

## MARKET-BASED INSTRUMENTS FACT SHEET

### Key messages

- **Environmental taxes** were 2.4% of EU-27's GDP and 6% of its total tax revenues, amounting to EUR 324.6 billion in 2018.
- Environmental taxes are dominated by **energy tax** (77.7%) and also include transport (19.1%) and resource/pollution taxes (3.3%).
- The EU's total **energy-related subsidies** were EUR 169 billion in 2016, with 55 billion on fossil fuels and 76 billion on renewables.
- **Emissions trading**, a flexible and cost-effective tool, helps deliver the EU's 2030 climate targets and other objectives.

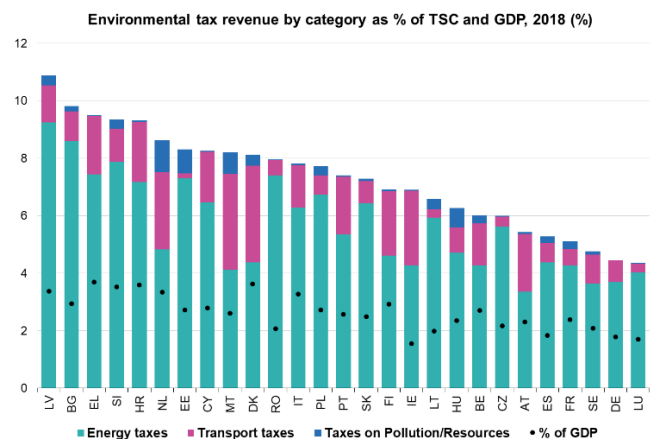
### Background

Economic or market-based instruments (MBIs) aim to correct market failures through pricing, reinforcing the polluter-pays principle (PPP). They allow for lower cost for regulators, less reporting, provide incentives for innovation and cost-effectiveness, generate revenues, and can also support employment if used as part of environmental tax reforms (ETR) – increased environmental taxation with the reduction of other, more distorting taxes e.g. on labour – ensuring budget neutrality while offering win-win both for environment and economy. However, effective MBIs can also lead to decreasing revenues via shrinking tax bases. The main MBI groups include taxes, fees, charges, deposit-refund systems; subsidies; and marketable/tradable rights.

### Environment-related taxes

**Environment-related taxes** reported in the EU include energy-, transport-, pollution- and resource taxes. Energy taxes are EU-level taxes, with a comprehensive system based on the Energy Taxation Directive (ETD, 2003/96/EC) that set minimum tax rates (per consumption volume) for energy products used as motor fuel, heating fuel and electricity. Tax benefits under the ETD amounted to EUR 40 billion in 2016<sup>1</sup>. The **ETD evaluation**<sup>2</sup> found that i) the wide range of exemptions and reductions favour the consumption of fossil fuels, ii) the Directive does not adequately promote GHG reductions, energy efficiency and alternative fuels (hydrogen, synthetic fuels, e-fuels, advanced biofuels, electricity etc.), iii) the ETD does not contribute any more to the proper functioning of the internal market. The EU Green Deal committed to **revise the**

**ETD, potentially extending** it to aviation and maritime. Almost half of Member States apply some form of carbon taxes. Transport taxes include one-off taxes (e.g. vehicle registration) or recurrent ones (annual circulation tax, road use charges). Albeit the reported pollution and resource taxes represent a small share of the total, they cover a wide range of taxes. These include producer responsibility schemes, recycling fees, product taxes, landfill taxes, water or air pollution taxes. Resource tax popularity is increasing, often applied at regional level (Germany, Italy, Spain). A few countries have levies on pesticides/fertilizers.<sup>3</sup>



Since early 2000s, the EU's **environmental taxes** have been **relatively stable**, ranging around 2.5% of GDP and 6-7% of total tax revenues. In 2018, they were 2.4 and 6% respectively, with a total environmental tax revenue of EUR 324.6 billion in the EU-27. Within total taxes, environmental taxes were the highest in Latvia (10.9%), followed by 4 countries with 9-10% (Bulgaria, Greece, Slovenia and Croatia), while the lowest values belonged to Luxemburg, Germany and Sweden (<5%). Relative to GDP, environmental taxes were between 1.6% (Ireland) and 3.7% (Spain). Since the 2000s, environmental taxes are strongly **dominated by energy tax**, with 77.8% of the total in 2018, while 19.1% related to transport and 3.3% directly to pollution/resources – this latter ranged between 3.3-3.6% since 2002. Energy tax mostly arise from transport fuel – two-thirds on EU average, reaching 90% in some countries<sup>4</sup>. Member States differences are important: energy taxes range between 50-94% of total environmental taxes, while pollution/resource taxes between 0-13% (over 10% in the Netherlands, Hungary and Estonia).<sup>5</sup>

