

# Review 01

EN

## Energy taxation, carbon pricing and energy subsidies



EUROPEAN  
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**Glossary**

**Acronyms and abbreviations**

**ECA team**

## Executive summary

**I** Energy taxation is a tool that governments can use not only to raise revenue but also to support climate objectives. It can ensure that the price signals for different energy products reflect their impact on the environment, and can encourage businesses to make greener choices.

**II** The Energy Taxation Directive sets minimum taxation levels to ensure that the internal market functions properly, and can also be used to support other relevant policies such as climate action.

**III** In July 2021, the Commission proposed a revision of the Energy Taxation Directive and new legislation to support the more challenging EU 2030 climate target and set the EU on a path towards becoming climate neutral by 2050. One of the aims of the proposals is to align the legislation with climate objectives.

**IV** This review makes use of our previous work in the area of energy, climate change and taxation, as well as publicly available information and material specifically collected for this purpose, to provide additional insights into energy taxation. We aim to contribute to the ongoing debate on energy taxation and climate change.

**V** Our review focuses on:

- the consistency of current levels of energy taxation and carbon pricing with climate objectives;
- energy subsidies, with a focus on green and fossil fuel subsidies;
- the current Energy Taxation Directive, which sets the minimum energy tax rates, and how the Commission's new proposal addresses the Directive's weaknesses.

**VI** Energy taxation can be an important driver for reaching climate objectives. However, certain sectors receive significant reductions and exemptions. Our review identified that the level of taxation of energy sources does not reflect their greenhouse gas emissions.

**VII** We note that in recent years the price of energy products, after the effect of taxes or emission-trading allowances, did not reflect the environmental cost of emissions.

**VIII** In its evaluation of the Energy Taxation Directive, the Commission reported shortcomings in the minimum taxation legislation. Among the objectives of the Commission's "Fit for 55" legislative proposals are aligning energy taxes with energy content, and covering more sectors in the EU Emissions Trading System.

**IX** Energy subsidies can be used to move towards a less carbon-intensive economy. Fossil fuel subsidies on the other hand hinder an efficient energy transition, and have remained relatively constant over the last decade despite commitments from the Commission and some Member States to phase them out.

**X** We note challenges that the European Union faces in revising the legislation:

- ensuring consistency in sectors and energy carriers that were previously treated more favourably;
- reducing fossil fuel subsidies; and
- reconciling climate objectives with social needs.

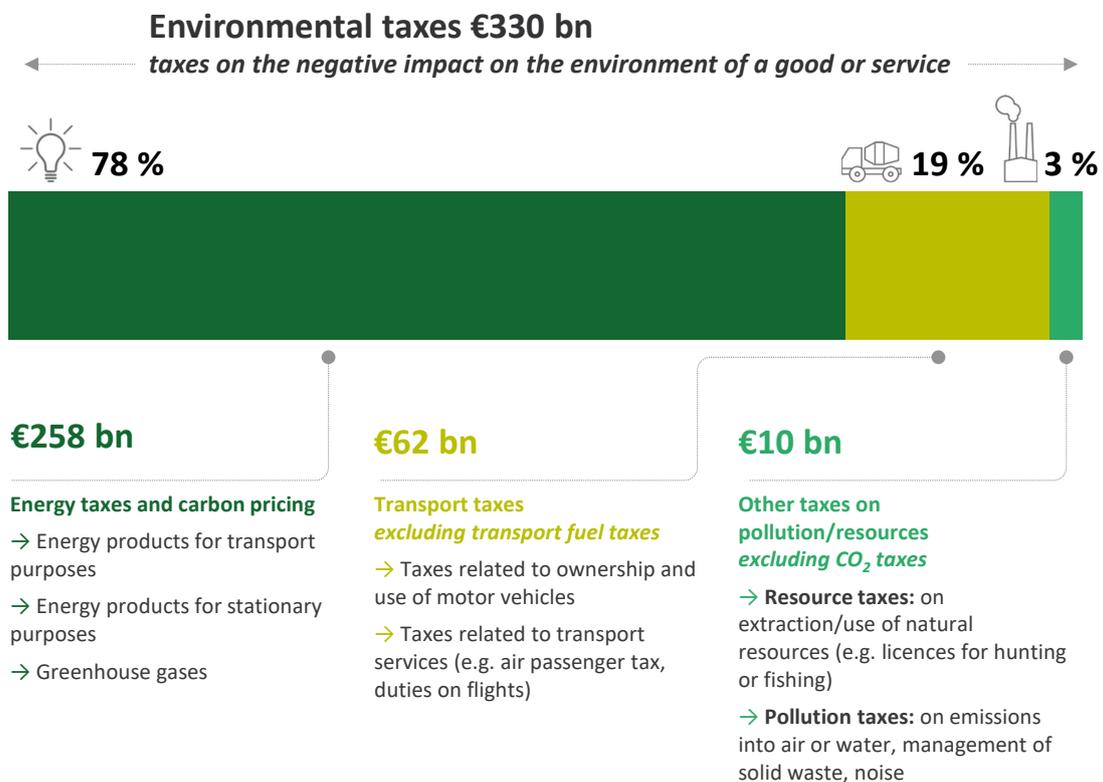
These challenges will need to be faced in the institutional context of unanimity on taxation issues.

# Introduction

## Energy taxation policy in support of climate action

**01** Energy taxation is a budgetary instrument that can also be used as a tool to incentivise greener energy choices. Within the EU-27, energy taxes make up more than three quarters of total environmental taxes (see [Figure 1](#)). As part of the European Green Deal, the Commission plans to align energy taxation with climate objectives.

**Figure 1 – EU-27 energy taxes and carbon pricing as part of environmental taxes**



*Note:* Eurostat's data on environmental taxes includes ETS proceeds recorded as taxes in the national accounts.

*Source:* ECA based on data from Eurostat, [Environmental tax revenues](#) (ENV\_AC\_TAX), 2019 data.

## 02 Energy taxes and carbon allowances are based on<sup>1</sup>:

- o energy products for transport purposes (such as petrol, gasoil, natural gas, kerosene or fuel oil);
- o energy products for stationary purposes (e.g. fuel oil, natural gas, coal, coke, biofuels and electricity);
- o greenhouse gases: carbon content of fuels. Eurostat data on such taxes includes proceeds from EU Emission Trading System (ETS) permits recorded as taxes in national accounts.

## 03 Energy taxes and carbon pricing may take different forms:

- o specific taxes on fuel use (primarily excise taxes) typically set a tax rate per physical unit (litre or kilogram) or unit of energy (kilowatt hour or gigajoule);
- o explicit carbon taxes typically set a tax rate for energy use based on carbon content;
- o emission allowances traded in emission trading systems.

## 04 Energy subsidies can be:

- o direct: changes in effective tax rates (e.g. tax rebates and tax credits); and grants and guarantees offering incentives to use one source of energy over another;
- o indirect: market interventions (e.g. quantitative exports or imports restrictions, administrative price setting), underpricing of permits and licenses, preferential loan interest, shifting of risks, ignored or underpriced externalities (greenhouse gas emissions (GHG), pollution, waste, depletion of natural resources).

**05** There is no standard definition of energy subsidies across the EU. The OECD broadly defines energy subsidies<sup>2</sup> as measures that keep consumer prices below market level, keep producer prices above market level, or reduce costs for consumers or producers.

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<sup>1</sup> Eurostat, *Environmental taxes – A statistical guide*, 2013 edition.

<sup>2</sup> OECD, *Environmentally Harmful Subsidies: Challenges for Reform*, 2005.

**06** Energy taxation policy is one of several tools that can be used to achieve climate goals. Others include legislation setting targets (e.g. the Effort Sharing legislation on binding annual greenhouse gas emission (GHG) targets<sup>3</sup>), regulatory standards (e.g. on vehicle emissions) and funding schemes (such as for energy efficiency investments).

## EU targets and commitments

**07** In line with the European Green Deal, the European Climate Law<sup>4</sup> set a 55 % GHG minimum net reduction (compared to 1990) as an intermediate target for 2030, up from the previous 40 % target. On 14 July 2021, the Commission published a set of proposals aiming to align climate, energy, transport and taxation policies with the new intermediate 2030 climate target, the so-called “Fit for 55” package<sup>5</sup>. It also includes increased renewable energy and energy efficiency targets (see [Figure 2](#)).

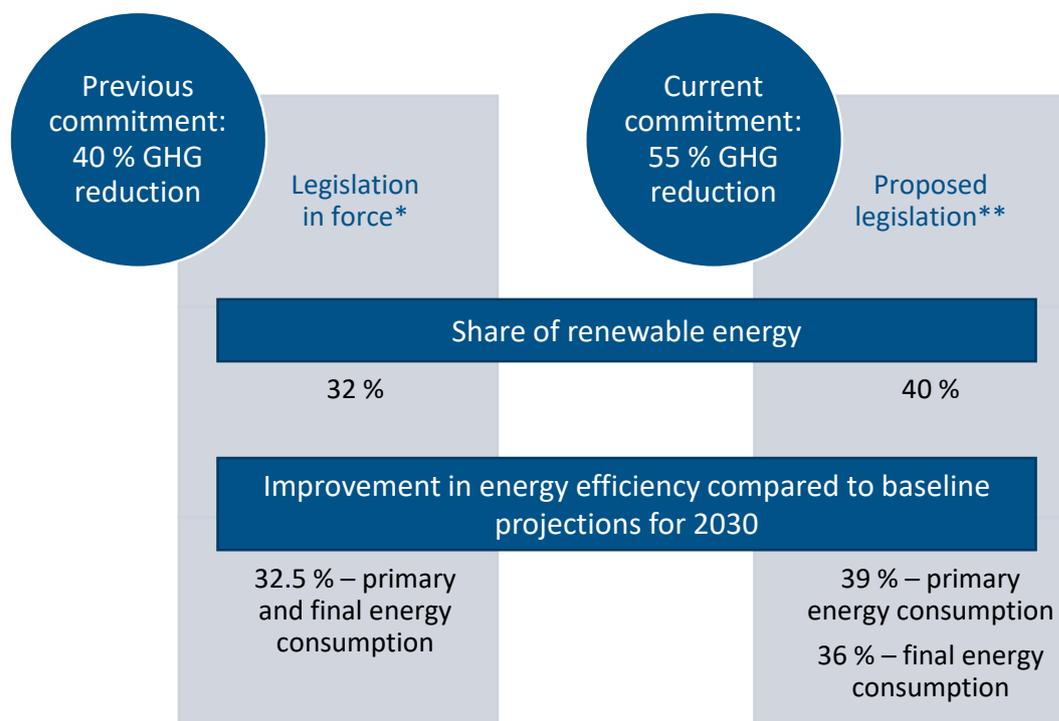
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<sup>3</sup> [Commission website – Questions and Answers to the Effort Sharing Regulation.](#)

<sup>4</sup> [Regulation \(EU\) 2021/1119](#) of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (‘the European Climate Law’) (OJ L 243, 9.7.2021, p. 1).

<sup>5</sup> [Commission website – Press release on European Green Deal.](#)

**Figure 2 – Updates to climate targets**



\* Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82), and Directive (EU) 2018/2002 of the European Parliament and of the Council of 11 December 2018 amending Directive 2012/27/EU on energy efficiency (OJ L 328, 21.12.2018, p. 210).

\*\* Proposal for a Directive of the European Parliament and of the Council as regards the promotion of energy from renewable sources (COM(2021) 557 final) and Proposal for a Directive of the European Parliament and of the Council on energy efficiency (recast) (COM(2021) 558 final).

Source: ECA, based on above-mentioned legislation and legislative proposals.

**08** In 2009, the G20 called for fossil fuel subsidies to be phased out by 2020<sup>6</sup>. The EU and some of its Member States have committed to phasing out inefficient fossil fuel subsidies by 2025<sup>7</sup>. The Commission also committed to Sustainable Development Goals (SDGs)<sup>8</sup> intended to be achieved by 2030, including SDG 7 for affordable and clean energy and SDG 12.C for the rationalisation of inefficient fossil-fuel subsidies that encourage wasteful consumption.

