



ENSURING THAT **POLLUTERS PAY**

Taxes, charges and fees

This factsheet captures some examples of polluter pays taxes, charges and fees in place in the EU. See the EU polluter pays Member State factsheets for more examples of other polluter pays instruments in each Member State.

WASTE DISPOSAL TAX (Altlastenbeitrag)

Austria has a well-designed tax on landfill, incineration and other forms of waste disposal which could be an example to other Member States.

The waste disposal tax (the Austrian name literally means charge for historic contaminated sites) is a tax on the disposal of waste, with the revenue used for sanitation of historic landfills. Key design features of Austria's tax are:

- ▶ it covers incineration and other forms of waste disposal or storage as well as landfill, in order to minimise the risk that a tax simply diverts waste from one form of disposal to another;
- ▶ the tax rate has different bands for different types of waste, and rates per tonne are high enough to have an impact;
- ▶ the only significant exemption is for inert mining waste;
- ▶ all revenue is used to improve historic contaminated sites.

How it works

The tax covers different disposal options with different tariffs:

- ▶ deposition (landfilling) of waste: € 9.2 - € 29.8/tonne, depending on the type of deposition site
- ▶ incineration of waste, production of combustible material from waste, and use of waste in blast furnaces: € 8/tonne
- ▶ storage of waste for disposal (> 1 year), for recycling (> 3 years), backfilling with waste: € 9.2 – 87 / tonne, depending on type of waste
- ▶ as well as export of waste for the above mentioned purposes.

It is important not only to tax landfilling, because waste will then move to other disposal options. Therefore, the tax is also laid on incineration, storage and export, to discourage these options too. However, landfilling as the least desirable option in the waste hierarchy is

taxed at the highest rate.

To simplify tax collection it is the landfill (or other waste disposal) operator who is liable to pay it. They pass it on to customers in higher gate fees, thus creating the desired incentive effect.

The revenue of the disposal tax is exclusively used to finance the remediation or protection of historic contaminated sites, i.e. sites from before 1989, the year the tax entered into force. The taxation of incineration was added in 2006. Also, it is important to note that modern landfills must be remediated at the operator's expense. The revenue of the tax amounted to around € 69 million in 2019, and accumulated to around €1.5 billion.

Austrian customs is responsible for the collection of the landfill tax.

What it does

By making the disposal of waste more expensive, the waste disposal tax can lead to minimisation of waste and the use of the different waste management options.

It is difficult to determine whether it has led to more recycling and prevention, since there are other measures (like the Landfill Ordinance) that can have an impact on waste generation and waste treatment. In any case, compared to other EU countries, waste recycling rates are relatively high and landfill rates of waste relatively low in Austria.

By using the tax revenue for the remediation/protection of contaminated sites, the tax can mitigate the effects of the disposal of waste on the environment and on humans. The total number of old deposits and old sites in Austria is currently (as of January 1st 2020) estimated at 74,280, 93% of which have already been identified. A total of 312 contaminations have been identified of which 168 have been remediated/protected and 2.3 million m²/11.5 million m³ contaminated areas/ contaminated underground/landfill bodies have so far been decontaminated.

This is an important example for other Member states where there are historic landfills and other contaminated / brownfield sites. As a citizen or

stakeholder campaigning for remediation of such a site you might well argue for a similar tax in order to generate funds for that.

How it came about and stakeholder involvement

Austria has set itself the objective to complete the remediation of contaminated sites within two generations, by 2050 the latest. The landfill tax was implemented in 1989 with the aim to remediation or protection of contaminated sites and, therefore, the revenue of the tax is exclusively used to this end.

Kommunalkredit Public Consulting (KPC) manages the allocation of the revenues from the landfill tax to projects. KPC is also involved in the development of new funding frameworks (e.g. for the mobilization of little contaminated properties which are brownfield sites right now). Stakeholders are involved in this process, for example by means of workshops.

Comments and questions related to the proposal of the latest amendments of the landfill tax (ALSAG-Novelle 2019) submitted by various stakeholders can be found on the [Parliament's website](#).

Environmental NGOs and citizens' initiatives are currently mainly concerned about potential negative impacts planned waste treatment/incineration facilities.

Greenpeace Austria is concerned about the [increase of pollutants in the filter cakes](#) of waste incineration plants, and there are several citizens' initiatives that are concerned about air pollution from waste treatment/incineration plants, like an [initiative in Theresienfeld](#), which protests the building of a large waste management facility, on the grounds that it will lead to noise, air pollution and endanger organic agriculture and biodiversity. In October 2019, citizens organised a demonstration against a new waste treatment facility. Further protests led to an EIA being conducted. Pressure finally meant that the facility was cancelled and a solar field contemplated instead. However, the waste will need to be treated somewhere else.

<https://www.neuestheresienfeld.net/31156-2/>

<https://www.derstandard.at/story/2000113374078/abfallbehandlungsanlage-im-theresienfeld-uvp-pflichtig>

<https://zusammenwachsen.co.at/photovoltaikanlage-statt-abfallbehandlungsanlage/>

Other protests against incinerators:

https://www.wienerzeitung.at/nachrichten/chronik/oesterreich/318511_Deponieverordnung-neu-kommt.html

<https://www.vol.at/mllverbrennung-heiligenkreuz-greenpeace-protest-in-eisenstadt/2179534>



TAX ON ENVIRONMENTAL IMPACTS FROM FARMING, Wallonia

This annual tax, in place since the beginning of 2015, replaces a tax on discharge of agricultural wastewater and aims to internalise the environmental costs linked to agricultural activities' impacts on water resources, and in particular to livestock manure or the use of fertilizers and phytosanitary products in crops. The Belgian Court of Audit [has reported to the Parliament](#) on the design of the tax and on its implementation by public authorities in Wallonia.

Around 13 500 taxpayers are targeted by the new tax, leading to an annual revenue of about €1.3 million. While the tax is a good step forward in the internalisation of environmental costs and is less complex than the previous system, the national Court of Audits argues that pollution caused by certain types of crops is not sufficiently taken into account in the tax calculation formula. The EC reports that the concentrations of nitrates in surface and groundwater stayed relatively stable in Wallonia from 2012 to 2015; more recent data are lacking.

The tax is in line with long-term plans outlined in Wallonia's First Strategy on Sustainable Development (2013), which aims for internalisation of external (environmental) costs, e.g. for food products. The strategy was partly informed by consultations with the Wallonia Council for Environment and Sustainable Development (CWEDD), the Wallonia Council for Economy, Society and the Environment (CESW), and the Wallonia High Council for Cities, Towns and Provinces.

Wallonia Federation for Agriculture (FWA) provides support to farmers in the region of Wallonia and defends the interests of the sector. The website can be accessed [here](#).



THE PER-KILOMETRE TAX FOR HEAVY GOODS VEHICLES, Flanders



The potential for a 'green' tax shift in Belgium was raised repeatedly in the European Semester process, and the introduction of a charge per kilometre for lorries in all Belgian regions from April 2016 was deemed to be one of the most significant improvements of the Belgium tax system reform by the EC. The measure, which is also mentioned in the subsequent National Air Pollution Control Programme, is one of the measures that the Flanders region hopes will improve air quality.

The charge takes the form of a fee subject to VAT in Wallonia since the roads are managed by a private company, whereas it is a tax in Flanders and in the Brussels region. It is paid at tolls, with the tariff being set at the regional level, by trucks with a mass of over 3.5 tonnes (with some exceptions) and by some semitrailers. The charge is paid via the use of an on-board device which calculates the toll based on the number of kilometers travelled, the type of road used, and the vehicle (based on weight and EURO emission class). In Flanders, the toll applies to all motorways and some major secondary roads. The tariffs set by each region and the map of all roads covered in Flanders can be accessed [here](#).

The tax should have environmental benefits in terms of CO2 emission reduction and improved air quality as

it pushes for rationalising trip planning in the sector and for the purchase and use of cleaner trucks. In a 2019 report, it is stated that the tax did accelerate the renewal of the truck fleet and hence reduced air pollution. Nevertheless, a 2017 study found that – although there was no shift of heavy good vehicles to non-toll roads one year after the tax came into force – there was actually a growth in traffic on toll roads (both highways and secondary roads). While the effectiveness of the tax is still being evaluated by the Flemish region, it is already looking into introducing a similar charge for all light-duty vehicles. Some options to differentiate the charge in terms of time and place are also being examined.

In Flanders, in 2019, the total amount levied reached over € 451 million, up from € 449 million in 2018 and € 424 million in 2017.

The process for setting up the system was kick-started in September 2011, when the three Belgian regions reached a cooperation agreement to reform the vehicles road tax. After some preliminary studies on feasibility, followed by a market analysis and some stakeholder consultations, some offers were made and the project design and implementation was granted to Satellic. The Inter-Regional Entity Viapass was also created in July 2014, and each region is equally represented within the Entity's administrative council.

WATER ABSTRACTION CHARGE

Bulgaria implemented its water abstraction charges in 2001. The charges have been reformed a couple of times since then in terms of the price charged for amounts and sources of water abstraction - the last amendment is in 2017 (the latest adopted "Tariff of fees for water abstraction, water use and those that are subject to contamination"¹⁾).

How it works

The charges apply to the abstraction from **underground water bodies, mineral water bodies or surface water bodies** (as well as for the use of water body for sediment from the Danube River, reservoirs and disturbance of the continuity of the rivers by the barrier facilities). According to the current legislation a permit for these activities should be issued (by River Basins Directorates), except for groundwater abstraction of less than 10 m³ for water

abstraction from wells to meet the personal needs of citizens.

Water abstraction charges for surface and groundwater bodies are determined on the basis of the **volume of water withdrawn and the relevant water consumption norms**. As for mineral waters, the water abstraction charge is based on the permitted water volume and mineral water temperature. Surface water abstraction charges range from 0.02 EUR per m³ (water used for cooling) up to 4.7 EUR per m³ for other purposes (2019). Groundwater abstraction charges range from 0.04 EUR per m³ (water used for cooling) up to 11.91 EUR per m³ for other purposes (2019). High values are set for independent drinking and household groundwater supply in order to stimulate the use of the public water supply. Specific incentives are applied to encourage rational water use for irrigation. In the case of water supply from underground source (wellc), a 30% discount is applied if the user (permit holder) is EMAS certified.

In 2018, total revenues from water abstraction

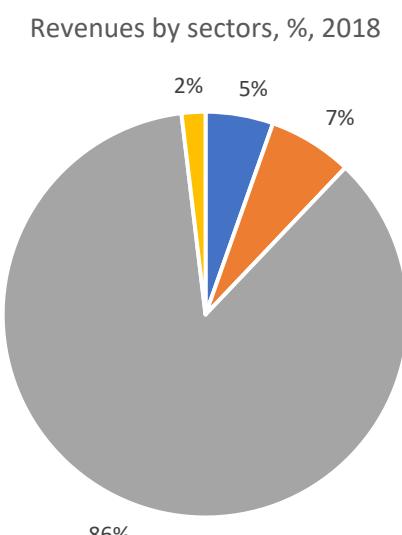


Figure 1 Revenues by sectors in 2018, NSI and EMEPA

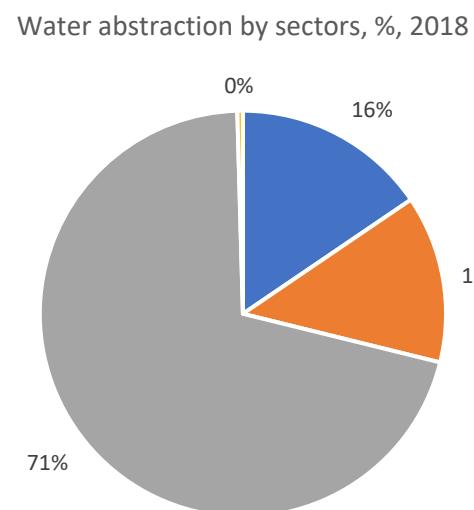


Figure 2 Water abstraction by sectors in 2018, NSI

charges (surface and groundwater abstraction) were 20.62 million EUR. The most significant water user for 2018 was the industry sector² which accounted for the largest proportion of revenues - 86% (Figure 1 and Figure 2). The revenues from charges are received by the Enterprise for management of environmental protection activities /EMEPA³/ and earmarked for financing environmental measures.

What it does (impact)

The main purpose of the water abstraction charge is to decrease the volumes of water abstracted and therefore to protect water resources. Users are charged according to their consumption level and therefore water saving is encouraged. There is a trend for improvement in the quality of surface waters in Bulgaria in terms of basic physical and chemical indicators, both in the short and long term. According to the [National Report on the Status and Protection of the Environment in Bulgaria in 2018](#), 98.4% of the drinking water in Bulgaria complied with the relevant quality standards (Ministry of Environment and Water, Executive Environment Agency, 2018).

The taxes and charges in the field of environmental protection are collected by EMEPA and are used for financing projects in the field of water and waste management, as well as for biodiversity protection

in Bulgaria. For the period 2018 and 2019, approx. 52 municipal projects related to the construction/rehabilitation of water supply and sewage networks were funded.

Stakeholder involvement

The last amendment of Tariff of fees for water abstraction, water use and those that are subject to contamination in 2017 was a subject of wide public discussion. Together with the proposed legislation a partial preliminary regulatory impact assessment (RIA) was published by the Ministry of environment and water (MoEW) in the [Council of Ministers' portal for public consultations](#). The water supply and sewage companies, national business associations, industry associations, as well as other relevant stakeholders were involved in the discussion by publishing their positions. However, an insignificant part of the opposition statements was taken under consideration by MoEW during the process. The [main disagreement](#) of business representatives concerned the increased amount of the charges for the industry, as well as the lack of in-depth socio-economic evaluation within the RIA.



VEHICLE TAX

With the latest amendments of the Local Taxes and Fees Act (LTFA), in force since the beginning of 2019, Bulgaria has introduced an “**environmental component**” in the formula for calculating the vehicle tax. This enables the direct application of the “**the polluter pays**” principle. The tax amount currently is determined based on two components – property and ecological. The property component is based on the engine power of the vehicle and a correction factor for the manufacturing year of the vehicle. The ecological component depends on the ecological category of the vehicle and is higher for the vehicles with ecological category “Euro 1” and “Euro 2”. With the latest amendment of the LTFA, on average the tax on vehicles belonging to the lowest environmental categories is increase by about 30%, and for those belonging to the highest standard (“Euro 6” and “EEV”), the tax falls by up to 20%. Nevertheless, with the current calculation methodology the citizens still pay lower taxes on the older vehicles (see example below).

Ecological component	
Category	Coefficient
without an ecological category or Euro 1 and Euro 2	1.40
Euro 3	1.1
Euro 4	1
Euro 5	0.6
Euro 6 and EEV	0.4

Sofia Municipality has developed an online tool helping citizens to calculate their due tax, with the following formula: Tax = Property component (i.e. engine power X correction factor for year of production) x Ecological component.

Example: The due tax for older vehicle that is produced in 2002, with category Euro 3 and engine power 60 kW should be 27.33 EUR. However, a tax for a vehicle produced in 2016, category Euro 5, engine power 137 kW accounts for 177.87 EUR.

The transport vehicle tax is assessed, secured and collected by the municipal administration officers. The revenues of Sofia Municipality from vehicle taxes in 2019 were approx. 47.80 million EUR which were allocated for municipal projects, incl. for construction and repair of urban infrastructure.

What is the impact

The environmental component in the transport vehicle tax aims to comply with the “polluter pays principle”. This measure is also in line with the [National Air Pollution Control Program 2020-2030](#) and in the [National Air Quality Improvement Program 2018-](#)

Property component						
Engine power		Age of the vehicle				
kW	euro	≤ 5 years	5-10	10-15	15-20	≥ 20 years
55	0.17 for 1kW	2.3	1.5	1.3	1	1.1
55-74	0.28	2.3	1.5	1.3	1	1.1
74-110	0.62	2.3	1.5	1.3	1	1.1
100-150	0.73	2.3	1.5	1.3	1	1.1
150-245	0.94	2.3	1.5	1.3	1	1.1
> 245	1.24	2.3	1.5	1.3	1	1.1

[2024](#) where the road transport has been identified as one of the emitters of nitrogen oxides (NOx) and particulate matters (PM). It is stated that socio-economic and behavioural factors are the reason for the high emissions of PM10 from road transport, as vehicles with a pre-Euro and Euro 1 environmental category account for a 22% of the total number of passenger cars and are owned mainly by people with low-income, whereas those with Euro 5 and Euro 6 category accounts for only 10% of the total number of passenger cars (Figure 5).

