Taxing Energy Use 2019: Country Note – Sweden

This note explains how Sweden taxes energy use. The note shows the distribution of effective energy tax rates – the sum of fuel excise taxes, explicit carbon taxes, and electricity excise taxes, net of applicable exemptions, rate reductions, and refunds – across all domestic energy use. It also details the country-specific assumptions made when calculating effective energy tax rates and matching tax rates to the corresponding energy base.

The note complements the Taxing Energy Use 2019 report that is available at http://oe.cd/TEU2019. *The report analyses where OECD and G20 countries stand in deploying energy and carbon taxes, tracks progress made, and makes actionable recommendations on how governments could do better to use taxes to reach environmental and climate goals.*

The general methodology employed to calculate effective energy tax rates and assign tax rates to the energy base is explained in Chapter 1 of the report. The official energy tax profile for Sweden can be found in Chapter 2 of the report. Chapter 3 additionally shows effective carbon tax rates per tonne of CO_2, and presents the corresponding carbon tax profiles for all countries. The report also contains StatLinks to the official data.

Structure of energy taxation in Sweden

Energy and carbon taxes in Sweden 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. Within this framework, as at 1 July 2018, the main taxes on energy use in Sweden are the following:

- The Energy Tax, classified as a "fuel excise" according to the TEU methodology, applies to most fossil fuel use, as well as a low blends of biofuels in gasoline and diesel.
- The Carbon Dioxide (CO_2) Tax, classified as an "explicit carbon tax" according to the TEU methodology, applies to most fossil fuel use, as well as low blends of biofuels in gasoline and diesel, at a nominal rate of SEK 1 150 (~ EUR 120) per tonne of CO_2.
- The use of electricity is taxed per kWh; this tax is classified as an "electricity excise tax" according to the TEU methodology. Electricity used in the industrial manufacturing process, by computer centres and in agriculture is taxed at a substantially lower rate than electricity used by the residential and commercial sectors.

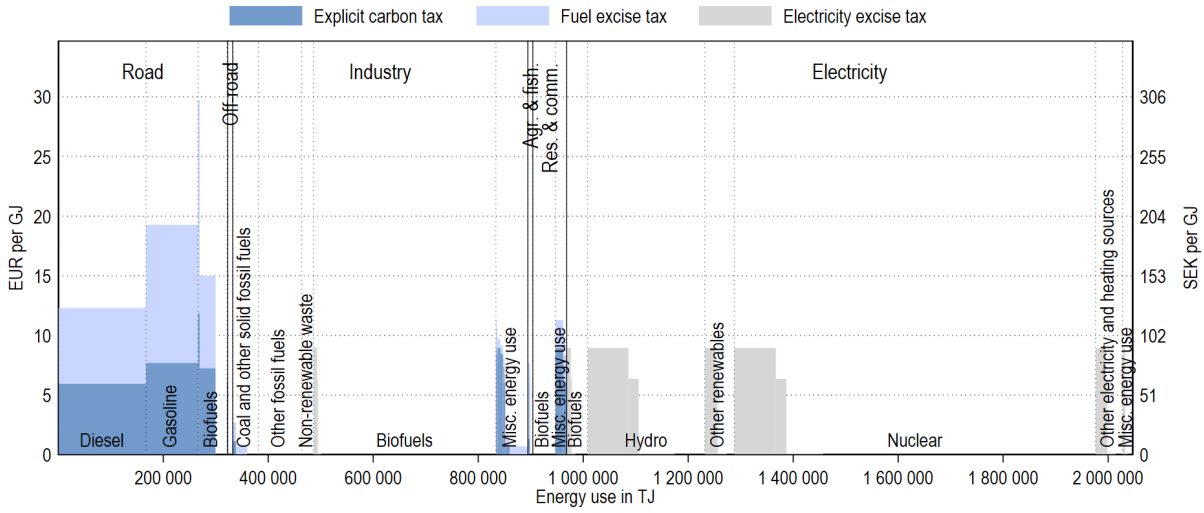
Sweden participates in the EU emissions trading system (ETS) (OECD, 2018[1]). Permit prices are not shown in the energy tax profiles. Since the industries that participate in the

EU ETS are not covered by the CO_2 tax – with the exception of district heating plants that are subject to a reduced CO_2 tax rate– a corresponding amount of energy use is shown as untaxed under the CO_2 tax in the industry sector.