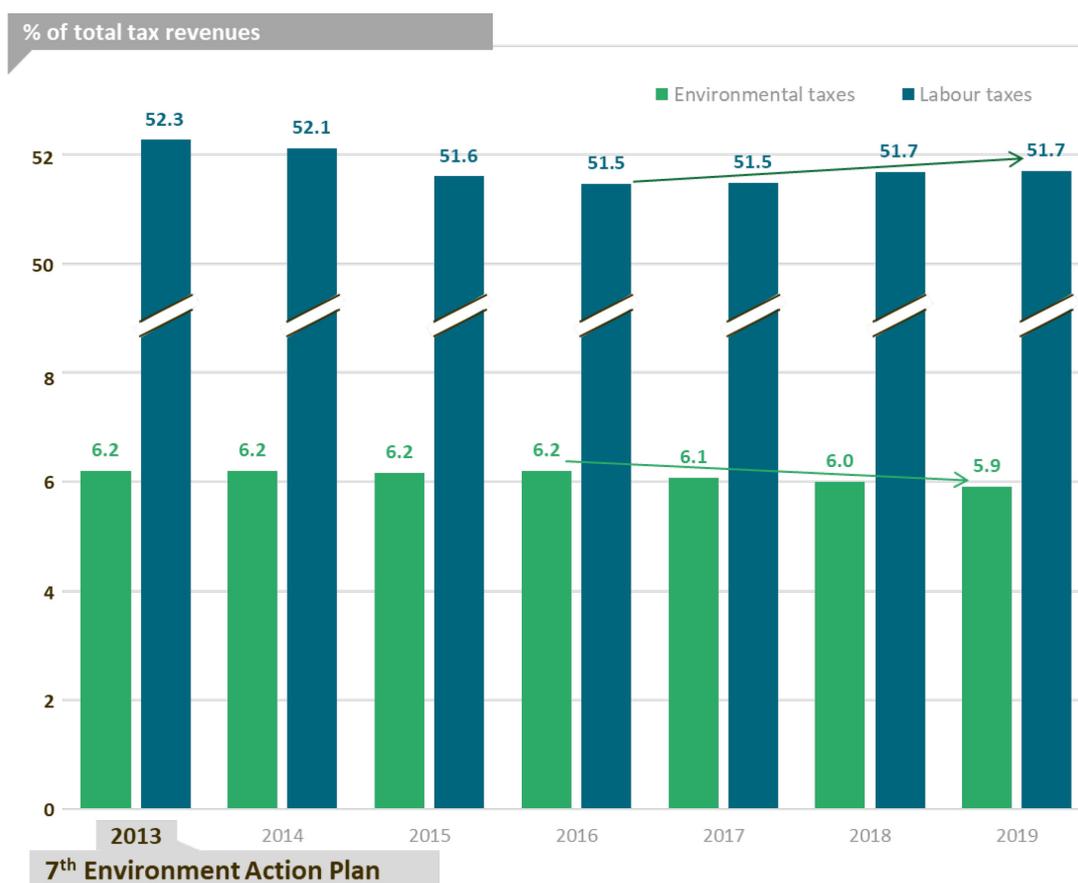
<sup>6</sup> G20 Leaders' Statement: The Pittsburgh Summit, September 2009.

<sup>7</sup> G7 Ise-Shima Leaders' Declaration, G7 Ise-Shima Summit, 26-27 May 2016.

<sup>8</sup> [https://ec.europa.eu/international-partnerships/sustainable-development-goals\\_en](https://ec.europa.eu/international-partnerships/sustainable-development-goals_en)

**09** In 2013, in its 7<sup>th</sup> Environment Action Plan, the Commission proposed shifting taxation from labour towards the environment by 2020<sup>9</sup> to support the sustainable use of resources. In practice, environmental taxes as a share of total tax revenue have declined slightly since 2016, while the share of labour taxes showed a marginal increase (see [Figure 3](#)).

**Figure 3 – Environmental and labour taxes as a share of total tax revenues (2008-2019)**



*Note:* Eurostat's data on environmental taxes includes ETS proceeds recorded as taxes in the national accounts.

*Source:* ECA, based on Eurostat, [Environmental tax revenues \(ENV\\_AC\\_TAX\)](#) and European Commission, [Taxation trends](#).

<sup>9</sup> As part of Priority Objective 6 of [Decision No 1386/2013/EU](#) of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' (OJ L 354, 28.12.2013).

## EU legislation on energy taxation, carbon pricing and energy subsidies

**10** EU powers in the field of indirect taxation comprise coordinating, harmonising and approximating VAT and excise duties, as these can affect the single market. Taxation is one of the EU policy areas where decision-making depends on unanimity<sup>10</sup>.

**11** The EU Energy Taxation Directive<sup>11</sup> (ETD) sets the minimum level of taxation for some energy products and sectors. Its primary objective is to harmonise national legislation to avoid distortions in the internal market.

**12** The EU ETS Directive<sup>12</sup> is also relevant in this context. It applies a carbon price mainly on emissions coming from installations in the power generation sector and energy-intensive industries, thus incentivising companies in these sectors to reduce emissions. Thus the carbon price is determined by the market.

**13** Some energy subsidies can be a form of state aid, which is in principle incompatible with EU internal market rules. The Commission has the power to decide whether such subsidies constitute state aid, and whether it is compatible with EU internal market rules. To guide its assessment, the Commission issued the Guidelines on State aid for environmental protection and energy 2014-2020<sup>13</sup>. In June 2021, the Commission issued new draft Guidelines on State aid for climate, environmental protection and energy 2022<sup>14</sup>.

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<sup>10</sup> Communication from the Commission to the European Parliament, the European Council and the Council, *Towards a more efficient and democratic decision making in EU tax policy* (COM(2019) 8 final).

<sup>11</sup> Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJ L 283, 31.10.2003).

<sup>12</sup> Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, last amended in 2018 (OJ L 275, 25.10.2003).

<sup>13</sup> Communication from the Commission, *Guidelines on State aid for environmental protection and energy 2014-2020* (2014/C 200/01) (OJ C 200, 28.6.2014, p. 1).

<sup>14</sup> Communication from the Commission, *Draft Guidelines on State aid for climate, environmental protection and energy 2022*.

**14** The “Fit for 55” package proposal aims, among other things, to:

- create a more comprehensive energy tax base and increase the minimum energy tax rates through changes to the ETD;
- extend the emission trading system to include other sectors such as road transport and buildings;
- set up a Carbon Border Adjustment Mechanism to reflect the GHG emissions of imports as an alternative for free emission allowances within the EU.

## Scope and approach of the review

**15** This review considers how energy taxes, carbon pricing and energy subsidies contribute to achieving the EU's climate goals. We reviewed the relevant EU legislation, in particular the existing ETD and the Commission's proposal for the ETD update. The review covers the period from 2008 to July 2021. We have taken into consideration additional data that became available after July 2021 for the price of EU emission permits (up to 30 November 2021) and for energy subsidies (data from October 2021).

**16** This is not an audit report; it is a review mainly based on publicly available information or material specifically collected for this purpose. We examined EU legislation in force, and proposed guidelines, evaluations, monitoring reports, National Energy and Climate Plans (NECPs), studies and reports from international organisations, NGOs, and national authorities, as well as reports drawn up by or for the European Commission. We analysed data from Eurostat and international institutions, as well as from some national authorities. We discussed areas covered by this review with Commission staff, relevant NGOs and think tanks. Our review is also informed by other ECA reports, academic publications and other publicly available information.

**17** Our review follows the recent publication of the Commission's "Fit for 55" package. We aim to bring an independent view on energy taxation to feed the legislative debate.

**18** The report has three sections:

- current energy taxation levels in the Member States and carbon pricing instruments, and how these support climate goals;
- energy subsidies and how they incentivise climate action;
- contribution of the ETD Directive to climate objectives.

# Current energy taxes and carbon pricing

## Taxation and energy efficiency

**19** In the 2019 assessment of progress towards national energy efficiency targets for 2020<sup>15</sup>, the Commission determined the main drivers of energy savings. According to this assessment, energy efficiency obligation schemes delivered 36 % of the energy savings reported. Energy taxation measures going beyond the EU-minimum rate were the second main driver, with 16 % of the total energy savings reported.

**20** Energy taxation can be a key driver for reaching the EU's climate objectives<sup>16</sup>. In their NECPs, four Member States quantified the impact of planned energy taxation measures. Their estimates range from 4 % to 32 % of total expected energy savings (32 % in Germany, 14 % in Lithuania, 10 % in Finland, and 4 % in Czechia).

**21** The OECD evidenced a negative correlation between taxation and the energy intensity of GDP<sup>17</sup>, and concluded that countries with higher energy taxes tend to have less energy-intensive economies<sup>18</sup>. We carried out a similar assessment for EU Member States and found a similar correlation.

## Taxation by sector and by product

**22** A recent study calculated an average EU energy tax rate of €25/MWh and an effective tax rate (taking account of tax rebates, credits and reductions) of

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<sup>15</sup> Report from the Commission to the European Parliament and the Council, *2019 assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive as required by Article 24(3) of the Energy Efficiency Directive 2012/27/EU*, COM(2020) 326 final.

<sup>16</sup> [https://ec.europa.eu/taxation\\_customs/commission-priorities-2019-24-and-taxation/european-green-deal-what-role-can-taxation-play\\_en](https://ec.europa.eu/taxation_customs/commission-priorities-2019-24-and-taxation/european-green-deal-what-role-can-taxation-play_en)

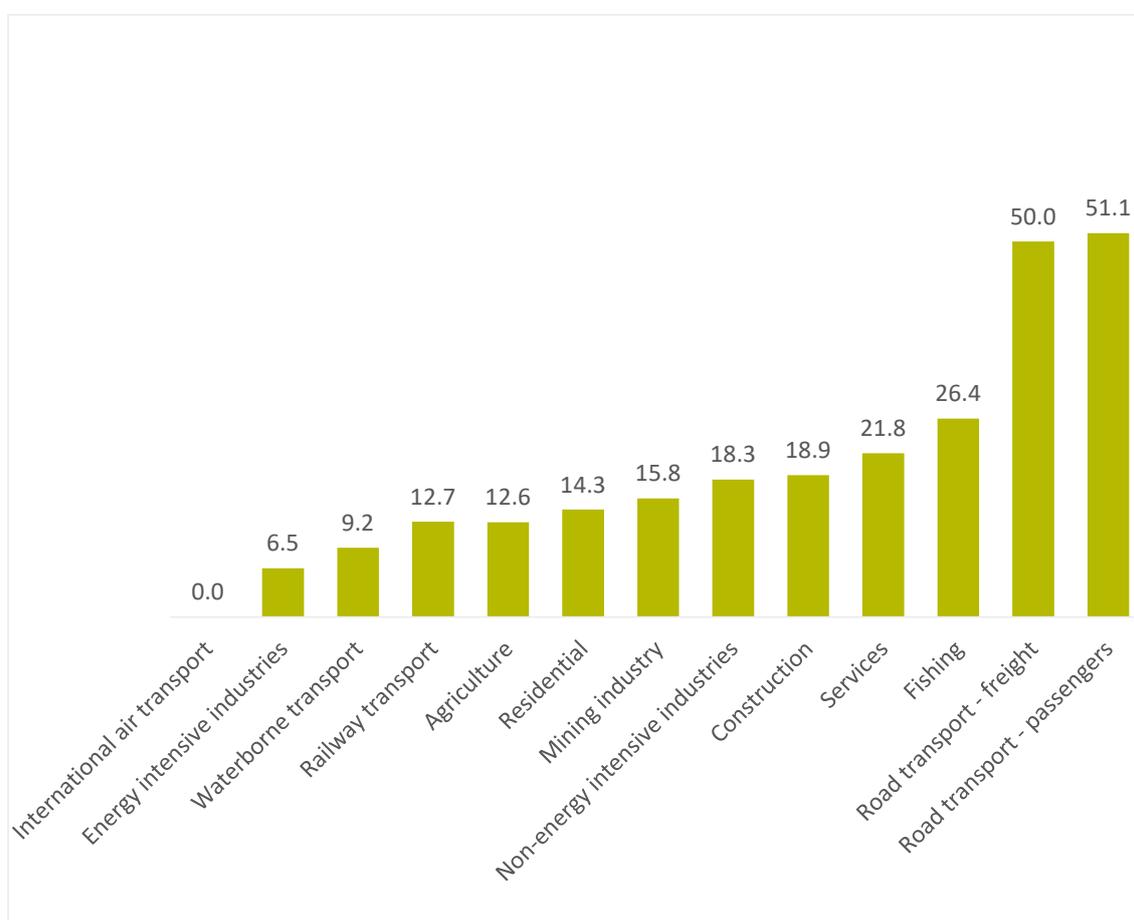
<sup>17</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Energy\\_intensity](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Energy_intensity)

<sup>18</sup> OECD, *Taxing energy use 2019*, October 2019.