For people of middle and upper class, the vehicle tax could be considered as an incentive for the use of

vehicles which do not pollute the environment like electric automobile, motorcycles, mopeds, electric vehicles of categories L5e, L6e and L7e, as they are exempted from the tax. However, the extent to which this measure could have a real impact on taxpayers' behaviour can hardly be estimated given the fact that the number of charging points in Bulgaria is still one of the lowest in the EU with total of 199 points (i.e. 2.69 charging points per 100 000 inhabitants). Nevertheless, the total amount of electric passenger cars (BEV – Battery electric vehicle) has doubled in 2020 compared to 2018.

For people of middle and upper class, the vehicle tax

Passenger cars distribution by environmental category, 2019

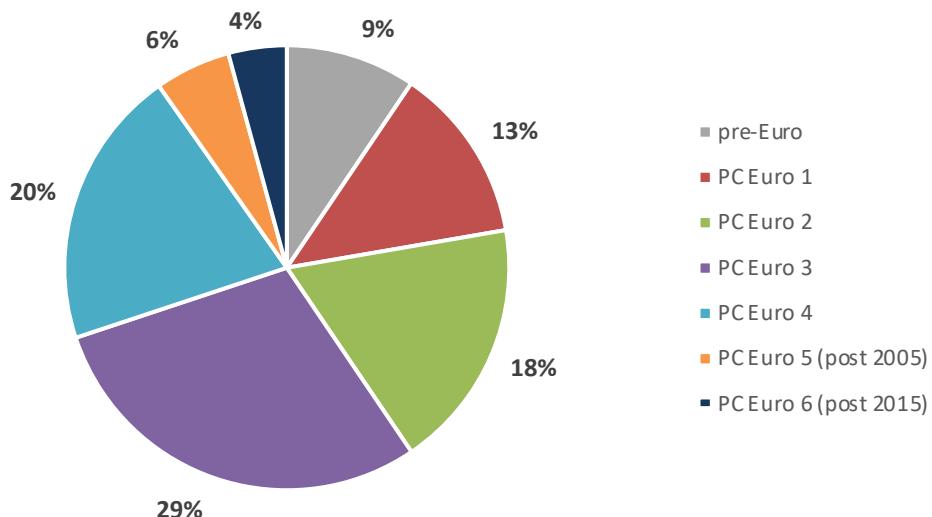


Figure 5 Distribution of passenger cars by environmental category in Bulgaria for 2019, Ministry of Interior of the Republic of Bulgaria

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Stakeholder involvement

The proposed amendments of LTFA as well as the municipal regulations on the vehicle tax are a subject of public consultations which allow stakeholder involvement (citizens are predominantly an active party). The legislative proposals related to the LTFA

were published in the Council of Ministers' portal together with a partial preliminary regulatory impact assessment (RIA), carried out by the Ministry of Finance.

The latest amendments of the LTFA have been voted difficultly because of the public dissatisfaction with the change in the transport vehicle tax. Despite the many discussions and speculations on the issue, the proposal to have a tax relief for cars with a working gas system was not accepted. The amendments aimed to reduce the tax burden for the owners of new vehicles that meet current requirements of the European emission standards. A real increase in the tax burden is actually available for the taxpayers with old vehicles who represent predominantly people with low incomes. However, in practice, the due tax is still significantly higher for new vehicles compared to the old ones that do not meet modern environmental standards. Due to the delicacy of the topic in the social context a gradual tax increase for the latter is envisaged with the subsequent amendments of the LTFA.

PLASTIC BAG LEVY

The Cyprus Plastic Bag Levy was introduced on 1st July 2018 by the Department of Environment of the Ministry of Agriculture, Rural Development and Environment, in the context of the island's harmonization, with the European Plastic Bags Directive, according to which Member states have to reduce the use of plastic bags to a maximum of 90 lightweight plastic carrier bags per person by the end of 2019 and 40 per person by the end of 2025.

How it works

Consumers in Cyprus have been required since July 2018 to **pay a levy of a minimum of €0.05 plus 19% VAT for each lightweight plastic carrier bag they use**. This price was set by the Department of Environment, while sellers of goods could potentially charge more per bag if they wanted. Sellers of goods are no longer allowed to freely distribute these bags and invoicing and costing of the lightweight plastic carrier bags are required to be demonstrated discretely in the relevant receipts. Exceptions to the legislation are only bags used as primary packaging, for hygienic reasons or for prevention of food waste. In December 2020, the cabinet decided to further ban all disposable thin plastic carrier bags at point of sale, including home delivery. This new regulation will enter into force after being passed by the House of Representatives.

What it does

It is estimated that in 2018, Cyprus had around 140 per capita annual consumption of plastic carrier bags. However, just after setting the Cyprus bag levy of €0.05 plus 19% VAT for each lightweight plastic carrier bag, the country was on course to bring down plastic bag use per person from 140 per capita per year to just 20, earlier than expected. In fact, just after a year of this legislation in place, the **reduction rate in supermarket use of plastic carrier bags across Cyprus reached 80% (equivalent to 140,000-380,000 plastic carrier bags per month)** compared to the supermarket data before the

implementation of this legislation (which was around 1,200,000-2,600,000 plastic carrier bags per month). Initially, the profits from plastic bags sales were intended to go into a special fund, so that the money could be used for charitable purposes. However, according to information from the Department of Environment, the money now remains with the sellers of the products, who are tasked with using it for raising awareness on the protection of the environment. Many sellers (mainly supermarkets) have already carried out several awareness-raising campaigns on the negative environmental impacts of plastic use by using these profits.

Stakeholder involvement

The Department of Environment of Cyprus made several [press releases](#) a few months before the introduction of the Cyprus plastic bag levy, as well as implemented a Cypriot-wide [campaign](#) to inform and engage industry and the public, that took place during June and July of 2018. They also developed and disseminated [information material](#) to the public/industry and run several [public consultations](#) to ensure stakeholders were informed and aware of the pending legislation and how to respond to it. The Department of Environment also ran a [student-oriented environmental campaign](#) during October and November of 2018 for schools all over the country. The students were asked to create posters on plastic bag use and its negative environmental impacts to learn first-hand about the negative effects of reckless use of plastic carrier bags on the environment. Stakeholders who would like to comment on the plastic bag levy since its introduction can do so by contacting the Department of Environment via email/phone.

NGOs (environmental, consumer, green business networks, citizen science groups, etc.)

The following organisations were involved in the discussions around the setting of the price of the levy and the introduction of the legislation, as well as in the awareness-raising campaigns to inform industry and the public on the pending legislation and on available alternatives.

[Pancyprian Retail Association](#) [Email: info@pasyle.com]

Cyprus Association of Retail Trade Enterprises [Email: a.paschalidou@ccci.org.cy]

Pancyprian Consumers Association [Email: info@katanalotis.org.cy]

Let's Make Cyprus Green [Email: letsmakecyprusgreen@gmail.com]

Green Dot Cyprus [Email: admin@greendot.com.cy]

Some articles

Ηρακλέους, Μ., 2019. Ψηλότερο Τέλος-'Η Οριστικό Τέλος Για Τις Σακούλες. [online] Kathimerini.com.cy. Available at: <https://www.kathimerini.com.cy/gr/periballon/psilotero-telos-i-oristiko-telos-gia-tis-sakoyles> [Accessed 11 December 2020].

ΛΑΖΑΝΙΑΣ, Χ., 2019. Ένας Χρόνος Χωρίς Δωρεάν Πλαστικές Σακούλες -Στο 80% Η Μείωση Της Χρήσης. [online] ΠΟΛΙΤΗΣ. Available at: <<https://politis.com.cy/politis-news/kypros/enas-chronos-choris-dorean-plastikes-sakoyles-sto-80-i-meiosi-tis-chrisis/>> [Accessed 11 December 2020].



WATER PRICING

Cyprus suffers from the highest water stress level in Europe, especially in years of excessive drought. Increased water demand in combination with climate change impacts have led to severe water scarcity, since demand surpasses the available water quantities by far. Cypriot Law 13(I)/2004 (section 32(i)(d)) the main piece of regulation on water consumption currently in force in Cyprus, is in line with the European Framework Directive on Water (2000/60/EC). In 2010, the national water authority re-assessed the pricing of water in order to fully comply with the EU Water Framework Directive and to appropriately account for water scarcity and the associated negative environmental impacts of extraction and use. The water is distributed to local municipalities by the water boards of each city, and the local municipalities then provide water to the end consumers (public, industry).

enforces restrictions regarding the use of water for irrigation, but not for drinking water use. This water-pricing externality has been developed and applied by the Water Development Department, after the approval of the Council of Ministers and the Minister of Agriculture, Rural Development and Environment.

The environmental harm and depletion of natural resources fee is applied to the following water type/sources:

- ▶ Drinking water from Government Water Works/Government Water Supply Systems to local water supply authorities.
- ▶ Drinking water from water sources other than Government Water Works/Government Water Supply Systems (i.e. private boreholes, springs, rivers)
- ▶ Fresh untreated irrigation water from Government Water Works/Government Water Supply Systems
- ▶ Irrigation water from water sources other than Government Water Works/Government Water Supply Systems (i.e. boreholes, springs or rivers and aquifers enriched with recycled water)
- ▶ Recyclable water produced by treatment plants managed by the state.

What it does and how it works

Cyprus has an extra charge on water pricing in place to account for the environmental harm of extracting water from a natural body and for the depletion of natural resources. The extra charge is added to both drinking water and water used for irrigation by households, agriculture and industry. Cyprus also

There are very few recent studies on the impact of the revised water pricing on water usage. The general perception is that it has not severely impacted behaviour, although I should note that there is generally high awareness amongst the general public of the fact that water is in short supply in Cyprus.

Stakeholder involvement

A broad range of stakeholders (business, science, NGOs) are involved in determining and setting the water prices. Their involvement typically takes place in the form of public consultations by the Water Development Department. Interested citizens who would like to engage with the Water Development Department on the issue of water pricing can do so by emailing/calling the Department to express their views.

Academics (universities, thinktanks research institutes, independent researchers)

Key Literature – Zachariadis, T., 2016. [Water Pricing In Cyprus](#). Cyprus University of Technology.

Anastasia Sofroniou, Steven Bishop, 2020. [Water Scarcity in Cyprus: A Review and Call for Integrated](#)

[Policy](#). In: Tewodros Tena, editor. Water: Ecology and Management. Hyderabad.

Hadjipanteli, A., 2018. [Water Pricing Workshop: Water Pricing Policies In Cyprus](#). WATER DEVELOPMENT DEPARTMENT.

NGOs

The following organisations are mostly involved in conservation efforts and awareness-raising campaigns for freshwater and marine environments, supporting the Water Development Department in considering what price would best reflect the environmental harm of extracting water and of depleting natural resources.

[Enalia Physis Environmental Research Centre](#) [Email: info@enaliaphysis.org.cy]

[Federation of Environmental Organizations of Cyprus](#) [Email: info@oikologiafeeo.org]

[AKTI Project and Research Centre](#) [Email: akti@akti.org.cy]

► [Let's Make Cyprus Green](#) [Email: letsmakecyprusgreen@gmail.com]



AIR POLLUTION FEE

In the former Czechoslovakia, charges for air pollution were introduced in 1967. They were largely aimed at raising revenues for the state budget, and were therefore considered as fiscal revenues until 1991. Following the political and economic changes that occurred in the former Czechoslovakia after November 1989, the charges for air pollution were constituted within the new legislative framework (Act No. 389/1991 on state administration in air protection and charges for air pollution), with effect from 1992. Since 2002 the system of charges in the field of air protection has been set by the Act on air protection (86/2002). National legislation on air quality evaluation in the Czech Republic is harmonised with EU legislation for the protection and improvement of ambient air quality. Act No. 201/2012 Coll. on air protection (hereafter the Air Protection Act), as amended and repels the 2002 Act.⁵

The 2012 Air Protection Act makes a rapid change in comparison to its predecessors and divides pollution sources into specified sources and activities listed in Annex no. 2 of the Act, and sources and activities not

mentioned in this Annex. Annex no. 2 includes 167 types of stationary source in 11 categories; the significance of each depends on the size of the facility. Air pollution fees are only paid by the operator of stationary sources listed in Annex no. 2, after fulfilment of other conditions specified in the law⁶. The charges are now decided by the 14 regional offices (i.e. regional governments) of the Czech Republic. An overview of development of air pollution fee rates is summarised in the table below.

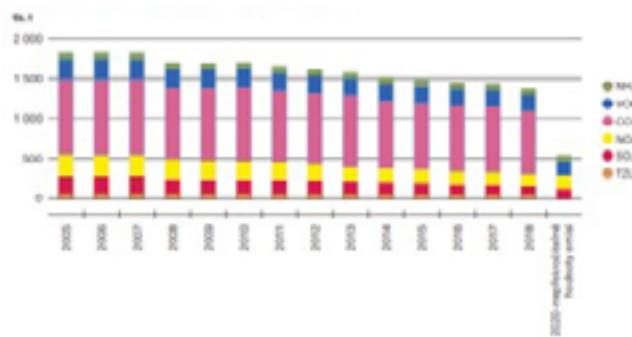
The impact of air pollution fees must be discussed in two separate groups, due to the change in legislation in 2012; impact of fees until 2012 and impact of fees since 2013. The impact until 2012 has previously been assessed as very limited for a number of reasons, e.g. lack of efficiency of the system, and lack of motivation for polluters⁷. The post-2012 appears somewhat more hopeful as the new Act itself stated that "increase of charges for air pollution should motivate operators to reduce emissions of major pollutants. This should contribute to reducing the environmental burden by substances harmful to human health, ecosystems and vegetation and also to contribute to protect the Earth's climate system". The impacts of the post-2012 system can be assessed based on CENIA's (Czech

	2002-2012	2003-2016	2017	2018	2019	2020	2021+
PM ₁₀	3,000	4,200	6,300	8,400	10,500	12,600	14,700
SO ₂	1,000	1,350	2,100	2,800	3,500	4,200	4,900
NOx	800	1,100	1,700	2,200	4,200	3,300	3,900

Figure 1-1 Air pollution fee rates, 2002/2021 (in CZK/tonne). Source: Air Protection Act (2012)

Environmental Information Agency) annual report on the status of the environment.

Annually, CENIA (Czech Environmental Information Agency) publishes a report on the status of the environment in the country. The most recent report⁸ (2018) concluded that emissions of air pollutants decreased significantly between 1990 and 2000. The decline in emissions continued after year 2000, in the period 2005–2018, SO₂ emissions decreased the most, namely by 53.0%, NOx by 42.1% and VOC emissions by 21.0%. The decline also continued in 2018, mostly in the case of SO₂ emissions by 10.9%.



However, it is unclear whether there is a correlation between emission reduction and the air pollution fee or the developments in waste water treatment technologies. The CENIA report concludes that SO₂ and NO_x emissions are constantly decreasing due to the introduction of technologies and production processes in accordance with the requirements for the application of best available techniques, changes in the fuels used and a reduction in the energy intensity of the economy. An important role is currently also played by the diversification of electricity production, i.e. the decline in electricity production in solid-fuel steam power plants and, conversely, its increase in nuclear power plants, as well as the production of electricity from renewable energy sources. The obligation to meet the legislative requirements given by the transposition of Directive 2010/75/EU of on industrial emissions has also had a great influence.⁹

Stakeholder engagement is still not very common in the Czech Republic. This is further confirmed by the OECD, which states that the 'Czech Republic should standardise the public consultation process and stimulate stakeholders including the general public to contribute to consultations. The implementation'¹⁰. The main stakeholders (and phases of introduction of the Air Protection Act) are as follows:¹¹

- ▶ **Evaluation phase** started around 2007, when analysis of the current situation was requested from the University of Economics in Prague, by the Ministry of the Environment of the Czech Republic. Other professional stakeholders included the Technical University in Ostrava, or the Czech Academy of Sciences.

▶ **Analysis phase.** After evaluation of the current status, discussions took place between the Ministry of Environment, represented by various Commissions, and the biggest companies (including the biggest polluters, e.g. power plants, ironworks, etc.). Companies could intervene as individuals, or represented by the Confederation of Industry of the Czech Republic. The discussions were focused on the new rates and how to motivate emission reductions by companies. According to stakeholders interviewed, the companies were against any kind of fee increase and some proposed to cancel the fee and replace it by some kind of tax deduction. This proposal was not accepted.

▶ **Preparation of draft.** After the evaluation and analysis phases, the draft of the new legal document was prepared. After the draft was published, anyone could challenge the document; this is the stage when some NGOs became interested in the draft document. The environmental NGOs in Czech Republic are united under the platform "Zelený kruh" (Green circle), an association of 26 important ecological NGOs. Some NGOs are also active on air protection topics, e.g. the NGOs Arnika and "Čisté nebe" (Clear Skies).

▶ **Finalisation of the document.** The above-mentioned stages of the process took approximately 4 years and finished in 2011, when the amended draft document was handed over to the legislation process. The final document was approved after approximately 1 year.