Effective tax rates on energy use in Sweden

Tax rates can differ across energy products and users, as described below. Figure 1 provides an overview of how energy and CO_2 taxes apply to different energy categories across the economy. Notice that the electricity sector in TEU covers all primary energy use associated with electricity generation, including transformation and distribution losses that are not subject to electricity taxes. Electricity tax rates are differentiated by end user, irrespective of the power source that is used to generate the electricity (as described above and further discussed in the electricity section below). The remainder of this document discusses details on tax rates and tax bases for each of the six economic sectors.

Figure 1. Effective tax rates on energy use by sector and energy category

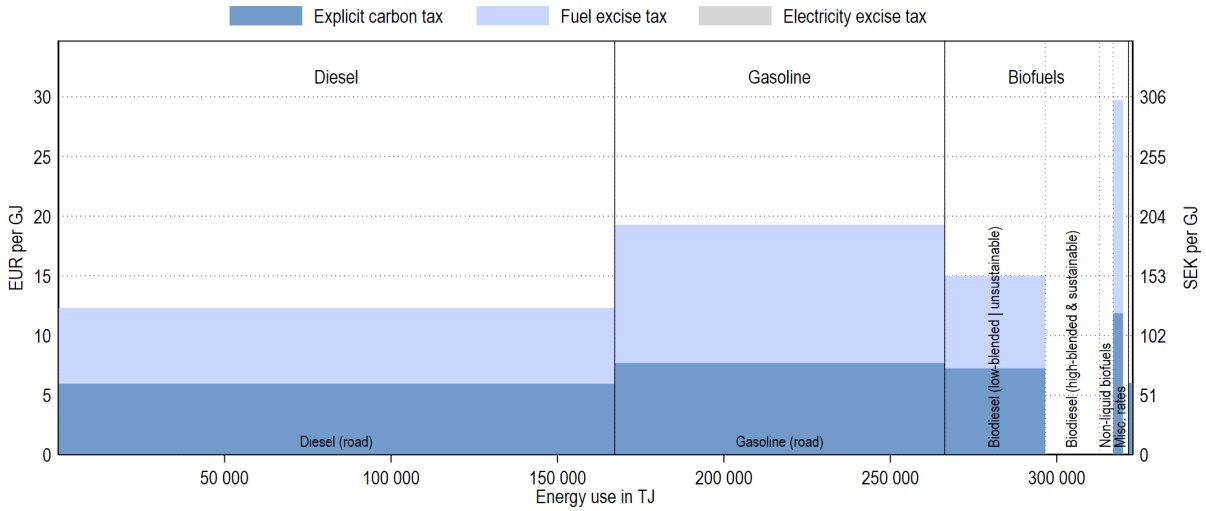


Note: Tax rates applicable on 1 July 2018. Energy use data is for 2016 and adapted from IEA (2018[2]), *World Energy Statistics and Balances*. Energy categories (labelled at the bottom) that represent less than 1% of a country's energy consumption are grouped into "misc. energy use" and may not be labelled.

Road

Figure 2 shows that within the road sector, gasoline is taxed at a higher effective tax rate than diesel.[1] Unsustainable and low-blended biofuels are taxed at the same statutory rates as their fossil fuel equivalents, which translates into higher effective tax rates according to the TEU methodology, given that their energy content is lower.[2] Sustainable high-blended biofuels are exempt from both CO_2 tax and the energy tax.[3]

Figure 2. Effective tax rates on energy use in the road sector



Note: Tax rates applicable on 1 July 2018. Energy use data is for 2016 and adapted from IEA (2018[2]), *World Energy Statistics and Balances.* Energy categories (labelled at the top) that represent less than 1% of a sector's energy consumption are grouped into "misc. energy use" and may not be labelled. Similarly, rate labels (shown at the bottom) are grouped into "misc. rates" using the same threshold.

[1] Natural gas is taxed at a lower effective rate than gasoline and diesel, but its use is very low and therefore grouped under misc. energy use, and not labelled in Figure 2.