€18/MWh<sup>19</sup>. As part of the impact assessment for its proposal for a revision of the ETD<sup>20</sup>, the Commission published effective tax rates for specific fuels for some sectors, but not overall *effective* tax rates per sector.

**23** *Figure 4* shows the average energy tax of the different sectors, calculated as the respective total energy tax revenues divided by their respective total energy use. Based on the data in the Trinomics report<sup>21</sup>, carried out for the Commission, the average energy tax varies widely from zero for international air transport to over €50 for road transport.

**Figure 4 – Energy taxes by sector in €/MWh**



Source: ECA based on Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments - Final Report Energy Taxes*, October 2020, p. 22.

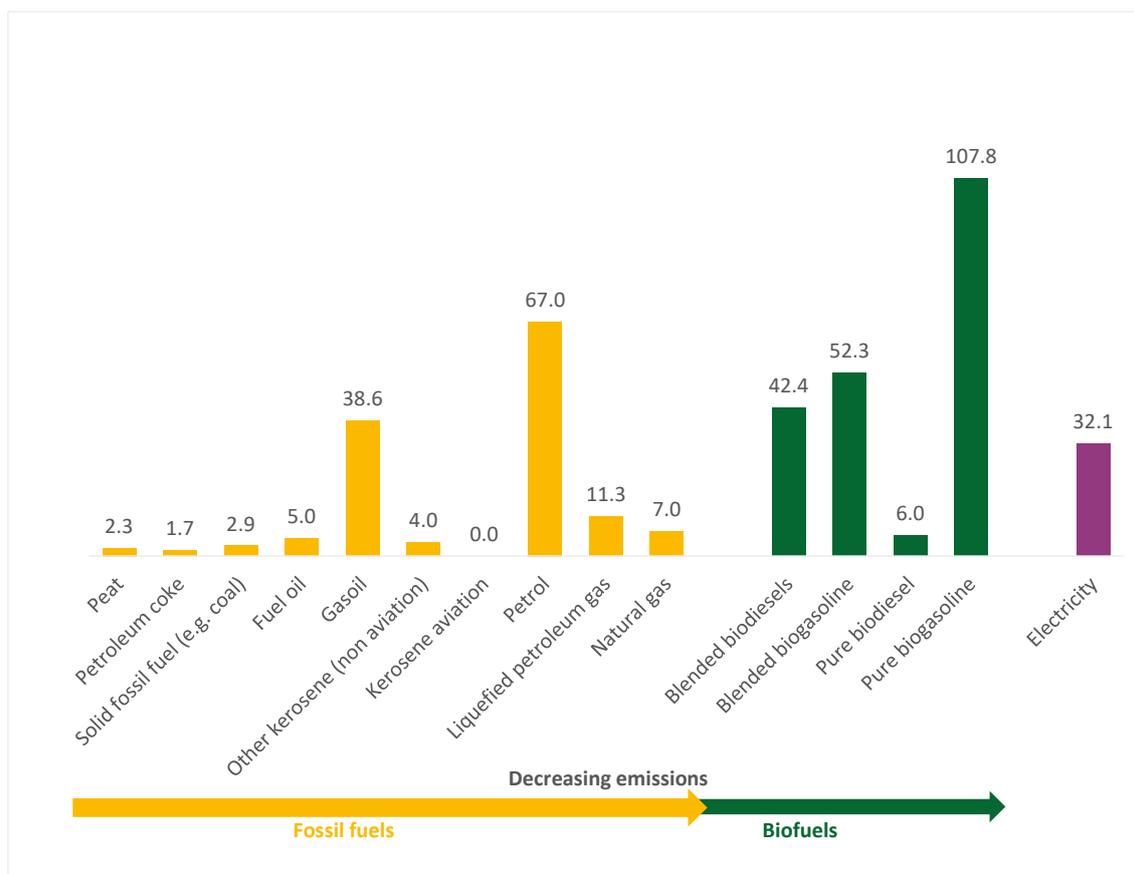
<sup>19</sup> Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments*, October 2020.

<sup>20</sup> Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast), COM(2021) 563 final.

<sup>21</sup> See footnote 19.

**24** The average tax rates for energy products range from €1.7/MWh to €107.8/MWh (see [Figure 5](#)). These variations do not reflect differences in carbon efficiency. Coal is taxed less than natural gas (which is more carbon-efficient), and some fossil fuels are taxed significantly less than electricity (which could be produced by low carbon sources).

**Figure 5 – Taxes by energy product in €/MWh**



Source: ECA based on Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments - Final Report Energy Taxes*, October 2020, p. 25.

## Carbon pricing

**25** International institutions<sup>22</sup> note that putting an appropriate price on carbon emissions supports climate objectives, and can be an efficient tool for reducing emissions. It also means polluters pay for the cost imposed on society by emissions from energy use. Carbon emissions can be priced via explicit carbon taxes and excise

<sup>22</sup> IMF Fiscal Monitor, *How to mitigate climate change*, October 2019; OECD, *Effective Carbon Rates 2021*, May 2021; IEA, Energy Policy Reviews; World Bank, [website](#).

duties (for which an implicit carbon tax equivalent can be calculated), or an emission trading system such as the EU ETS.

**26** In our report on sustainable finance<sup>23</sup>, we recommended that the Commission should identify additional measures that aim to ensure that the pricing of greenhouse gas emissions better reflects their environmental cost.

### ETS sectors receive free allowances for part of their emissions

**27** The EU ETS applies to the electricity and heat generation sectors, energy-intensive industries and intra-EU commercial aviation. It caps the total emissions of these sectors. Under the EU ETS, companies need to obtain emission allowances equivalent to their GHG emissions. The default option is to purchase them at an auction. However, allowances are allocated for free to energy-intensive industries (such as steel and cement production) and to the modernisation of the power generation sector in some Member States. In our 2020 report on EU ETS<sup>24</sup>, we noted that the allocation of free allowances was not sufficiently well targeted to reflect the risk of carbon leakage. Under the revised 2018 EU ETS legislation, the system of free allocations is prolonged for another decade<sup>25</sup>.

### Explicit carbon taxes became more common, but vary considerably between Member States

**28** The use of explicit carbon taxes, which directly put a price on CO<sub>2</sub> emissions, has increased over time. In 2008, seven Member States levied explicit carbon taxes. Currently, 14 EU Member States have such a tax (see [Figure 6](#)); these differ widely from €0.1/tonne CO<sub>2</sub> in Poland to over €100/tonne CO<sub>2</sub> in Sweden. These taxes do not usually apply to sectors already covered by the EU ETS. The highest share of total emissions covered is in Ireland (49 %), followed by Denmark and Sweden (40 %).

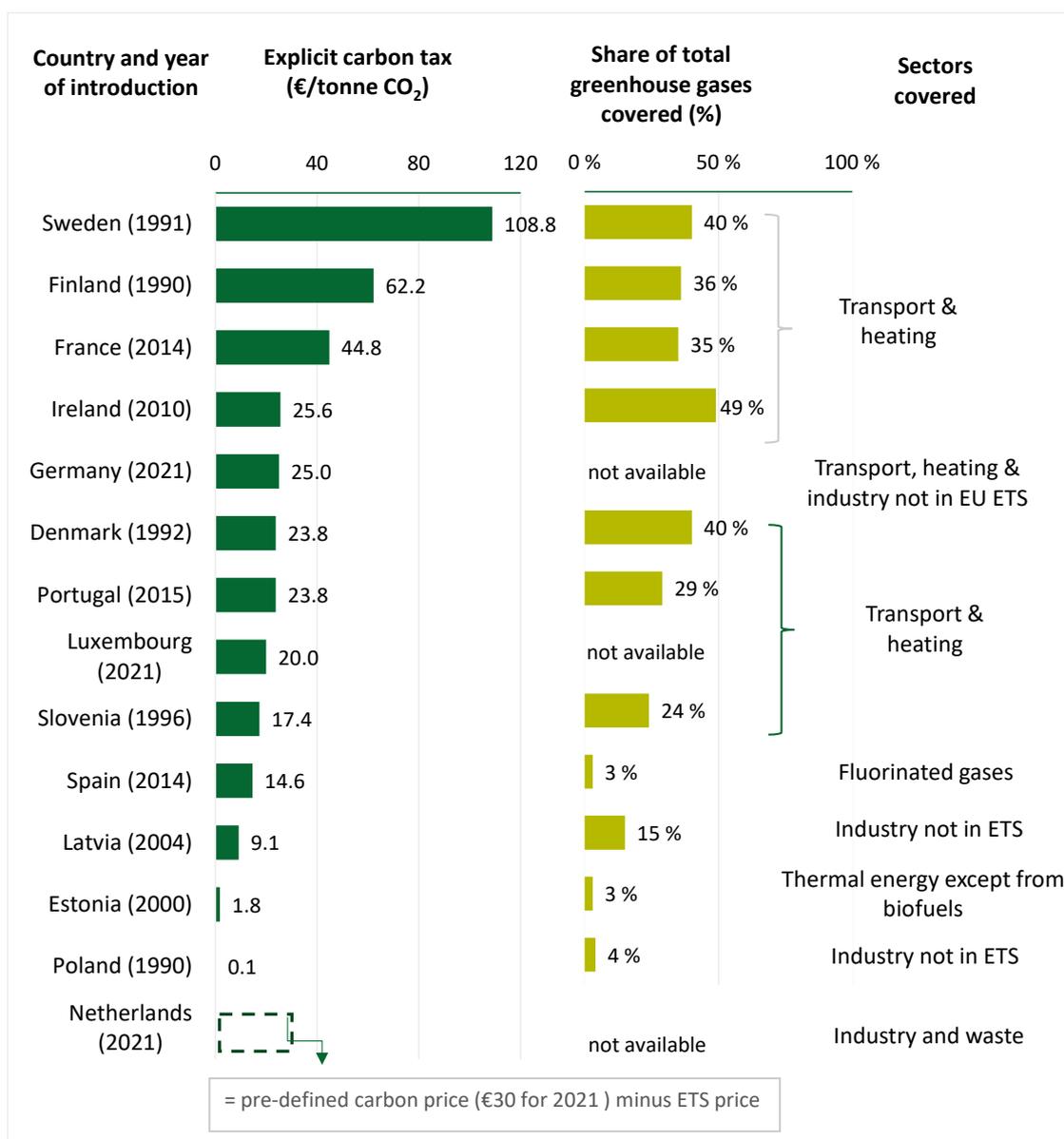
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<sup>23</sup> ECA, *special report 22/2021: Sustainable finance: More consistent EU action needed to redirect finance towards sustainable investment*, September 2021.

<sup>24</sup> ECA, *special report 18/2020: The EU's Emissions Trading System: free allocation of allowances needed better targeting*, September 2020.

<sup>25</sup> [Directive \(EU\) 2018/410](#) of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 (OJ L 76, 19.3.2018, p. 3).

**Figure 6 – Explicit carbon taxes in the EU**



*Note:* Data on the share of greenhouse gas covered are not yet available for Germany, Netherlands and Luxembourg, which introduced a carbon tax in 2021.