WATER POLLUTION FEE

Charges for water pollution (in its full name fee for discharge of waste water into surface waters) have been introduced in the Czech Republic (Czechoslovakia at the time) were introduced in 1966. At the time the reasoning behind the introduction of the fee was to motivate polluters to build waste water treatment facilities. It, however, did not turn out very effective as the fee was too low in comparison to the costs of establishment and consequent operation of the treatment facilities.¹²

The current regime of the water pollution fee is in place is codified in § 88 and 89 of the Water Law (Act 254/2001) where any natural or legal entity has the obligation to pay a fee for discharging waste water into surface waters. The fee is paid per each individual source of pollution. As a source is understood, for example, a municipality, an industrial area or an individual structure that discharge waste water. The fee must be paid if the discharged waste water exceeds given limits (of concentration and weight). The fees differ per pollutant (for example, if nitrogen exceeds its given limit the fee amounts to CZK 30 / kg, if phosphorus exceeds its given limit the fee amounts to CZK 70 / kg and if mercury exceeds its limits the fee amounts of CZK 20 000 / kg).¹³

The fee is calculated as the sum of the partial fee from the volume and the partial fees from individual pollutants. The partial fee is calculated both by the difference between the product of the partial fee base and the rate for this partial fee base and the discount applied by the taxpayer to the partial fee. The fee period for the discharge of wastewater into surface waters is a calendar year.¹⁴

Cost-benefit analysis and effectiveness of environmental policies is not a common practice in the Czech Republic.¹⁵ However, data on discharge of waste water are available. Annually, CENIA (Czech Environmental Information Agency) publishes a report on the status of the environment in the country. The most recent report¹⁶ (2018) concluded that since 2000 the total volume of discharged wastewater has decreased by 14.5% to 1,540.8 million m³ (see Figure 2-1) below. However, at the same time there is no clear long-term trend in the development.

At the same time, from a longer-term perspective, the amount of nitrogen has decreased by 35.6% and

phosphorus by 44.2% since 2003 (see Figure 2-2). However, as with the above MBI, it is unclear whether a correlation between the waste water fee or in developments in waste water treatment technologies. The 2018 CENIA concludes that the long-term decline is mainly influenced by the fact that in the technology of wastewater treatment at new and intensified WWTPs, biological nitrogen removal and biological or chemical phosphorus removal, but also by reducing the amount of phosphates used in detergents.¹⁷

The Water Law (in which the waste water fee is codified) was revised and amended in 2019. In the course of this amendment process, other than the 'usual' phases of an introduction of a new act (or its amendment) outlined under the previous case study on air pollution fee, a so called Commission for Drought ('Komise pro sucho') was also involved in the legislative process. The Commission comprised of actors such as the Czech Hydrometeorological Institute, Water Authority and representatives of different regions / provinces.

Academics - CENIA prepares annual reports on the status of the environment in the Czech Republic: <https://www.cenia.cz/o-cenia/kontakty/>.

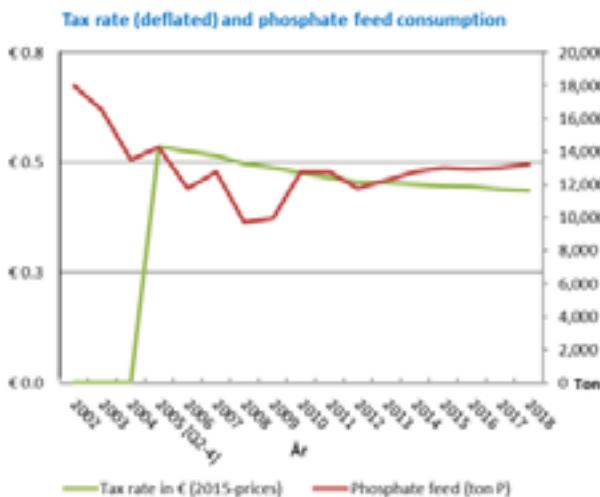
NGOs - 'Zeleny kruh' (Green Circle) is an association of environmental NGOs, gathering those NGOs that were involved in the drafting of the Air Pollution Act: <http://zelenykruh.cz/en/>



PHOSPHORUS TAX

The Danish tax on mineral phosphorus in animal feed agreed in 2004 and introduced in 2005 addresses the contents of raw phosphate in animal fodder. The tax rate of DKK 4/kgP corresponds to €0.54/kgP. The justification for the tax is the high loss rate of up to 90% associated with animal feed phosphorus supplied to large livestock installations, mainly of pork and poultry, and the subsequent flows of phosphorus from manure spread on croplands to water bodies, triggering eutrophication (algae growth and polluted water). Much better use of phosphorus contents in domestic plant feed can substitute the need for imported animal feed, stimulated by adding enzymes (fytase), for which the tax provides an economic incentive. With substitutions caused by the tax, imports of animal feed raw phosphorus declined by 25%¹⁸, however due to lack of tax rate indexation there has been a slight rebound in later years.

Prior to its adoption consultations took place with the national interest organizations of farmers. In exchange for the phosphorus tax they obtained a lowering of their property tax rate. In December 2019 the phosphorus tax was suddenly abolished without any public consultations, and the property tax rate was not restored to its initial rate, reflecting presumably lobbying from farmers. NGOs are now making the case for its reintroduction.



Key stakeholders

Academics and research

Aarhus University (Dept. of Agroecology and Dept. of Environmental Science) and University of Copenhagen (IFRO).

SEGES – national advisory service for farmers <https://en.seges.dk/>

NGOs

Main environmental NGO: The Danish Society for Nature Conservation: <https://www.dn.dk/home/english-page/>

Other environmental NGO: Green Transition Denmark: <https://rgo.dk/frontpage-english/>

Main agricultural NGO: Danish Agriculture and Food Council: <https://agricultureandfood.dk/>

Water related issues: Dansk Vand- og Spildevandsforening: <https://www.danva.dk/>

Other links

The act (in Danish): <https://www.retsinformation.dk/eli/ft/200313L00238>

OECD Environmental Performance Review – Denmark 2019: https://www.oecd-ilibrary.org/environment/oecd-environmental-performance-reviews-denmark-2019_1eeec492-en



PESTICIDE TAX

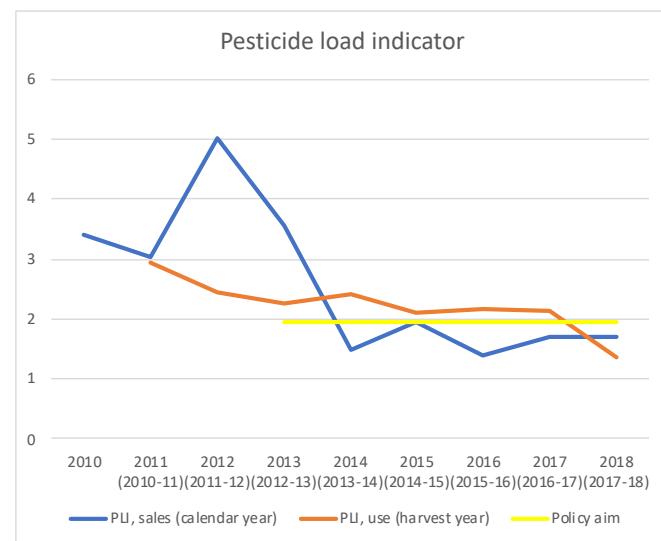
Since 1972, different types of pesticide fees and taxes have been introduced in Denmark. Continued challenges in meeting the aims of Danish pesticide action plans gave rise to a 2013 reform of the tax, which was designed as a more ‘true’ environmental tax reflecting the load of the pesticides. Organized by the Environmental Protection Agency, a new complex pesticide load indicator – based on human health risks, toxicity to non-target organisms and environmental fate of the pesticide – was constructed and calculated for each pesticide product and new a tax levels corresponding to the load were calculated for each pesticide. Additionally, average tax levels were more than doubled compared to the former pesticide tax.

Ex ante calculations indicated a 40% reduction in load due to the tax. Following a tradition of reimbursing the pesticide tax revenue to the agricultural sector, farmers were compensated for the DKK150 million difference between former annual revenue from the tax and expected future annual revenue through a reduction in land taxes. Annual revenue of DKK650 million was expected (€87 million). As a consequence of the reform, some pesticides have experienced very large price increases, while others have seen prices decrease¹⁹. Some products have been taken off the market due to very high load and correspondingly high tax..

Basically, Danish pesticide use is registered both through sales statistics (per calendar year) and through farmers' mandatory registration of use in electronic spray journals (per harvest year). Since farmers can buy pesticides and not use them immediately, and due to the difference between calendar year and harvest year there are some differences between these indexes (see figure below). The pesticide load indicator is calculated by multiplying load (per kilo/litre) with the used/sold amounts and dividing with the conventionally farmed area in Denmark in 2007²⁰.

The table shows that the PLI for both sales and registered use were around 3 in the calendar year 2011 and harvest year 2010-11. In 2012 and 2013 hoarding effects before the tax implementation in the summer of 2013 are observable through a substantial increase in PLI sales. In 2014 PLI sales decreased dramatically, since farmers could use pesticides stored in the years before the tax implementation, before load based on sales started increasing a bit again in 2017 and 2018 (probably because most stored pesticides

were used around that time). Pesticide load based on the registered use of pesticides is, not surprisingly, a bit more steady. However, PLI use has also decreased substantially. For three subsequent harvest years (2014-15, 2015-16, 2016-17), PLI use seemed to stabilize just above 2,1 and a bit above the policy aim of 1,96, however, in 2017-18 PLI use dived to 1,35. This can be explained though with unusual Danish weather conditions in 2018 due to a long period with very hot weather and severe drought in Denmark (PLI sale does not see the same drop, since farmers could not anticipate the drought when buying pesticides that year). More detailed data further indicates that the tax in particular has decreased the load from insecticides²¹.



Danish Pesticide Load Indicator (PLI) and policy aim (2010-2018)²²

The tax has primarily led to these substantial load reductions due to a comprehensive substitution towards less harmful products, which is also one of the 8 integrated pesticide management principles in the Directive 2009/128/EC. Indications are that for registered use of pesticides it might be difficult entirely to reach the policy aim of 1,96 though, since PLI use was around 2,1 for three subsequent years before the drought in 2018.

Stakeholder engagement

Over the years, stakeholders have been involved when pesticide tax changes have been planned. In 2012, there was a consultation phase and a hearing phase prior to the 2013 tax reform with many hearing responses from interest organisations e.g. representing

commercial interests (farmers, producers, importers etc.), but also from organisations advocating reduced pesticide use (e.g. the Danish Water and Wastewater Association (DANVA) and the Danish Ecological Council). A common fear in the agricultural sector is that the pesticide tax will cause more pest resistance problems. The Danish parliament's Tax Committee received written comments and held meetings with e.g. main organisations from the agricultural sector and the largest environmental NGO. Concerns were raised in the consultation phase over economic consequences of the tax for Danish potato growers. As a compensation, another tax (tax on pickling agents) was reduced, and as a further compensation, part of the revenue from the pesticide tax was directed to the so-called Potato Tax Fund²³. However, in general many farmers feel that pesticide taxes are unfair despite the reimbursement mechanism through the land tax. Before the tax introduction, the agricultural sector feared that in particular some specialty and high value crops could be flagged out of Denmark due to the tax. However, in 2018 the Danish Ministry of Environment concluded in an evaluation of the effects of the tax that this had not been the case. Some of these crops had experienced increased pesticide costs, but pesticide costs measured as a share of gross dividend remained constant. After the tax implementation there has been a decrease in sugar beet production, eating potatoes, cherries and black currants, but here the decrease can be explained by other factors (e.g. for sugar beets: EU regulation, for cherries and black currants: a large drop in market prices, for eating potatoes: maybe a switch towards starch potatoes)²⁴.

Academics

Aarhus University (e.g. Dept. of Agroecology, Dept. of Environmental Science, Dept. of Bioscience) and University of Copenhagen (e.g. Dept. of Food and Resource Economics). Some of them are referred to above.

SEGES – national advisory service for farmers <https://en.seges.dk/>

NGOs

Some of the most important NGOs regarding these types of taxes are:

Main environmental NGO: The Danish Society for Nature Conservation: <https://www.dn.dk/home/english-page/>

Other environmental NGO: Green Transition Denmark: <https://rgo.dk/frontpage-english/>

Main agricultural NGO: Danish Agriculture and Food Council: <https://agricultureandfood.dk/>

Water related issues: Dansk Vand- og Spildevandsforening: <https://www.danva.dk/>

Other links

The Environmental Protection Agency's database listing all approved pesticides, load, tax levels etc (only in Danish): <https://middeldatabasen.dk/>

Journal article analysing farmer heterogeneity and farmer responses to Danish pesticide taxes: Pedersen, A.B., Nielsen, H.Ø., Daugbjerg, C., 2020. Environmental policy mixes and target group heterogeneity: analysing Danish farmers' responses to the pesticide taxes. Journal of Environmental Policy and Planning 22:5, 608-619.

TV clip on Youtube with Professor Philippe Grandjean on the negative effects of pesticides (in Danish): <https://www.youtube.com/watch?v=p8bfcFlT4iA>

Presentation on the effects of risk-based pesticide taxation on Youtube with Senior Researcher Anders Branth Pedersen: <https://www.youtube.com/watch?v=Smir6v-43x4>

OECD Environmental Performance Review – Denmark 2019: https://www.oecd-ilibrary.org/environment/oecd-environmental-performance-reviews-denmark-2019_1eeec492-en



POLLUTION CHARGE FOR WASTE DISPOSAL

The pollution charge for waste is paid when depositing waste in landfills. The charge for depositing waste in landfills is paid by companies per ton of waste and for most waste types the charge was 29.84 €/ton in 2020, different rates apply to asbestos and oil shale waste²⁵. Revenues collected from the pollution charge on waste were 39 million euros in 2018, which formed about 54% of environmental charges revenue and 5% of total environmental taxes and charges revenue.²⁶

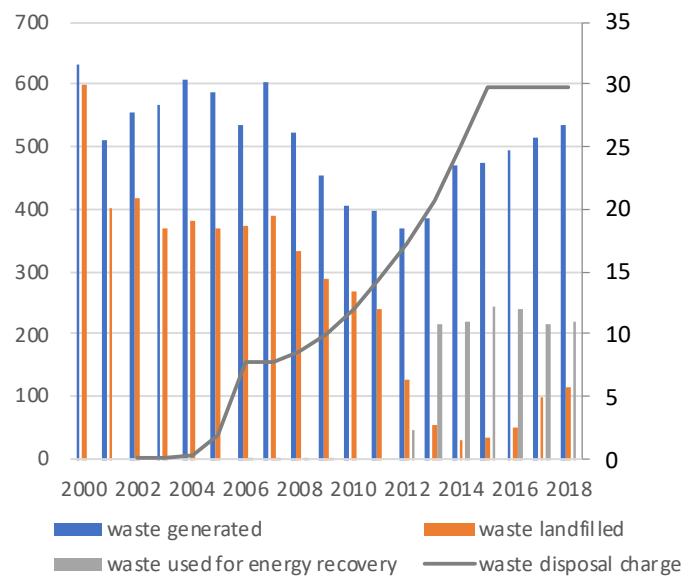
What it does

Prior to its adoption consultations took place with the national interest organizations of farmers. In exchange for the phosphorus tax they obtained a lowering of their property tax rate. In December 2019 the phosphorus tax was suddenly abolished without any public consultations, and the property tax rate was not restored to its initial rate, reflecting presumably lobbying from farmers. NGOs are now making the case for its reintroduction.

The waste disposal charge for landfilling has been increased considerably in 2000s, to discourage landfilling and increase reuse and recycling. The amount of municipal waste that was landfilled was quite stable in 2000-2008, but started to decrease after that (figure 1). However, part of the decrease can be related to the economic crisis and the concurrent decrease in general consumption. In the period 2012-2018 the amount of municipal waste landfilled has been low due to increasing use for energy recovery. After 2012, the total waste amount has increased again with more than 40% by 2018, as can be seen in the graph below.

