2e.

Norway participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Fuel combustion that is subject to the EU ETS faces a reduced rate of the CO_2 Tax on Mineral Products. While mineral oil use under the EU ETS was previously fully exempt from the CO_2-tax until 2023, it is now subject to a tax of 9% of the standard rate. LPG remains fully exempted. Domestic aviation subject to the EU ETS faces 65% of the standard CO_2 tax rate and natural gas use covered by the EU ETS faces 3.5% of the standard rate. The offshore petroleum and gas industry, which accounted in 2022 for 24.5% of Norway's GHG emissions, faces special provisions. While the sector is covered by the EU ETS, is also subject to an additional CO_2 tax rate of NOK 725 /tCO_2 on natural gas and mineral oil combustion. In addition, natural gas (methane and NMVOC), vented by the offshore industry faces a tax rate of NOK 952 /tCO_2e.

Norway abolished its Base Tax on Mineral Oil (*Grunnavgift på mineralolje*) in January 2023. It previously applied to liquid mineral oils used off-road, e.g., for heating, at a standard rate of NOK 1.74 per litre and a reduced rate for specific industry purposes.

Norway further introduced in 2022 a Tax on Waste Incineration (*Avgift på avfallsforbrenning*). The tax rate in 2023 was NOK 238 /tCO_2 and has been increased and differentiated between EU ETS and non-EU ETS emissions in 2024. The tax is calculated by multiplying the amount of waste delivered to an incineration facility measured in tonnes by a standard emissions factor of 0.5498 /tCO_2 per tonne of

[198] The rate increased from NOK 766/tCO_2e in 2022 and NOK 591/tCO_2e in 2021.

[199] The rate was NOK 591 /tCO_2e in 2021 and NOK 500 /tCO_2e in 2018.

waste. To incentivise sorting and recycling of fossil materials at the facility level, incineration facility may apply for the use of a facility specific emission factor, if they can prove to the Norwegian Environment Agency that the fossil material content of the incinerated waste is lower than the assumed standard rate of 54.98%. As the Norwegian Tax on Waste Incineration is expressed in CO_2 emissions and its design allows to approximate proportionality, this tax is included in the scope of the CPET methodology.

Country-specific assumptions

- Natural gas and LPG used in greenhouses are subject to a reduced CO_2 tax rate of NOK 0.15 /m3 and NOK 0.23 /kg, respectively, while other uses of natural gas and LPG in the agricultural sector are subject to the full CO_2 tax. Based on physical consumption data provided by the Norwegian administration in 2021, it is estimated that 84% of natural gas and LPG use in agriculture benefits from this reduced rate.
- Fishing and catching in distant waters (more than 250 NM from the shoreline) are exempted from the CO_2 Tax on Mineral Products. These activities account for about 40% of emissions generated through diesel combustion by fishing in 2022.
- It is assumed that all liquid biofuels (i.e., biodiesel, bioethanol or bio jet kerosene) are subject to the Road Usage Tax on Engine Fuel but are fully exempt from the CO_2 tax.
- It is assumed that fossil fuel use covered by the EU ETS accounts for 94% in domestic aviation, 4% in the residential and commercial sector and varying shares for different industry sub-sectors such as iron and steel, chemicals, food production, non-metallic minerals or wood production.
- It is assumed that in 2023 99% of the electricity from wind power is generated by onshore wind power plants.
- Revenues from the Excise Duty on Power (High-Price Contribution) are listed with NOK 8 200 million in the National Budget (2023-2024)[200] and applied to the electricity generated by hydro and onshore wind power plants.
- Due to data constraints, the Road Usage Tax on Engine Fuel tax exemption on fuel used for a boat or snowmobile in areas without roads.
- Norway levies a tax on NO_X emissions, but the tax does not apply nitrous oxide (N_2O) and is hence outside the scope of the database.
- Norway levies a Lubricating Oil Tax of NOK 2.54 per litre, however, this tax applies to non-energy uses and is hence outside the scope of the database.
- In addition to an income tax, income generated from petroleum extraction is taxed through a resource rent tax at 56%, but this tax is out of the scope of the database.

[200] Prop. 1 LS (2023-2024). https://www.regjeringen.no/no/dokumenter/prop.-1-ls-20232024/id2998665/

Panama

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Panama were the following:

- The Tax on consumption of fuels and petroleum derivatives (*Impuesto al Consumo de Combustible y Derivados del Petróleo)* is levied on diesel, gasoline, biogasoline, fuel oil and kerosene consumption.

No tax on electricity consumption has been identified.

Panama does not levy taxes on carbon or other GHG emissions, nor does it operate a GHG emissions trading system.

Table 10. Energy taxes on petroleum products in Panama as at 1 April 2023

Rates in PAB per GAL	Diesel	Fuel oil	Gasoline	Biogasoline	Kerosene	LPG
ICCDP	0.25	0.15	0.6	0.54	0.13	0

Source: art. 1057-G Código fiscal

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2018 and 2020:

- Three funds – the *fondo de estabilización tarifaria* (*FET*), the *fondo tarifario de occidente* (*FTO*) and, since April 2020, the *fondo de Estabilización Tarifaria Extraordinario por efectos del COVID-19* – help to stabilize the electricity prices, up to PAB 269.00 million in 2022[201] and are financed by the government.[202]
- LPG cylinders are generally subject to price cap and subsidised up to PAB 115.46 million in 2022.[203]
- Certain categories of users (agriculture sector, senior citizens etc.) may further benefit from electricity tariffs discount. As these take the form of cross-subsidies, they are not considered according to the CPET methodology.
- Gasoline and diesel consumption are subject to price cap set by government but not related budgetary transfers could be identified, suggesting that the price gap was not binding.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The electricity subsidies have been computed by allocating the total amount of the subsidy across all consumption from households and commercial sectors, assuming that the industrial sector was not concerned.
- Fuel excise taxes are assumed to apply for all fuel uses.

Due to data constraints, the following tax rates or subsidies are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Exemption for fuel used by public administration.

[201] Cuenta General del Tesoro - Ministerio de Economía y Finanzas de Panamá (mef.gob.pa);

[202] INFORMACIÓN SOBRE LOS SUBSIDIOS A CLEINTES DEL SECTOR ELÉCTRICO EN PANAMÁ (asep.gob.pa)

[203] Cuenta General del Tesoro - Ministerio de Economía y Finanzas de Panamá (mef.gob.pa)

Paraguay

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Paraguay were the following:

- The *impuesto selectivo al consumo (ISC)*, classified as a "fuel excise tax" according to Carbon Pricing and Energy Taxation (CPET) methodology, applies as *ad valorem* on gasoline, aviation gasoline, kerosene, jet kerosene, diesel, fuel oil and LPG.

Several reduced rates for the ISC have been implemented in 2022 but are not longer in effect.

No tax on electricity consumption was identified.

VAT standard rate of 10% applies to electricity, petroleum products being exempted according to art. 100 of law 6380/19. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Paraguay does not collect carbon taxes or taxes on other greenhouse gases emissions.

Paraguay does not operate an emissions trading system for greenhouse gas emissions.

Table 11. Energy taxes on petroleum products in Paraguay as at 1 April 2023

Rates in percent per Litre	**Diesel**	**Fuel oil**	**Gasoline**	**Kerosene**	**Jet kerosene**	**LPG**
ISC	18%	10%	34%	10%	0%	10%

Note: gasoline for octane between 88 and 97 octanes
Source: decreto 3109/2019 (still valid in 2023)

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- A subsidy[204] to compensate the social tariff of electricity is planned in the budget.[205] However, the figures executed for 2022 and 2023 are null, and are assumed to be pending as in previous years.[206] Consequently, no electricity subsidy was recorded even if the electricity sector seems subsidised according to IMF data, and the national company ANDE generates losses.[207]

Note that the following subsidies were not modelled, due to data constraints or (time) scope:

- A stabilisation fund was briefly adopted in March 2022.[208]
- Subsidies to maintain the cost of public transport low.[209]

[204] Since 2020, the social tariff compensated by a transfer from the ministry of finance, and not by lower VAT and income tax from ANDE https://informacionpublica.paraguay.gov.py/public/357049-RespuestaalaSolicitudN50403-2021-TarifaSocialpdf-RespuestaalaSolicitudN50403-2021-TarifaSocial.pdf
[205] https://www.mef.gov.py/pgn-2024/archivos/EJECUCION%20GASTOS/EJECUCION.pdf p. 59 "SUBSIDIO POR TARIFA SOCIAL DE LA ANDE »
[206] https://informacionpublica.paraguay.gov.py/public/357049-RespuestaalaSolicitudN50403-2021-TarifaSocialpdf-RespuestaalaSolicitudN50403-2021-TarifaSocial.pdf
[207] archivo.php (hacienda.gov.py) p. 210, https://www.abc.com.py/economia/2023/07/06/la-ande-registro-otro-ano-de-deficit/
[208] https://www.swissinfo.ch/spa/congreso-de-paraguay-deroga-subsidios-a-combustibles-de-la-estatal-petrolera/47510442
[209] https://www.abc.com.py/economia/2023/08/29/baja-del-gasoil-reducira-subsidio-no-precio-del-pasaje-dice-viceministro/

- A subsidy for gasoline used by taxis has been implemented in September 2023.[210]

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The *ad valorem* taxes are computed by applying the rates directly to the prices published by Petropar for 2023. For all but virgin naphtha and LPG, the prices are from April 2023[211]. For virgin naphtha and LPG, they are from December 2023 due to lack of data[212].
- Gasoline consumed for automotive purpose is assumed to be shared between 15% of petrol with less than 88 octanes ("nafta 85") and 85% of petrol with more than 88 octanes ("nafta 90" and "nafta 95") according to 2023 sales data[213]. Gasoline used in industry is assumed to be "virgen nafta". Taxation of petrol with 97 octanes or more is not modelled due to the low consumption. Aviation gasoline taxation is not modelled due to lack of consumption data reported.
- Diesel consumed domestically is assumed to be shared between 13% of type I (premium) and 87% of type III (regular) according to 2023 sales data[214].
- Biogasoline is assumed to be taxed as virgin gasoline.
- Tax rates for kerosene and fuel oil, whose consumption is very low, were assumed to be the same as diesel, due to lack of data on prices.
- Coal and petroleum coke are assumed to be untaxed.
- Gasoline, biogasoline, diesel, kerosene and fuel oil are assumed to be taxed equally for all uses.
- For Type III Diesel, a reduced tax base of PYG 3,777.78 per litre is considered, according to Art 15 of Decree No. 3109/19, so a fixed reduced rate of PYG 680 per litre.
- For Type I Diesel, 75% of the tax base is fixed at PYG 3,777.78 per liter; the remaining 25% is calculated on the market price, according to Art 15. of Decree No. 3109/19.
- For virgin gasoline, a reduced tax base is established, taking into account 60% of the market price of RON 85 gasoline, according to Decree No. 3785/20.