*Source:* ECA based on data from [Tax foundation](#), [Taxes in Europe database](#), and the OECD for identifying sectors covered by the explicit carbon tax for [Estonia](#) and [Poland](#).

## Benchmarking as a tool for evaluating the level of taxation

### Member States' taxes and ETS allowance prices

**29** The OECD recently benchmarked national carbon prices against various carbon costs<sup>26</sup>:

- €30/tonne of CO<sub>2</sub> – a historic low-end price benchmark. CO<sub>2</sub> prices below this benchmark do not trigger meaningful abatement;
- €60/tonne of CO<sub>2</sub> – a mid-range estimate of carbon costs in 2020, which also represents a low-end estimate of carbon costs in 2030. A carbon price of €60/tonne of CO<sub>2</sub> in the 2030s is consistent with slow decarbonisation;
- €120/tonne of CO<sub>2</sub> – a central estimate of the carbon price needed in 2030 to decarbonise by mid-century. The OECD notes that €120 is more in line with recent estimates of overall social carbon costs.

**30** Tax levels in EU Member States for energy uses other than road-transport fuels (see [Figure 4](#) and [Figure 5](#)) are below €30/tonne CO<sub>2</sub>, the level at which the OECD expects abatement efforts to start.

**31** The EU ETS is based on a long-term plan to gradually tighten the cap on total emissions for ETS sectors. This entails an expectation of a price increase, which could prompt businesses to act earlier. The EU ETS emission allowance price varied significantly over time (see [Figure 7](#)). Between 2008 and 2020, despite the EU ETS price being below the OECD's lowest benchmark, CO<sub>2</sub> emissions covered by the ETS declined by around 40 %<sup>27</sup>. The EU ETS price has increased since then: at the end of November 2021, the price of an emission allowance reached over €70.

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<sup>26</sup> OECD, *Effective carbon rates 2021*, May 2021.

<sup>27</sup> Based on EEA data.

**Figure 7 – Evolution of the emission allowance price**



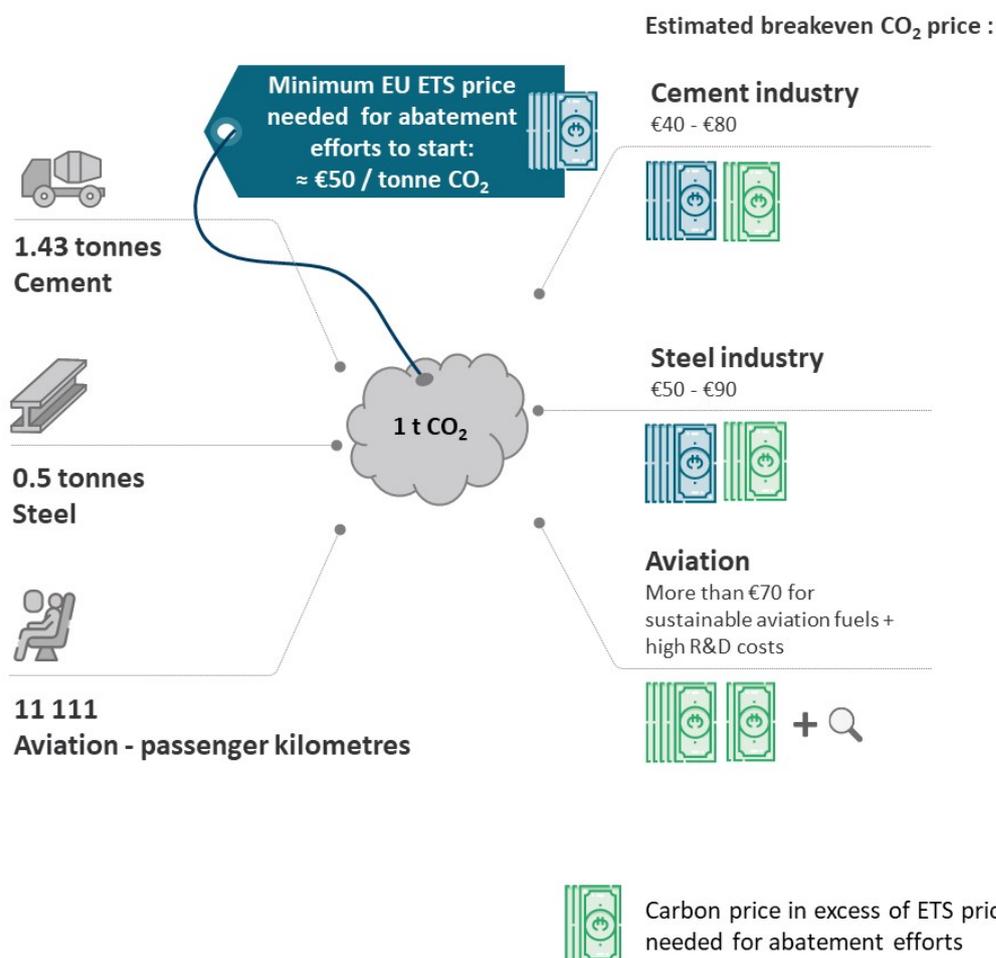
Source: ECA, based on [Sandbag carbon price viewer](#) and [EU ETS data viewer](#).

## Sectors where a higher carbon price is needed

**32** The CO<sub>2</sub> price that would reduce the competitive advantage of fossil fuels differs, depending on the sector of economic activity and technology concerned (see [Figure 8](#)). The *Institut du Développement Durable et des Relations Internationales* (IDDRI) calculated that low carbon technology for the cement industry would break even at a carbon price of €40 to €80/tonne CO<sub>2</sub>, while for steel the rate would be €50 to €90 per tonne of CO<sub>2</sub><sup>28</sup>. Based on International Energy Agency data, we estimated that a carbon price of over €70/tonne CO<sub>2</sub> would be needed to incentivise the uptake of sustainable aviation fuels and investments in research and development for low carbon technologies in aviation.

<sup>28</sup> IDDRI, *Decarbonising basic materials in Europe*, October 2019.

**Figure 8 – Estimated breakeven CO<sub>2</sub> price to reduce the competitive advantage of fossil fuels compared to low carbon technologies**



Source: ECA, based on data from Cordis, the Commission's website and the ICCT for emission intensity of industries; data from IDDRI and own calculations based on IEA data, the average oil price and the average EUR/USD exchange rate in June 2021 for the breakeven price.

**33** Taxation is, however, only one element of the national governments' response. Sectoral rules and regulations already exist in the EU, for example air-quality standards and limits on vehicle emissions. The Member States have specific policies to become more climate-friendly, such as France's recent proposal to ban of short-haul air travel where rail alternatives exist.

### Social aspects of taxation

**34** The energy taxation impact on households can be significant, and result in push-back against energy taxes. The Commission found that the amounts that households spend on energy (including both heating and transport) vary considerably. The poorest households, those in the lowest decile of the income distribution, in Luxembourg,

Malta, Finland and Sweden spend less than 5 % of their income on energy. In Czechia and Slovakia, they spend more than 20 % of their income on energy<sup>29</sup>.

**35** To alleviate the risk of rejection of tax reforms, international organisations<sup>30</sup> have recommended greater transparency about the reasons for tax reforms and the use of revenues, reductions in other taxes, and redistribution measures (see also **Box 1**). Studies<sup>31</sup> have shown that earmarking revenue can improve acceptance of carbon taxes.

### Box 1 – Rejection of energy-tax reforms

France introduced a carbon tax in 2014 to support its climate objectives; this included a schedule of tax increases. In 2018, against a backdrop of rising international oil prices, the price of energy soared, leading to civil unrest in the form of the “yellow vest” movement. The government froze the tax as a result. A 2019 report by France’s *Cour des comptes*<sup>32</sup> recommended returning to the planned increase in the carbon tax, supported by other measures such as compensation for the most affected households.

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<sup>29</sup> Commission staff working document SWD(2020) 951 final, *Energy prices and costs in Europe*, part 3/6, October 2020.

<sup>30</sup> OECD, environment working papers no 168, *Designing fossil fuel subsidy reforms in OECD and G20 countries: A robust sequential approach methodology*, October 2020; Centre for Climate Change Economics and Policy and Grantham Research Institute on Climate Change and the Environment, *How to make carbon taxes more acceptable*, December 2017 and Commission website – Conference on Green Taxation.

<sup>31</sup> Ibid.

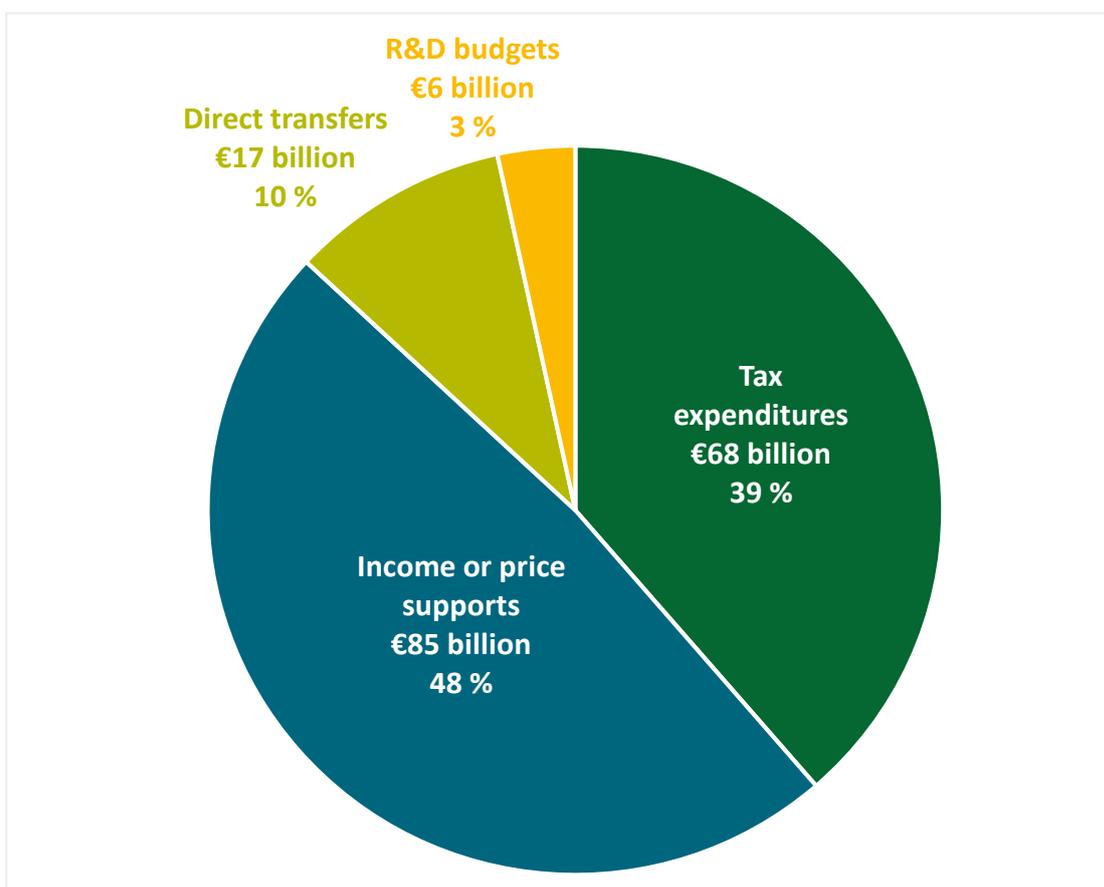
<sup>32</sup> *Cour des comptes, Conseil des prélèvements obligatoires, La fiscalité environnementale au défi de l’urgence climatique - Synthèse*, September 2019.

# Energy subsidies

## Types of energy subsidies

**36** Energy subsidies can take different forms: tax expenditure (e.g. tax credits and rebates), income or price support, direct transfers, or financing of research and development (see also paragraph **04**). Energy subsidies coming from taxation measures, and thus influencing the effective tax rate, represented 39 % of the total energy subsidies in 2019 – €68 billion out of a total of €176 billion (see **Figure 9**).