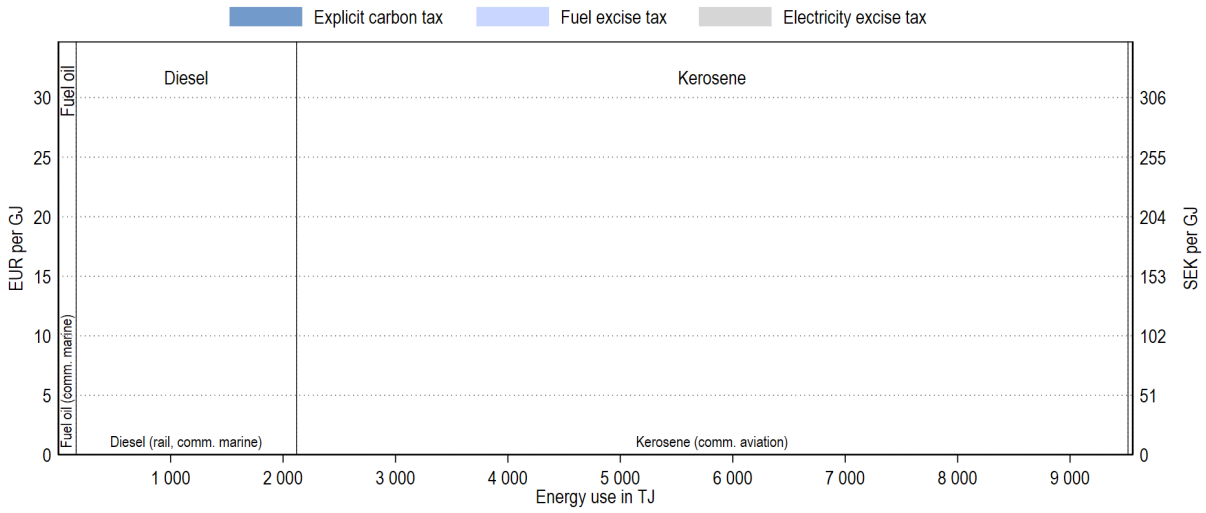
[2] The highest rate in the figure is for low-blended biogasoline, but as biogasoline consumption is small (in practice it is mainly ethanol), it is grouped under misc. rates.

[3] TEU assumes that all 35% of liquid biofuels consumption in the Swedish road sector is high-blended and sustainable, (http://www.energimyndigheten.se/nyhetsarkiv/2018/kortsiktsprognos-minskad-tillforsel-av-energi-medan-anvandningen-okar), whereas 65% is considered low-blended or unsustainable.

Off-road

Fossil fuels used in the off-road sector are untaxed when used for commercial navigation, commercial aviation, or rail, as shown in Figure 3. Diesel and kerosene used in private pleasure craft and private planes are taxed (not modelled in TEU due to a lack of consumption data).

Figure 3. Effective tax rates on energy use in the off-road sector



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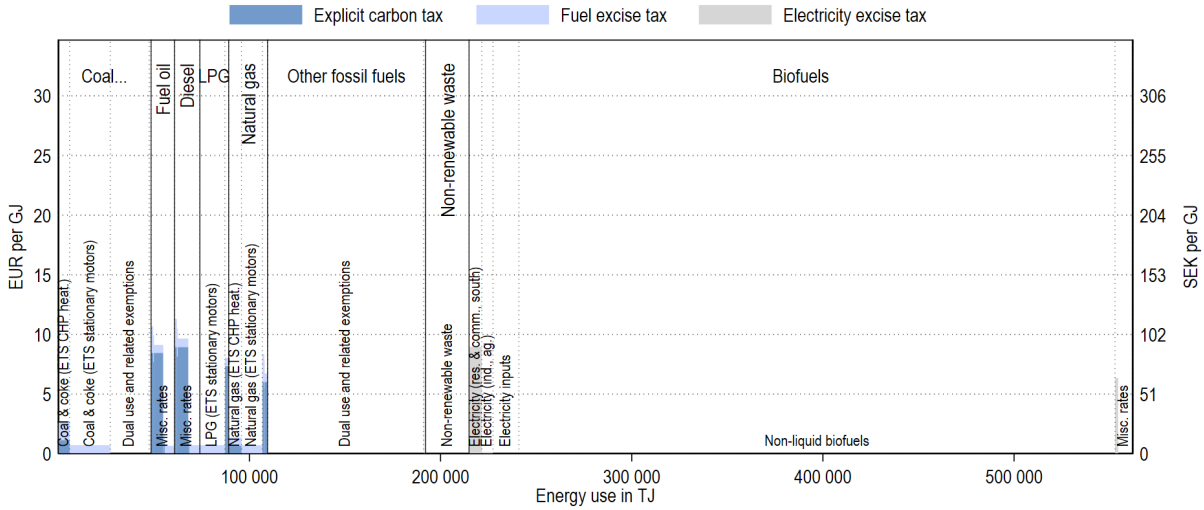
Industry

Most fossil fuels used in the industry are subject to both the Energy and the CO_2 Tax, except when entities participate in the EU ETS. Entities covered by the EU ETS generally do not pay the CO_2 Tax, but are still liable for the Energy Tax, as shown in Figure 4. 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 ("dual use and related exemptions"). Biofuels for heating purposes are not subject to CO_2 or energy taxes either.