[210] https://surtidoreslatam.com/como-se-aplicara-el-bono-de-gasolina-para-taxistas/
[211] Fuel Products (mic.gov.py)
[212] Current fuel prices PETROPAR – Petropar – Petróleos Paraguayos
[213] Fuel Products (mic.gov.py)
[214] Fuel Products (mic.gov.py)

Peru

Taxes on energy use and greenhouse gases

As of April 1, 2023, the main energy taxes in Peru were the following:

- The Selective Consumption Tax *(Impuesto Selectivo al Consumo - ISC) on fuels*, classified as a fuel excise tax under the CPET methodology, taxes the consumption of coal, diesel, including blends of diesel with biodiesel, gasoline, including biogasoline, and fuel oil. Pure biodiesel, LPG and vehicular natural gas (VNG) are not taxed under the ISC.
- The Fuel Harmfulness Index (*índice de Nocividad a los Combustibles* - INC) is one of the criteria used to establish the ISC that is levied on fuels and vehicles, better incorporating the environmental criterion and the polluter-pays principle, that is, that users of fuels will have to pay more taxes for using a more polluting fuel than another. Carbon dioxide is not included in the INC.
- The *Impuesto al rodaje*, classified as a special tax on gasoline, is levied at a rate of 8% on the consumption of gasoline only at the producer level, applied on the ex-plant price or the CIF value in the case of importation.

It is worth noting that there are two contributions set by the *General Law of Rural Electrification* and the *Law of the Electrical Social Compensation Fund* which levied on electricity consumption. As these take the form of cross-subsidies, they are not taken into account according to the CPET methodology. No other taxes on electricity consumption have been identified.

Peru does not levy a tax on carbon dioxide or other GHG emissions. In setting the structure of the ISC rates, however, an index expresses a scale of harmfulness of various fuels used in the domestic market, taking as a reference base the cleanest fossil fuel available in the country (VNG).
Peru does not operate a GHG emissions trading system.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2018 and 2020:

- The Fuel Prices Stabilization Fund (*Fondo para la Estabilización de Precios de los Combustibles Derivados del Petróleo - FEPC*), created in 2004, set bands prices to prevent the high volatility of international oil prices from being transferred to Peruvian consumer prices. For instance, it subsidizes the prices of LPG, as well as automotive diesel and fuel oil used for power generation. The fund is financed by a surcharge on fuel consumption when the price is below the set minimum price. Therefore, they are considered cross-subsidies and not included in CPET.[215]
- The Fund for Energy Social Inclusion (*Fondo de Inclusión Social Energético – FISE*) manages, among other programmes, the LPG Voucher programs and refunds for residential electricity tariffs. Nevertheless, as the fund is financed by several taxes on energy products (surcharge on the monthly billing of free electricity users of the interconnected system, surcharge on the supply of liquid products derived from hydrocarbons and gas liquids, surcharge on the monthly billing of charges to natural gas pipeline transportation), they are considered to be cross-subsidies and therefore not included in CPET.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Fuel excise taxes are assumed to apply across all fuel uses.
- Return of the ISC to the hauliers. the benefit of a refund equivalent to 53% of the Selective Consumption Tax (ISC) which is part of the selling price of B5 and B20 diesel fuel with a

[215] Fuel Price Stabilization Fund | Peruvian Institute of Economics (ipe.org.pe)

sulphur content of 50 ppm or less, purchased from wholesale distributors and/or retailers or retailers of fuels with electronic proof of payment, for a period of three years from 1 January 2020. It is assumed 20% of the consumption on road is concerned.

- The special tax on gasoline is applied to prices without VAT and profit margin.

Due to data constraints, the following tax rates or subsidies are not included in the CPET database:

- Exemption from ISC and IGV applicable to oil, natural gas and its derivatives in Amazonia, according to Law N°27037.

The following measures have not been taken into account as they are out of the scope of CPET:

- The standard VAT rate of 18% applies to petroleum products. The ISC is part of the VAT tax base.
- Tax benefits to mining and hydrocarbons. This benefit consists in the refund of the VAT and Municipal Promotion Tax to the holders of the mining and hydrocarbon activity during the exploration phase. Through Emergency Decree 021-2019 extending the validity of Laws 27 623 and 27 624 it has extended this benefit until 31 December 2022, concluding that this will ensure the sustainability of exploration investments.
- Depreciation of Investment in the electricity generation activity based on water resources or based on other renewable resources. (Legislative Decrete N° 1058).

Philippines

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in the Philippines were the following:

- Excise taxes apply to several product categories like beverages, cosmetics, tobacco, and fuels. Specifically, the tax applies to coal and coke, fuel oil, diesel, gasoline (including aviation gasoline), liquid biofuels when used as propellants, LPG, kerosene (including aviation kerosene), and other petroleum products in accordance with the "Tax Reform for Acceleration and Inclusion (TRAIN)" Act.
- Electricity consumption attracts a local franchise tax for all customer classes plus an energy tax for residential users.

The statutory rates of excise taxes on fuels have undergone staggered increases until 2020 as foreseen in the TRAIN Act, with the table below summarising the information for the main energy products.

In addition, there is a standard VAT of 12%. VAT rates are registered for information but not included in the calculation of effective tax rates. It applies to electricity consumption and most fuels (biofuels are exempt and sale of electricity generated from renewable energy sources is subject to a zero percent VAT).

Philippines does not collect carbon taxes or taxes on other greenhouse gases emissions.

Philippines does not operate an emissions trading system for greenhouse gas emissions. A carbon pricing scheme is under consideration.[216]

Table 12. Excise tax rates on energy products.

Tax rates by year (in PHP per litre)	Diesel	Fuel oil	Gasoline	Kerosene	Aviation Kerosene	LPG (kg)	Natural gas	Coal and coke (kg)
2018	2.50	2.50	7.00	3.00	4.00	1.00	-	0.05
2019	4.50	4.50	9.00	4.00	4.00	2.00	-	0.10
2020-…	6.00	6.00	10.00	5.00	4.00	3.00	-	0.15

Note: Tax rates are on a Philippine peso (PHP) per litre basis except for LPG, coal and coke (PHP/kg), LPG for other purpose than motive power
Source: TRAIN Act

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- The National Power Corporation (NPC), responsible for Missionary Electrification and the Small Power Utilities Group, received PHP 5.076 million as a budgetary support from the national government.[217]

[216] https://carbon-pulse.com/252043/
[217] https://www.dbm.gov.ph/wp-content/uploads/BESF/BESF2023/E10.pdf

- Government provided subsidies in responses to energy price rise starting from 2021. PHP 2.5 billion were spent for public utility vehicles (PUV), taxis and delivery services drivers in 2022.[218] Farmers and fisherfolks benefitted from PHP 500 million.[219]

It is also worth noting there are two special electricity consumption rates in favour of senior citizens and low-income households (lifeline), cross-subsidised by other consumption classes. They are assumed to be fully compensated, and thus are not modelled according to Carbon Pricing and Energy Taxation (CPET) methodology.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Natural gas is assumed to be locally extracted natural gas and thus always exempted.
- Liquid biofuels are taxed when used as propellants and their consumption in the agriculture and fishing sector is assumed exclusively for such motive power.
- LPG used for motive power is taxed at the equivalent rate as the excise tax on diesel fuel oil, that is PHP 6 per kg since 2020.
- The amount received by NPC was modelled as a universal subsidy towards all electricity output.
- Rate per kWh rate of the local franchise tax of 0.50% and of the energy tax on electricity was recorded with maximum typical consumption of 5000 kWh used as an upper bound.
- The subsidy for farmers and fisherfolks was assumed to concern diesel and gasoline and was allocated across all diesel and gasoline consumption in the agriculture and fishing subsectors.
- Subsidies for public utilities vehicles, taxis and delivery services drivers are assumed to cover 50% of diesel consumption and 10% of gasoline consumption and be equally allocated across all the resulting energy consumption.

Due to data constraints, the following tax rates or subsidies are not included in the CPET database:

- Special rates for indigenous petroleum are not modelled.

[218] https://www.dbm.gov.ph/index.php/management-2/332-govt-allots-p4-billion-in-fuel-subsidies-for-puv-drivers-farmers-fisherfolks

[219] https://www.dbm.gov.ph/index.php/management-2/454-dbm-releases-p3-0-billion-for-fuel-subsidy-and-discount-programs ; https ://www.da.gov.ph/media-resources/da-annual-reports/ ; https://www.dbm.gov.ph/wp-content/uploads/GAA/GAA2022/VolumeI/DA/A.pdf

Poland

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Poland were the following:

- Excise duties (*Podatek akcyzowy*) apply to liquid and solid fossil fuels, including specified uses of diesel, gasoline, fuel oil, LPG, natural gas, biodiesel and biogasoline, as well as to electricity.
- The Fuel Surcharge (*Opłata paliwowa*), classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, biodiesel, biogasoline and LPG, when used for automotive purposes.
- The Emission Fee (*Opłata emisyjna*) applies to gasoline and diesel used as a fuel for propellant or stationary motors.

Energy and carbon taxes in Poland are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Poland has environmental taxes on emissions from various gases (*opłaty za gazy wprowadzane do powietrza*) including GHGs. It taxes carbon dioxide, classified as a carbon tax according to CPET methodology. Further, it levies taxes on methane, nitrous oxide and F-gas (sulphur hexafluoride, perfluorocarbons, hydrofluorocarbons and halogenated hydrocarbons) which are classified as taxes on other GHG emissions.[220]

Poland participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Biogasoline and biodiesel used as propellant are taxed at the same statutory rates as their fossil fuel equivalents; pure biofuel benefits from a reduced rate, which is not modelled.
- Solid biofuel and municipal wastes are not taxed.
- Fossil fuels for commercial navigation and aviation are exempted from excise duty.
- Coal and coke products, natural gas, as well as electricity, are exempted from excise duty if used in industrial processes (mineralogical, electrolytic and metallurgical processes, chemical reduction) under the specified conditions.
- Coal and coke products and gas products used for heating purposes are exempted from excise duty under the specified conditions, used by residential households, public administration authorities, units of the Polish Armed Forces, educational units, crèches and children's clubs, healthcare units, social assistance organisational units and public benefit organisations; to transport goods and passengers by rail; as well as in agricultural, horticultural and piscicultural works, and in forestry.
- Electricity and fuels used in combined heat and power (CHP) plants and to generate electricity are exempted from excise duty.
- Electricity produced from renewable sources is exempted from excise duty.
- CO_2 emissions from facilities covered by the EU ETS are exempt from the carbon tax. The share of firms covered by the EU ETS is estimated to be 64 % in industry while the electricity sector is fully covered.

[220] Poland also levies other taxes such as charges for non-GHGs or fuel combustion related dust which vary according to the type of vehicles or boilers. These are out of the scope of CPET and therefore not included in the database.

- The rates for environmental taxes per tCO_2e[221] are PLN 0.012 for methane, PLN 0.374 for nitrous oxide and approximately PLN 22.2 in 2023 for F-gases based on an unweighted average of all rates. The tax base affected was estimated at 15 600 $ktCO_2e$.
- For carbon dioxide, the rate was PLN 0.34 /tCO_2, up from PLN 0.31 /tCO_2 in 2021.

Due to data constraints, the following taxes, refunds, or tax exemptions are not included in the CPET database:

- Taxation of fossil fuel used for private aviation and navigation.
- Exemption for electricity produced from generators with a total capacity not exceeding 1 MW per entity consuming this energy.
- Exemption for energy products used for energy-intensive businesses in which a system has been put in place to meet environmental targets or to improve energy efficiency.