In order to decrease the amount of landfilled waste, better separation options are needed. For some materials, the separate collection works fine (it is also supported by a deposit return scheme for bottles), but some materials lack good collection systems, specifically biodegradable waste is problematic

Figure 1. Municipal waste by waste management operations (thousand tons, on left axis) and waste disposal charge (euro per ton, on right axis)



Source: Eurostat; Environmental Charges Act of Estonia

How it came about and stakeholder involvement

Environmental charges have the longest history in Estonian environmental taxation, as these were imposed already in the beginning of 1990s and the rate has been constantly increased, to give a financial incentive to avoid polluting the environment. The growth of charge rates has been announced by law for several years ahead. The last time the growth rates were discussed was for the period 2010-2020, and relevant stakeholders were invited to participate in the discussion²⁷. According to the Ministry of the Environment which led the process, different stakeholders were involved:

- ▶ other ministries, for example Ministry of Economic Affairs and Communications, Ministry of Finance, Ministry of Rural Affairs;
- ▶ academia and experts, for example Tallinn Technical University and SEI Tallinn;
- ▶ storage of waste for disposal (> 1 year), for

recycling (> 3 years), backfilling with waste: € 9.2 – 87 / tonne, depending on type of waste

- ▶ representatives of enterprises and their associations;
- ▶ local governments;
- ▶ other state authorities like National Audit Office.
- ▶ Stakeholder involvement took place in different formats: in general forum and working teams; written propositions were enabled online (Participation Web). Although stakeholders were involved and several propositions made, not all of these could be addressed through rate changes. This led to dissatisfaction from the side of enterprises , whose competitiveness the charges affected most. The enterprises and their associations launched an active media campaign to draw attention to their claims about negative impact on their competitiveness. In 2015, when charge rates for 2016-2020 were discussed in the Parliament, it was decided to freeze the rates for environmental charges and the environmental charges have not been revised since then.



Germany

EFFLUENT TAX (ABWASSERABGABE)

Since 1981, an effluent tax has to be paid in Germany for the discharge of effluent into a water body. The tax due depends on the harmfulness of the effluent: the tax rate amounts to 35.79 Euro per damage unit, with damage units being calculated as the equivalents of specific pollutants in the discharged effluent. Municipalities, associations for sewage water treatment, and industrial, commercial and agricultural enterprises pay the tax. For small dischargers, like households, public entities designated by the federal states are liable, but no tax has to be paid for households connected to the sewage water system, given the according treatment plant has been built according to the generally recognized rules of technology.

The revenue of the tax is earmarked for measures to maintain or improve water quality. In 2018, the revenue of the tax amounted to around 266 M €, not including the revenues collected in the three city-states.

What it does

Potential steering effects:

- ▶ Increased construction of sewage treatment plants
- ▶ Improvement of sewage treatment technologies
- ▶ Development and use of low/no-effluent production processes
- ▶ Economical use of effluent-intensive goods

Potential effect of the earmarking of the revenues:
Facilitation of water protection measures.

The effluent tax is considered the first tax with an intended environmental steering effect in Germany.

The federal states collect the tax, with the common design elements being laid down in the national law Gesetz über Abgaben für das Einleiten von Abwasser in Gewässer.

The actual steering effect of the effluent tax is however difficult to determine since complementary regulative law has also been implemented.

Together, these have led to a significant decrease of nutrient and pollutant emissions; especially nutrient emissions from point sources, mainly due to an improvement of the performance of the sewage treatment plants.

- ▶ Entries from diffuse sources, which have less reduction potential compared to point sources, become dominant;
- ▶ The harmfulness of the effluent has significantly been reduced (between 1985 and 2005, for example -47% for nickel and -91% for

cadmium) which can be attributed to stricter legal requirements for direct discharges, but also to the reduction of industrial activity in the new eastern federal states;

- ▶ Overall, there has been a clear decline in the amount of wastewater of around 30 % since 1991, especially regarding direct discharges;
- ▶ The degree of connection of the German population to public sewage system increased from 90 % in 1990 to 96 % in 2004; in the same period, the proportion of sewage treatment plants with a biological treatment stage rose from 79 to 94 %.



WATER ABSTRACTION CHARGE²⁸

Currently, 13 of the 16 federal states in Germany levy water abstraction charges²⁹. The charge is due for the abstraction of water from ground and/or surface waters and the tax due depends on the volume of the water abstracted. In most of the federal states, the charge is also differentiated, depending on the purpose of the abstraction. The state regulations differ with respect to the tax rates, the exemptions as well as reductions/offsetting options. The charge for groundwater abstraction ranges from 0.25 to 16.72 € cent/m³ and for surface water abstraction from 0.1 to 10 € cent /m³. A recent overview of the different tax rates is provided by the German Ministry of Environment and the German Environment Agency.

There are also differences in the use of the revenues between the states. In more than half of the 13 federal states, the funds are, after deduction of administrative expenses, earmarked for financing measures to improve the status of water. In 2018, the revenue of the tax amounted to around € 340 M, not including the revenues collected in the three city-states.

What it does

Potential steering effects:

- ▶ Development and use of water-saving production processes
- ▶ Switching from groundwater to surface water
- ▶ Decline in demand for public water supply and for water-intensive products

Potential effect of the earmarking of the revenues:

- ▶ Facilitation of the development and use of water-saving production processes
- ▶ Facilitation of water protection measures

The actual steering effect of the water abstraction charge is difficult to determine. Prices for water supply and wastewater disposal have increased, technological progress has taken place and the water abstraction charge has probably contributed to this, but it is difficult to empirically verify this:

- ▶ Overall, a decrease in water abstraction (total volume) of around 30 % can be observed in the mining and manufacturing industries in the period 1991 und 2007, with large differences between the sectors. Coal mining and the food

industry showed minor changes and the expected significant adjustment in the paper industry did not materialize. The automotive industry was able to reduce the amount of water withdrawn by almost a third.

- ▶ Regarding the specific water use (water use per gross value added), the development also differs highly between the sectors. For the period 1991 to 2001, the reductions have been observed to range from just under -7% in food production to -59% in the metal industry. Coal mining stood out negatively with an increase in specific water use of around 250 %. Despite the decline in absolute water abstraction, the influence of the clearly declining value added in this sector is visible here.

Households receive their water from public water suppliers who have a natural monopoly and can pass the charge on to the consumer; the direct effect of the groundwater extraction charge on private water consumption is relatively low.

Stakeholder involvement

A comprehensive national water strategy is currently being developed in Germany with a proposal scheduled for mid-2021. For the development of the strategy, the Federal Ministry for Environment together with German Environment Agency conduct different stakeholder dialogues. In October 2020, the "National Water Dialogue" was rounded off. In the two-year dialogue process, experts from science, business, practice, administration and interest groups identified the future key challenges, guidelines and goals of/for the water management in Germany. From February 2021 onwards, the "National Citizens Water Dialogue" will be held.

A list of all the stakeholders that participated in the National Water Dialogue has been published in the [final report](#) 'Kernbotschaften, Ergebnisse und Dokumentation des Nationalen Wasserdialogs', under 7.9 there is a list of stakeholders involved.

HOUSEHOLD WASTE TAX OR FEE

Depending on the city in which they live, French residents must pay the **household waste collection tax and/or fee**. The **household waste collection tax or “taxe d’enlèvement des ordures ménagères” (TEOM)** aims to finance both household and non-household waste collection. It is paid annually by the owner of a property alongside the property tax, but can be transferred to tenants in rental charges.

The **household waste collection fee or “redevance d’enlèvement des ordures ménagères” (REOM)** is paid by the person who lives in the household and based on the usage of waste collection services. It is fixed by the local authorities, which also decide on invoice and payment dates. The fee can be partly fixed and partly proportional, or vary depending on the number of people living in the household.

Alongside the TEOM and the REOM, **incentive pricing or “tarification incitative” (TI)** charges the waste removal service according to the actual weight of waste produced by each household.

What it does

Pioneering local authorities set up TI since the end of the 1990s. However, the adoption of TI began to pick up pace since 2010 thanks to several laws, plans and programmes focused on reducing waste. More recently, it has also been promoted in the 2015 law on the energy transition and green growth.

The Ministry of Environment published an evaluation of the TI; while the Agency for Ecological Transition (Agence de la transition écologique, ADEME) provides extensive information/guidance documents about the three instruments. The take-up of TI ultimately lies in the hands of local authorities. A few examples of municipalities which have implemented TEOMI are available here. Furthermore, the Association nationale des collectivités locales (AMORCE), a national network of local communities, has also been active in at least one stakeholder consultation in 2004 regarding a REOM reform.



WATER POLLUTION FEE

France's water pollution fee (or redevance pollution eau) raised a total of 1,960M€ in 2016. The fee is paid in €/m³ on water consumption at the household level. Together, these two charges represent over 80% of total revenues from water charges. Water-related taxes are said to make up 23% of the total water bill. The level of taxes is calculated using a simple formula at the municipal level, combining inhabitants and seasonal visitors, as well as an agglomeration coefficient depending on the size of the city. A pre-determined cost of pollution per capita, differentiated from city to city, is then multiplied by the number of inhabitants. The product of taxes is collected by the utilities and transferred to the Basin Agencies.

What it does

Water taxes in France are meant to put a price on pollution, while also raising consumer awareness and decreasing consumption. Research on consumer responsiveness to water taxes in France shows that a 10% increase in tax reduces water consumption by 0.26%. The water pollution and resource fees in France represent environmental taxes that are used by the Basin Agencies to improve the environmental wellbeing of the river basins (i.e. pollution control and protection

of ecosystems).

How it came about and stakeholder involvement

Six Water Basin Agencies in France are responsible for managing and preserving water resources and aquatic environments. They are placed under the authority of the Ministry for Ecological Transition and the Ministry of Economy, Finances and Recovery. An example of a water agency is Agence de l'Eau Seine-Normandie, responsible for the Seine-Normandy basin. The agency finances investments projects and activities that contribute to the preservation of water resources and fight against pollution through fees collected from all users. The revenues collected are redistributed in the form of subsidies and/or advance payments to local authorities, economic operators, farmers or associations undertaking actions to protect the natural environment. The agency also provides technical support and advice (more information on the scientific committee can be found [here](#))

Public information portal on water (e.g. relevant statistics and data, information on the status of water bodies, public policy on water): Eau France (eaufrance.fr).



LANDFILL TAX

In 2012, a landfill tax for untreated waste to landfill was introduced through Law 4042/2012, and was meant to enter into force on 1 January 2014. However, it was never implemented, instead a series of legal suspensions occurred. It was planned to start at € 35/tonne, increase annually by € 5/tonne, and reach € 60/tonne. In 2019, an Environmental Fee (Περιβαλλοντική Εισφορά) to support circular economy was introduced, according to Law 4609/2019 replacing the original landfill tax. The Environmental Fee started from € 10/tonne from 1 January 2020, applied to all municipal waste that goes to landfill with no pre-treatment, and increased by € 5/tonne each year up to € 35/tonne by 2025.

However, according to a new draft Greek Law, the Environmental Fee of Law 4609/2019 is proposed to be replaced by a new landfill tax which will be applied to all waste disposed to landfill, starting at €15/tonne as of 01.01.2021, increasing annually by € 5/tonne and up to € 35/tonne by 2025 (further analysed in the following).

Finally, according to the recently adopted National Waste Management Plan 2020-2030 (NWMP), the following measure is set as a priority: “*Modernise the existing environmental fee with the aim to provide an incentive for diversion of waste from landfilling.*”

How it works

The landfill tax (LFT) has been recently reintroduced, but has not yet been implemented. The major reason for this is the notion (commonly shared by the Government and other stakeholders) that the tax would impose an additional economic burden that would be politically hard to tolerate. Moreover, other reasons include:

- ▶ the infrastructure needed for source separation and recovery operations was not complete;
- ▶ it was not combined with measures to encourage different waste management or to boost recycling / circular economy/ waste management infrastructure.

The Environmental Fee of Law 4609/2019 is currently in force for garden and park waste, and several

categories of municipal waste that are disposed of to landfill. It is collected via the ‘Green Fund’ dedicated to financing prevention, preparation for re-use and waste recycling activities. The environmental fee is charged to the regional waste management authorities (FOSDA) or the municipal authorities and paid by households (and private companies) via the electricity bills.

In particular, the environmental fee can be reduced in relation to the progress of the implementation of the planned waste treatment plants:

- ▶ by 35% when there is an environmental permission issued for a waste treatment facility (MBT plant or/and bio-waste treatment plant);
- ▶ by 70% when there is a contract for the construction of a waste treatment facility (MBT plant or/and bio-waste treatment plant);
- ▶ by 100% when there is a waste treatment facility (MBT plant or/and bio-waste treatment plant) in operation.

The landfill tax proposed through the new draft Law 2021, as already mentioned, was proposed to start at € 15/tonne from 1st January, 2021, increasing annually by € 5/tonne and up to € 35/tonne by 2025. Moreover, according to this new draft law, a different landfill tax of € 5/tonne, increasing annually by an additional € 5/tonne is proposed for the wastes generated from the treatment of the separately collected waste in Recycling Sorting Centres, Biowaste Treatment Units or Mechanical Biological Treatment Units. The landfill tax is charged to the regional waste management authorities (FOSDA) or the municipal authorities and paid by the citizens (and private companies) via the electricity bills.

According to the new draft Law 2021 (yet to be adopted and implemented) the landfill tax revenues will be collected via the Green Fund and will be used in the following manner:

- ▶ 50% of the LFT revenues will be used to support the Greek municipalities to increase prevention, separate collection and recycling, as well as enhance the environment in general;
- ▶ 40% of the LFT revenues will be used to support the Greek municipalities that achieved

- the highest separate collection and recycling performance, as a rewarding mechanism; and
- the remaining 10% will be used to provide financing in research and technology in the field of recycling and waste management.

What it does

Landfilling is still dominant in Greece – over 80% of municipal waste is disposed of in landfills, compared to the EU average of less than 40%. Specifically, the percentage of waste disposal at landfills is consistently close to 80% (78.4% of the produced MSW for 2018) and it is far from the minimum target of 26% set in the previous NWMP for the year 2020 and even further from the corresponding EU average of 22.6% of MSW production. The existing Environmental Fee provides no serious economic incentives for households or the industry to reduce the amount of waste generated, since waste charges and landfill gate fees are flat and they are not linked to the amount of waste generated. Moreover, the proposed landfill tax (if this is adopted into new Law) is still considered to be very low (starting at € 15 / tonne) in order to be meaningful and effectively discourage the landfill of waste.

Stakeholder involvement

There is a broad range of stakeholders involved in the discussions about waste management and related economic instruments in Greece. These include:

- Producer Responsibility Schemes (PROs) such as HERRCO for packaging ;
- Industry Associations such as the: Federation of Recycling and Energy Recovery Industries and Enterprises (SEPAN), Hellenic Association of

Biogas Producers (HABio), Hellenic Solid Waste Management Association (ΕΕΔΣΑ), Hellenic Cement Industry Association, Association of the Greek Manufacturers of Packaging & Materials (ΣΥΒΙΠΥΣ), Association of Hellenic Plastic Industries , Federation of Hellenic Food Industries (ΣΕΒΤ), Greek Tourism Confederation (SETΕ), concerned about requirements for reduction or reuse of industrial waste and any related costs;

- The Union of Municipalities (ΚΕΔΕ), the Regional Waste Authorities (ΦΟΔΣΑ) and the local authorities (who are supposed to bear the costs of a landfill tax);
- Private investors interested in building and operating waste treatment plants;
- Environmental NGOs (such as the Ecological Recycling Society (Mediterranean SOS, Greenpeace and WWF Greece)
- Research and Academia that have been involved in all previous public consultations.

The role of civil society has been limited to support the development and adoption of an effective policy to divert waste from landfill: mainly environmental NGOs, a limited number of companies and academics have supported the (future) adoption of economic instruments for waste management. This is also evident from the position papers/statements submitted during the public consultation periods of the proposed draft Law 2020 and the NWMP 2020-2030. Local authorities (municipalities and communities) that will be responsible for paying landfill tax (passing this tax through to households and companies) may be hostile due to political and social concerns, this instrument may bring.



EXTERNALITY PRICING FOR WATER SCARCITY - “RESOURCE COST”

In terms of externality pricing for water scarcity in Greece, there is a recent regulatory framework for the pricing of water services in Greece, which sets the definition of ‘Resource Cost’ and the methodology for calculating this cost.

How it works

In particular, ‘Resource cost’ is defined as the cost of alternative water uses in case a water system is over-used, beyond its ability of natural replenishment. The methodology for the calculation of the ‘resource cost’ is applicable when:

- a. a groundwater body is evaluated as ‘bad’ in terms of water quantity, or
- b. there is inadequate coverage of water needs for human use, especially when this is due to inefficient water management.

The water management authority determines the price per cubic meter, to be paid by end users through tariffs relative to water use. There is different pricing for different types of water usage and sources (residential, industrial, agriculture, tourism, commercial, etc.).

The charge rate depends on the type of water use and on the state of the basin groundwater area.

What it does

The charge rate depends on the type of water use and on the state of the basin groundwater area.

Stakeholder involvement

The JMD that introduced the “Resource cost” into the Greek legislation was co-signed by the Ministries of Energy and Environment, Interior, Economy & Development, Health, Finances, Infrastructure and Transportation and Agricultural Development & Food. These ministries make up the National Water Committee which was established in 2003 in accordance with the Greek transposition of the Water Framework Directive (Law 3199/2003). The aim of the National Water Committee is to develop policies for the protection and management of water resources, to monitor and control the implementation of these policies and to approve the River Basin Management Plans.