**Figure 9 – Energy subsidies by category in 2019**



Source: ECA based on the *Study on energy subsidies and other government interventions in the European Union* - Final report, October 2021.

**37** The Commission is responsible for the approval of some subsidies (e.g. tax exemption measures for biofuels<sup>33</sup>). This applies to selective measures that qualify as

<sup>33</sup> Commission website – News of 3 September 2021 on State aid.

state aid and do not fall under the general block exemption rules<sup>34</sup> or under *de minimis* rules<sup>35</sup> (below €200 000 for three years), and are not granted under an aid scheme already authorised by the Commission. The Commission has set out guidelines on the conditions under which it may consider aid for energy and environment compatible with the Treaty. In June 2021, the Commission published draft Climate, Energy, and Environment State Aid Guidelines<sup>36</sup>. Several NGOs expressed their concern regarding possible gaps in the newly introduced provisions for coal closures, and the risk of increased fossil gas support<sup>37</sup>.

**38** In the past, the Council has shown it has the power to decide on specific rules allowing Member States to provide state aid, thus neutralising the appraising power of the Commission, as has been the case for facilitating the closure of coal mines<sup>38</sup>.

### Renewable energy subsidies

**39** Energy subsidies have been increasing over time, driven by a rise in renewable energy subsidies which increased 3.9 times over 2008-2019<sup>39</sup> (see [Figure 10](#)).

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<sup>34</sup> [Commission Regulation \(EU\) No 651/2014](#) of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187, 26.6.2014, p. 1).

<sup>35</sup> [Commission Regulation \(EU\) No 1407/2013](#) of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid Text with EEA relevance (OJ L 352, 24.12.2013, p. 1).

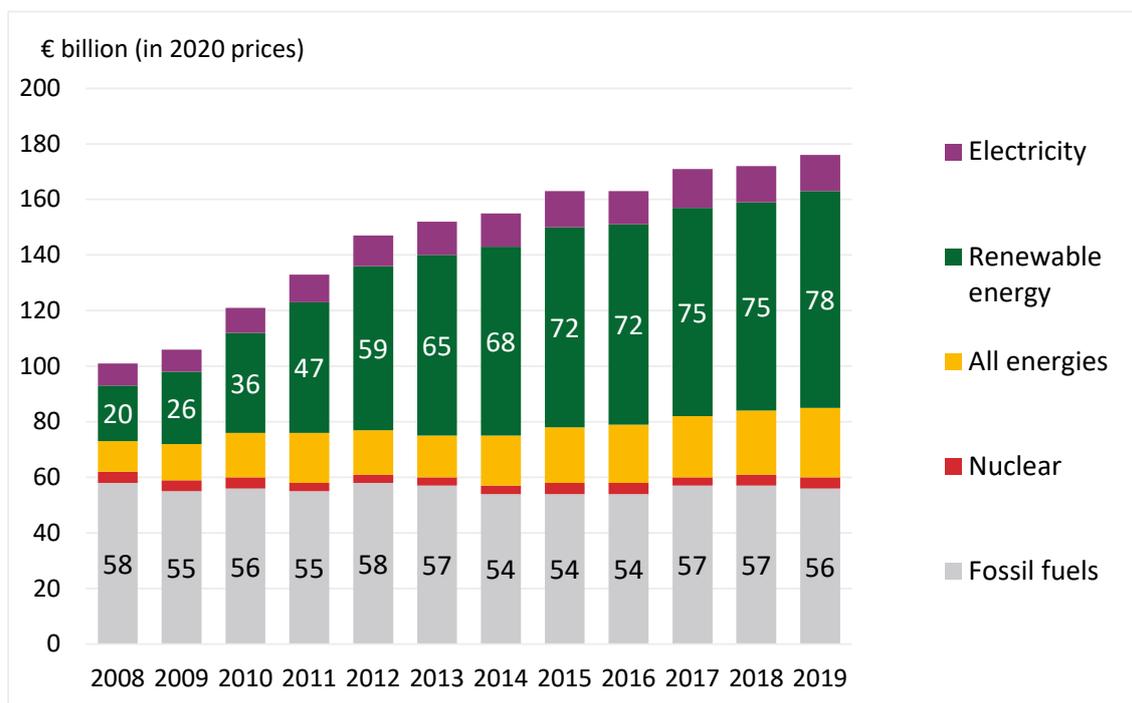
<sup>36</sup> Communication from the Commission, [Draft Guidelines on State aid for climate, environmental protection and energy 2022](#).

<sup>37</sup> State aid CEEAG revision – [NGO letter on fossil fuels](#).

<sup>38</sup> [2010/787/EU: Council Decision](#) of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines (OJ L 336, 21.12.2010, p. 24).

<sup>39</sup> See Trinomics, [Study on Energy costs, taxes and the impact of government interventions on investments](#), October 2020.

**Figure 10 – Energy subsidies by category between 2008 and 2019**



Source: ECA based on the *Study on energy subsidies and other government interventions in the European Union*, October 2021.

**40** Renewable energy subsidies can be used by Member States to support their climate objectives. These can take the form of financing the initial investment needed to use renewable energy; other forms include price guarantees, feed-in tariffs, and tax exemptions.

**41** The use of renewable energy for electricity generation increased in all Member States over the last decade. The growth in renewable energy subsidies contributed to the increase in the share of renewable energy sources in the EU, rising from 12.6 % in 2008 to 19.7 % in 2019, close to the 20 % target<sup>40</sup> for 2020.

### Energy-efficiency subsidies

**42** Subsidies can also be used to encourage improvements in energy efficiency. Energy-efficiency subsidies have more than doubled since 2008<sup>41</sup>, increasing from

<sup>40</sup> Eurostat data, *Share of renewable energy in gross final energy consumption (T2020\_31)*.

<sup>41</sup> See Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments*, October 2020.

€7 billion in 2008 to €15 billion in 2018. Energy efficiency received around 9 % of total EU energy subsidies in 2018; the biggest recipients were households.

**43** Member States report annually to the Commission on the progress made towards national energy efficiency targets. Their reports quantify the impact of measures aiming to bring energy savings. The Commission evaluation of these reports estimates that subsidies in the form of fiscal incentives and financing schemes contribute around 20 % of the total energy savings reported by Member States<sup>42</sup>.

### Fossil fuel subsidies

**44** Fossil fuel subsidies may take the form of tax exemption or tax reduction, budget transfers, income and price support, and the under-pricing of products. They pose significant risks<sup>43</sup>:

- undermining the effectiveness of carbon price signals, thereby hindering energy transition;
- contributing to damaging public health, as they favour the leading source of air pollution;
- increasing the risks of 'locking in' high-carbon investments and of investing in assets which need to be decommissioned before the end of their lifetime;
- distorting the market, making clean energy and energy-efficiency technologies relatively more expensive.

**45** A recent study on energy subsidies carried out for the Commission<sup>44</sup> showed that fossil fuel subsidies from EU Member States remained relatively stable from 2008 to 2019 at around €55-58 billion per year. Member States provided two thirds of these

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<sup>42</sup> Report from the Commission to the European Parliament and the Council, *2020 assessment of the progress made by Member States towards the implementation of the Energy Efficiency Directive 2012/27/EU and towards the deployment of nearly zero-energy buildings and cost-optimal minimum energy performance requirements in the EU in accordance with the Energy Performance of Buildings Directive 2010/31/EU*, COM(2020) 954 final, October 2020.

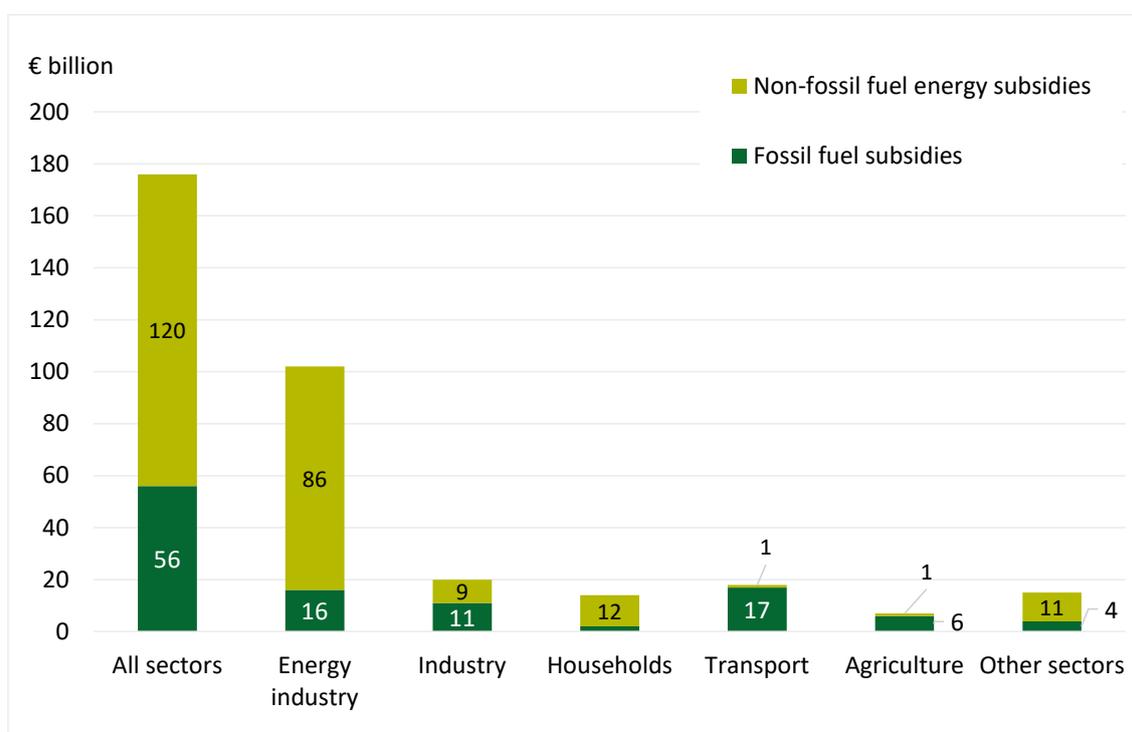
<sup>43</sup> ODI, *Fossil fuel subsidies in draft EU National Energy and Climate Plans*, September 2019.

<sup>44</sup> Study on energy subsidies and other government interventions in the European Union, October 2021.

subsidies (€35 billion in 2018) as tax exemptions or tax reductions; the other third (€8.5 billion) consisted of feed-in tariffs, feed-in premiums, renewable obligations and producer price support schemes for producing electricity from combined heat- and power-burning fossil fuels<sup>45</sup>.

**46** All sectors receive fossil fuel subsidies (see [Figure 11](#)). The energy industry receives both the most energy subsidies and the most fossil fuel subsidies in absolute terms. Fossil fuel subsidies represent the majority of the energy subsidies for three sectors: industry, transport and agriculture.

**Figure 11 – Energy subsidies and fossil fuel subsidies by sector in 2019**



Source: ECA based on the [Study on energy subsidies and other government interventions in the European Union](#), October 2021.

**47** We noted in our report on the EU ETS<sup>46</sup> that Member States which benefit from free ETS allowances for the power generation sector have reduced the related carbon intensity less than those Member States which were not eligible for free ETS allowances. Thus, free ETS allowances, which cover GHG emissions mainly from fossil

<sup>45</sup> See Trinomics, [Study on Energy costs, taxes and the impact of government interventions on investments](#), October 2020.

<sup>46</sup> ECA, [special report 18/2020: The EU's Emissions Trading System: free allocation of allowances needed better targeting](#), September 2020.

fuel use and could therefore be considered as fossil fuel subsidies, have slowed the uptake of low carbon technologies.

**48** The Governance Regulation requires Member States to report in their NECPs on the national objectives to phase out energy subsidies, in particular, for fossil fuels and the progress made to phase out. The European Climate Law empowers the Commission to provide uniform reporting formats on phasing out energy subsidies, in particular fossil fuel subsidies. The Commission informed us that the reporting arrangements are to be set out by means of an implementing act in 2022.