Fuels used in combined heat and power (CHP) plants that produce electricity and district heating are not subject to energy or CO_2 taxes with respect to the electricity generation. Fuels used for heat production in CHP plants are taxed. Electricity from industrial cogeneration is subject to the general electricity tax (called "electricity excise tax" in TEU) (see electricity section below).

Figure 4. Effective tax rates on energy use in the industry sector



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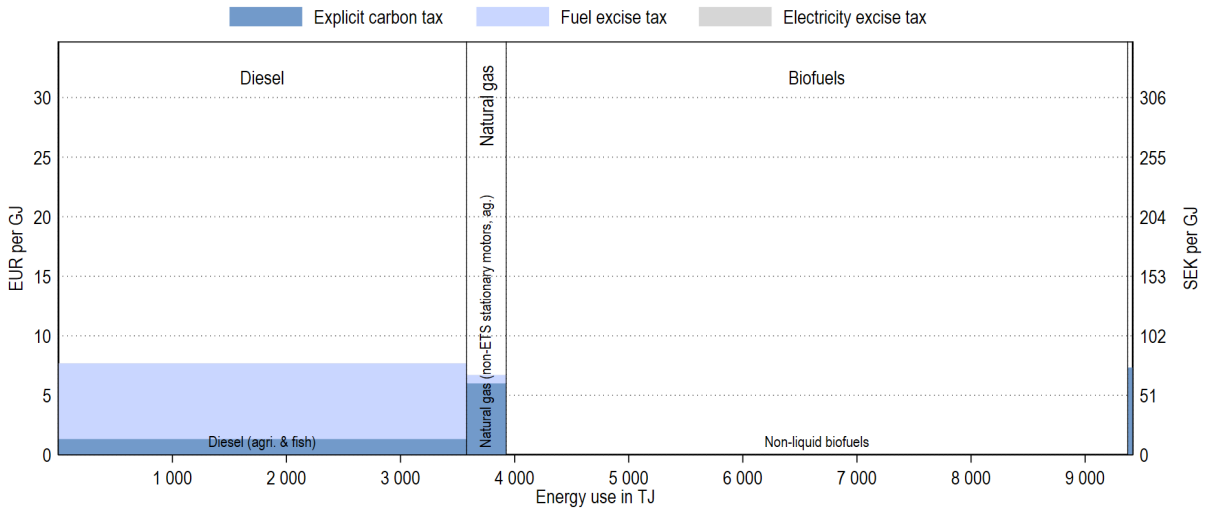
Agriculture and fisheries

Fossil fuels used in the agriculture and fisheries (Figure 5) sector are subject to both the Energy Tax and the CO_2 Tax as the sector is not covered by the EU ETS (OECD, 2018[1]). Diesel used as motor fuel in this sector benefits from a reduced CO_2 tax rate. Natural gas used for heating benefits from a reduced energy tax rate. Biofuels are not taxed.

Figure 5. Effective tax rates on energy use in the agriculture & fisheries sector



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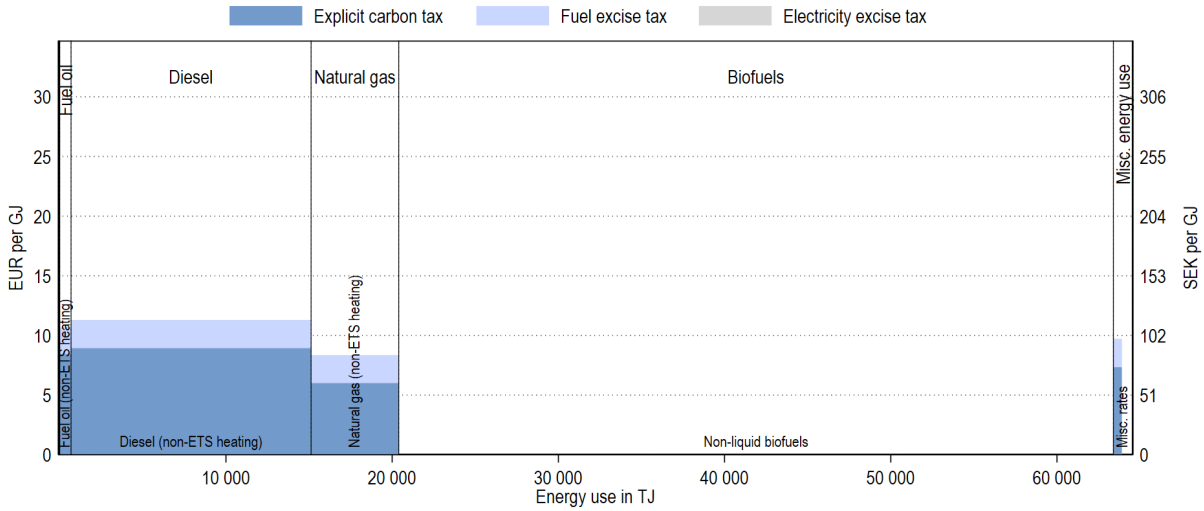
Residential and commercial