[221] Converted with rates for GWP 100 (AR5)

Portugal

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Portugal were the following:

- The energy tax (*imposto sobre os produtos petrolíferos e energéticos - ISP*), classified as a fuel excise tax according to Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, kerosene, natural gas, fuel oil, coal and coke, and LPG.
- The energy tax (*imposto sobre os produtos petroliferos e energéticos*) also applies to electricity consumption and is classified as an electricity excise tax.
- The CO_2 tax, classified as carbon tax, applies to gasoline, diesel, kerosene, natural gas, fuel oil, coal and coke and LPG at a nominal rate of EUR 23.921 per tonne of CO_2[222], unchanged from the last vintage.
- The Road Service Tax (*contribuição de serviço rodoviário*), classified as a fuel excise tax, applies to oil products used in road transport, in addition to the carbon and the energy tax.

Energy and carbon taxes in Portugal are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Portugal levies no tax on other GHG emissions (such as F-gases or N_2O).

Portugal participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. Facilities that are covered by the ETS do not to pay the carbon tax (or receive a full refund) except for coal used for electricity generation.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The contribution to service road applies on diesel, gasoline and LPG used for automotive purpose only and not for stationary motors or heating.
- Commercial diesel used as propellant benefits from a partial refund, and it is assumed 20% of the consumption on road is commercial diesel. Diesel in agriculture and stationary motors is taxed at a lower rate. Diesel used for rail is untaxed.
- Fishing fuels are untaxed.
- Fuels used for commercial navigation and commercial aviation are not taxed.
- Other fossil fuels that are used in petroleum refining processes are not taxed.
- Solid biofuels, non-renewable waste, and other renewables (mainly solar thermal) are not taxed. Biofuels are not taxed if they are produced by approved "dedicated small producers" or are classified as advanced biofuel. Due to lack of data, we assume that all biofuels meet these conditions in the road sector.
- ETS-covered firms do not have to pay the CO_2 tax, except for coal-fired power plants.
- Certain fuels used for electricity generation, including in CHP plants, are subject to ISP and carbon tax with a special rate. It concerns coal (in 2023, 100% of ISP rate and 30% of the carbon tax rate, heavy fuel oil (in 2023, 52% of regular rates if also sulphur content is <0.5%) and natural gas (in 2023, 40% of regular rates). Refinery gas used for electricity generation is assumed to be taxed as LPG. The carbon tax does not apply if the sector is covered by EU-ETS, except for coal inputs for electricity generation. Gas oil used for this purpose is still untaxed,

[222] Ordinance 277/2020, 2020-12-04 - DRE

except in autonomous regions (not modelled) and other energy sources such as renewables are also untaxed.

- Electricity consumption is generally subject to the energy tax (per MWh). Electricity produced by autogeneration plants is generally subject to the electricity excise tax under the same conditions as main-producer electricity plants. Own use by the electricity industry is not taxed, and neither are exports, which may, however, be subject to electricity taxes in other countries.

Due to data constraints, the following taxes, refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- The taxation of fuel used for private aviation and navigation.
- All special rates in the autonomous regions, including rates for gas oil and heavy fuel oil used for electricity generation.
- The exemption for natural gas and LPG consumed for public transportation (as no consumption is reported).
- The exemption for facilities, which develop an energy consumption rationalisation agreement (ARCE) to reduce emissions under the System for Management of Intensive Energy Demand (SGCIE).

Romania

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Romania were the following:

- Excise duty on energy (*Accize pentru produse energetice*), classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, diesel, kerosene, fuel oil, natural gas, LPG, coal and coke.
- An excise tax applies on electricity consumption (per MWh), classified as an electricity excise tax according to the CPET methodology.

Energy taxes in Romania are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Romania participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- A subsidy per litre of liquid motor fuel (diesel, gasoline) in the road transport sector.[223]
- Regulated caps on electricity and natural gas prices replacing the compensation scheme in place since November 2021.
- State aid for promoting high-efficiency cogeneration (CHP).[224]
- Compensation for indirect ETS costs to electro-intensive industry.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Biodiesel and biogasoline in road transport are treated as their fossil fuel equivalents.
- Diesel consumed in agriculture, fishing and railways is in practice untaxed (tax exempted or fully refunded). Diesel consumed in industry or buildings is taxed at the regular rate.
- Fuels used in the agriculture and fisheries sector are practically untaxed.
- In the off-road sector, marine fuels used for domestic navigation and kerosene for commercial aviation are untaxed.
- Fuels used as input to electricity generation are untaxed. CPET assumes that all electricity inputs benefit from this provision.
- Fuels used as inputs to heat plants (including cogeneration plants) are taxed at their respective rates except natural gas and coal which are practically untaxed.

When modelling the energy subsidies specified above to the corresponding base, the following country-specific assumptions were made:

- The motor fuels subsidy is modelled at the rate of RON 0.25 per litre, accounting for the amount of the subsidy covered by the state budget and not including any voluntary commercial discounts by gas stations.

[223] OECD (2023), Energy Support Measures Tracker, "Aiming Better: Government Support for Households and Firms During the Energy Crisis", OECD Economic Policy Papers No. 32, OECD Publishing: Paris, https://doi.org/10.1787/839e3ae1-en

[224] DG COMP State Aid Cases database https://competition-cases.ec.europa.eu/search, https://ec.europa.eu/competition/state_aid/cases1/202207/SA_57969_B0DFE37E-0000-C664-B146-354E1DC6B727_169_1.pdf

- The scheme capping prices of electricity and natural gas is modelled as an electricity output and a fossil fuel subsidy. It is assigned to the buildings sector, namely residential consumption and commercial and public services. The total subsidy amount was approximately RON 900 million.[225] The subsidies were allocated proportionately between the energy base of natural gas consumption and electricity output.
- The subsidy on CHP is granted for the electricity produced in high efficiency cogeneration. The state aid is designed to compensate fixed costs and return on capital besides variable costs, which are mainly fuel costs (about 53% of total costs), for the production of electricity in high-efficiency cogeneration, over a span of years. The value of state aid for promoting high-efficiency cogeneration approximates the 2022 subsidy at RON 0,73 billion. The value of the primary energy economy for the production of both heat and electricity in high-efficiency cogeneration was about RON 0,307 billion, and the costs thus avoided with the CO_2 certificates were about RON 0,137 billion. CPET models 53% of the state-aid as a fossil fuel subsidy assigned to solid fuels and natural gas consumed for electricity generation.
- The compensation for indirect ETS cost, which reached EUR 126 million, is for simplicity modelled to benefit electricity consumption in industry.[226]

[225] Ministry of Finance, Romania

[226] Compensation disbursed in 2022 for 2021 costs, Table 4, Report on the functioning of the European carbon market in 2022.

Russian Federation

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main tax on energy use in Russia, is the following:

- An Excise Tax on Fuel (Акцизы на топливо[227]) applies to gasoline, diesel, and medium distillates (fuel oil).
    - Aviation kerosene is in principle taxed with Article 193 of the Tax Code of the Russian Federation, but deductions are available for airline operators as specified in article 200.[228]
    - Fuel oil and diesel used to generate electricity are taxed.

Russia does not levy a fuel-based carbon tax, excise taxes on electricity consumption and does not tax greenhouse gas (GHG) emissions directly.

The Russian Federation does not levy a carbon tax, but there are a number of payments connected with negative impact on the environment: payments for emissions of pollutants into the air, discharges of pollutants into water bodies, storage, disposal of production and consumption waste, water tax, ecological levy. In July 2021, the Federal Law "On Limiting Greenhouse Gas Emissions" was adopted, establishing, in particular, the obligation of regulated organisations to submit reports on greenhouse gas emissions, maintaining state accounting of greenhouse gas emissions, and the procedure for supporting activities for the implementation of climate projects. These measures fall outside the scope of CPET and are hence not included in the database.

Russia does not operate an emissions trading system (ETS) for GHG emissions.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The energy product motor oils for diesel and (or) carburettor (injection) engines (моторные масла для дизельных и (или) карбюраторных (инжекторных) двигателей)
- refer to diesel used for heating purposes, to fuel for stationary internal combustion engines and for electricity generation.
- Diesel fuel (дизельное топливо) refers to diesel only in terms of its use as a fuel.
- Due to data constraints, it is assumed that 90% of aviation kerosene benefits from a full deduction (civil aviation) and 10% pays the full rate (private flights).
- Middle distillates (fuel oil) no longer benefit from tax reductions as specified in Article 200 of the Tax Code of the Russian Federation. The estimated rate equals the rate for diesel propellant plus RUB 750 per tonne.

[227] Article 193 http://nalog.garant.ru/fns/nk/9ab581f332f422774f6e67652ce80a1c/#block_193
[228] Article 200 http://nalog.garant.ru/fns/nk/948c9c0734b6e944a4727660f2d5a027/#block_200027

Rwanda

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Rwanda were the following:

- An excise duty, classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline and other oil products (diesel, kerosene and fuel oil) at a rate of 183 and 150 RWF per litre respectively, with the exception of aviation kerosene.[229]
    - Excise duty exemption was put in place in May 2021 for fuel used by public transport,[230]which is assumed to be ended in 2023. Additionally, a subsidy on diesel consumed by public transport was introduced in October 2022 and phased out as of 3 April 2023, which is assumed to be an exemption on excise duty for diesel.
- A Road Maintenance Fund levy applies to liquid fossil fuels at a rate of 115 RWF per litre. The RMF is also partially financed through road toll charges, which are outside the CPET scope.[231]
- A strategic reserve levy applies to liquid fossil fuels at a rate of 32.73 RWF per litre.[232]
- While not included in the model as not effective as at 1 April 2023, it is worth noting that the fuel levy was reduced from May 2021 to April 2022,[233] and then removed completely until August 2022.[234] The rate was restored at its original level of RWF 115 per liter.[235] Additionally, a stabilization fee on petroleum prices to recover the losses from previous subsidies has been introduced for FY 2023/2024.
- Rwanda also collects an infrastructure development levy and an African union levy. These apply ad-valorem on eligible imports of a wide range of goods besides fuels. Therefore, they fall outside of CPET scope.
- Rwanda does not levy carbon taxes or taxes on other greenhouse gases emissions and does not operate an emissions trading system (ETS).

Energy use subsidies

The Rwanda Utilities Regulatory Authority (RURA) coordinates the setting of nation-wide maximum retail prices for oil products. It does so in collaboration with fuel suppliers and ministries, passing-through global oil price changes.[236]

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[229] https://www.rra.gov.rw/fileadmin/user_upload/announce/RATES.pdf , https://www.rra.gov.rw/fileadmin/user_upload/RRA_ANNUAL_ACTIVITY_REPORT_2022-2023_FINAL.pdf , https://www.minijust.gov.rw/index.php?eID=dumpFile&t=f&f=74585&token=a47c5459b0fc8a16732080484451fbc6d7a6e134

[230] https://rura.rw/fileadmin/Documents/transport/laws%20and%20order/Body_Decision_Determining__Management_of_Public_Transport_subsidy.pdf

[231] https://rmf.gov.rw/index.php?id=44Should increase to 150 per liter according to FY 2024/2025.