By economic activity, 49.1% of energy taxes (on average) were paid by households, 26.9% by productive sectors (manufacturing, construction, mining, utilities) and 18.3% by services in 2017. Households payed also most of the transport taxes (two-thirds, due to motor vehicle taxes), followed by services (24.6%) and the productive sectors (7.1%).

## Environment-related subsidies

Subsidies, direct financial aid (grants) and indirect support (tax benefits) by public bodies to economic sectors promote policies – while many are economically/socially inefficient or adversely impact the climate, health or the environment, e.g. by promoting polluting and energy-intensive processes, the wasteful use of resources, also introducing distortions in the Single Market. There is wide-scale consent on phasing out such **environmentally harmful subsidies** (EHS). IEA and IMF documented EHS reforms in ca. 30 countries worldwide in 2013-2014, finding that successful reforms happened with strong government commitments and communication, complementary (eg. social) programs and suitable timing. European reform examples, e.g. in Poland, France confirm this and the need to improve efficiency to cut costs. Curbing EHS combined with Environmental Tax Reform (ETR) is referred to as Environmental Fiscal Reform (EFR). Subsidies need to be in line with **state aid rules**, ensuring EU Member States do not support their own industries to the detriment of others.

EU initiatives aimed at **phasing-out of EHS** (incl. on fossil fuels) by 2020, while international commitments (eg. G7, G20) envision it by 2025. Estimates on subsidies, concerning energy and other EHS, range up to EUR 200 billion (direct and indirect) at EU level and up to USD 5 trillion worldwide. EU's Energy Union package showed EUR 120 billion a year of energy subsidies. A recent report refers to stable fossil fuel subsidies in the EU (EUR 54-60 billion in 2008-2016), along with increasing renewable energy subsidies: in 2016, the EU's total energy-related subsidies were EUR 169 billion, with 76 billion for renewables, indicating a three-fold increase over 2008.<sup>6</sup>

**IMF's integrated methodology** has higher amounts by adding external social costs.<sup>7</sup> It estimates that the EU-28's fossil fuel subsidies amounted to EUR 330 billion in 2015, almost half concentrated in 3 countries, Germany, Poland and the UK. Per capita fossil-fuel subsidies in most Member States remained under EUR 1,000, in a few cases (Denmark, Poland, Czech Republic) between EUR 1,000-2,000, while they were the highest in Bulgaria (EUR 2,721) and Luxemburg (EUR 3,747). At EU-28 level, subsidies on coal accounted for around 60% of the total in 2015, with petroleum and natural gas with shares of around 20% each. In Bulgaria, coal subsidies reached almost 90% of the total, while in Luxemburg, Petroleum had similar, around 90% share.

The International Energy Agency (IEA) data shows that **subsidies for IEA countries** on fossil fuel consumption (USD 300 billion in 2009), almost doubled by 2012, making 5% of the group's GDP. Since 2014, subsidies dropped due to reforms, falling to USD 470 billion in 2014, 317 billion in 2015 and 276 billion in 2016. Without reforms, IEA estimates that subsidies would have increased over USD 600 billion. However, latest data show an increase again (due to higher oil prices), with fossil subsidies reaching 427 billion in 2018. The IMF estimates that **global fossil energy subsidies** made USD 4.7 trillion (6.3% of GDP) in 2015 and USD 5.2 trillion (6.5% of GDP) in 2017. China was the largest subsidizer (USD 1.4 trillion), followed by the US (649 billion), Russia (551 billion), the EU (289 billion) and India (209 billion). Coal and petroleum remain the largest sources of subsidies (44 and 41% respectively), followed by natural gas (10%) and electricity output (4%).