Within the Ministry of Energy and Environment the Special Secretary for Water is in charge of drafting and developing water-related policies and ensure the implementation of the Water Framework Directive.

Furthermore, in 2013 the National Water Council was established consisting of parties’ representatives, organizations, public bodies, local authorities and NGOs. President of the Council is the Minister of Energy and Environment.

Finally, the water providers (regional and local) are responsible for charging and collecting the “Resource cost” from their customers. The pricing of the “Resource cost” is carried out by the Decentralized Administrations of the various regions, based on the methodology proposed in the JMD.



AIR POLLUTION FEE³⁰

An air pollution load charge was introduced in 2003 and applies to emissions of nitrogen oxides, sulphur dioxides and non-toxic dust. The charge is based on Act LXXXIX of 2003 on environmental load charges which also introduced charges on water pollution and soil pollution load.

The annual revenue collected by the state was 5.607 billion HUF in 2019³¹, but this is a total income from air, water and soil pollution fees, and the breakdown is not available publicly.

The charge is paid by point-source emitters, mainly in the industry and power sector. Exemptions are applied to domestic emitters, district heating suppliers and to all emitters in emergency situations.

Since the introduction of the charge in 2003, no major changes have taken place and no evaluations on the effectiveness of the charge have been carried out by the government.

CHARGE ON WATER ABSTRACTION³²

This Charge is regulated by the Act on Water Management no. LVII. of 1995. and the 43/1999. (XII. 26.) KHVM decree (updated by 34/2016. (VIII.2.) BM decree). This MBI is subjected to all water users with water right permit (there are specific exceptions defined in the Act.).

The level of the charge depends on the permitted water use. If the usage of the water is more than 110% of the permitted water use, the tariff is 9 HUF/m³. If less,

the tariff is 4,5 HUF/m³. If the consumption is 80% or less, than the charge calculated after 80% of the consumption.

NGOs (environmental, consumer, green business networks, citizen science groups, etc)

One of the most relevant NGOs in environmental topics is Levegő Munkacsoport [Clean Air Action Group] -- <http://levego.hu/en/>



PLASTIC BAG LEVY

The Ireland plastic bag levy (tax) was introduced in 2002, charging shoppers €0.15 per plastic bag at the point of sale in retail outlets. Plastic bags constituted approximately 5% of national litter at the time of the implementation of the levy, yet such pollution was persistently visible throughout Ireland. As such, the levy was introduced to change consumer's behaviour from using disposable shopping bags to using more durable, reusable bags.

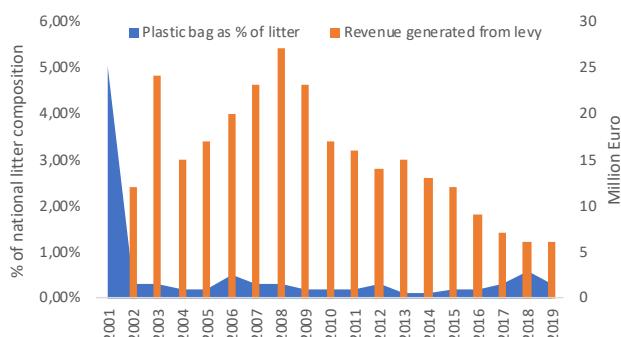
The revenues generated from the levy are managed by the Department of Communications, Climate Action and Environment, with proceeds fed into the Environment Fund. The Fund finances waste management, litter and various other environmental protection schemes.

In 1999 the Ministry of Environment commissioned a report to explore options to reduce plastic litter. The report led to an amendment to the Waste Management Act to support the introduction of a €0.15 levy placed on downstream actors.

The levy has worked well, leading to a fast and strong reduction in percentage of plastic bags in total waste. A slight increase in plastic bag usage between 2004-2006 led to the levy fee being increased to €0.22 cents in 2007.

A key success of the levy was the extensive consultations that took place with industry representatives and retailers throughout the implementation. Retailers

noted that they would be negatively viewed by the public and seen as 'profiteering' from the introduced levy, therefore the Department of the Environment introduced a publicity campaign to explain that the levy was deployed to combat plastic pollution.



For the collection, enforcement and administration of the levy to run smoothly, it has been essential to have the support from the Minister of Finance and of local authorities.

Ongoing consultations are taking place currently – gathering views from actors on the suitability of increasing the levy charges, identifying any potential challenges to legislative changes and identify potential impacts of changes to the levy. Furthermore, the consultations are also analysing the options for implementing similar levy's to tackle additional plastic waste, such as disposable coffee cups.



LANDFILL TAX

The Irish Landfill Levy was introduced through the Waste Management Regulation of 2001 in response to the EU Landfill Directive (1999/31/EC) and due to the estimation that landfill sites were due to reach their capacity by 2020. The levy fee has been successively adjusted since 2001, with the latest iteration stipulating a levy of €75 per tonne. The cost of the levy is passed onto households through an increased waste collection charge, in order to incentivise waste reduction from households.

The introduction of the landfill levy has been noted as reducing the overall landfilling of waste in Ireland, yet other factors such as increased material recovery and developments in the international market of secondary materials can also be attributed to lower landfill volumes taking place. The levy has improved

the recycling and performance within Ireland, and additional complementary levies are scheduled for introduction in 2021 in a bid to further increase municipal waste recycling (the waste recovery levy).

Meanwhile, the government has required private waste companies to offer incentivised pricing options to ensure households produced less waste.

Following the implementation of the Levy, the Minister extended and altered the powers of local authorities through the Protection of the Environment Act (2003). This Act in essence allowed local authorities to charge for waste services, and further incentives for households to reduce their waste. Since then, regular public consultations have taken place to scope the feasibility of further increases to the rate of the Landfill Levy.

Italy

INTEGRATED WATER SERVICE CHARGES (TARIFFE DEL SERVIZIO IDRICO INTEGRATO (SII))

Integrated water tariffs include three types of charges: for aqueduct, sewerage and water treatment services. In fact, water tariffs are defined as "integrated" since they aim to cover costs derived from all the activity needed to withdraw water from the sources, purify it, transport it up to taps, collect it once used and treat it to clean it before it is discharged into the environment.

The methodology to establish those tariffs is the Water Tariff Method (Metodo Tariffario Idrico, MTI) which is based on what it has been consumed, rewards energy efficiency and provides incentives for saving and reusing water. Regionally or locally, different tax rates and brackets of consumption are set according to the local situation. Also, water tariffs are set for different user categories, like domestic use, industrial use, commercial use, agricultural use; potable and non-potable public use. For all users, there is a fixed quota and a variable quota. The latter is aimed at

discouraging excessive consumption and preserving water resources..

How it works

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non-potable public use. For all users, there is a fixed quota and a variable quota. The latter is aimed at discouraging excessive consumption and preserving water resources.

What it does

The persistent lack of centralised data on revenue from water tariffs makes it arduous to evaluate the real impact that those tariffs had on reducing the serious “Water Service Divide” between northern and southern Italy or promoting efficiency measures to reduce withdrawals and consumption of the water resource. Water tariff revenues are not reported to Eurostat.

While entire geographic areas have a high-quality, efficient and innovative water management system, others stand out for their negative performance due to long interruptions of the service, frequent incidences of non-potability and poor adequacy of the sewage system. Investments are needed to address this critical situation, but funds for water infrastructure and service improvements are limited. One of the main investment barriers on reducing withdrawals and consumption of the water resource is linked to the fact that Italian water consumption per capita is among the highest in the EU, while its cost is one of the lowest. Due to cheap price for water use, Italian citizens are not driven to concrete actions to reduce water consumption and policy makers are much more engaged in the debate on privatization than on that of water efficiency.

How it came about and stakeholder involvement

The use of water and the related tariff is governed by a complex and unstable regulatory framework, which involves different government levels, and has been modified several times. Water privatisation has been a hot political topic for 30 years. A new 4-year MTI for 2020-2023 was approved after an extensive three-months consultation with the interested parties: Environment Ministry, operators, Local Authorities, District Authorities, consortia, associations, monitoring centres and local municipalities. The aims of the new MTI are:

1. to introduce innovations and interventions to improve the infrastructure;
2. to promote and reward environmental sustainability;
3. to improve the efficiency of the measurement of water consumption and
4. to strengthen controls on the implementation of investments.

Also, for the first time in Italy, a stakeholder engagement instrument operating on the basis of “willingness to pay” has been introduced, involving citizens in defining the investment plan and achieving a higher water service quality.



LANDFILL TAX

The amount of the landfill tax varies regionally, and it is obtained multiplying the unit amounts, differentiated by type of waste, quality and conditions of delivery by the quantity, expressed in tons, of the waste delivered. The tax categorisation is typically structured around the following categories: 1. Urban waste and waste from urban treatment; 2. Inert waste; 3. Non-hazardous special waste; 4. Special hazardous waste. The tax is due to the regions, which are responsible for determining the amounts applicable, while a unitary maximum value is set at national level. Since 1996, the eco-tax lost 1/3 of its maximum value in 25 years passing from €38.5/ton to €25.8/ton in 2018³³. Similarly, revenue decreased from €470 million (1996) to €101 million (2018).

The regional breakdown of this revenue is very heterogeneous from €21.9 million in Puglia to €0.2 million in Molise. In some regions, rewarding/penalising mechanisms are also provided according to the level of separate collection reached or the amount of dry waste per capita generated. An incentive modality provides for a reduction of the landfill tax, depending on whether the level of separate waste collection is above the national target level.

What it does

The eco-tax should have improved the waste management cycle by reducing the use of landfills, by making landfill less convenient and supporting waste initiatives to reduce waste generation and incentivising recycling and energy recovery alternatives. Although there was a reduction of landfilled waste since 1996, the amount of waste sent to landfill was still excessive, with 22% of the total municipal waste disposed of

in landfill in 2018 (still far above the EU target of 10% fixed for 2035). Furthermore, the reduction in landfilled waste was not progressively accompanied by the robust increase in the landfill tax by the Regions, on the contrary, there was a progressive decrease. Because of the current low rate, the landfill tax does not contribute significantly to public revenue, nor does it disincentivise landfill. Furthermore, though there was originally a commitment to use 20% of the revenue for financing more sustainable waste treatment, actually only 1% of the revenue has been allocated to build such infrastructures.

How it came about and stakeholder involvement

The landfill tax was introduced in 1 January 1996 to promote separate collection and to support recycling and energy recovery plants. Relevant stakeholders have addressed the need to discuss a progressive increase of the tax which would discourage landfilling. Since 2018, ARERA has started three consultations³⁴ for the definition of the Tariff Method for the Integrated Waste Management Service. Criteria have been set for recognising effective costs for the period 2018-2021. This represents a first and important step in the start of the economic regulation of waste management. In the second consultation, which involved a large number of different types of stakeholders, a “zero landfill” goal was discussed and a new perspective was taken, which envisages economic instruments that would encourage mechanical-biological treatment and energy recovery. However, this would require a strong commitment to improve the current infrastructural deficit and implement the best industrial experiences in waste management.



PACKAGING TAX AND PRODUCER RESPONSIBILITY SCHEMES

The packaging tax in Latvia is part of the all-inclusive natural resource tax. However, the packaging tax is only applied in limited circumstances. It is used as an incentive to join producer responsibility organisations which require producers and retailers to pay a fee to ensure their packaging obligations are discharged by these organisations. Organisations that choose to do so receive a packaging tax break. Therefore revenues from the packaging tax are relatively small and declining as the implied rates are effectively punitive.

To stimulate a decrease in the consumption and increase in the recovery of packaging materials, for the last 20 years, environmental NGOs in Latvia have been advocating changes in this system: a) to make producers pay packaging tax for non-recyclable packaging (except from Producer responsibility schemes) and b) to introduce the deposit refund system (DRS) for beverage containers.

The main civil society engagement mechanism in the field of environment in Latvia is the Environmental Consultative Council (ECC) – a consultative and coordinating institution that adopts advisory decisions in the fields of environmental protection and sustainable development. 20 members of the Environmental Consultative Council are elected annually by representatives from environmental civil society organizations. The Council regularly gives its opinion on legislative and policy proposals and is also

represented in different ministerial working groups. ECC has given input on the proposals for the Packaging tax and DRS.

ECC has been also strongly involved in the advocacy for the DRS especially after the EU recycling targets for the beverage containers were introduced. As a response to this, Saeima (the national parliament) approved amendments to the Packaging Law in 2019, which deal with the introduction of a deposit-return system in Latvia and stipulate that the new system will commence on February 1, 2022. ECC has also been observing The State Environmental Service in choosing the DRS operator (there was competition from two competing organizations – one linked with beverage producers, another with waste management and producer responsibility organizations). ECC has also been invited to participate in the Committee set up by The State Environmental Service to supervise the DRS operator.

A consultation also took place on the packaging tax, and by 2023, it will have to be paid for non-recyclable packaging. The packaging tax along with participation in extended producer responsibility organisations or DRS will be the main economic instruments in the field of packaging. However, so far there is little evidence that the packaging tax has influenced producer and consumer choice of packaging materials and design. The recycling and recovery targets set have been a more important influencing factor.



ENVIRONMENTAL POLLUTION TAX

As of 22 January 2002 seven widely used products, which account for a large portion of the waste stream, were added to the Law on the Tax on Environmental Pollution of the Republic of Lithuania: tyres, accumulators, galvanic elements (batteries), fuel or oil filters, air intake filters, shock absorbers and mercury lamps.

How it works

The tax is reduced according to the level of recovery/recycling achieved. If the producer meets the full target, no tax is paid, if half of the target is met, half the amount of tax is paid. Legally exported waste is also exempted.

What it does

The tax was supposed to be the 'stick' leading to behaviour change by producers and importers, and to lead to initiatives to create more environmentally friendly products. The instrument was designed as a 'dual' system, i.e. with features of a tax and a producer responsibility scheme. No official evaluation of the effectiveness of the instrument has been done, but expert evaluation has revealed that the instrument for tyres, accumulators and galvanic elements (batteries) is considered to be only partly effective, whilst the instrument for fuel/oil filters, air intake filters and hydraulic (oil) shock absorbers is considered ineffective. The instruments have also had a relatively insignificant impact on improving the environment. Furthermore,

there is a lack of transparency in how much money is actually collected from tax payers, and where it is spent.

How it came about and stakeholder involvement

Before introduction of the instrument, a Working Group on Pollution Tax Law was created by the MoE, including representatives from Ministry of Economy, Ministry of Agriculture, Ministry of Finance, Lithuanian Association of Municipalities, Association of Environmental Engineering, Lithuanian Communal Services, Waste Management Association and other institutions. In 2016 a new Working Group has been formed by the MoE to analyse problems related to the treatment of ELVs and their parts (including taxable products), comprising representatives from the MoE, other ministries, PROs and waste treatment/management associations. Despite the formation of these Working Groups, however, there has been a minimal involvement of stakeholders, mainly because the tax was not associated with any EU Directive and because it was driven by environmental authorities and the waste management sector. It may be the case that the environmental authorities failed to adequately communicate the objective of the tax and its potential benefits. Importers and their PROs were passive. Documents around the introduction of the Law indicate that 'citizens, NGOs, political parties and political organisations and other interested persons hadn't submitted proposals for amendments'.



MUNICIPAL WASTE MANAGEMENT TAX

Waste management responsibilities are distributed among different institutions and actors in the Grand Duchy of Luxembourg. The Ministry of Environment, Climate and Sustainable Development is in charge of defining national policies in terms of waste management, including the development and monitoring of the [National Waste Management Plan \(NWMP\) \(approved in 2018\)](#). The NWMP states that costs should be allocated in a way that reflects the real environmental cost of waste generation and management, in line with the polluter-pays principle (PPP). The cost of waste management is borne by the original waste producer or the current or previous 'holder' of the waste.

Responsibility for household, bulky and similar waste [lies with the municipalities \('communes'\) and municipal associations](#), in particular as regards collection, recovery and recycling methods, waste disposal, awareness-raising measures, and municipal waste management taxes. Waste treatment prices must include all waste collection costs and costs incurred in setting up and managing the disposal or recovery infrastructure. For household and similar waste, there is a legal obligation that the taxes charged [must correspond to the actual production of waste](#). Thus, taxes must include a variable component based on the weight and/or volume of waste (household or bulky) produced.

What it does

The municipal tax falls in line with the PPP, as defined in the [NWMP](#). The tax must cover all costs incurred and must be directly linked to the actual production of waste, to encourage the population to participate in waste prevention and collection. The NWMP states that in order to help municipalities set their taxes, a cost consideration model will be developed and made available to them. The Plan also states that one way to use taxes as incentives is to offer negative taxes according to the quantities of waste disposed of through separate collection structures.