[232] https://www.minecofin.gov.rw/index.php?eID=dumpFile&t=f&f=68370&token=e052b2e93506ed4b6e2ad5f3b7b96a5ccb04a826

[233] the applied rate being 55 FRW per litre from 115 FRW for gasoline and 82 FRW per litre from 115 FRW

[234] https://www.minecofin.gov.rw/index.php?eID=dumpFile&t=f&f=51698&token=e4091382f5997509a5806ee426bf82dfaa314850

[235] https://www.minecofin.gov.rw/index.php?eID=dumpFile&t=f&f=62242&token=6854b95caef0559fa1f73f9dd224da5f1a84d75a, https://www.elibrary.imf.org/view/journals/002/2022/381/article-A001-en.xml? ; https://www.elibrary.imf.org/view/journals/002/2022/381/article-A001-en.xml?rskey=VwZ0cU&result=34

[236] https://www.wto.org/english/tratop_e/tpr_e/s384-03_e.pdf & https://greenfiscalpolicy.org/policy_briefs/rwanda-country-profile/

The following subsidies on energy use were identified to be in operation in 2022:

- Electricity subsidies are transferred to the Energy Utility Corporation Limited (EUCL), the subsidiary of the Rwanda Energy Group (REG) devoted to electricity utility service, from the government. The government, through RURA, determines the tariffs to be charged to end users and a contribution to cover the shortfall between the company's revenue requirement and the set tariff is given through subsidies. The amount of the subsidies reached 11.5 billion RWF in 2022[237] according to the annual reports and financial statements from REG.
- The pump price for gasoline (PMS) and diesel (AGO) were subsidized by the Government of Rwanda to curb the sharp increase in fuel prices.[238] In the absence of other information on the nature and amount of this subsidy, this was not modelled.
- Subsidies not taken into consideration are:
- Grants to the Energy Development Corporation Limited (EDCL), which comprise the development, transmission and energy access subsidiary of REG are outside of CPET scope. Electrification infrastructure and connection subsidies are outside CPET scope.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- LPG and coal are untaxed. Additional tax incentives on taxation outside CPET scope (import tariffs and VAT exemptions) have been granted to LPG.
- Fuel consumed by public transport is assumed to represent 10% of the diesel consumption in the road transport sector.
- Fuels used for electricity generation are untaxed. This includes diesel, fuel oil, natural gas and peat.
- Gasoline and diesel are taxed with the same rates they attract in road transport when consumed for other purposes (residential, industry).
- Charcoal and biomass are untaxed.
- The 2023 excise rates coincide with those of 2021 and 2018.[239] The RMF levy is unchanged since 2016[240] and the strategic reserve levy since its introduction in 2015.
- Natural gas production in Rwanda takes place at Lake Kivu in the Eastern African Rift Zone. The lake contains high concentrations of naturally occurring methane gas which is currently used for electricity generation. No quantification of a subsidy for forgone revenue is modelled due to data constraints. No official quantification of an associated subsidy was found.[241]
- Electricity consumption is untaxed according to CPET methodology. Electricity tariffs may be subject to VAT, which is however outside CPET scope.[242] A regulatory fee that is paid by flat-rate industrial consumers and potentially within CPET scope, is not included due to data constraints.
- The whole amount of electricity subsidies identified corresponds to compensation for low tariffs and is assigned to all electricity output.

[237] Table 3.11 https://www.reg.rw/fileadmin/REG_ANNUAL_REPORT_2020-2021_V3.pdf https://www.reg.rw/fileadmin/user_upload/REG_ANNUAL_REPORT_2022-2023.pdf
[238] https://rura.rw/fileadmin/Documents/docs/report/Annual_Report_for_2021-2022.pdf
[239] https://www.wto.org/english/tratop_e/tpr_e/s384-03_e.pdf
[240] https://rmf.gov.rw/index.php?id=57 & https://rmf.gov.rw/fileadmin/document/Modified_law_on__Road_Maintenance_Levy_2a__2_.pdf
[241] Back of the envelope estimates yield a 5 mln EUR upper bound and negligible proportion of the GDP.
[242] https://www.reg.rw/customer-service/tariffs/

Singapore

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main tax on energy use in Singapore is the following:

- Excise duty on petroleum products, classified as fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to diesel, gasoline, biodiesel blends and natural gas when used as motor fuel.[243]

Singapore does not levy an electricity excise tax.

Singapore has been levying a carbon tax since 1 January 2019, as guided by the Carbon Pricing Act.[244] The tax rate was set at 5 Singapore dollars (SGD) per tonne of CO_2e for the first five years, from 2019 to 2023. The level of the carbon tax was raised to S$25/t$CO_2$ on 1 Jan 2024, and will be raised to S$45/t$CO_2e$ in 2026, with a view to reaching S$50-80/t$CO_2e$ by 2030.[245] The tax is levied only on facilities that directly emit at least 25,000 tCO_2e of GHG emissions annually. Currently, there are around 50 such facilities, which together account for approximately 80% of Singapore's GHG emissions. If we include fuel excise duties that incentivise the reduction of transport emissions, the overall taxation coverage rises to about 90%. The tax covers emissions of CO_2, CH_4, N_20, HFCs, PFCs and SF_6. From 2024 onwards, the coverage will extend to include NF_3 emissions.[246]

Singapore does not operate an emissions trading system (ETS).

Energy use subsidies

No energy use subsidies (targeting fossil fuels or electricity), as defined in the CPET methodology, were identified to be in operation in Singapore in 2022.

Singapore does not subsidise electricity prices.[247] Consumers in Singapore can choose to purchase electricity (i) at the regulated tariff from Singapore Power[248], (ii) from electricity retailers[249], or (iii) from the wholesale electricity market. The regulated tariff takes into account the fluctuations in the global fuel market (i.e., a fuel cost component) and the cost of generating and delivering electricity to homes (i.e., a non-fuel cost component).

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Diesel consumed in domestic navigation, industry and electricity generation is taxed at the standard rate.

When modelling the carbon tax specified above to the corresponding tax base, the following country-specific assumptions were made:

- CO_2 emissions by the electricity sector are fully covered.

[243] https://www.customs.gov.sg/businesses/valuation-duties-taxes-fees/duties-and-dutiable-goods/list-of-dutiable-goods/
[244] https://sso.agc.gov.sg/Act/CPA2018
[245] https://sso.agc.gov.sg/Bills-Supp/27-2022/Published/20221003?DocDate=20221003
[246] https://www.nccs.gov.sg/singapores-climate-action/mitigation-efforts/carbontax/
[247] Measures such as the Temporary Electricity Contracting Support Scheme (TRECS) and U-Save rebates are out of CPET scope. The former is associated with no government transfers and the latter is conditional on property type and not proportional to energy use.
[248] Consumers choosing Singapore Power buy at the wholesale electricity market/Uniform Singapore Energy Prices (USEP) which fluctuates half-hourly, or regulated tariff.
[249] This refers to Singapore's open electricity market with various price plans.

- 90% of energy related CO_2 emissions by the industry sector are assumed to be emitted by facilities that are above the coverage threshold of 25,000 tCO_2e per year.
- The residual coverage (which together with electricity and industry sectors, comprise 80% of national emissions) is assigned to other GHG.

Slovak Republic

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in the Slovak Republic were the following:

- Fuel excise taxes, applies to certain forms of use of mineral oils (*Spotrebná daň z minerálneho oleja*), as well as gas *(Spotrebná daň zo zemného plynu*) and coal (*Spotrebná daň z uhlia*) but not to the fuels used to generate electricity.
- Electricity excise tax (*Spotrebná daň z elektriny*) applies to electricity use (tax per MWh) when consumed by businesses.

Energy taxes in Slovakia are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

The Slovak Republic does not levy a fuel-based carbon tax and does not tax GHG emissions directly.

The Slovak Republic participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Biodiesel and biogasoline are taxed at the same statutory rates as their fossil fuel equivalents.
- Wastes and non-liquid biofuels are not taxed.
- Coal and coke products are taxed when used for business only.
- Natural gas is taxed at a lower rate when used for heating purposes, and LPG is exempted for heating.
- Fuels used for certain uses (chemical reduction, mineralogical, metallurgical, and electrolytic processes are untaxed), as well as fuels used in CHP.
- Natural gas is untaxed for dual-use, mineralogical processes, CHP, rail, production of electricity, losses in energy transmission, and for use other than propellant or as a fuel for heat production.
- Other fossil fuels (mainly by-products of industrial processes such as blast furnace gas, coke oven gas, converter gas, and refinery gas) are not taxed.
- All energy sources used to generate electricity are untaxed.
- Electricity consumption is subject to an electricity excise tax (per MWh), when used for business purposes other than rail transport and for certain uses (chemical reduction, etc), and when not generated by renewables sources. Electricity produced by autogeneration plants is subject to electricity excise taxes under the same conditions as main-producer electricity plants. Electricity exports are not taxed in the Slovak Republic but may be subject to electricity taxes elsewhere.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Taxation of private navigation and aviation.
- Various exemptions of electricity consumption are not modelled due to data constraints, such as exemption for electricity produced from renewable energy; from autogeneration for own use for installation below 5MW or from cogeneration plant if it is supplied directly to the final consumer of electricity or consumed by the person who produced it for a maximum period of 12 years after the cogeneration plant has been put into service.

Slovenia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gases (GHG) in Slovenia were the following:

- An energy tax (Trošarina na energente), classified as a fuel excise tax according to taxing energy use methodology, applies to specified uses of oil products, natural gas and coal and coke consumption, as well as a surcharge on energy end-use efficiency and a surcharge for the promotion of electricity generation from renewable energy sources and high-efficiency cogeneration.
- A carbon tax with a nominal rate of EUR 17.3 per tonne of CO_2 applies to the same fossil fuels subject to the energy tax. As at 1 April 2023, Slovenia had suspended the carbon tax on a major part of fossil energy sources (apart from kerosene, LPG, fuel oil and coal & coke). Since May 2023, the carbon tax was reinstated on gasoline (unleaded petrol) and diesel.
- An electricity tax (Trošarina na električno energijo) applies to energy use (per MWh), as well as a surcharge for the promotion of electricity generation from renewable energy sources, except if used for chemical reduction and electrolytic and metallurgical processes.

Energy and carbon taxes in Slovenia are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which sets minimum rates for the taxation of energy products in EU member states.

Slovenia does not tax other GHG such as fluorinated gases or N_2O emissions.[250]

Slovenia participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors. The firms that participate in the ETS are additionally subject to all applicable excise taxes, including the carbon tax.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Diesel used for commercial transport purposes is taxed lower than non-commercial transport. It is assumed this represents 33% of the diesel and biodiesel used for road transport.[251]
- Biodiesel and biogasoline that are blended with their fossil fuel equivalents are taxed at the same statutory rates; pure biofuels and biogases are exempted from the excise tax; CPET assumes that biodiesel consumed in industry (CHP) is pure.
- Diesel used in rail, stationary motors and for construction for business purposes benefit from an approximate 50% refund; Due to data constraints, CPET assigns this rate for all construction.
- Fuel oil and coal products are taxed only when used for heating purposes.
- Gas oil, LPG and natural gas benefit from a lower statutory tax rate for heating than for propellant.[252]
- Commercial aviation and navigation fuels are exempt from the excise tax and the carbon tax.
- In principle, fossil fuels in the industry sector are subject to both fuel excise and carbon tax. Firms that participate in the EU ETS are subject to a minimum level of taxation according to the 2003 EU Energy Tax Directive.

[250] Slovenia levied a carbon tax on fluorinated greenhouse gases from 2008-2016.
[251] Steadily increasing from 29% in 2018, to 30% in 2019 and 32.6% in 2020.
[252] From 23 June 2021 to 31 December 2025 the excise duty on natural gas for propulsion of road vehicles is 0 EUR. This is a temporary measure aimed at promoting alternative fuels in transport. Other surcharges and the carbon tax still apply.