**49** The Commission's assessment of the NECPs<sup>47</sup> concludes that fossil fuel subsidies remain a major impediment to a cost-efficient energy and climate transition, and to a functioning internal market. Three Member States (Denmark, Italy and Portugal) have performed a comprehensive stocktake of fossil fuel subsidies, twelve stated that they would work on plans to phase them out, and six have included a timeline for doing so. In the State of the Energy Union report of 2021<sup>48</sup>, the Commission reiterated that fossil fuel subsidies should come to an end.

**50** International organisations regularly drew attention to the role of fossil fuel subsidies. In its Energy Policy Reviews (2016-2021), the International Energy Agency advised that subsidies for fossil fuels should be eliminated<sup>49</sup>, and that incentives and price signals should be aligned with climate objectives<sup>50</sup>. The OECD has called, in

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<sup>47</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *An EU-wide assessment of National Energy and Climate Plans - Driving forward the green transition and promoting economic recovery through integrated energy and climate planning*, COM(2020) 564 final, September 2020.

<sup>48</sup> Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, State of the Energy Union 2021 – *Contributing to the European Green Deal and the Union's recovery*, COM(2021) 950 final, October 2021.

<sup>49</sup> e.g. Belgium (2016); Germany (2020); Poland (2016).

<sup>50</sup> e.g. Austria (2020); Slovakia (2016); Finland (2018); European Union (2020).

Environmental Performance Reviews<sup>51</sup> and national Economic Surveys<sup>52</sup>, for a reduction in fossil fuel subsidies and an alignment between pollution and taxation.

**51** Our 2020 report on the EU ETS<sup>53</sup> recommended that the role of free allowances should be re-examined, and that they should be better targeted. The Commission accepted this recommendation and informed us that it is following up on it. We note that action on this would also contribute to reducing fossil fuel subsidies.

## Comparison of fossil fuel subsidies and renewable energy subsidies

### Fifteen Member States subsidise fossil fuels more than renewable energy

**52** We compared fossil fuel subsidies to renewable energy subsidies (see [Figure 12](#)). Overall, across the EU, renewable energy subsidies are higher. However, the aggregated data conceal significant differences between Member States. Fifteen Member States allocate more fossil fuel subsidies than renewable energy ones. Member States that spend more than the EU average on fossil fuel subsidies generally have a surplus of fossil fuel subsidies over renewable energy subsidies.

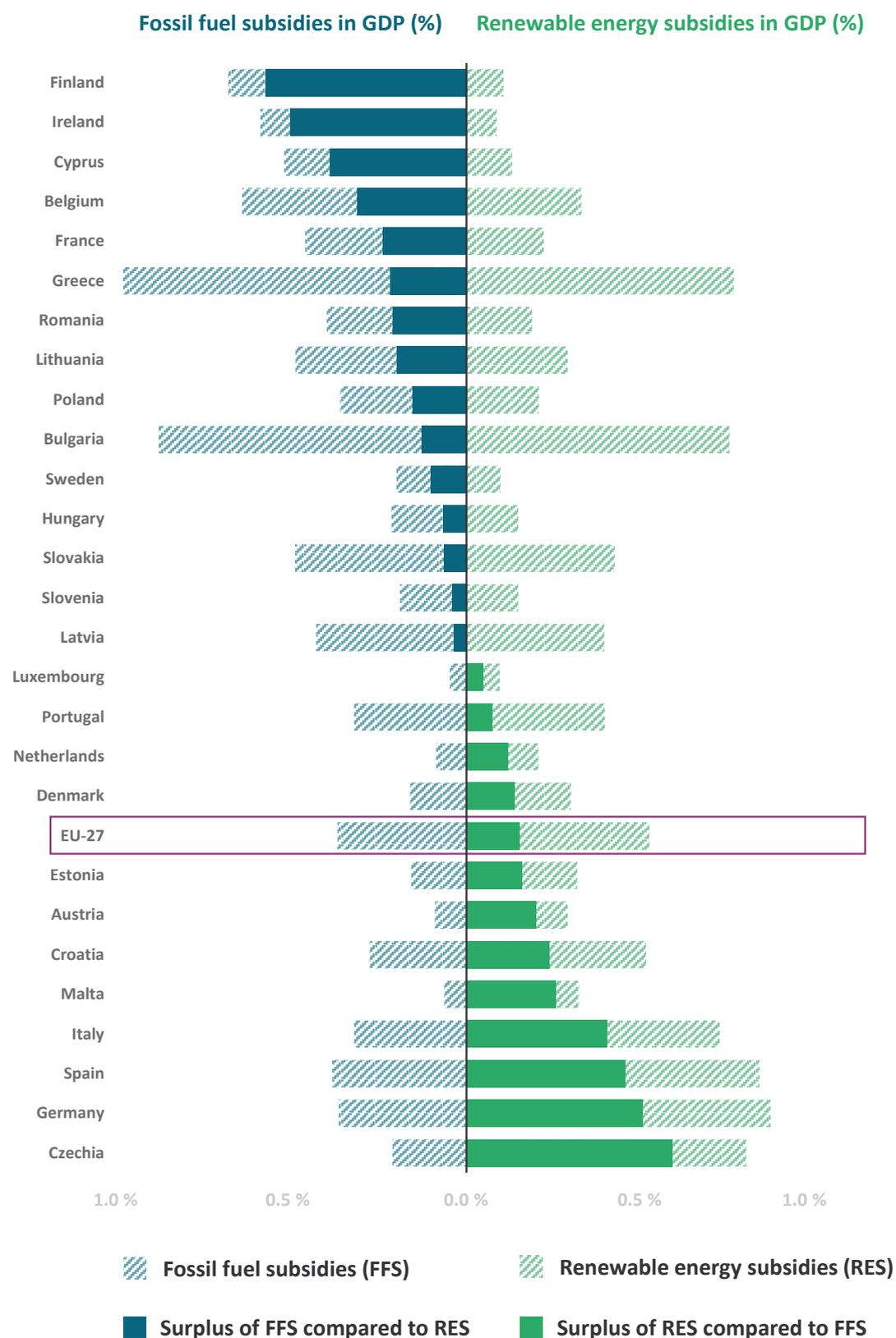
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<sup>51</sup> Czechia, Hungary.

<sup>52</sup> Czechia, Denmark, Germany, Greece, Spain, Netherlands, Poland, Portugal, Slovakia.

<sup>53</sup> ECA, *special report 18/2020: The EU's Emissions Trading System: free allocation of allowances needed better targeting*, September 2020.

**Figure 12 – Level of fossil fuel subsidies compared to renewable energy subsidies**



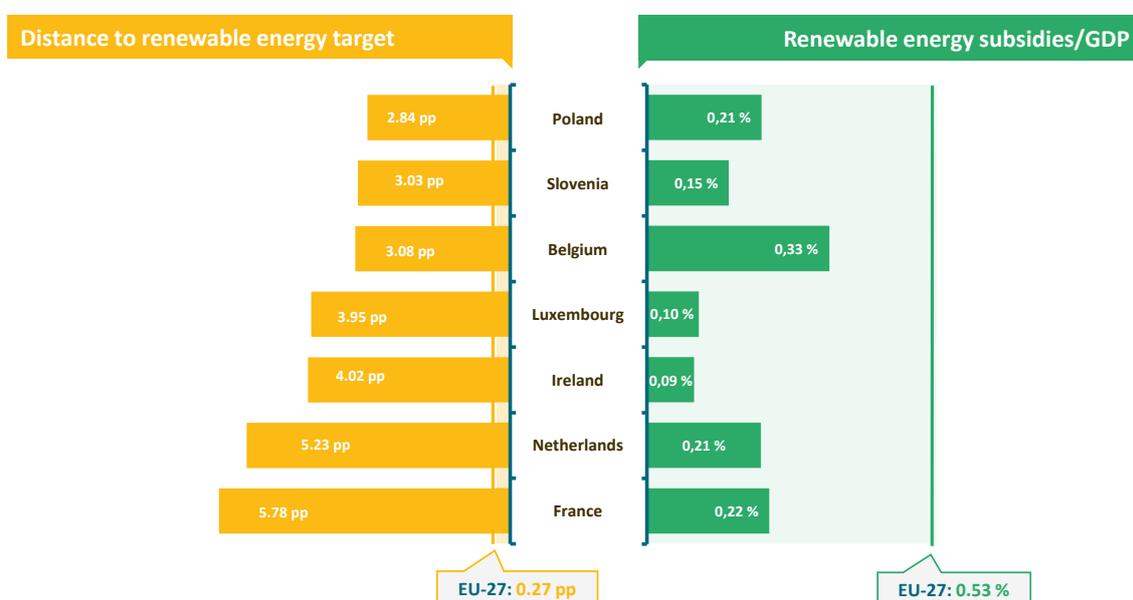
Source: ECA based on Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments*, October 2020.

Member States that are behind in their progress towards renewable energy goals allocate less funding to renewable energy

**53** We looked at the seven Member States that in 2018 and 2019 were more than two percentage points behind in terms of reaching their 2020 renewable energy targets<sup>54</sup>. We note that for these Member States the share of renewable energy subsidies in GDP is below the EU average (see *Figure 13*).

### Figure 13 – Distance to renewable energy target and level of renewable energy subsidies

Member States more than two percentage points away from their renewable energy target in 2019



Source: ECA, based on Eurostat data on the *Share of renewable energy in gross final energy consumption (T2020\_31)* and Trinomics, *Study on Energy costs, taxes and the impact of government interventions on investments*, October 2020.

<sup>54</sup> Defined in the [Directive \(EU\) 2018/2001](#) of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (OJ L 328, 21.12.2018, p. 82).

# Energy Taxation Directive – setting floors to energy taxation

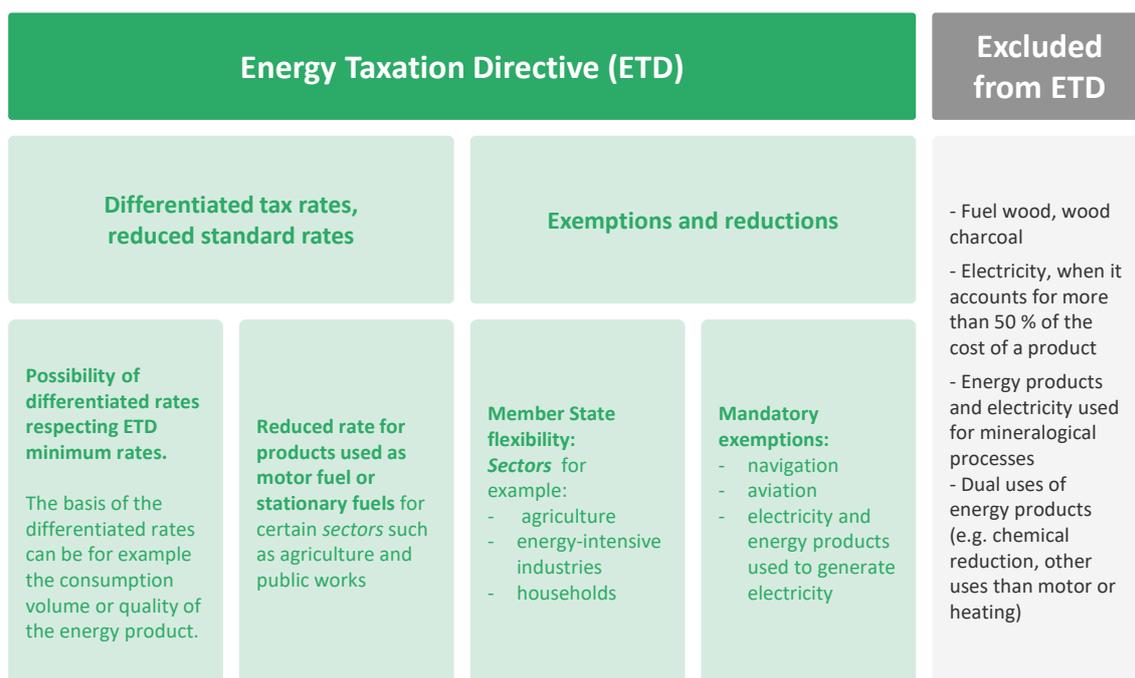
## The current ETD

### The ETD mainly aims to support the internal market

**54** The main objective of the 2003 ETD is to ensure the proper functioning of the internal market. It sets the minimum level of taxation for energy products and electricity to harmonise national legislation and avoid distortions in the internal market. It also supports other policies such as protection of the environment, the competitiveness of the EU economy and the social dimension. Since the ETD came into force, there have been significant developments in the EU such as greater climate ambition, technological progress and legislative updates. Since 2003, modifications to the ETD have only reflected formal changes through Council Implementing Decisions, such as the revision of Combined Nomenclature, which is used to define taxable energy products.