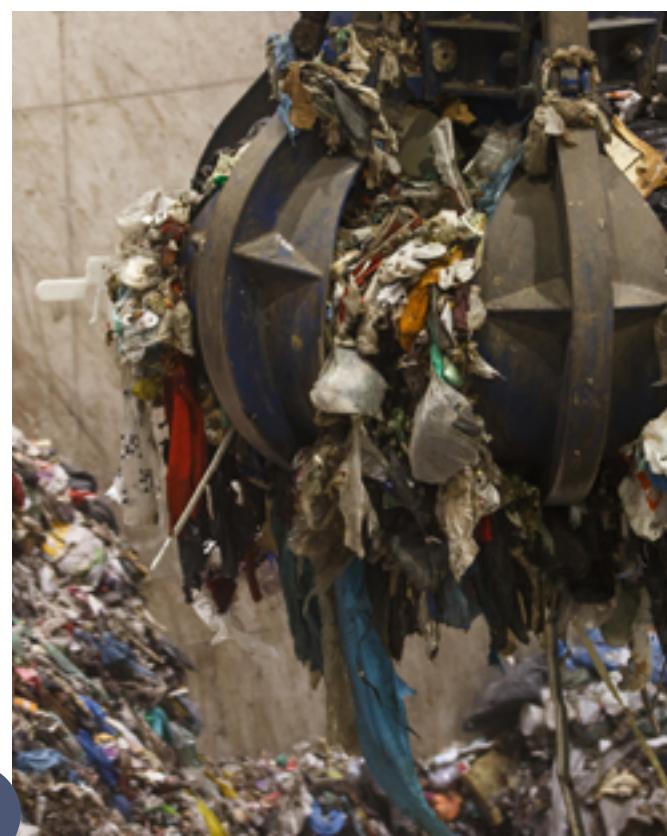
As an example of the level of annual taxation, the municipality ('commune') of [Stadt breditimus](#) charges the following municipal waste taxes (as of 29 May 2020): a fixed charge of €18/year/household/bin and a variable

charge of €1.35/L. The basic charge is calculated based on 960L of waste per year (i.e. equivalent to €24 of collection costs per year). Collection costs (referred to as 'emptying costs') amount to €0.025/L. If needed, households can throw away additional bags of waste (next to their bins), but they have to purchase specific 'SIGRE' bags of 70 L (€5/bag). Bulky waste can be picked up upon request and cost between €35 to €50, depending on the volume (max. 3 m²). More details on the taxes in Stadt breditimus can be found [here](#).

How it came about and stakeholder involvement

Waste management is governed and defined by the [NWMP](#), the [Law on Waste Management](#) (21 March 2012). Each municipality also defines its own regulation concerning waste management.

[Other stakeholders involved](#) in waste management decisions and planning include the Ministry of Interior, who oversees the legality of municipal decisions in terms of waste management and coordinates territorial organisations. There are also three intermunicipal associations, SIDEC, SIDOR, and SIGRE. They possess waste management facilities and have [concluded a cooperation agreement](#).



WATER SUPPLY TARIFFS AND METERING FEES

Household water consumption in Malta was effectively supported until the year 2000. From the mid-1990s, however, awareness began to increase about the need to use water optimally and to make users more accountable for their water consumption. In 2010, following the issuing of a Maltese River Basin Management Plan (RBMP), groundwater abstraction metering fees were adopted, and water supply tariffs were increased. In 2011, the Malta Water Association (MWA) was formed, and in 2012, a national conference on water consumption and scarcity was held by the Malta Chamber of Commerce, Enterprise and Industry to debate water pricing. The first RBMP was then updated in the 2nd Water Catchment Management Plan, published in 2016.

How it works

Water users receiving potable and non-potable water from the public supply must now pay a [water supply tariff](#). Water supply tariffs are applied to water users based on the amount of water used, and metering allows the correct level of tariffs to be charged. A 'rising block' structure is used: water use to a certain volume is charged at one rate, and water use exceeding that volume is charged at a higher rate. Residential and domestic users are charged a flat-rate annual service charge of €59 per m³ used, as well as a tiered variable consumption charge of between €1.40-5.40 per m³ per person per year. Charges to non-residential users are structured similarly but at different rates. Variable consumption charges account for 70% of revenue, whilst fixed annual charges account for 30%.

Water users from the agricultural and commercial sectors are required to pay [metering fees](#) for all significant groundwater abstraction sources they operate. Metering fees are paid for meter installation (€765) and annual metering fees per groundwater source (€143), among others. Some exemptions on metering (and associated fees) can be granted.

Water supply tariffs are collected by ARMS Ltd., a subsidiary to the Maltese Water Services Corporation (WSC). In 2010, water supply charges were applied to

16 million m³ of water consumption. In 2011, the WSC received around €58 million in revenue from sale of water and related services (similar in 2014 and 2015); around 50% of which came from the residential sector, 29% from the non-residential sector and 21% from the domestic sector.

What it does

Consumer charges recovered around [88% of the total costs](#) of water services in Malta in 2014. The water supply tariffs and metering fees do not appear to have had a significant impact on the amount of water provided through the public water supply. Groundwater abstraction remains a significant pressure for the country's two main mean sea level aquifer systems. In the period 2004-2014, groundwater abstraction per capita increased by 35% (from 77 m³ to 104 m³), and self-abstraction by the agricultural sector for irrigation purposes (for which no price is charged) doubled. Since self-abstraction of groundwater is not subject to the water supply and metering fees, it has been suggested the water supply fees may be acting as an incentive for self-abstraction.

Stakeholder engagement

Although not specifically related to the water pricing instruments, in the creation of the 1st and 2nd Water Catchment Management Plans, [relevant stakeholders](#) (agriculture, ports/navigation, water suppliers, NGOs, fisheries/aquaculture, local authorities, transport and tourism) were actively involved. The public was consulted via internet, media and an international trade fair. The draft RBMP was available through the internet, and sector specific workshops and ad-hoc meetings were held. Long-term educational campaigns on the value of water conservation were designed to provide an opportunity for stakeholders to engage with the relevant authorities about water use, and potentially allow them to express their views on instruments that support Maltese water policy. Specific participation from the public includes the MWA presenting its views to government on developing a coherent water policy in 2013, and the Today Public Policy Institute publishing a report arguing that Malta needs an integrated national

policy framework on water in 2015.

As of August 2020, the [draft third river basin management plan](#), covering the period 2021 to 2027, was open to public consultation, with plans to reduce

Malta's dependency on groundwater extraction and increase the use of highly-filtered urban wastewater. Submissions concerning the water management plan can be made until February 19, 2021.



CONTROL VEHICULAR ACCESS (CVA) IN VALETTA

The Control Vehicular Access (CVA) system was launched in Valletta in 2007 to provide easier access to the city, reduce congestion and utilise parking spots better. The new CVA system replaced an older system, called the Vignette system, where access and parking in the inner-city was restricted to drivers who paid €46 a year for a Vignette displayed on their vehicle (other vehicles were prohibited from entering).

How it works

The CVA system allows any vehicle to enter the city of Valletta under a time-based 'pay-as-you-go' billing system. The system makes use of Automatic Number Plate Reading (ANPR) technology and dedicated camera systems (27 cameras located throughout the city) to monitor and photograph vehicles entering and exiting the CVA boundary. The system then automatically calculates the time the vehicle remained inside the Valletta CVA boundary and finally computes the fee due for access and parking based on the tariffs issued by Transport Malta. Access for the first 30 minutes is free; access for over 30 minutes and up to 60 minutes costs €0.82; access for over 60 minutes costs €0.82 per hour up to a maximum charge of €6.52.

What it does

The new CVA system is a market pricing system that encourages a more efficient use of limited resources. The system incentivises individuals to drive less in the centre (the more one drives in the centre, the more one gets charged) and it discourages parking for long periods of time (the longer one parks for, the more one gets charged). It therefore incentivises better use of both roads and parking places (both a limited resource) and reduces traffic congestion as a result. In addition, the charging structure is flexible and can be tweaked according to supply and demand. Parking surveys carried out pre- and post-implementation of the CVA revealed that on a typical weekday, 9.5% fewer vehicles parked in Valletta. The number of vehicles parked at peak time (10:00–11:00) reduced by 26.7% and the average parking duration went down from 3.9 to 3.5 h. By the third year of operation (2010), the number of vehicles entering the zone declined by 2%, and 10% of trips had shifted from private to public transport modes (comparing 2010 with 1998, when the V-licence regime was still in place). Even though it is hard at this point

to attribute this shift completely to the change from a parking fee to a road user charge, the Valletta projects, of which the CVA is a major component, were the most influential measures to affect travel behaviour³⁵. In addition, the new system was designed to increase accessibility to the city centre – a wider group of people can now come in, not just those with a Vignette license. Before the CVA system was introduced, only around 32,000 unique vehicles with a Vignette license could enter Valletta. By 2013, more than 325,720 unique vehicles had entered Valletta.

The impacts of the scheme on the quality of life of residents and the general environment have not been properly assessed yet. Issues of charging, equity and fairness are currently being discussed in the media.

Stakeholder involvement

According to the Mayor of Valletta, the success of the CVA project was thanks to the collaboration between various stakeholders and government before its launch. A team of experts was appointed by a special Cabinet Committee of the Maltese Government dealing with National Projects, and was tasked with writing the policy, designing the scheme and subsequently implementing what would be later termed the Valletta projects. In 2005, the Cabinet Committee for National Projects published a consultation document called "Valletta and Floriana: A strategy to improve access", which incorporated the views of the major stakeholders in accepting the problems of the city and its suburb, Floriana, and proposed a number of projects. The stakeholders included local councils, national authorities, merchant associations, local associations and general trades' unions. The outcome of the consultation and the results of the questionnaire to stakeholders were included in the document, revealing the stakeholders' views on the proposed separate charges for access (fixed basic charge) and parking (varies over time) within the charging zone. Following a year of public consultation, in July 2006, the four Ministers presented their final decisions, reflecting the Government's attempt and methods used to gain public support for the Strategy during the process of consultation. At the public launch of the White Paper, a number of stakeholders were present and declared their support. This gave credibility to the Strategy as well as providing Government with enough comfort and drive to pursue the project³⁶.



The Netherlands

CARBON TAX / CO₂ LEVY

In the Netherlands, a carbon tax was announced in the "Climate Agreement". The tax applies to industry, and is levied for emissions that would exceed the EU ETS benchmarks minus a predefined reduction path. The law has passed both houses of the national parliament and has entered into force on 1 January, 2021. It applies to all installations in the EU ETS plus waste incinerators and large emitters of non-CO₂ GHG, such as N₂O in as far they have not been opted in the EU ETS in the latest years. The imposed CO₂ tax is a baseline-and-credit system. Emissions above the baseline will be taxed.

To allow Dutch Industry some time to adapt to the levy, the levy will start at € 30/t CO₂ in the year 2021 and will increase each year by € 10.56 up to a rate of € 125/tCO₂ in 2030. The levy is formed as a CO₂ minimum price. Hence, the levy will be reduced with the EU ETS price of last year. Water users from the agricultural and commercial sectors are required to pay [metering fees](#) for all significant groundwater abstraction sources they operate. Metering fees are paid for meter installation (€765) and annual metering fees per groundwater source (€143), among others. Some exemptions on metering (and associated fees) can be granted.

What it does

Different variants of the CO₂-levy have been evaluated ex ante. Together with other policies, such as feed-in subsidy for CO₂-abatement (SDE++) and policies targeted at specific abatement technologies (e.g. hydrogen), the incentives that come from the levy may

be sufficient to reach the Dutch 2030 goal of 14,3 Mton CO₂-reduction in 2030³⁷, a reduction of 26% compared to the 2015 level of 55,1 Mton CO₂.

How it came about and stakeholder engagement

The instrument has been proposed as part of the National Climate Agreement. It is an agreement between many organisations and companies in the Netherlands to combat climate change. The government's central goal with the National Climate Agreement is to reduce greenhouse gas emissions in the Netherlands by 49% by 2030 compared to 1990 levels.

The process to draft the Climate Agreement has been chaired by the Dutch Government, but stakeholders have been actively approached to participate. The drafting was structured along five topics ("sectortafels"), one of which was industry. Participating parties were representatives of Industry, Labour unions, Environmental NGO's and local, regional and national government bodies³⁸. Of these, notably the environmental NGOs fought for the CO₂-levy³⁹. In a draft version of the Climate Agreement, the CO₂-levy was not included. Because of this, the environmental NGOs left the negotiation table⁴⁰. An assessment of the impacts of the draft Climate Agreement by PBL and CPB showed this was insufficient to attain the abatement goal for industry. This, together with the pressure from the NGOs, led to a governmental announcement that a CO₂-levy would be introduced⁴¹.

WASTE TAX

The Dutch Waste Tax (Afvalstoffenbelasting) aims to reduce the amount of landfilled or incinerated waste and to increase recycling rates⁴². As such, it taxes waste that is handed in at a waste disposal facility for landfilling or incineration. As of January 2019, the waste tax also includes waste that originates in the Netherlands and that is moved to a location outside the Netherlands for landfilling or incineration.⁴³ The taxpayer is the owner of a waste disposal establishment.⁴⁴

In 2015, the tax was set at € 13 per 1000 kg of waste. This was expected to generate a revenue of € 100 million per year. In 2019, the tax was raised to € 32.53, an increase of 150% compared to 2015. It is expected to generate a revenue of € 200 million per year.⁴⁵

The figure below illustrates the amount of processed waste and the generated revenues per year. The figure shows that the amount of landfilled waste has increased in recent years, whereas the amount of incinerated waste has decreased to 7.5 Mton. Digestion and composting of biowaste remains constant at 1.5 Mton⁴⁶. As such, the waste tax shows to have a positive effect on incineration, but does not reduce the number of landfill waste. Moreover, research found that landfilling and incineration remain financially attractive, compared to recycling.⁴⁷

Between 2014-2018, the revenue from the waste tax came close to € 100 million; in 2019, the revenue was € 205 million, well above the expected level.

The tax was reintroduced in 2014 after it was abolished in 2012 to simply the Dutch tax system⁴⁸. The former waste tax (Stortbelasting) only taxed landfill waste. This tax was found to be effective in reducing landfill waste as well as increasing the incineration and recycling rates.⁴⁹

The waste tax was reintroduced both in order to stimulate reduction of residual waste and to generate more tax revenue. In the programme “From waste to resource” (Van Afval naar Grondstof) the government expressed the ambition to decrease landfilling and incineration to a maximum of 5 Mton (the amount of residual waste was 8.3 Mton in 2014).⁵⁰ Moreover, the nation-wide Circular Economy programme aims to move towards a 100% circular economy in 2050. A sub-target of the programme is to reduce landfilled or incinerated waste by 50% in 2022 compared to the 2012 levels. The waste tax is seen as one of the instruments of the third Dutch National Waste Management plan (2017-2023) (Nederlands Afvalbeheerplan)⁵¹ to incentivise companies and municipalities to reach these targets.⁵²

The reintroduction of the waste tax led to some criticism from experts and the waste sector, especially regarding the risk of increased exports of waste.⁵³ Therefore, from January 2019, the waste tax also covers waste exports. Moreover, in the rapport “Towards an economy without waste (Naar een economie zonder afval) of April 2020, the government has indicated that there are several bottlenecks that hinder the effective execution of the circular economy programme. For one, prices do not



reflect environmental damage.⁵⁴ Further, the current cost of landfilling and incineration does not incentivise recycling. For these reasons, the rate of the waste tax was almost doubled in 2019.

However, several stakeholders such as the Association for waste companies (Vereniging afvalbedrijven) and MVO Nederland⁵⁵ indicate that only stronger pricing of landfilling and incineration will not be enough and that

other flanking measures are needed to move toward a more circular economy.⁵⁶ The strong pricing has also consequences for municipalities and waste disposal stations which affects the price of the [waste collection levy](#) for households. In 2021, this levy will increase with an average of 7.3%.⁵⁷



Poland

WASTEWATER (SEWAGE) SYSTEM AND FEES

Fees for the discharge of sewage to water or soil were introduced in Poland in 2002. This market-based instrument (MBI) was introduced to dissuade the pollution of waters and the soil, to internalise costs and to use the fee revenues collected to compensate environmental impacts caused by pollutants introduced to water or soil.

There is evidence for a correlation between the wastewater fee increase and the reduction of water pollution in Poland, however, this trend can also be partly attributed to major infrastructural investments. Nevertheless, Poland cannot demonstrate the full implementation of the EU sewage directive. Large

agglomerations with more than 100,000 inhabitants have a significant share in the infringement. Correct planning of investments in the water and sewage sector for 2021-2027 in the National Program for Municipal Wastewater Treatment is a condition for granting Poland EU funding.