- Fuels as well as electricity, used in chemical reduction, electrolytic and metallurgical processes are exempted from the excise tax and the carbon tax, but not from the surcharge for high-efficiency cogeneration.
- Diesel used in the agriculture sector is subject to a partial reduction of the excise tax- directly upon the purchase of fuel - the excise tax is the same as the excise tax on gas oil (diesel) used for heating; all fuels used for agriculture are submitted to a carbon tax; fuels used for the propulsion of fishing vessels are exempted from the excise tax and the carbon tax but no such use is reported in the IEA energy balances; other taxes do not apply to gasoline used in the agriculture and fishing sector;
- Other renewables, wastes and solid biofuels are not taxed.
- Inputs into combined heat and power plants that are used for production of heat are subject to carbon tax that equals the minimum level of taxation according to the 2003 EU Energy Tax Directive.
- All energy sources used to generate electricity are untaxed, as well as inputs into autoproducer electricity plants[253] and combined heat and power (CHP) plants for the production of electricity.
- Electricity consumption is generally subject to an electricity excise tax (per MWh). Electricity produced by autogeneration plants is subject to electricity excise taxes under the same conditions as main-producer electricity plants. Electricity exports are not taxed in Slovenia but may be subject to electricity taxes elsewhere.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Fuels used for commercial domestic navigation are untaxed, but the IEA does not report any energy use for domestic navigation.
- Fuels used for private aviation are taxed but not modelled.

[253] Alternatively, electricity plants for self-supply of electricity.

South Africa

Taxes on energy use and greenhouse gases

- As at 1 April 2023, the main taxes on energy use and greenhouse gases in South Africa, were the following:
- The Fuel Levy, classified as a fuel excise tax in the Carbon pricing and energy taxation (CPET) database, applies to gasoline, diesel and its biofuel equivalent, as well as to kerosene.
- The Road Accident Fund (RAF) Fuel Levy and the Customs and Excise Levy, equally classified as a fuel excise taxes, apply to gasoline and diesel, and the latter's biofuel equivalent. Diesel consumed for domestic navigation, and fishing purposes benefit from a full refund of the Fuel Levy and the RAF Fuel Levy. Diesel consumed for agriculture, forestry, as well as on-land mining purposes, and open cycle gas turbines electricity generation plants used for peaking demand benefit from a partial refund on the Fuel Levy, as well as from a full refund on the RAF Fuel Levy.[254] Freight rail and harbour vessels benefit from a full refund on the RAF Fuel Levy.
- The Demand Side Management Levy (DSML), classified as a fuel excise tax in CPET, additionally applies to gasoline (95 unleaded petrol in the inland area).
- The Illuminating Paraffin (IP) Tracer Dye levy, classified as a fuel excise tax in CPET applies to diesel to avoid its mixing with kerosene for use in primary production activities.
- The Petroleum Pipelines (PP) Levy, classified as a fuel excise tax in CPET, applies to gasoline and diesel, and the latter's biofuel equivalent (biodiesel).
- The Fuel Levy on the sale of aviation fuels is the only fuel excise tax applicable to aviation fuels.
- A carbon tax is in effect since 1 June 2019. The nominal 2023 rate is R159/tCO_2e (~EUR 7.9). The gradual implementation of the tax provides for the first phase from 1 June 2019 to 31 December 2024 (initially planned to be 31 December 2022) and the second phase from 2025 to 2030. The carbon tax rate increases annually by inflation plus 2 per cent until 2022 and annually by inflation thereafter. Significant activity-specific tax-free emissions allowances range from 60 per cent to 95 per cent apply for the energy combustion, industrial processes and fugitive emissions, and 100% tax-free allowances apply for certain emitters including agriculture, forestry and other land use and waste sectors, implying that effective carbon tax rates are substantially lower. Emissions covered by the carbon tax are those that need to be reported in terms of the Department of Forestry, Fisheries and Environment's Mandatory Reporting Regulations.[255]
- The Environmental Levy on electricity generated from fossil fuels and nuclear in the Republic, classified as an electricity excise tax according to the CPET methodology, applies to electricity consumption. The final consumption of electricity is taxed, unless the electricity was generated from renewable energy sources, from power plants with an installed capacity of not more than 5 MWh, or from combined heat and power

[254] Diesel that benefits from refunds is still subject to the SACU levy, the IP Tracer Dye Levy and the PP Levy.

[255] The carbon tax design is aligned to the mandatory emissions reporting to DFFE and any natural or juristic persons who exceed the DFFE thresholds for reporting, which also functions as the carbon tax threshold, are subject to the carbon tax. Tax bases were the following greenhouses gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). The tax is administered by the South African Revenue Services in the same way as other environmental levies.

cogeneration (CHP). The fuels used to generate electricity are generally not subject to fuel excise taxes.[256] The carbon tax will also not have any impact on the price of electricity in the first phase.

- South Africa also levies a Slate levy on gasoline and diesel.[257] This levy compensates the slate balance for gasoline and diesel linked to delays in pump price adjustments. It is calculated based on over-recovering or under-recovery from last month's sales. This is not included in CPET.
- South Africa does not operate an emissions trading system for greenhouse gas emissions.

Country-specific assumptions

- Due to data limitations,[258] the OECD Secretariat made the following simplifying assumptions when including the carbon tax in the database, identical to the previous CPET edition.
    - As an upper bound estimate of the applicable net carbon tax rate, the basic tax-free allowance of 60%, corresponding to a carbon tax rate of R 63.6 per tonne of CO_2e, was applied to:
        - 90% of fossil CO_2e emissions from the industry sector as defined in CPET (incl. energy industries, such as heat production and petroleum refining), as well as manufacturing industries and construction.
        - 100% of fossil CO_2 emissions related to energy combustion in the agriculture and fishing sector, as well as the commercial sector, and non-specified energy use.[259]
        - 100% of industrial process emissions.
    - As an upper bound estimate of the net carbon tax rate, the basic tax-free allowance of 75%, corresponding to a carbon tax rate of R 39.75 per tonne of CO_2e, was applied to the transport sector as follows:
        - 90% of domestic aviation, domestic waterborne navigation, and railways.
        - 100% of fossil CO_2 emissions from road sector and other transport because petrol and diesel fuel use in road transport are all taxed at the refinery gate as they are administered through the fuel levy mechanism.
    - Activities with a basic tax-free allowance of 100% have been considered as effectively untaxed (corresponding to a net carbon tax rate of R 0).
        - GHG emissions from residential use.
        - Non-CO_2 GHG emissions from agriculture, forestry, and other land use.
        - Non-CO_2 GHG emissions from waste.
    - GHG emissions from the electricity sector as defined in CPET are assumed to be effectively untaxed because in the first phase of the carbon tax (until end 2024) the South African electricity company benefits from a credit against its carbon tax liability.

- The kerosene is assumed to be unmarked, and thus subject to the fuel tax and road fund levy.
- The rise[260] of the fuel levy on the sale of aviation fuel is not considered, as it comes into effect only as of 1 May 2023.
- All diesel consumed for electricity generation is assumed to be during peaking time and taxed with partial refund.

[256] Diesel used for electricity generation is subject to fuel excise taxes and only diesel used in peaking plants benefits from a partial refund on the Fuel Levy (but enjoys a full refund on the RAF Fuel Levy). However, diesel consumption for electricity generation is low relative to other energy sources.

[257] Government Notice No. 920 (www.gov.za)

[258] Such limitations include a lack of information on which share of emissions are not reportable or below the threshold and hence not taxed.

[259] Other emissions from agriculture, forestry and other land use and waste sectors benefit from a 100% free allowance.

[260] za-government-gazette-dated-2023-03-29-no-48330.pdf (gazettes.africa)

- Diesel power plants are assumed to have a capacity below 5 MWH, and so electricity generated is untaxed.
- Reduced rates for diesel consumed for food production, mining, rail, agriculture, fishing and marine have been modelled.
- Domestic aviation is assumed to be mainly for passenger commercial flights and thus untaxed.

Spain

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and greenhouse gas emissions in Spain, were the following:

- A Tax on Hydrocarbons *(Impuesto sobre Hidrocarburos*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to specified uses of liquid and gaseous fuels, including biofuels, as well as to coal tar, crude oil, waste oils and coal and coke-related gases. Hydrocarbons are untaxed when used for commercial navigation on waterways, commercial aviation[261], railways or are used to produce electricity in power plants or to cogenerate electricity and heat in combined power plants.
- A Special Tax on Coal (*Impuesto Especial sobre el Carbón*), classified as a fuel excise tax according to the CPET methodology, applies to specified uses of coal and coke products (excluding peat).
- A Tax on Fluorinated Gases (*Impuesto Sobre Gases Fluorados*)[262], classified as a carbon tax according to the CPET methodology, is proportional to the each gas' global warming potential (up to a maximum tax of EUR 100 per kg). Spain does not levy specific taxes on other greenhouse gases[263].
- The Special Tax on Electricity (*Impuesto Especial sobre la Electricidad*), classified as an electricity excise tax according to the CPET methodology, is an ad-valorem tax applied to electricity consumption by end users.

Energy taxes in Spain are levied within the framework of the 2003 EU Energy Tax Directive, which sets minimum rates for the taxation of energy products in member states.

Spain participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Spain has established taxes on the production of spent nuclear fuel and radioactive waste resulting from nuclear power generation and the storage of spent nuclear fuel and radioactive waste in centralized facilities.[264] Due to limitations for translating them into a rate per unit of energy use, they are not included in CPET.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The F-gas tax is assumed to be levied on all F-gases at an estimated average rate of 8.93EUR per tonne of CO_2 equivalent. The estimation is based on 2020 accrued tax worth 62 million EUR[265] and an emissions base of 6.94 $MtCO_2e$.[266]
- The Tax on Hydrocarbons on waste oil is applied to non-renewable municipal waste.
- In road transport, biodiesel and biogasoline are taxed at the same statutory rate as their fossil fuel equivalents.

[261] Diesel and kerosene used in private pleasure craft and private planes are taxed (not modelled in CPET due to a lack of consumption data).
[262] https://boe.es/buscar/act.php?id=BOE-A-2013-11331&p=20180704&tn=1#a5
[263] A tax on the emission of gases into the atmosphere in the region of Andalusia is not included due to data constraints.
[264] https://boe.es/buscar/act.php?id=BOE-A-2012-15649&p=20210521&tn=1#tii, Ley 15/2012, de 27 de diciembre, de medidas fiscales para la sostenibilidad energética.
[265] Agencia Tributaria Ingresos Tributarios Totales table 6.2.
[266] CAIT data: Climate Watch. 2022. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions

- Fishing fuels and biofuels are not taxed.

Sri Lanka

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Sri Lanka were the following:

- Excise duties on gasoline and diesel according to the Excise (Special Provisions) Act No. 13 of 1989. Excise duties were increased for diesel and gasoline by LKR 25 from January 2023.[267]

Electricity consumption is not taxed.

The standard rate of VAT is 8%, in 2021 and applies to gasoline, natural gas and solid biofuel (coal, charcoal) while several energy products are exempted (electricity, crude oil, kerosene, LPG, aviation fuel, diesel fuel oil and oil for ships). VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Sri Lanka does not collect carbon taxes or taxes on other greenhouse gases emissions.