**55** Many users covered by the ETD can benefit from differentiated tax rates, reductions or exemptions decided by the Member States. *Figure 14* gives some examples of such flexibilities allowed by the ETD.

Figure 14 – ETD framework



Source: ECA, based on the [Energy Taxation Directive](#).

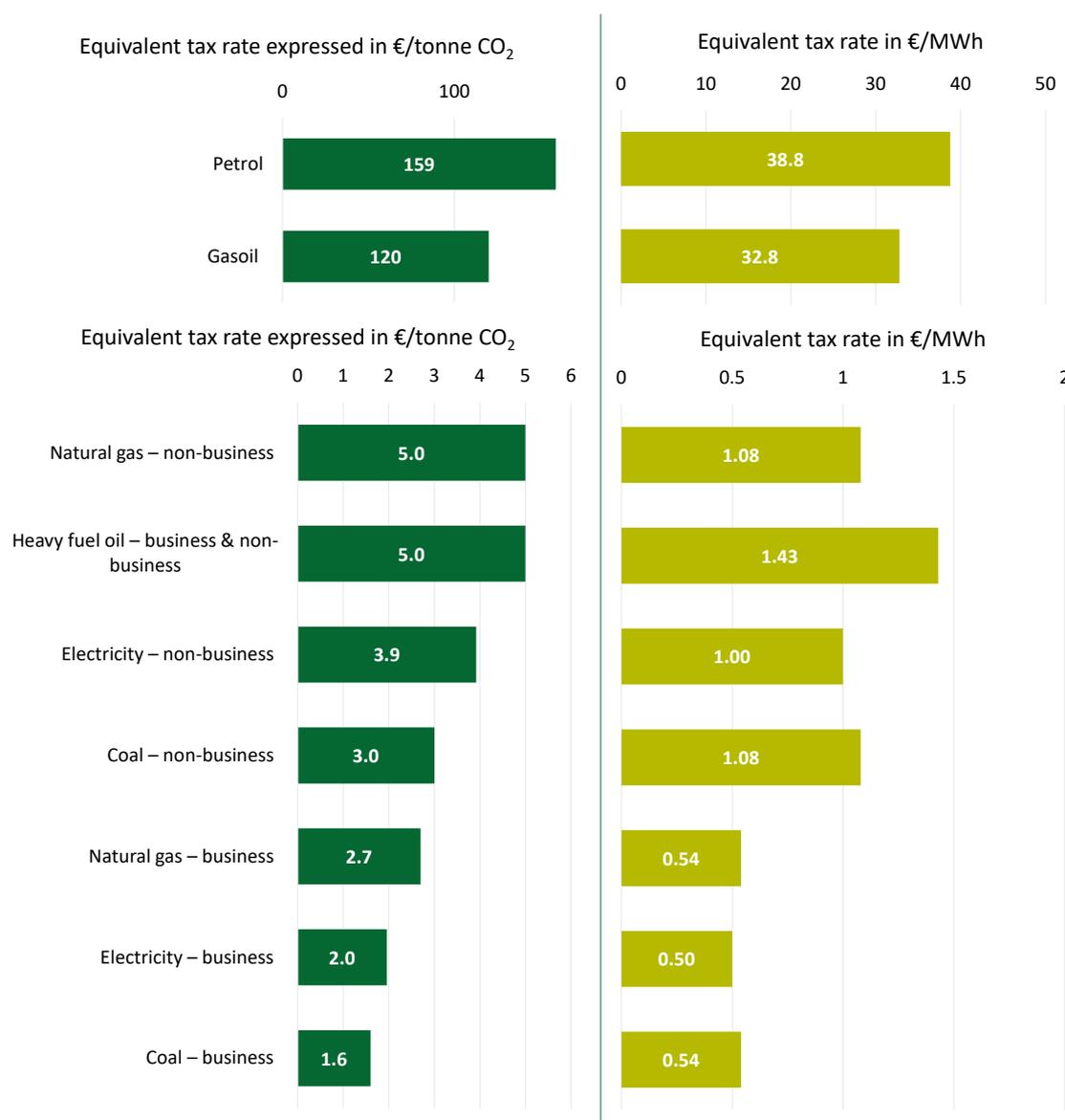
**56** The Commission's evaluation of the ETD<sup>55</sup> concluded that the Directive does not support the uptake of low-carbon alternatives, under-prices certain carbon-intensive fuels, and does not provide clear legal provisions for some new energy products, such as alternative fuels, e-fuels, synthetic fuels, bio-methane, and renewable fuels of non-biological origin. Moreover, the minimum taxation rates set in the Directive no longer fulfil their initial convergence role. Minimum taxation was introduced to reduce differences in national energy-tax levels. Over time, most Member States have increased tax rates significantly above the ETD minimum. This situation may lead to distortions in the internal market.

### Minimum levels of energy taxation do not incentivise the use of cleaner energy sources

**57** [Figure 15](#) summarises the carbon tax equivalent of the minimum taxation rate as calculated by the Commission. It shows that the minimum tax rate for the most polluting energy source – coal for business use – is among the lowest.

<sup>55</sup> Commission staff working document, *Evaluation of the Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity*, SWD(2019) 329 final.

**Figure 15 – Minimum taxation for selected energy products**



*Note:* The figures for the equivalent carbon tax for electricity are based on the [EU average greenhouse gas emission intensity of power generation](#), which depends on the energy source used to produce the electricity. CO<sub>2</sub> emissions vary from approximately 1 tonne CO<sub>2</sub> per MWh for coal-fired plants to zero for electricity produced from renewable sources such as solar and wind power or by nuclear power plants.

*Source:* ECA, based on [Commission evaluation of the ETD](#).

**58** The current ETD gives Member States scope to partially or fully exempt from energy taxation renewable energy sources such as biofuels and to fully exempt from taxation electricity sourced from renewables. The Commission notes<sup>56</sup> that these

<sup>56</sup> See footnote 55.

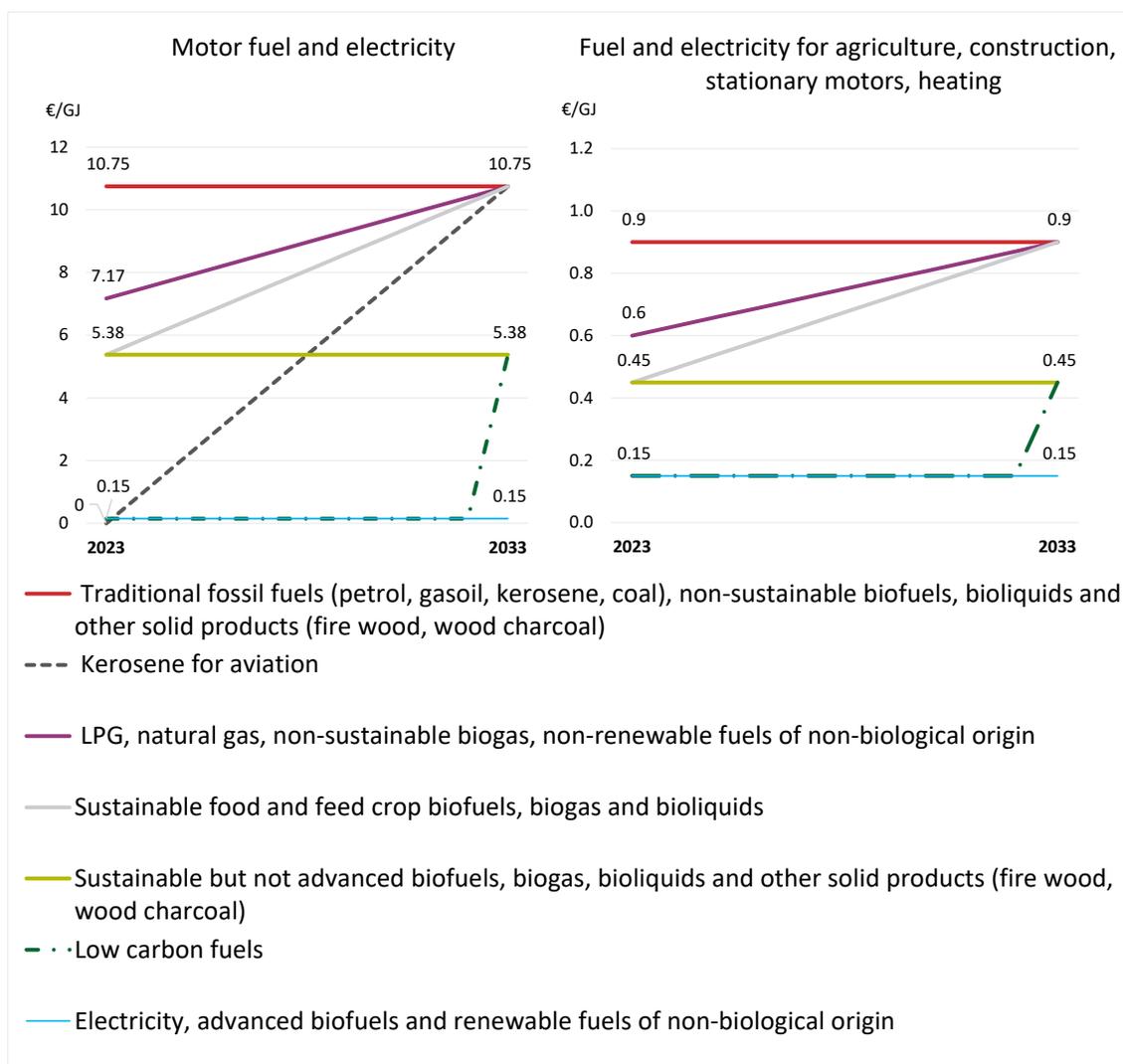
flexibilities do not ensure that overall renewable energy has a lower effective tax rate when compared with some fossil fuel sources.