In Poland there are over 2,700 entities providing water and sewage services. Approximately 30% of the water / sewage price is affected by depreciation of the previously incurred costs for investments, and another 30% are handling costs. This means that 60% of business cost is beyond municipal control.

The sewage costs for the households differ depending the administration area of the country. The 2020 costs

for some of the largest cities are as below:

Town	Cost PLN /1 m ³ of the wastewater (1 E= 0.225 average for 2020)
Olsztyn	6,94
Poznan	6,51
Cracow	6,05
Katowice	8,29
Warsaw	5,96

The costs for industrial sewage discharge depend on the type of water pollutants.

Source: <https://sip.lex.pl/akty-prawne/dzu-dziennik-ustaw/oplaty-za-korzystanie-ze-srodowiska-18238942>

In general, wastewater treatment and water protection has been greatly improving over the last 40 years in Poland, this can be partly attributed to the implementation of fees but also other factors such as infrastructure improvements (discussed above). A key drawback is the relatively weak enforcement system. The Marshal's Offices and the Voivodeship Inspectorates of Environmental Protection have very limited resources to verify compliance related to wastewater discharges. Furthermore, only a limited number of economic operators in Poland report on their environmental uses.

Key Stakeholders

Key stakeholders are: operators of wastewater treatment plans, industrial sites, agricultural holdings and other similar activities, the wider civil society represented by environmental and consumer groups and state and local authorities involved in fee collection. Previous research suggests that the wastewater fees are applied in isolation from wide stakeholder engagement but that their design and level are influenced by lobby groups (IEEP 2017).

NGOs

Klub Przyrodnikow – NGO involved in criticising the lack of wider consultation in relation to the 2017 Water Law. <https://www.kp.org.pl/pl/>

Other - Examples of private firm stakeholders

Operator of wastewater treatment plants (one of many): Rybnik PWIK <https://pwik-rybnik.pl/kontakt.html>

Ekologika – environmental consulting and services (including dealing with wastewater) for firms <https://ekologika.info.pl/firma,c,2>

TREE AND SHRUBS REMOVAL FEE

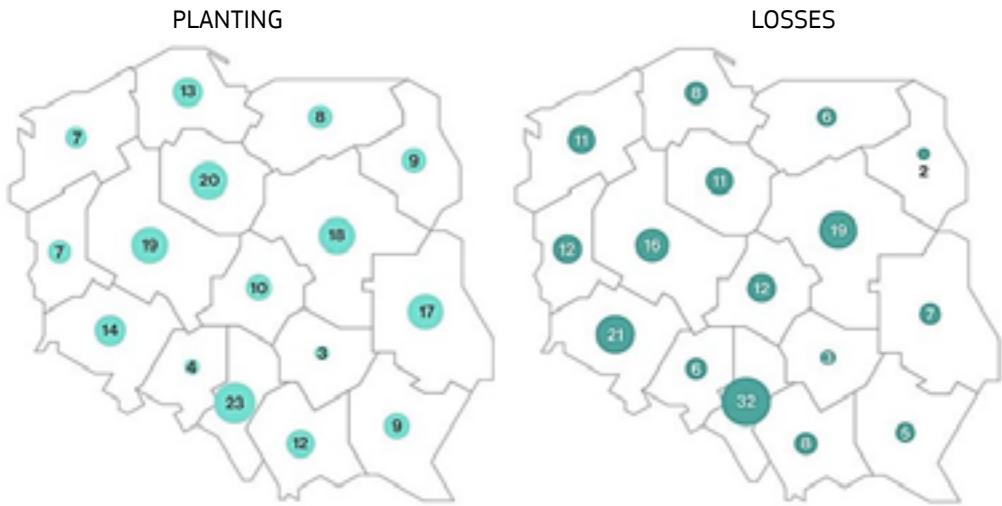
The fees for cutting down trees and shrubs have the purpose of preserving biodiversity and mitigating air pollution through the regulation of tree and shrub cutting and logging in Poland. The fees are stipulated under the most recent law amending the Nature Conservation Act which came into force in 2017. Prior to 2017, tree and shrub cutting even on private property was subject to filing for permission and the potential payment of fees. The amendment law, commonly known as "Szyszko's law", after Poland's environment minister, has been controversial as it removes the requirement for private landowners to apply for permission to cut down trees, pay compensation or plant new trees, or even to inform local authorities that trees have been or will be removed. The amendment from 2017 weakens the effectiveness of this instrument. The argument of the Government is that it protects private property rights and minimises bureaucratic costs, but the amendment has been heavily criticised.

The fee for the removal of trees and shrubs may be used only for the implementation of environmental tasks referred to in the Environmental Protection Law.

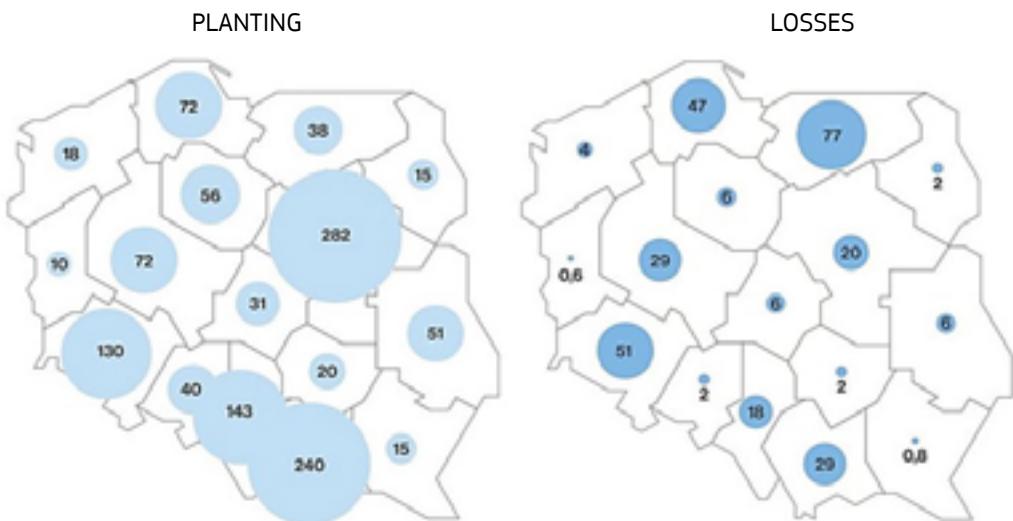
Key Stakeholders

Civil society groups and NGOs, some of the key ones listed below, have been very vocal in their criticism of the amendments to the Nature Conservation Act and have organised several protest actions to draw attention to the issue. Other key stakeholder involved include government institutions, especially the Ministry of Environment, and private individuals and firms interested or involved in tree and shrub cutting.

Tree planting and losses in 2017 (in thousands pieces):



Tree planting and losses in 2017 (in thousands pieces):



TAX ON LIGHTWEIGHT PLASTIC BAGS

This tax is applied to all establishments that supply lightweight plastic bags, i.e., with a thickness equal or less than 50 micrometres (μm), to the final purchaser in the point of sale of goods or products. The value of the contribution on lightweight plastic bags is 0.08 EUR/bag, plus current VAT (23%), i.e., 0.02 EUR/bag (total: 0.10 EUR/bag). The payment of the contribution to the State is made by producers and importers of lightweight plastic bags with headquarters or permanent establishment in the mainland Portugal, as well as the buyers of lightweight plastic bags from suppliers with headquarters or establishment in another Member State of the EU or in Portugal's Autonomous Regions (Madeira and Azores). The value of the contribution is passed on, through the various economic actors intervening in the commercial chain, as a price, until the final purchaser⁵⁸.

What it does

This instrument was created in 2014 and implemented in 2015 to motivate citizens and economic actors to reduce the production and consumption of plastic bags⁵⁹. Data for the period 2015-2018 shows a decrease in the number of lightweight plastic bags subject to the tax from approximately 2.5 million to 157 thousand bags, whereas the corresponding revenue went from around 199.2 to 12.6 thousand Euros, respectively (Figure 1). Counting all types of lightweight plastic bags (taxable and exempt), data from the Portuguese Environment Agency for 2018 shows that a total of 6 bags were

consumed per capita in Portugal. This level was significantly lower than the targets established in the EU Directive 2015/720 for 2019 (90 bags per capita) and 2025 (40 bags per capita).

With the taxation of lightweight plastic bags, retail industry (particularly supermarkets) started to apply a price equivalent to the value of the tax for bags thicker than 50 μm . Data from 2014 to 2017 shows a rise in the number of these plastic bags as well as of garbage bags. Nevertheless, this increase was lower than the reduction in lightweight plastic bags, either in number or weight.⁶⁰

How it came about and stakeholder involvement

This instrument was proposed as part of the Green Taxation Reform (GTR) (Reforma da Fiscalidade Verde) in alignment with the EU mandate to reduce the consumption of lightweight plastic bags. The GTR was developed in 2014 with the support of a committee composed of both academic and professional experts. An important task of the committee was to coordinate the process of public consultation, which received more than 100 contributions to the draft of the GTR from several stakeholders (NGOs, business associations, citizens, etc.). The Law No 82-D/2014 of 31 December embodied the results of the GTR, including various measures in other fields such as waste management and water pricing.

Fig 1 – Evolution of the number of lightweight plastic bags subject to the contribution and revenue generated.



WATER SUPPLY AND SEWAGE TARIFF

Depending on the water operator, the citizens must pay the water supply and sewage tariff. There are two types of water service providers in Romania: regional operators and local operators. In 2017 there were 268⁶¹ licensed operators, of which 45 regional operators.

The provision of water supply and sewage services is made only on the basis of a contract, which can be individual or collective.

Tariffs for public water supply and sewage are composed of:

- ▶ water consumption - a water meter is installed in all places of water consumption and the invoice depends on the water consumption; if there is no water meter, then a lump sum is paid per household member.
- ▶ sewerage charge – the wastewater to be taken from a household / public building / economic operator and surface water drainage collected from a building / property, which drains into the public sewerage system.

The water supply and sewage operator establish the tariffs in compliance with the calculation methodology established by the competent regulatory authority, based on production and operation costs; maintenance and repair costs; depreciation related to fixed assets in tangible and intangible assets, the costs of environmental protection, the financial costs associated with the contracted credits, the costs deriving from the management delegation contract, and include a quota for the creation of sources for the development and modernization of public utility systems, as well as a

profit quota.

What it does

National Administration Romanian Waters has the responsibility to manage all the water resources in a sustainable way and can allocate the right to use the water resources. Surface or groundwater can be used free of charge, in compliance with the sanitary and water quality protection regulations, to meet the needs of households (for drinking, watering, washing, bathing and other household needs), if no installations or installations with a capacity of up to 0.2 litres/second are used.

National Administration Romanian Waters applies the system of contributions and tariffs, fees and specific penalties for water resources management to all water users, regardless of the holders of any title of the water works and installations. The system is based on the user pays principle, cost recovery principle, as well as on the principle of rational use of water resources. According to the Water Law no 107/1996 with subsequent amendments, the abstraction of surface water and groundwater is established by a water management permit and license (authorisation). The water management permit and licenses are issued by the National Administration Romanian Waters, the river basin administrations or the water management systems.

Water taxes are meant to promote environmental behaviour of residents and businesses and sustainable use of water based on the long-term protection of available water resources, but there is not enough evidence to say that the fee is sufficiently high to affect behaviour.



CARBON AND OTHER EMISSION FEES

According to the Strategy of the environmental policy of the Slovak Republic until 2030, by 2030, greenhouse gas emissions in all non-ETS sectors in Slovakia should be reduced by 20% compared to 2005. Green fiscally neutral tax reform will be considered, together with an increase in environmental taxes.

The Slovak legislation distinguishes between stationary and mobile sources of air pollution; stationary sources are further divided into large, medium and small-sized sources.

In the energy sector, only 30% of CO₂ emissions from burning fossil fuels cost more than the lowest estimate of the cost of pollution (In other words, according to the most optimistic scenario, only 30% of those emissions have externalities priced in). Another almost 13% of CO₂ was emitted completely free of charge. The same is true for air pollutants, where the current level of charges for medium and large sources corresponds to less than a percentage of the estimated damage. SO₂ is mainly emitted by large sources of pollution, which means that most of these emissions are charged. The majority of revenues from environmental taxes came from excise duties on energy carriers (88%) and motor oils (11%), while their tax rates distinguish only fuel types but not the intensity of pollution.

Energy taxes (including transport fuels) are in general aimed at taxation of:

- ▶ energy products intended for transport purposes
 - unleaded petrol, leaded petrol, diesel and other energy products intended for transport purposes (eg LPG, natural gas, kerosene or heating oil),
- ▶ energy products intended for stationary purposes
 - light heating oil, heavy fuel oil, natural gas, coal, coke, biofuels, consumption and production of electricity, district heating, other energy products for stationary use,
- ▶ greenhouse gases - carbon content in fuels, greenhouse gas emissions.

The pollution tax in 2019 reached 28.69 mil. EUR and decreased by 23% compared to 2010. Pollution tax increased by 0.3% compared to the previous year. In total, taxes with an environmental aspect in 2019 reached 2,245.97 mil. EUR and increased by 58.2% compared to 2010. The energy tax in 2019 reached 1,984.19 mil. EUR and increased by 61.5% compared to 2010. Energy tax increased by 2.2% compared to the previous year. Transport tax in 2019 reached 233.09 mil. EUR and increased by 52% compared to 2010. Transport tax increased by 0.2% compared to the previous year.

WATER MANAGEMENT FEES

Landfilled waste:

- ▶ Minimum fee (EUR/kg) 0.33
- ▶ Maximum fee (EUR/kg) 60

A person/entity required to pay the fee is the last holder of the waste. For municipal waste it is the municipality. The rate of landfill tax (to be more precise it's landfill fee, not a tax – because it is by no means linked to taxpayer's annual report of tax liabilities influencing his tax position) was changed (increased) only recently.

New way of calculation of the fee started in 2019, with heavy impact on municipalities. From 2020, nearly all municipalities had to increase the waste-fee for their inhabitants dramatically. In some cases, there will be 90% increase between 2019 and 2021. Slovakia will not reach the EU target of recycling of at least 50% of municipal waste by 2020 (39% of waste was recycled in 2019). Incineration facilities are largely supplied by material from abroad, it is therefore not expected that waste management fees will influence this type of business.

WATER FEES

Water abstraction fee is the payment of the consumer for taking water from the public water supply network provider - which includes payment for drinking water taken, supplied through a water pipe. Besides the price for water supplied, there is also the cost of delivery and the supplier's profit included. Water discharge fee is the payment for the drainage of sewage and its subsequent treatment.

Average Tarifs in 2020 (EUR/m³):

- ▶ Water abstraction fee 1.12
- ▶ Water discharge fee 1.0702
- ▶ Average price of water (includes VAT and process fee) 3.0146

The pricing policy in the Slovak Republic is based on

the principle of reimbursement of costs for water management services, including environmental protection costs in accordance with the "user and polluter pays" principle. Until now, the costs of environmental protection have been taken into account only partially, the increase in prices was caused by the costs of production and supply of drinking water by public water mains and the drainage and treatment of wastewater. However, there is now a pressure to reflect more on the "true cost of water" which takes into account additional parameters like community and watershed risks, water stress, etc.

GDP share of environmental taxation is declining from 2017 (2.54% in 2017) until present (2.39% in 2019).



Slovenia

ENVIRONMENTAL TAX FOR WASTEWATER COLLECTION AND TREATMENT

The Slovenian wastewater tax came into force in 2012. It aims to reduce the burden on the environment. It is paid for two types of wastewater, namely industrial wastewater and municipal wastewater. The basis for calculating the environmental tax is the sum of the units of environmental load (EO), achieved by direct or indirect discharge of wastewater or discharge of wastewater through public sewers into water. The EO depends on the quantity and nature of emissions.

The recipient of the environmental tax for wastewater is the municipality in which the taxpayer generates wastewater. 99% of the revenues can be attributed to industry and 1% to households. The revenues are paid into the water fund, they were supposed to be used for water issues, improving infrastructure, quality, however they have been used for different purposes.

1. Industrial wastewater

The annual sum of EO is calculated in the operational wastewater monitoring report on the basis of data

on the annual amount of industrial wastewater and the concentration of pollutants set out in Annex of the Regulation (https://www.fu.gov.si/davki_in_druge_dajatve/podrocja/okoljske_dajatve/#c460).

2. Municipal waste disposal water

The EO of the household is calculated based on the number of residents of the household. When municipal wastewater is discharged into a treatment plant with appropriate treatment (does not apply to existing septic tanks), the effects of treatment of the treatment plant are taken into account when calculating the annual sum of EO, namely:

- the annual sum of EO is reduced by 90 percent

if the treatment plant has secondary or tertiary treatment;

- the annual sum of EO is reduced by 40 percent if the municipal wastewater is discharged to the municipal wastewater treatment plant with primary treatment.