Sri Lanka does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

The following subsidies on energy use were identified to be in operation in 2022:

- Electricity is sold by the state-owned Ceylon Electricity Board (CEB) at prices below cost-recovery levels. Losses from the CEB amounted LKR 261.869 billion in 2022.[268] Tariffs were increased in August 2022, and LKR 93 billion were transferred to CEB in 2022.[269]
- Net losses from the Ceylon Petroleum Corporation (CPC) are estimated to LKR 615.053 billion in 2022.[270] A monthly retail fuel price adjustment was implemented starting from June 2022.[271]

Regarding other energy products, it is worth noting that:

- There is no discretionary control of LPG prices, and therefore it is not subject to any subsidy.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The Ports and Airports Levy (PAL) and Nation Building Tax (NBT) are broad-based ad valorem taxes resembling VAT and are therefore not included.
- Diesel used for electric generation is assumed to be untaxed.
- Estimates of per unit electricity subsidies were back-calculated from the net loss recorded by CEB and the government transfer to CEB in 2022. This non-fuel electricity subsidy was allocated as a universal subsidy across all electricity output.
- Estimates of per unit electricity subsidies were back-calculated from the net loss in 2022 recorded by CPC. Fuel subsidies were interpreted to affect the following fuels and sectors: automotive gasoline, diesel (road, rail, industry), fuel oil (agriculture, industry, domestic navigation) and residential kerosene. Additionally, fuels used as inputs to electricity generation

[267] A second increase (not included) by LKR 25 per liter occurred as of June 2023. Both increases are to compensate the transfer of liabilities from the CPC to the Treasury. https://www.treasury.gov.lk/api/file/0dd9229c-80f6-4248-9ac6-4e935ae9bf6f ; https://economynext.com/sri-lanka-key-excise-taxes-from-jan-2023-108218/

[268] https://www.treasury.gov.lk/api/file/0dd9229c-80f6-4248-9ac6-4e935ae9bf6f

[269] https://www.treasury.gov.lk/api/file/0dd9229c-80f6-4248-9ac6-4e935ae9bf6f

[270] https://www.treasury.gov.lk/api/file/0dd9229c-80f6-4248-9ac6-4e935ae9bf6f

[271] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/annual_report/2022/en/10_Chapter_06.pdf

and specifically diesel, fuel oil, naphtha were included. Due to data constraints, the subsidies were allocated proportionately to the energy base of each fuel, i.e. one GJ is subsidised equally independently of the petroleum product combusted to produce it.

Sweden

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Sweden were the following:

- The Energy Tax (*Energiskatt*),
  - It applies to most fossil fuel use, as well as to low blends of biofuels in gasoline and diesel and is classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology.
  - It applies to electricity consumption. In this case, it is classified as an electricity excise tax according to the CPET methodology. The standard rate of SEK 0.392 /kWh (2023) applies to residential and commercial use. Consumption in certain Northern municipalities, manufacturing industry and agriculture, forestry and aquaculture benefits from a reduced rate. Electricity use for rail transport is exempted. The reduced rate for electricity use data centres has been abolished as of 1 July 2023.[272]
- The Carbon Dioxide (CO_2) Tax (*Koldioxidskatt*) applies to most fossil fuel use, as well as to low blends of biofuels in gasoline and diesel, at a nominal rate of SEK 1330 (EUR 122)/tCO_2 in 2023.

Energy and carbon taxes in Sweden are levied within the framework of the 2003 European Union (EU) Energy Tax Directive, which e.g. sets minimum rates for the taxation of energy products in EU member states.

Sweden participates in the EU emissions trading system (ETS). The EU ETS provides a common carbon price for large emitters in the electricity, industry, and aviation sectors.

Sweden does not levy tax on other GHG emissions (such as F-gases or N_2O).

Sweden levies a sulphur tax (*Svavelskatt*) on fossil fuel. As it is not considered to be a tax on energy use or GHG emissions in the CPET methodology, it is not included in the database.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The rate applied to gasoline and gas oil for automotive purpose is that of environmental class 1; the rates applied to fuel oil, gas oil and kerosene for other uses than automotive purpose are assumed to be those of labelled oil.
- Unsustainable biofuels and low-blended biofuels are taxed at the same statutory rates as their fossil fuel equivalents. Sustainable high-blended biofuels (including heating biofuels) are exempt from both carbon tax and energy tax.
- As some bioliquids for heating are taxed at the same statutory rates as their fossil fuel equivalents (EU Energy Tax Directive), it is assumed that other liquid biofuels used for heating purposes are taxed at the rate of fossil fuel oil.
- According to the Swedish Energy Agency, consumption of high-blended and sustainable biofuels accounted for 18% in 2021 and 17% in 2023 of total liquid biofuel consumption in in road transport, while the reminder can be considered low-blended or unsustainable.
- Fuels used for commercial navigation and aviation as well as rail transport are untaxed.
- Fuels used in industrial processes are untaxed if the conditions for non-taxation of the EU Energy Tax Directive are fulfilled ("dual use and related exemptions").
- Fuels (except gasoline and highly taxed oil i.e., not labelled) consumed for manufacturing process in industrial activity are eligible to a carbon tax exemption if they are covered by the

[272] Regeringens proposition 2022/23:1

EU ETS. Except gasoline, it is assumed all other fossil fuels are labelled and so eligible to refunds.

- As of 2023, the CO_2 Tax on fossil fuels used for heat production in heating and CHP plants within the EU ETS has been abolished.
- Diesel used as motor fuel in agricultural, aquaculture and forestry benefits from tax refunds. The amounts have been subject to multiple changes since 2021. On 1 April 2023 the tax on diesel used in agriculture, forestry and aquaculture was SEK 199 /m^3. This rate was reduced to SEK 0 /m^3 on 1 July 2023, and then increased to SEK 229 /m^3 on 21 October 2023.[273]
- The fuels used to generate electricity are not subject to the Energy or CO_2 tax, but the electricity sector is fully covered by the EU ETS.
- The use of electricity is subject to a tax per kWh. The tax rate is lower for the residential and commercial sectors in certain municipalities in Northern Sweden (the tax rate is lower by SEK 96 per MWh). The tax rate on the industrial manufacturing processes, agriculture, forestry and aquaculture is SEK 6 /MWh. As is standard, electricity exports are not subject to the electricity tax in Sweden but may be subject to electricity taxes elsewhere.
- Due to data constraints, taxes on diesel and kerosene used in private pleasure craft and private planes are not modelled.

[273] Prop. 2022/23:69; Prop. 2022/23:112

Switzerland

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Switzerland, were the following:

- The Tax on Mineral Oils (*impôt sur les huiles minérales*), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to crude oil, diesel, fuel oil, gasoline, kerosene, LPG, natural gas and waste oil. The Surtax on Mineral Oils (*surtaxe sur les huiles minérales*) applies to these liquid and gaseous fuels when used in road or off-road transport.
- The CO_2 Tax (*taxe sur le CO_2 sur les combustibles fossiles*), classified as a carbon tax according to the CPET methodology, applies to coal and coke, diesel, fuel oil, gasoline, LPG, natural gas when used for heating purposes and to fuel stationary motors at a uniform rate of CHF 120 per t CO_2 since January 2022, increasing from CHF 96 per tCO_2 as a result of previously insufficient emissions reductions (above 67% of 1990 levels).
- Electricity consumption is subject to the Federal Compensatory Feed-in Remuneration Fee *(rétribution à prix coûtant du courant injecté - RPC)*, which is classified as an electricity excise tax according to the CPET methodology.

Switzerland operates an emissions trading system (ETS) on greenhouse gas emissions. Energy use is exempt from the carbon tax if it is covered by the ETS or a legally binding emissions reduction commitment (*engagement de réduction / Verminderungsverpflichtung*), signed between the firm and the Federal Office for the Environment (FOEN).

In addition, multiple tax reductions from the Tax on Mineral Oils and its Surtax are provided for engine fuels used in, among others, agriculture, forestry, professional fishing, by licensed transport companies and snow groomers as well as stationary use for electricity generation. In 2022, licensed transport companies received the largest amount of refund (CHF 111.8 million), followed by agriculture and snow groomers.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumption was made:

- The Swiss Electricity Federal Council provides data on the local taxes paid by network provider and by electricity consumption category. Based on the pre-defined electricity consumption categories, CPET includes unweighted averages for the local taxes paid by households (categories H1 through H8), by business (categories C1 through C3) and by industries (categories C4 through C8).
- Biofuels benefit from a tax relief as far as they fulfil certain ecological and social conditions according to Swiss MOT law/ordinance. They are normally produced and/or imported pure and are later blended with fossil fuels.
- Diesel and gasoline used for domestic aviation, domestic navigation as well as diesel used for railway transport are taxed at the standard rates for propellants. Natural gas used for pipeline transport is taxed at the standard rate for non-propellant use inside the ETS.
- A low share of natural gas consumption in the industrial sectors food production, non-metallic minerals and chemicals was assumed to be subject to a legally binding emissions reduction commitment (*engagement de réduction /*

Verminderungsverpflichtung). In 2022, such reduction commitments covered in total 1.34 Mt CO_2e_q.

- As no fossil fuel use in agriculture is reported in the IEA's energy balances, tax reductions in this sector could not be modelled.
- Due to relatively small quantities in fuel consumption, tax reductions that apply to fuels used in professional fishing, forestry and quarrying of natural stones are not modelled.

Türkiye

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and GHG emissions in Türkiye were the following:

- A Special Consumption Tax (SCT) (*Özel Tüketim Vergisi* (*ÖTV)),* classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to biodiesel, diesel, fuel oil, gasoline, LPG, railway diesel, marine diesel, marine fuel oil and natural gas.
    - Fuels used to generate electricity and for commercial aviation are not taxed.
- An Electricity Consumption Tax (ECT) (*Elektrik tüketim vergisi*), applies to electricity consumption as an *ad-valorem* rate of 1% for industry and transport users, and at an *ad-valorem* rate of 5% for all other users. This tax is collected by municipalities.
    - The Municipality Revenues Law (Law #2464) also contains a Coal Gas Consumption Tax (*Havagazı tüketim vergisi*),[274]

On 16/07/2023 the rates of the SCT increased almost threefold and would have a similar impact on the energy taxation and carbon pricing indicators of Türkiye. However, for comparability across countries, the 1/04/2023 rates are recorded.

Türkiye does not levy a fuel-based carbon tax and does not tax greenhouse gas emissions directly.

Türkiye did not operate an emissions trading system (ETS) during 2023 but is considering a future pilot.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The *per-unit* electricity tax rate is estimated as the product of the 2023 Q1 electricity prices excluding taxes sourced from the IEA ‘s OECD Energy Prices and Taxes quarterly and the *ad-valorem* electricity rate applied to industry and transport users (1%) and to all other users (5%);
- The Electricity and Coal Gas Consumption Tax rate of 1% is applied to the sales price of the electricity consumed in manufacturing and production, transportation, loading, unloading, cooling, wired and wireless telegraph and telephone works and 5% of the sales price of the electricity consumed for other purposes. Due to data constraints, the low rate is applied to all industry and transport uses and the higher rate to all other uses.
- Biogasoline is untaxed but biodiesel is taxed.
- Fuel oil, diesel and natural gas consumed in industry are taxed.
- Natural gas used in pipeline transport and by households is taxed.
- Fossil fuels used in the agriculture and fisheries sector are taxed.
- Kerosene and aviation kerosene are taxed but at zero rate. They are included in the list (I) attached to the Law 4760[275].
- Solvent naphtha (non-energy use) is taxed in the list (I) attached to the Law 4760. Naphtha for energy use is assumed to be untaxed.