## “Fit for 55” legislative proposals for energy taxation

The Commission has proposed new tax rates based on energy content

**59** The Commission put forward a new structure for tax rates as part of the ETD proposal (see [Figure 16](#)).

**Figure 16 – Proposed energy tax rates (non-indexed)**

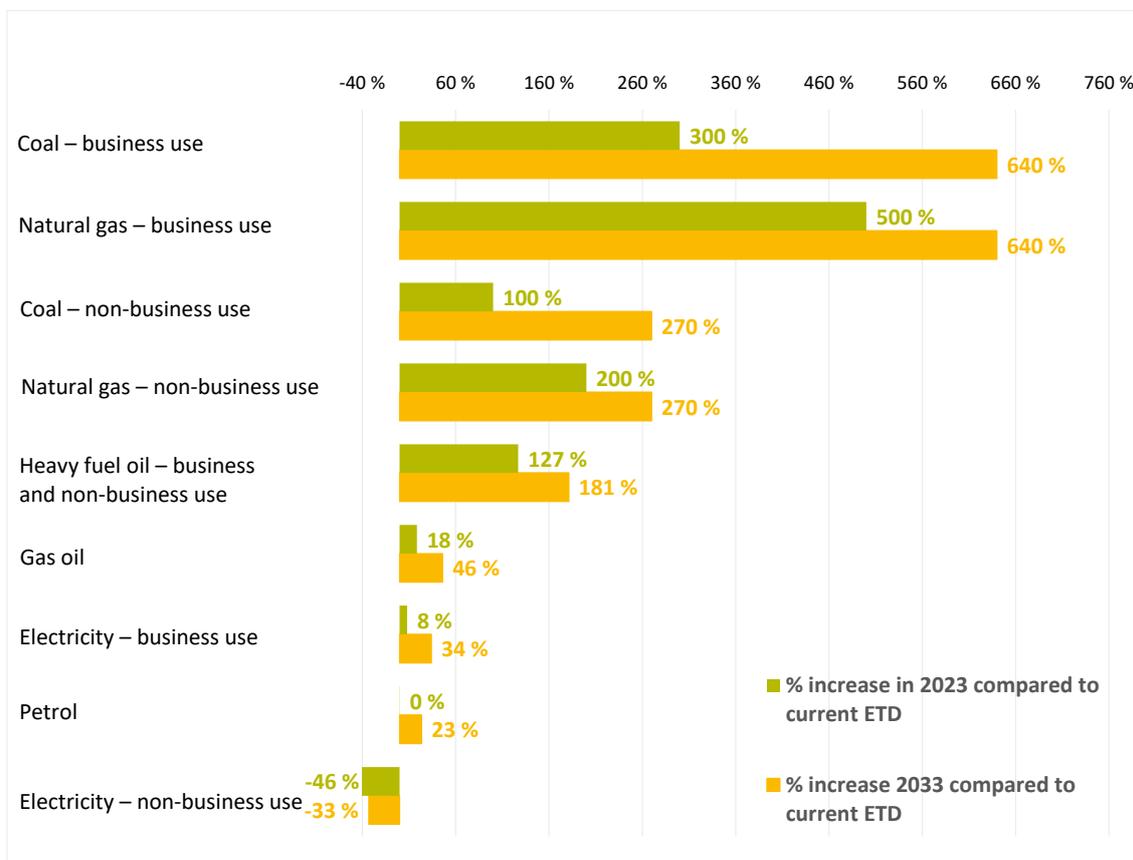


Source: ECA, based on data from the European Commission’s [Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity](#), COM(2021) 563 final, July 2021.

## 60 The proposed changes include:

- Introducing new tax rates based on energy content and environmental and climate performance:
  - moving from volume-based to energy-content taxation (€/GJ);
  - ranking and setting the minimum taxation of the different energy products according to their environmental performance;
  - increasing the minimum tax rates for motor and heating fuels, while reducing the minimum tax for electricity for non-business use (see [Figure 17](#));
- Removing the favourable treatment of some sectors or fuels, and extending the scope of the ETD:
  - eliminating the favourable treatment of diesel compared to petrol;
  - removing the tax exemption of kerosene for passenger air transport and heavy oil for maritime transport, for intra-EU journeys;
  - cancelling the possibility for Member States to fully exempt from taxation the energy consumption of energy intensive businesses and agriculture or reduce their taxation below the minima;
  - extending the scope of the directive to peat, fuel wood, wood charcoal, and alternative fuels (such as hydrogen);
  - specifying different minimum energy-tax rates for the different categories of bio-fuels;
  - removing the distinction between business and non-business use;
- Transitional provisions:
  - increasing energy-tax increases gradually over a 10-year transition period from 2023 to 2033 for some fuels and uses to smoothen the transition from current full exemption. Most notably, transition periods apply to households and the aviation sector;
  - indexing minimum tax rates to inflation;
- Maintaining the possibility for Member States to apply exemptions and reductions for social or environmental-protection reasons.

**Figure 17 – Changes to energy tax rates from current minimum levels to the proposed minimum levels in 2033 (non-indexed to inflation)**



*Note:* Conversion factors used to convert the volumetric rates are based on the Commission’s impact assessment.

*Source:* ECA based on European Commission’s *Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity*, COM(2021) 563 final, July 2021 and its impact assessment.

## The Commission’s additional proposals on climate and energy

**61** The “Fit for 55” package also includes:

- a proposal to amend the ETS, including maritime transport in the ETS and a tightening of the allowance cap;
- a separate but adjacent emissions trading system for the use of fuels for combustion in the road transport and buildings sectors;
- a Social Climate Fund – funding dedicated to citizens who want to finance investments in energy efficiency, new heating and cooling systems, and cleaner mobility;

- a Carbon Border Adjustment Mechanism (CBAM). The proposed rules require importers of goods to pay for CBAM certificates equivalent to the GHG emissions embedded within them. A discount is proposed for emissions covered by the GHG pricing mechanism in the country of origin. The Commission proposed to introduce CBAM gradually, as free allowances under the EU ETS are phased out;
- the ReFuelEU Aviation – a regulation requiring increases in the levels of sustainable aviation fuels used for jet fuels taken on board at EU airports;
- the FuelEU Maritime – a regulation aiming to stimulate the uptake of sustainable maritime fuels and zero-emission technologies, setting a maximum limit on the GHG intensity of the energy used by ships calling at European ports;
- updates of the Energy Efficiency Directive and Renewable Energy Directive.

## Closing remarks

**62** The Commission has identified energy taxation as a key driver of energy savings. In their National Energy and Climate Plans, Member States note that taxation will contribute significantly to future energy savings.

**63** Tax levels vary widely between sectors and between energy carriers. Under the current Energy Taxation Directive, more polluting sources of energy may have a tax advantage compared to carbon-efficient sources of energy.

**64** While a majority of Member States impose taxes on fuels that significantly exceed the minimum levels established in the Energy Taxation Directive, several Member States keep taxes close to the minimum. This situation may lead to distortions in the internal market.

**65** The EU's Emission Trading System and national carbon taxes complement the EU energy taxation framework. However, free emission-trading allowances allow some market participants not to pay for part of their CO<sub>2</sub> emissions. This will continue to be the case over this decade.

**66** Fossil fuel subsidies represent an obstacle in reaching climate goals because they hinder the green energy transition. Overall, Member States' subsidies for fossil fuels amount to over €55 billion per year. They have been relatively stable over the last decade, despite calls to phase them out. Some Member States spend more on fossil fuel subsidies than on green subsidies.

**67** In July 2021, as part of the "Fit for 55" legislative package, the Commission published a proposal for a revision of the Energy Taxation Directive. This aims to address weaknesses in the current energy tax legislation and, in particular, to align taxation level more closely with energy content and the environmental performance of energy carriers. It still allows Member States to reduce energy tax rates for some sectors, for environmental, energy efficiency and energy poverty reasons.

**68** The legislative package also includes a proposal to extend the Emission Trading System to maritime transport and introduces a separate emission trading system for road transport and buildings. The gradual phasing out of the free allowances linked to a risk of carbon leakage is accompanied by the proposed phasing in of the Carbon Border Adjustment Mechanism.

**69** Taken together, these proposals would tax energy use and price GHG emissions on a wider scope than the current legislation.

**70** One of the challenges for EU policymakers is to find ways to align EU energy taxation with climate policy objectives. Low carbon prices and low energy taxes on fossil fuels increase the relative cost of low carbon technologies and delay the green energy transition. As we have previously noted, free allowances granted to electricity generation in certain Member States have slowed the uptake of green technologies.

**71** Taxation policy is not the only instrument affecting energy use, and the challenge is to find the right mix between regulatory and financial measures. Well-targeted subsidies and well-defined regulatory standards can be used to complement and reinforce taxation support for greener energy and energy savings.

**72** Conversely, fossil fuel subsidies hinder or increase the cost of the energy transition. Phasing them out by 2025, to which the EU and its Member States have committed, will be a challenging social and economic transition.

**73** The social impact of the different initiatives can be significant, and can have a negative impact on the transition to a greener economy if not addressed. Perception of unfair treatment for some groups or sectors may result in resistance to progress in this area.

**74** These challenges will need to be faced in the institutional context of unanimity on taxation issues.

This review was adopted by Chamber I, headed by Mr Samo Jereb, Member of the Court of Auditors, in Luxembourg on 15 December 2021.

*For the Court of Auditors*

Klaus-Heiner Lehne  
*President*

# Glossary

**Biodiesel:** Liquid biofuel that is suitable for blending with, or as a replacement for, gas/diesel oil of fossil origin.

**Biofuel:** Fuel produced from dry organic matter or combustible plant oils.

**Biogasoline:** Liquid biofuel that is suitable for blending with, or as a replacement for, conventional petrol.

**Carbon content:** CO<sub>2</sub> and other greenhouse gasses with a CO<sub>2</sub> equivalent effect that are released through the combustion or oxidation of a fossil fuel, or that are associated with the combustion or oxidation of a fossil fuel used to generate electricity.

**Carbon leakage:** An increase in GHG emissions owing to transfer of production from a country with strict emission constraints to one where the rules are not so strict.

**Decarbonisation:** Transition to an economic system with reduced emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases.

**Emission Trading System:** System for meeting greenhouse gas emission reduction objectives in certain sectors, whereby the total amount of emissions is capped and allowances, in the form of emission permits, can be bought and sold by companies or other entities participating in the system.

**Feed-in premium:** A policy instrument paying a premium on top of the market price to producers of electricity.

**Feed-in tariff:** A policy mechanism offering producers a fixed price over an extended period of time for each unit of energy supplied to the grid.

**Final energy consumption:** The total energy consumed by end users, such as households, industry and agriculture, excluding that which is used by the energy sector itself.

**Fit for 55:** An EU legislative package for meeting climate goals, in particular reducing the EU's greenhouse gas emissions by at least a 55 % by 2030.

**Greenhouse gas:** A gas in the atmosphere – such as carbon dioxide or methane – that absorbs and emits radiation, trapping heat and so warming the Earth's surface through what is known as the greenhouse effect.

**Primary energy consumption:** Total energy demand, including consumption by the energy sector itself, losses during the transformation and distribution of energy, and

final energy consumption, but excluding the use of energy carriers for non-energy purposes (e.g. petroleum for producing plastics).

**State aid:** Direct or indirect government support for a business or an organisation, giving it an advantage over its competitors.

# Acronyms and abbreviations

**ECA:** European Court of Auditors

**ETD:** Energy Taxation Directive – Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJ L 283, 31.10.2003, p. 51)

**ETS:** Emissions Trading System

**GJ:** Gigajoule

**IDDRI:** Institute for Sustainable Development and International Relations – a non-profit research centre in Paris

**IEA:** International Energy Agency

**IMF:** International Monetary Fund

**kWh:** Kilowatt hour

**MWh:** Megawatt hour = 3.60 GJ

**NECP:** National Energy and Climate Plan

**NGO:** Non-Governmental Organisation

**OECD:** Organisation for Economic Co-operation and Development

**SAF:** Sustainable Aviation Fuel

**SDG:** Sustainable Development Goal

**Toe:** tonne of oil equivalent = 41.8 GJ

**VAT:** Value-Added Tax

## ECA team

This report was adopted by Chamber I Sustainable use of natural resources, headed by ECA Member Samo Jereb. The task was led by ECA Member Viorel Ștefan, supported by Roxana Bănică, Head of Private Office and Olivier Prigent, Private Office Attaché; Emmanuel Rauch, Principal Manager; Lucia Roșca, Head of Task; Josef Edelmann, Anna Zalega, Auditors and Marika Meisenzahl provided graphical support.



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This report assesses how energy taxes, carbon pricing and energy subsidies fit with EU climate objectives. Energy taxation can support climate efforts, but current tax levels do not reflect the extent to which different energy sources pollute. Renewable energy subsidies have almost quadrupled over 2008-2019, while fossil fuels subsidies have remained stable. Fifteen Member States spend more on fossil fuel than on renewable energy subsidies. In mid-2021, the Commission published a proposal to revise the Energy Taxation Directive. Our report outlines challenges faced by policymakers when updating energy taxation and subsidies policies: ensuring energy taxation consistency across sectors and energy carriers; reducing fossil fuel subsidies, and reconciling climate objectives with social needs.

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