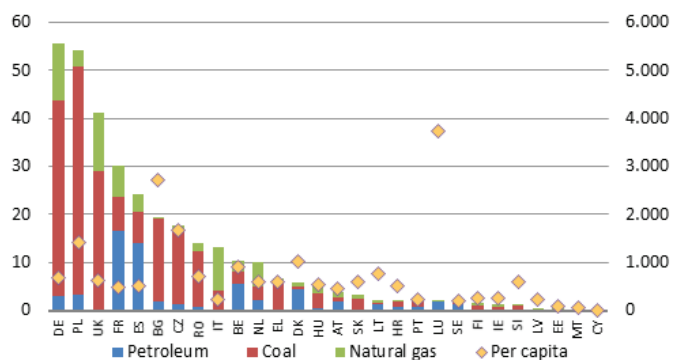
Beyond climate and energy, there are **subsidies in other sectors** that present big challenges for achieving air/water/land/biodiversity objectives e.g. farming (CAP)-, or low-cost housing subsidies – leading to land-take, urban sprawl and biodiversity/ecosystem degradation.

## Tradable emission rights

Emission trading allows for **emission reductions at lower economic costs** than conventional instruments, through innovation. As emissions need to be covered with credits/rights, this pushes for in-house or purchased innovation or to buy emission rights from those who made cuts and sell surplus rights. Individual cost-effective strategies result in economically efficient allocation of reductions among polluters with emissions cuts where they cost the least. Over time, trading caps are lowered in line with emission reduction plans. Restricting supply leads to allowance price increases, incentive for further cuts. Quantitative, cap-and-trade systems bring more certainty in terms of specific objectives than pure price-based instruments. Trading systems can also generate budget revenues, if allowances are distributed at auctions. Since its launch in 2005, the EU's Emission Trading Scheme (EU ETS) is the world's largest **carbon trading** system for carbon allowances (credits), with further systems operating in Switzerland, California, New Zealand, Australia, South Korea, India and one being prepared in China, to be launched in 2020. By 2015, the EU's share in global CO<sub>2</sub> emissions dropped under 10%, China climbed on top (30%) and the US (14%) ranked second. Future evolution of carbon trading will likely include linkages among major regional schemes with the recognition of allowances of others and increasing market liquidity and stability.

Initial periods of the **EU ETS** featured free allocation of allowances, high caps and overallocation, leading to falling carbon prices, 'windfall' profits and low incentives for abatement. The 3<sup>rd</sup> period from 2013 brought significant changes, tighter caps, an overall EU cap and a shift towards allowance auctioning. The auctioning ratio, 40% in 2013, will rise to 57% for 2013-2020 (on average). In 2013, industrial installations received 80% of allowances for free (30% by 2020), power generators usually having to buy it, and airlines receiving most of it cost-free. EU ETS – regulating 45% of the EU's GHG emissions<sup>8</sup>, covering 31 countries and 11,000 different installations, as well as European aviation since 2012 – basically

Post-tax fossil fuel subsidies in the EU, 2015  
(Total in USD bn - left, per capita in USD - right)



delivered 2020 GHG targets (20% cut upon 1990) by 2014-15. Carbon prices of EUR 30/tCO<sub>2</sub> (2006) sunk to zero in 2007, then rose to over EUR 20/tCO<sub>2</sub> in 2008 with a gradual decline to EUR 10 in 2012, remaining under EUR 10 until early 2018 in the third period. Since then carbon prices steadily rose, hitting almost EUR 27 in Q1-2 of 2019. The fourth period (2021-2030) will have faster cap reductions (2.2% p.a., compared to the current 1.74%) and a strengthened reserve mechanism for better price control to make the system more effective to ensure 43% GHG reduction in the ETS sector by 2030 (upon 2005). Under the European Green Deal, the EU Commission presented a plan to increase this ambition to 55%, with an upcoming legislative proposal in 2021 to implement it, including the revision and the potential extension of the EU ETS (shipping, aviation). Compliance to the EU ETS is ensured by annual monitoring, reporting and verification, linked to a single EU registry. Allowance trading takes place in various forms, on a bilateral basis, via intermediaries or at European climate exchanges. Annual trading volumes showed strong increase since 2005, peaking in 2013 with 8.7 billion allowances.