[274] The corresponding rate is 5% but no longer relevant in practice as Turkey has stopped using coal gas. The electricity and Coal Gas Consumption Tax has been regulated between articles 34-39 of the Municipality Revenues Law No. 2464

[275] https://www.gib.gov.tr/fileadmin/mevzuatek/otv_oranlari_tum/ozeltuketimoranlari-OpenPage.htm

Uganda

Taxes on energy use and greenhouse gases

As at 1 April 2023, there was a single specific tax on energy use in Uganda:

- The Petroleum Excise Duty (PED) applies to gasoline, diesel and other gas oils, illuminating kerosene and aviation fuels.

In 2021, the Ugandan Parliament passed the Excise Duty (Amendment) Bill 2021, which increased the tax on petrol and diesel by 100 UGX respectively, starting from 1 July 2021.

Table 13. Energy taxes on petroleum products in Uganda

Rates in UGX per L	**Gasoline**	**Diesel (road)**	**Other gas oils**	**Illuminating Kerosene**	**Jet kerosene (commercial)**	**All fuels (electricity generation)**
PED	1450	1130	630	300	0	0

Note: FY 2022/2023, the financial year (FY) in Uganda starts on the 1st of July. Expressed in Ugandan shillings (UGX) per product litre.
Source: Excise duty (amendment) Act 2018 and 2021.

As of 2023, Uganda does not levy a tax on carbon or other GHG emissions and has not implemented a GHG emissions trading system.

Energy use subsidies

No subsidies on energy use have been identified to be in operation in 2023.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Gasoline, diesel and kerosene are taxed uniformly across eligible sectors (i.e., road, industry).
- As fuel oil is not explicitly mentioned in the excise duty bill, it is assumed to be taxed as "other gas oil".
- As LPG is not explicitly mentioned in excise duty bill, it is assumed to be untaxed.
- Jet kerosene consumed is assumed to be consumed only from commercial, registered airline companies and there exempted from the Petroleum Excise Duty. Taxation of jet kerosene used for private aviation is not modelled.

Due to data constraints, the following refunds or tax exemptions are not included in the Carbon Pricing and Energy Taxation (CPET) database:

- Sales to diplomats and embassies exempted from fuel excises.

The following measures are out of scope of the database:

- The standard VAT rate is 18%. Petroleum products are exempted from VAT, but VAT is applied to and other energy products such as electricity, charcoal, or wood.

Ukraine

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Ukraine were the following:

- An excise tax (*АКЦИЗНИЙ ПОДАТОК*), classified as "fuel excise tax" according to Carbon Pricing and Energy Taxation (CPET) methodology, applies to gasoline, jet kerosene, kerosene, diesel, fuel oil and LPG.
- An environmental tax (*ЕКОЛОГІЧНИЙ ПОДАТОК*), classified as "carbon tax", applies to all carbon dioxide emissions from stationary sources.
- An excise tax (*АКЦИЗНИЙ ПОДАТОК*), classified as "electricity excise tax", with an *ad valorem* rate also applies to electricity consumption.
- In addition, there is a standard 20% VAT rate, which is recorded for information but not included in the calculation of effective tax rates.

Ukraine does not levy a tax on other greenhouse gases emissions.

Ukraine does not operate an emissions trading system for greenhouse gas emissions, but is currently developing one, which could be implemented starting from 2025.

Table 14. Energy taxes on petroleum products and natural gas

Rates in UAH per 1000 L	Gasoline	Diesel	Fuel oil	Jet kerosene	LPG	Natural gas
Excise tax	213.5	139.5	139.5	21	52	0

Note: rates for 2023, identical to 2018 and 2021, biogasoline assumed to be taxed as gasoline
Source: Tax code

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- The carbon tax is assumed to apply to all fuels, including biofuels, consumed in the industry, electricity and heat generation sectors. Residential, commercial, road and off-road displacements are assumed to be out of the scope, and agriculture and fishing to be exempted because of smaller installations with emissions below the annual 500 tCO_2e threshold. The carbon tax is modelled by translating the tax rates per tonne of CO_2e (UAH 30 in 2023) to tax rates per of usual metrics (e.g. 1000 litres) with IEA conversion factors.
- Fuels excises are assumed to apply similarly to all uses (e.g. automotive fuel, stationary motors etc.).
- Electricity generated from renewables and from cogeneration plants, whether it comes from autoproducers or main plants, are assumed to be untaxed.
- Own uses and transformation processes are untaxed. Distribution losses are also assumed to be untaxed.
- The "coal and coke" label stands for anthracite, bituminous coal and coke oven coke. The "coal gas" label stands for blast furnace gas, coke oven gas and converter gas.
- The temporary exemption from the environmental tax, starting from January 2023 and the during period of martial law on the territory of Ukraine, for emissions of environmental substances from power generating units owned is assumed to apply to auto generated electricity,

included from combined heat and power sources.[276] Electricity from main electricity producers is assumed to be subject to the environmental tax.

Due to data constraints, the following refunds or tax exemptions are not included in the CPET database:

- Sales to diplomats and embassies exempted from fuel excises.
- Sales or transfer of certain fuels within the same enterprise exempted from fuel excises.
- The first 500 tons of CO_2 emissions from the registered emitters exempted from carbon tax, starting from 2019, as no information available on the share of this consumption in the total consumption by fuels.
- Decreased excise tax for operations related to the sale of aviation gasoline and jet fuel (produced in Ukraine as well as imported), as no aviation gasoline and jet fuel consumption recorded in the energy base.
- Excise tax relief for operations related to the sale of LPG at specialised auctions for the needs of households.

[276] https://ips.ligazakon.net/document/EN230163 ; https://kh.tax.gov.ua/media-ark/news-ark/718493.html ; https://ips.ligazakon.net/document/t222836?an=1

United Kingdom

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in the United Kingdom, were the following:

- A Fuel Duty, classified as a fuel excise tax according to the CPET methodology, applies to liquid fuels (including bioethanol and biodiesel), as well as to LPG and natural gas (including biogases) when used as motor fuel.
    - Diesel used in commercial navigation ("marine") and fishing fuels are relieved from Fuel Duty.
    - Aviation jet fuel (avtur) used on commercial flights is untaxed, but fuel duty applies when used for private pleasure flying. Fuel duty also applies to aviation gasoline, which is typically used in smaller piston-powered aircraft.
    - Heating oil (kerosene) is taxed when used as a fuel in an engine other than in a road vehicle. When used for heating, kerosene is zero-rated.
- A Climate Change Levy (CCL) applies to solid fossil fuels, LPG, natural gas and electricity when supplied to business and public sector users. CCL does not apply to supplies for use in metallurgical and mineralogical processes or for non-fuel uses.
- Carbon Price Support (CPS) rates of CCL and Fuel Duty – represent a Great Britain only instrument covering electricity generation, which is charged in GB in addition to UK ETS participation. The CPS, which is classified as a carbon tax according to the CPET methodology, is set at a nominal rate of GBP 18.00 per tonne of CO_2. CPS applies to gas, LPG, solid fuels, and qualifying oils (including kerosene and bioblends).
    - The CPS is the UK's only direct tax on GHG emissions, but the primary means by which the UK places a price on carbon is through the UK ETS. The United Kingdom operates an emissions trading scheme (ETS) for greenhouse gas emissions that covers large emitters from the industry, domestic aviation and electricity sectors. Permit prices resulting from the ETS apply in addition to energy and carbon taxes.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- The CPS exemption for fossil fuels used in a combined heat and power (CHP) station to generate good quality electricity consumed on-site is assumed to apply to all CPS excisable fossil fuel use for CHP stations.
- All autogeneration electricity plants are assumed to be tax exempt.
- Kerosene in agriculture is assumed to be 50% used for heating (untaxed) and 50% used for stationary motors and off-road engines.
- Due to data constraints, a number of the following tax exemptions are not included in the database, including:
    - The reduced CCL rates for participants in Climate Change agreements.

United States

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use and GHG emissions in the United States were the following:

- The Highway Motor Fuel Tax (HMFT), classified as a fuel excise tax according to the Carbon Pricing and Energy Taxation (CPET) methodology, applies to motor fuels. The HMFT is set at USD 0.183 per gallon on gasoline, biogasoline (ethanol), CNG and LPG, and at a rate of USD 0.243 per gallon on (undyed) diesel, biodiesel, (undyed) kerosene[277] and LNG.
- The General Aviation Fuel Tax (GAFT) applies to gasoline and kerosene used for non-commercial aviation purposes at a rate of USD 0.193 per gallon and USD 0.218 per gallon, respectively.
- The Commercial Fuel Tax (CFT) applies to aviation fuels when used for commercial aviation purposes at a rate of USD 0.043 per gallon.
- The Inland Waterways Trust Fund financing rate (IWTF Tax), classified as a fuel excise tax according to the CPET methodology, applies to all fuels used for domestic navigation purposes at a rate of USD 0.29 per gallon.
- The Leaking Underground Storage Tank (LUST) Trust Fund Tax, classified as a fuel excise tax according to the CPET methodology, applies to all excisable motor, aviation and marine fuels, with the exception of CNG, LNG, and LPG, at a rate of USD 0.001 per gallon.
- The Petroleum Tax comprises the Oil Spill Liability Tax (OSLT) and since 2023 the Hazardous Substance Superfund Tax (HSST). Both are classified as a fuel excise tax according to the CPET methodology and apply to crude oil at a rate of USD 0.09 and USD 0.164 per barrel respectively (approximate total petroleum tax rate of USD 0.006 per gallon).
- At the subnational level, states levy taxes on transport fuels, and these are added to the federal tax rates.[278] CPET includes state taxes in road transport[279] and domestic aviation.[280]

The United States does not levy excise taxes on electricity consumption, does not have a fuel-based carbon tax, and does not tax GHG emissions directly.

In the United States, several emissions trading systems (ETS) exist at the subnational level including the California cap-and-trade, the Massachusetts ETS, the Washington cap-and-invest, and the Regional Greenhouse Gas Initiative (RGGI) spanning multiple states.

Country-specific assumptions

When matching the taxes specified above (net of applicable exemptions, rate reductions, and refunds) to the corresponding tax base, the following country-specific assumptions were made:

- Fossil fuels used in electricity generation are not taxed.
- Diesel use by railways is not taxed.[281]

[277] No such use is reported in the IEA energy balances.

[278] As the IEA energy balances only provide energy use data at the country level, CPET calculates subnational tax bases based on data from the US Energy Information Administration (EIA), which also provides information on state excise taxes.

[279] https://www.eia.gov/petroleum/marketing/monthly/xls/fueltaxes.xlsx

[280] https://www.eia.gov/petroleum/marketing/monthly/xls/aviationtaxes.xlsx

[281] Diesel marked for off-road use is taxed in Arkansas, Mississippi and North Dakota. CPET does not include these subnational taxes as rates are low and the corresponding fuel consumption is negligible.