Fossil fuel use in the residential and commercial sectors (Figure 6) are subject to both Energy and CO_2 Tax, as the sector is generally not covered by the EU ETS.[4] Biofuels make up the largest share of energy use in the sector and are not taxed. Notice that TEU reports the energy use associated with electricity and district heating consumption in the industry and electricity sector as that is where the primary energy consumption occurs.

Figure 6. Effective tax rates on energy use in the residential & commercial sector



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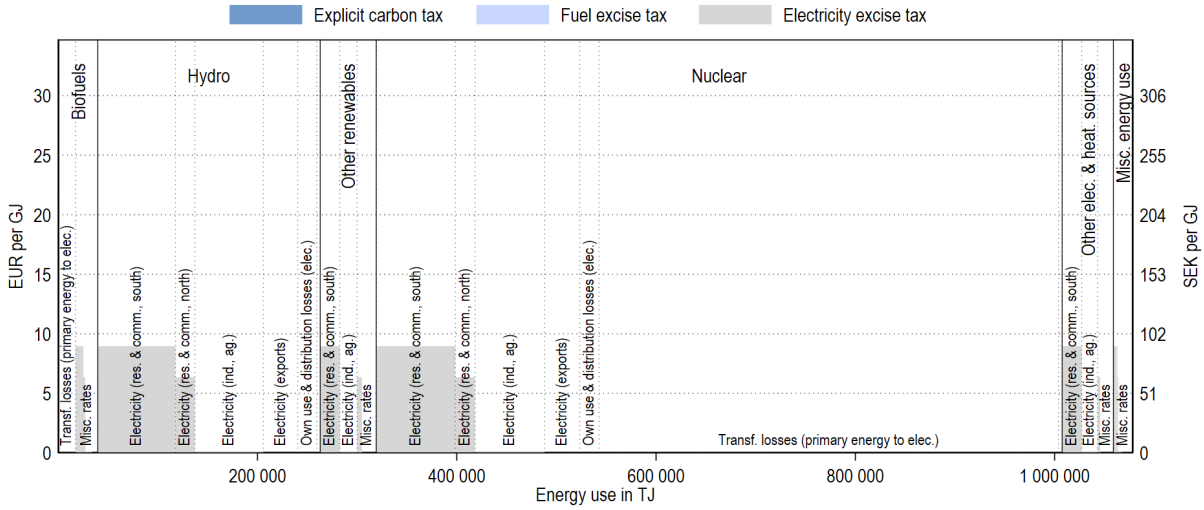
[4] TEU ignores the 1.5% of fossil fuel emissions that are covered according to *Effective Carbon Rates* (OECD, 2018[1]).

Electricity

Figure 7 shows how the electricity sector, as defined in TEU, is taxed in Sweden. The fuels used to generate electricity are not taxed, but the electricity sector is fully covered by the EU ETS (OECD, 2018[1]).

The use of electricity, on the other hand, is subject to a tax per kWh, irrespective of the primary energy source from which the electricity is generated. The tax rate on electricity are lower for the residential and commercial sectors in certain municipalities in Northern Sweden than in other parts of the country. The tax rate on the industrial manufacturing process, computer centres etc. correspond to the minimum level that is admissible under the EU Tax Directive. This rate is barely visible in the figure because TEU uses the same scale for all sectors in a given country to facilitate inter-sectoral comparisons. As is standard, electricity exports are not subject to the electricity tax in Sweden, but may be subject to electricity taxes elsewhere.

Figure 7. Effective tax rates on energy use in the electricity sector



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References

IEA (2018), "Extended world energy balances", *IEA World Energy Statistics and Balances* (database), http://dx.doi.org/10.1787/data-00513-en. (accessed on 16 October 2018) [2]

OECD (2018), *Effective Carbon Rates 2018: Pricing Carbon Emissions Through Taxes and Emissions Trading*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264305304-en. [1]

OECD (2018), *Taxing Energy Use 2018: Companion to the Taxing Energy Use Database*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264289635-en. [3]