How did it come about

The wastewater tax was initiated by the Ministry for the Environment. Cross-sectoral coordination took place in 2009 and the draft was discussed with the Chamber of Commerce and Industry in 2012. Public consultation took place in 2015, mainly municipalities gave their opinion.



MUNICIPAL WASTE LANDFILL AND INCINERATION CHARGES



The Catalan landfill and incineration tax on municipal waste charges municipalities for the landfilling and incineration of municipal solid waste in private and public facilities. The rationale behind the instrument is “the polluter pays principle”, so that the more waste is landfilled and incinerated by municipalities, the more they pay. This creates a stimulus for the deployment of more efficient waste collection schemes, increasing separate collection and waste prevention. The tax rates have risen gradually since 2004, reaching 47.1 €/t in 2020 for landfilling and 23.6 €/t for incineration.

Since 2004 separate collection rates increased from 25.4% to 44.9 in 2019. In the same period, the landfilling of untreated waste reduced from 2.1 to 0.5 Mt, whereas incineration of untreated waste dropped from 0.7 to 0.2 Mt. The separate collection of biowaste collection has more than doubled from 0.2 in 2004 to 0.5 Mt in 2019. Furthermore, the tax has facilitated the deployment of door-to-door collection schemes.

Stakeholder involvement

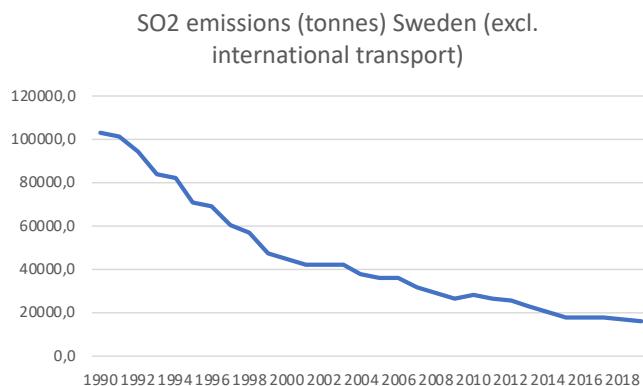
The creation of the tax was government-driven. The instrument lasted more than 10 years to be implemented due to, among other reasons, the expected creation of a nationwide landfill tax in 1998, which did not occur eventually. One of the key elements to the success and acceptability of the tax has been its graduality and having a clear plan about the evolution of the tax rates. Having this information in advance has permitted the taxpayers to adapt to the new context in terms of, for example, adapting waste collection schemes and revising prices across the value chain. Moreover, transparency about tax rebates has contributed to predictability on budgets.

What does it do

The tax aims at increasing the separate collection of municipal solid waste with a specific focus on biowaste.

SULPHUR TAX

In 1991, Sweden implemented a sulphur tax. The tax is aimed at reducing SO₂ emissions from combustion of peat, coal, coke and other solid fuels or gaseous products. Throughout the period 1990-2020, tax levels have remained constant at SEK 30/kg (€3,0) sulphur in solid fuels and SEK 27/kg (€2,7) for each thousandth of sulphur content by weight in oils⁶³ (some types of use are exempted). If SO₂ emissions are reduced by cleaning or binding to the ash, a part of the tax proportionate with the saved amount of SO₂ emissions is reimbursed to the polluters⁶⁴. A 1997 analysis of the reimbursement demonstrated that 44-57% of the revenue was reimbursed each year⁶⁵. Total SO₂ emissions in Sweden have decreased substantially since the tax introduction.



Source: Statistiscs Sweden 2021 <https://www.statistikdatabasen.scb.se>

The background of the tax introduction: until the end of the 1980's there was little interest in introducing environmental taxes in Sweden. However, at that time some major focusing events took place in the marine environment – e.g. there was a severe decline of the seal population. Additionally, there was a political focus in Sweden at the time at reducing income taxes since large segments of the population paid 80% in marginal tax rate. Environmental tax reform could pave the way for decreasing income taxes without incurring a too large budget deficit by generating revenue from environmental taxes and meanwhile contribute to solving environmental problems⁶⁶. Consequently, environmental tax reform became part of the solution and a number of environmental taxes were introduced in Sweden during the 1990's – in particular regarding energy taxation.

Sweden has a long tradition for including stakeholders. The Environmental Tax Commission (ETC) preparing the environmental tax reform (initiated in 1987) involved a broad representation of interests. Furthermore, when the commission in 1989 presented the conclusions, including proposals for NOx and sulphur taxes (and some other taxes), there was a comprehensive public hearing phase where a large number of stakeholders commented on the taxes⁶⁷.

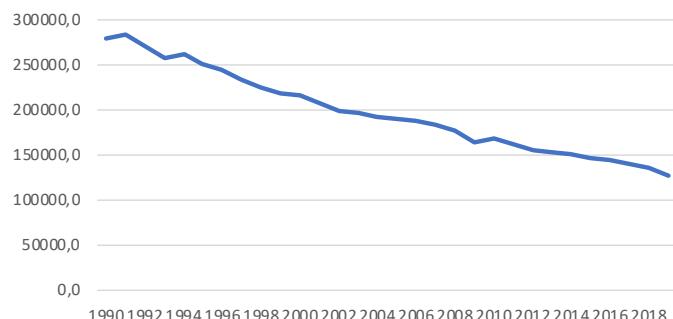


NOx TAX

In 1992, Sweden implemented a NOx tax on emissions from stationary combustion facilities, aimed at providing incentives to reduce emissions beyond the limit values, to combat acidification. All revenue generated from the charge is reimbursed back to the plants based on the amount of energy used at each plant in order to reduce potential negative impacts on competitiveness. Consequently, plants with low emission in relation to energy production are net receivers of funding, while plants with high emissions are net payers. Originally, the tax level was SEK 40/kg NOx emitted. In 2009, the tax level was increased to SEK 50/kg NOx emitted (€5/kg). Total NOx emissions in Sweden have decreased substantially after the tax introduction (table XX). According to the OECD, Swedish emissions of SOx and NOx per unit of GDP are among the lowest in OECD⁶⁸.

Similarly to the sulphur tax, the tax introduction followed discussions in the Swedish Environmental Tax Commission starting in 1987 and broader discussion in Sweden in the late 1980's on environmental problems and potential environmental tax reform.

NOx emission (tonnes) Sweden (ecl. international transport)



Source: Statistiscs Sweden 2021 <https://www.statistikdatabasen.scb.se>

The Swedish Environmental Tax Commission involved broad groups of stakeholders and the proposals from the commission went through a public hearing phase with many responses from stakeholders (see description above).

¹ Instructions for application of the tariff are available on the website of the Ministry of Environment and Water here.

² Data from National statistical institute (NSI) - Water Statistics, 2018 and Enterprise for management of environmental protection activities /EMEPA/.

³ EMEPA is a legal state-owned entity at the Ministry of Environment and Waters.

⁴ European Alternative Fuels Observatory, 2020

⁵ ⁶ ⁷ IEEP and Denkstatt (2017) The Air pollution fee in the Czech Republic. Available at <https://ieep.eu/uploads/articles/attachments/7e40a844-5aab-490e-8eec-208d8095168c/CZ%20Air%20Pollution%20Fee%20final.pdf?v=63680923242>

⁸ CENIA, 'Report on the Environment of the Czech Republic' (2018) available at <https://www.cenia.cz/wp-content/uploads/2020/05/Zprava_o_ZP_CR_2018.pdf>. An English equivalent exists, however it goes into far less detail.

⁹ CENIA, 'Report on the Environment of the Czech Republic' (2018) available at <https://www.cenia.cz/wp-content/uploads/2020/05/Zprava_o_ZP_CR_2018.pdf>.

¹⁰ OECD, 'Regulatory Policy Outlook – Country Profile the Czech Republic' (2018) available at <<https://www.oecd.org/gov/regulatory-policy/czech-republic-country-note-regulatory-policy-2018.pdf>>

¹¹ IEEP and Denkstatt (2017) The Air pollution fee in the Czech Republic. Available at <https://ieep.eu/uploads/articles/attachments/7e40a844-5aab-490e-8eec-208d8095168c/CZ%20Air%20Pollution%20Fee%20final.pdf?v=63680923242>

¹² Jana Soukupova, Eduard Baros, 'Ekonomika životního prostředí' available here <https://is.muni.cz/el/1456/podzim2010/MKV_EKZP/um/17711660/EZP-03.pdf>

¹³ Ministry of Environment, Overview of environmental fees applicable in the Czech Rep.' (2013) available at <[https://www.mzp.cz/C1257458002F0DC7/cz/poplatky/\\$FILE/oeden-poplatky_dane_CR-20130918.pdf](https://www.mzp.cz/C1257458002F0DC7/cz/poplatky/$FILE/oeden-poplatky_dane_CR-20130918.pdf)>

¹⁴ Act 254/2001, paras 88 and 89

¹⁵ OECD, 'OECD Environmental Performance Review – Czech Republic' (2018) available at <https://www.oecd.org/env/country-reviews/OECD_EPR_Czech_Rep_Highlights_ENG.pdf>

¹⁶ CENIA, 'Report on the Environment of the Czech Republic' (2018) available at <https://www.cenia.cz/wp-content/uploads/2020/05/Zprava_o_ZP_CR_2018.pdf>. An English equivalent exists, however it goes into far less detail.

¹⁷ 2018 CENIA report, see above (5)

¹⁸ Poulsen, H.D., et al., 2019. Videnskabelig rapport nr. 325, Aarhus Universitet: DCE – Nationalt Center for Miljø og Energi <http://dce2.au.dk/pub/SR325.pdf>

¹⁹ Nielsen, H.Ø., et al., 2020. Evaluering af den omlagte pesticidafgift. Betydningen af beslutningsadfærd for pesticidanvendelsen. Danish Environmental Protection Agency. <https://www2.mst.dk/Udgiv/publikationer/2019/10/978-87-7038-116-1.pdf>.

²⁰ ²¹ ²² Danish Environmental Protection Agency, 2020. Bekæmpelsesmiddelstatistik 2018. Behandlingshyppighed og pesticidbelastning baseret på salg og forbrug. <https://www2.mst.dk/Udgiv/publikationer/2020/09/978-87-7038-233-5.pdf>

²³ Ministry of Food, Agriculture and Fishery, 02.05.2012. Svar på sprm. 225 (af 02.04.2012) fra Fødevareministeren. <https://www.ft.dk/samling/20111/almdel/flf/spm/225/svar/880058/1113553/index.htm>

²⁴ Environmental Protection Agency, 2018, Evaluering af den differentierede pesticidafgift. Miljø- og Fødevareministeriet. <https://www2.mst.dk/Udgiv/publikationer/2018/05/978-87-93710-28-3.pdf>

²⁵ Environmental Charges Act

²⁶ Estonian Statistical Office website (<https://andmed.stat.ee/en/stat>)

²⁷ Stakeholder involvement overview in Participation Web: <https://osale.ee/?id=121>

²⁸ The federal states use different terms for the charge: Wasserentnahmeentgelt/-abgabe/-gebühr, Wassernutzungsentschädigung, Landeswasserabgabe, Grundwasserentnahmeentgelt, and Entgelt für Wasserentnahme.

²⁹ Bavaria, Hesse and Thuringia do not levy such a charge. In North Rhine-Westphalia a law for the gradual phase-out of the charge entered into force 2009, but in 2011 the parliament decided to repeal this phase-out.

³⁰ <https://ieep.eu/uploads/articles/attachments/38588884-7624-4f96-b9cf-5e60c4223fab/HU%20Air%20Pollution%20Charge%20final.pdf>

³¹ https://www.ksh.hu/docs/hun/xstadat/xstadat_eykozi/e_qse006h.html

³² <https://www.vkj.gov.hu/>

³³ Elaboration on ISTAT data 1996–2018

³⁴ 713/2018/R/rif; 351/2019/R/rif; 352/2019/R/rif

³⁵ Attard, M., and Ison, S. (2015) The effects of road user charges in the context of weak parking policies: The case of Malta, Case Studies on Transport Policy, Vol.3, No.1, pp.37–43

³⁶ Attard, M., and Ison, S.G. (2010) The implementation of road user charging and the lessons learnt: the case of Valletta, Malta, Journal of Transport Geography, Vol.18, No.1, pp.14–22

³⁷ <https://www.pbl.nl/nieuws/2019/effect-kabinetvoorstel-co2-heffing-industrie>

³⁸ The complete list is: FNV, Greenpeace, Interprovinciaal Overleg, Natuur & Milieu, Unie van Waterschappen, vertegenwoordiger industriecluster Chemelot, vertegenwoordiger industriecluster Noord NL, vertegenwoordiger industriecluster Noordzeekanaalgebied, vertegenwoordiger industriecluster Rotterdam/Moerdijk, vertegenwoordiger industriecluster Zeeland, vertegenwoordiger overheid, vertegenwoordiger werkgroep grote uitstoters, vertegenwoordiger werkgroep kleinere uitstoters en nieuwe groemarkten, een vertegenwoordiger van het ministerie van Economische Zaken en Klimaat, Vereniging Nederlandse Gemeenten.

³⁹ https://milieudefensie.nl/actueel/laat-vervuilers-niet-wegkomen-met-een-slappe-co2-heffing?utm_source=actie-mail&utm_medium=email&utm_content=button&utm_campaign=eerlijkehandel

⁴⁰ <https://www.volkskrant.nl/nieuws-achtergrond/milieubeweging-stapt-uit-klimaatonderhandeling-met-kabi->

[net-uit-woede-over-co2-heffing~bcc4fcdd/](#)

⁴¹ <https://nos.nl/artikel/2275799-kabinet-minder-energiebelasting-voor-burgers-toch-co2-heffing-bedrijven.html>

⁴² Rijksoverheid (n.d.) Milieubelasting – afvalstoffenbelasting. Available at: <https://www.rijksoverheid.nl/onderwerpen/milieubelastingen/afvalstoffenbelasting>

⁴³ European Commission (n.d.). Taxes in Europe Database 3. – Indirect Taxes. Available at: https://ec.europa.eu/taxation_customs/tedb/taxDetails.html?id=874/1546297200#Generic_partTitle1

⁴⁴ Or depending on the circumstance the party that is granted permission according to Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste to move waste outside the Netherlands.

⁴⁵ Vereniging afvalbedrijven (2018). Naar een waterdicht buitenland heffing. Available at: <https://www.verenigingafvalbedrijven.nl/nieuws/naar-een-waterdichte-buitenlandheffing>

⁴⁶ Rijkswaterstaat (2020). Afvalverwerking in Nederland, gegevens 2018

⁴⁷ Raak, R., Spork, C. and de Graaf, S. (2019) Onderzoek Afvalprikkels. DRIFT (Erasmus Universiteit Rotterdam).

⁴⁸ Ministerie van Infrastructuur en Milieu (2014). Landelijk afvalbeheerplan 2009-2021, naar een materiaalketen beleid, Den Haag 3 december 2014

⁴⁹ Bartelings et al. (2005). Effectiveness of landfill taxation, Vrije Universiteit Amsterdam 24 November 2005.

⁵⁰ PBL (2014). Opties voor een afvalstoffenbelasting

⁵¹ ⁵² Ministerie van Infrastructuur en Water (2017). Derde Nederlands Afvalbeheerplan

⁵³ PBL (2014). Opties voor een afvalstoffenbelasting. Note that it seems that the strong increase in price was not pushed by stakeholders (or at least not the stakeholders in the waste sector).

⁵⁴ Rijksoverheid (2020). Naar een economie zonder afval. Available at: <https://www.rijksfinancien.nl/bmh/bmh-11-naar-een-economie-zonder-afval.pdf>

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⁵⁶ Vereniging Afvalbedrijven (2020). Standpunten afvalstoffenbelasting. Available at: <https://www.verenigingafvalbedrijven.nl/standpunten/afvalstoffenbelasting>

⁵⁷ NOS (2020) Woonlasten huiseigenaren gemiddeld 4 procent omhoog <https://nos.nl/artikel/2359702-woonlasten-huiseigenaren-gemiddeld-4-procent-omhoog.html#:~:text=Belangrijkste%20oorzaak%20van%20de%20hogere,-naar%2031%20euro%20per%20ton>.

⁵⁸ Law 82-D/2014 of 31 December: <https://dre.pt/application/file/66014833>.

⁵⁹ Portuguese Environment Agency: <https://apambiente.pt/index.php?ref=17&subref=1104&sub2ref=1105>.

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⁶² It refers to “net” tonnes, discounting rejects.

⁶³ OECD Environmental Performance Reviews Sweden 2014. Swedish Tax Agency 2021: <https://www4.skatteverket.se/rattsligvagledning/edition/2020.15/323440.html#:~:text=Belangrijkste%20oorzaak%20van%20de%20hogere,-naar%2031%20euro%20per%20ton>

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