International **competitiveness** in sectors being exposed to high risks of carbon leakage is supported by a special treatment, involving a higher share of free allocation of allowances (up to 100%). In other sectors, 80% of allowances could be received for free in 2013, gradually cut to 30% by 2020. Further support includes compensation for electricity cost increases resulting from the EU ETS, provided that state aid is in line with EU state aid guidelines.<sup>9</sup>

An example for trading in **local/regional pollutants** (NO<sub>x</sub>, SO<sub>x</sub> etc.) is the **Dutch phosphate emission rights** system in the livestock sector (dairy cattle), to cut manure and phosphate levels as of 2018 (to the levels of 2002), by promoting land-based farming, cutting phosphorus in feed and by trading for phosphate rights with a generic reduction of 8.3% for non-land based ones. Phosphate emissions are only allowed if covered by emission rights (granted to farmers freely,

based on 2015 livestock size). Farms having cattles excessive to their rights can either reduce excess livestock or buy rights, with 10% of rights withheld from each transaction by a public 'phosphate bank' for the re-allocation of non-tradable rights to land-based farms via a lottery system, favouring young farmers. Free allocation is renewed every 5 years. Benefits cover manure-, phosphate- and ammonia reduction, improved water quality and increased animal welfare via land-based farming and grazing. A secondary objective is to support young farmers, tackling ageing of farmers in line with the EU's CAP policy.

### Benefits and potential

Eco-taxes trigger environmental and health benefits, innovation and budget revenues. Budget-neutral tax-shifting (away from labour) has the potential to positively influence employment and economic output, to increase employment by 2.5% at EU-level (5.5 million jobs) and to add 0.6% to GDP.<sup>10</sup> The IEA foresees that even a partial phase-out of fossil fuel subsidies can result in a reduction of 360 million tonnes of CO<sub>2</sub> by 2020, 12% of the required GHG reductions to keep temperature rise within 2 °C. EHS reform can also increase policy coherence in the EU. Emission trading provides cost-effective emission cuts in a transparent way, lowered energy dependency and incentives for innovation and investment. Historically low carbon prices, and the difference between current- (EUR 30/t) and optimal price levels (EUR 100 covering environmental and social costs) suggest that the effectiveness and monetary efficiency of the EU ETS is not yet fully exploited. Auctioning provided EUR 15.8 billion revenue between 2013-2016. At global level, with fully efficient fuel prices (factoring in environmental costs), the IMF estimated (in 2015) that global CO<sub>2</sub> emissions would be 28% lower, fossil fuel-related air pollution deaths 46% lower, tax revenues 3.8% higher (of GDP), with net economic benefits amounting to 1.7% of global GDP.<sup>11</sup>

- 1 Energy tax factsheet: [https://ec.europa.eu/energy/sites/ener/files/qmy\\_factsheet\\_on\\_taxes.pdf](https://ec.europa.eu/energy/sites/ener/files/qmy_factsheet_on_taxes.pdf)
- 2 [https://ec.europa.eu/taxation\\_customs/news/commission-report-evaluation-energy-taxation-directive%2%A0\\_en](https://ec.europa.eu/taxation_customs/news/commission-report-evaluation-energy-taxation-directive%2%A0_en)
- 3 Environmental taxation and EU environmental policies. EEA Report, No. 17/2016.
- 4 Taxation trends in the European Union. European Commission, DG TAXUD, 2017.
- 5 Environmental tax statistics. Statistics Explained. Eurostat 2020. [https://ec.europa.eu/eurostat/statistics-explained/index.php/Environmental\\_tax\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Environmental_tax_statistics)
- 6 Energy prices and costs in Europe. SWD(2019)1, Part 4/11 for COM(2019)1.
- 7 Fossil Fuel Subsidies. Dir. Gen. Internal Policies. Policy Dept. A. Economic and Scientific Policy. EU Parliament, 2017.
- 8 Sectors outside EU ETS are covered by the Effort-Sharing Decision, establishing binding rules for Member States for 2013-2020 for sectors, such as transport, buildings, agriculture and waste.
- 9 The EU Emissions Trading System (EU ETS) FactSheet. European Commission. Climate Action. 2016.
- 10 The economic benefits of environmental policy. VUA, GHK, SERI (2009).
- 11 Global Fossil Fuel Subsidies Remain Large. IMF WP/19/89, 2019.

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