- Energy use in the industry sector is not taxed.[282]
- Energy use in the residential and commercial sector, agriculture and fisheries is not taxed.
- In road transport, natural gas (in the form of LNG) is taxed at the diesel equivalent rate, while LPG at the gasoline equivalent rate. The extent to which US states also tax these fuels in road transport varies across the country. As their relative consumption in the sector is negligible, the secretariat makes the simplifying assumption that all states tax natural gas and LPG at the diesel and gasoline equivalent rates respectively.
- Off-road kerosene use is taxed at both federal and state level. Rates are lower for domestic commercial aviation, which is assumed to be responsible for 90% of aviation fuel consumption.
- Local surcharges above state-wide minima for excise tax rates may not always be covered due to data constraints (this is, for instance, relevant in parts of Hawaii).
- Biodiesel and biogasoline consumed in the road sector are taxed at the same statutory rates as their fossil fuel equivalents. Tax credits for alternative fuels are not considered because CPET does not cover refunds that operate through the income tax system.
- Due to data limitations, CPET does not take into account that in the road sector, fuels used by state and local governments; non-profit educational organisations; certain private local mass transit buses as well as private intercity buses serving the public are generally tax exempt. In addition, various tax credits apply to alternative fuels (e.g., natural gas and LPG) as well as to biogasoline and biodiesel consumption. CPET does not take these tax credits into account.

The following measure is out of scope of the database:

- A manufacturer's tax is imposed on the first sale of coal mined in the United States.[283] The producer of the coal is liable for the tax. This severance tax is out of scope according to CPET methodology.

[282] CPET does not include severance taxes. In addition, CPET does not include Alaska's surcharge of $0.0095 per gallon on refined fuel used in an engine, machine, or contrivance that creates heat, energy, or power, as the corresponding energy base is negligible.
[283] https://www.irs.gov/pub/irs-pdf/p510.pdf

Uruguay

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Uruguay were the following:

- The excise tax or *Impuesto Específico Interno* (IMESI) applies to several product categories like beverages, tobacco and fuels. Specifically, the tax applies to gasoline (including aviation gasoline and biogasoline) and kerosene (excluding aviation kerosene) in accordance with the decree n° 435/022. Since 2022, a carbon tax component applies on gasoline only, at a rate of 6,024 Uruguayan pesos (UYU) per tonne of CO_2.[284]
- The tax in support of the *Unidad Reguladora de Servicios de Energia y Agua* (URSEA), or *Tasa de Control del Marco Regulatorio de Energía y AguaI*.[285] It is a low ad-valorem tax fixed at 0.2% the ex-IMESI or ex-VAT price and apply to LPG, fuel oil, diesel, kerosene (including aviation kerosene) and gasoline.

Currently, electricity consumption attracts a 0% IMESI although there is a provision for a maximum rate of 10%. VAT of 22% applies to electricity consumption[286] as well as several fuels not paying IMESI e.g. diesel, fuel oil, LPG, natural gas, petroleum coke and charcoal. On the contrary, fuels that attract the IMESI are associated with a 0% VAT. VAT is not included in the effective rates calculation in CPET, to be consistent with the general approach of this report.

Uruguay does not levy taxes on other greenhouse gases emissions (such as fluorinated gases, methane or nitrous oxide). Uruguay does not have a GHG emissions trading system.

Table 15. Taxes and energy products applicability matrix

Taxes	Diesel	Fuel oil	Gasoline	Kerosene	Aviation Kerosene (Jet A1)	LPG	Natural gas
IMESI	✗	✗	✓	✓	✗	✗	✗
URSEA	✓	✓	✓	✓	✓	✓	✗
VAT	✓	✓	✗	✗	✗	✓	✓

Source: DGI

Energy use subsidies

The following subsidies were identified in 2022, but not recorded according to the current methodology of CPET as they are all assumed to be cross-subsidies, the cost being compensated elsewhere in the companies' activities[287]:

- Diesel consumed by public passenger road transport benefits from subsidies, which are funded by charging a fee (*fideicomiso del boleto*) of 4.984[288] Uruguayan pesos (UYU) per litre of automotive diesel in 2021.[289] This is considered as a cross subsidy fully compensated and therefore neither the subsidies nor the tax are included in CPET.
- LPG use is subsidised through two mechanisms: (i) since June 1, 2022, and planned until December 2023, households benefitting from certain social aids may get a 50% discount on 13

[284] https://medios.presidencia.gub.uy/legal/2022/decretos/12/mef_900.pdf

[285] dominoapps.ursea.gub.uy/web/eresolucionv21.nsf/ResolucionPublicada?OpenForm&id=37DAB82F96D4C01C032587DB006F91AC

[286] With exception of the fixed charge of the residential tariffs and the monthly charge of the basic residential, according to art. 53 bis DTO 220/998

[287] https://legislativo.parlamento.gub.uy/temporales/5031622.pdf

[288] https://medios.presidencia.gub.uy/legal/2022/decretos/12/miem_352.pdf

[289] Administration Trust in the collective transport of passengers by road | Ministry of Transport and Public Works (www.gub.uy)

kg bottles of LPG. This scheme has been extended in June 2023 because the number of claims has been as high as planned (a million bottles).[290] The amount of the subsidy was about UYU 320 million from June to December 2022, and UYU 329 million for the first semester of 2023.[291] (ii) LPG is sold by ANCAP at a price below the real cost, whereas higher prices are set for other fuels to compensate. The amount of subsidy was up to UYU 108 million in 2021.[292] They are considered as cross-subsidies and not included in CPET.

- Losses from Portland activities related to cement can be seen as an implicit subsidy but are out of the scope.
- In the electricity sector, certain productive sectors (e.g., dairy production, rice production, industrial companies with a high annual expenditure in electricity related to gross production value, companies that can prove maintaining or increasing export volumes and jobs) and also vulnerable residential consumers (e.g., *Tarifa Básica Residencial*) receive price discounts.[293] The discounts are considered in the cost structure that is utilized to determine price adjustments leading to cross subsidisation between sectors and categories of users.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- All premium gasoline is consumed in the road sector, as it is special low-sulphur diesel. Market shares in the road sector are assumed to be 10% for premium gasoline and 90% for regular gasoline.
- The URSEA tax is ad-valorem, and its amount is contingent on the prevailing prices.
- Prices for fuels are either the maximum prices set in December 2022 by decree n° 414/022, or, when available, the prices from URSEA valid from March 26th to April 26th, 2023.[294]

Due to data constraints, the following discount is not modelled:

- The discount on excise tax payable for gasoline acquired at the border zones of Argentina and Brazil since February 2021, according to the resolution DGI n° 876/023.

[290] Government extends supergas subsidy for vulnerable families for 6 more months | Ministry of Industry, Energy and Mining (www.gub.uy)
[291] The government allocated $8.3 million to subsidies for supergas (ambito.com)
[292] Supergas subsidy: for Uruguay's ANCAP, segmenting the market is a "good starting point" (bloomberglinea.com)
[293] TRS (ute.com.uy)
[294] https://www.gub.uy/unidad-reguladora-servicios-energia-agua/comunicacion/publicaciones/informe-ppi-mayo-2023

Zambia

Taxes on energy use and greenhouse gases

As at 1 April 2023, the main taxes on energy use in Zambia were the following:

- Excise duties on gasoline, diesel, jet kerosene, fuel oil, as well as *ad valorem* tax on coal according to the Customs and Excise Act.[295]
- A fuel levy is levied on gasoline[296] and classified as a "fuel excise tax".
- A Strategic Reserve Fund levy is levied on gasoline, diesel, jet kerosene, kerosene, fuel oil and LPG and classified as a "fuel excise tax".
- An *ad valorem* excise duty is levied on electricity and classified as an "electricity excise tax".

The standard rate of VAT is 16%, in 2023 and applies to the same product as the excise duty. VAT rates are collected for information but not included in the calculation of effective tax rates on energy use.

Zambia does not collect carbon taxes or taxes on other greenhouse gases emissions.

Zambia does not operate an emissions trading system for greenhouse gas emissions.

Energy use subsidies

No explicit subsidies on energy use were identified to be in operation in 2022.[297] Explicit fossil fuel subsidies were phased out at the end of 2021.[298]

The following measures are worth noting but not considered as subsidies according to CPET methodology:

- To avoid fuel prices inflation, the strategic reserve fund mitigated the cost of transporting petroleum products.
- The government waived the excise duty tax on gasoline and reduced the rate for diesel during 2022.[299] Rates are back to their normal rates in 2023.[300]
- Arears towards fuel suppliers in 2022.

Country-specific assumptions

When matching the taxes specified above to the corresponding tax base, the following country-specific assumptions were made:

- Fossil fuels used for electric generation (coal, diesel, fuel oil) are assumed to be taxed.
- Prices are respectively those as of January 2024[301] for coal in absence of other information, and as of April 2023[302] for electricity.

[295] https://www.parliament.gov.zm/sites/default/files/documents/acts/Customs%20and%20Excise%20Act.pdf
[296] https://www.zra.org.zm/wp-content/uploads/2022/06/Excise-Duty-brochure.pdf
[297] IMF Country Report No. 23/439, December 2023
[298] https://www.thepolicypractice.com/zambia-fossil-fuel-subsidies-study ; https://www.elibrary.imf.org/view/journals/002/2022/292/article-A001-en.xml
[299] https://www.moe.gov.zm/wp-content/uploads/2022/06/PRESS-RELEASE-ON-EXTENSION-OF-WAIVERS-16TH-JUNE-2022.pdf
[300] https://www.zra.org.zm/wp-content/uploads/2022/10/2023-Budget-Highlights-updated.pdf
[301] https://coal-price.com/
[302] Mentioned as « current » https://www.erb.org.zm/wp-content/uploads/PressStatements/2023-04-21_BOARDS-DECISION-ON-ZESCOS-APPLICATION-TO-ADJUST-ELECTRICITY-TARIFFS-FOR-RETAIL-CUSTOMERS-FOR-THE-PERIOD-2023-TO-2027.pdf

Annex A

Table 16 Energy use subsidies' data source by country covered in the CPET database.

Country in CPET database	OECD Inventory of Support Measures for Fossil Fuels	CPET research
Argentina	Yes	
Australia	Yes	
Austria	Yes	
Bangladesh		Yes
Belgium	Yes	
Brazil	Yes	
Bulgaria		Yes
Burkina Faso		Yes
Canada	Yes	
Chile	Yes	
China	Yes	
Colombia	Yes	
Costa Rica	Yes	
Côte d'Ivoire		Yes
Croatia		Yes
Cyprus		Yes
Czechia	Yes	
Denmark	Yes	
Dominican Republic		Yes
Ecuador		Yes
Egypt		Yes
Estonia	Yes	
Ethiopia		Yes
Finland	Yes	
France	Yes	
Germany	Yes	
Ghana		Yes
Greece	Yes	
Guatemala		Yes
Hungary	Yes	
Iceland	Yes	
India	Yes	
Indonesia	Yes	
Ireland	Yes	
Israel	Yes	
Italy	Yes	
Jamaica		Yes
Japan	Yes	
Kazakhstan		Yes
Kenya		Yes
Korea	Yes	
Kyrgyzstan		Yes
Latvia	Yes	
Lithuania	Yes	
Luxembourg	Yes	
Madagascar		Yes
Malaysia		Yes
Malta		Yes
Mauritius		Yes
Mexico	Yes	

Morocco		Yes
Netherlands	Yes	
New Zealand	Yes	
Nigeria		Yes
Norway	Yes	
Panama		Yes
Paraguay		Yes
Peru		Yes
Philippines		Yes
Poland	Yes	
Portugal	Yes	
Romania		Yes
Russia	Yes	
Rwanda		Yes
Singapore		Yes
Slovakia	Yes	
Slovenia	Yes	
South Africa	Yes	
Spain	Yes	
Sri Lanka		Yes
Sweden	Yes	
Switzerland	Yes	
Türkiye	Yes	
Uganda		Yes
Ukraine	Yes	
United Kingdom	Yes	
United States	Yes	
Uruguay		Yes
Zambia		Yes