

Does the polluter pay?

The social cost of pollution caused by economic activities and environmental taxes in Italy

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*Excise duties on energy products, taxes on vehicles, noise, pollution and natural resources: **environmental taxes** paid by Italian residents ensured **revenues** totalling 53.1 billion Euros in 2013. **Is it possible to quantify the environmental costs borne by the community**, namely, the damage to the environment and health caused by pollution sources related to household and enterprise activities, and compare them with the environmental taxes paid by the same activities?*

*A preliminary calculation of health and environmental damages caused by pollution due to economic activities – limited, for the time being, to emissions into the atmosphere and transport noise pollution – in 2013 **showed households at the top of the list, with 16.6 billion, followed by the industrial sector (13.9 billion) and agriculture (10.9)**. Yet there is a **remarkable imbalance between the damages due to actors who pollute (externalities) and the environmental taxes paid by the same actors**: in 2013, households paid 70% more than the damage caused, while enterprises paid 26% less. The greatest discount was granted to agriculture (93%). Is there room for a **reform of environmental taxation, so as to ensure greater fairness and transparency**? This paper sets forth a new approach for a better implementation of the 'Polluter pays' principle, taking into account not only environmental taxation, but also subsidies that are harmful to the environment.*

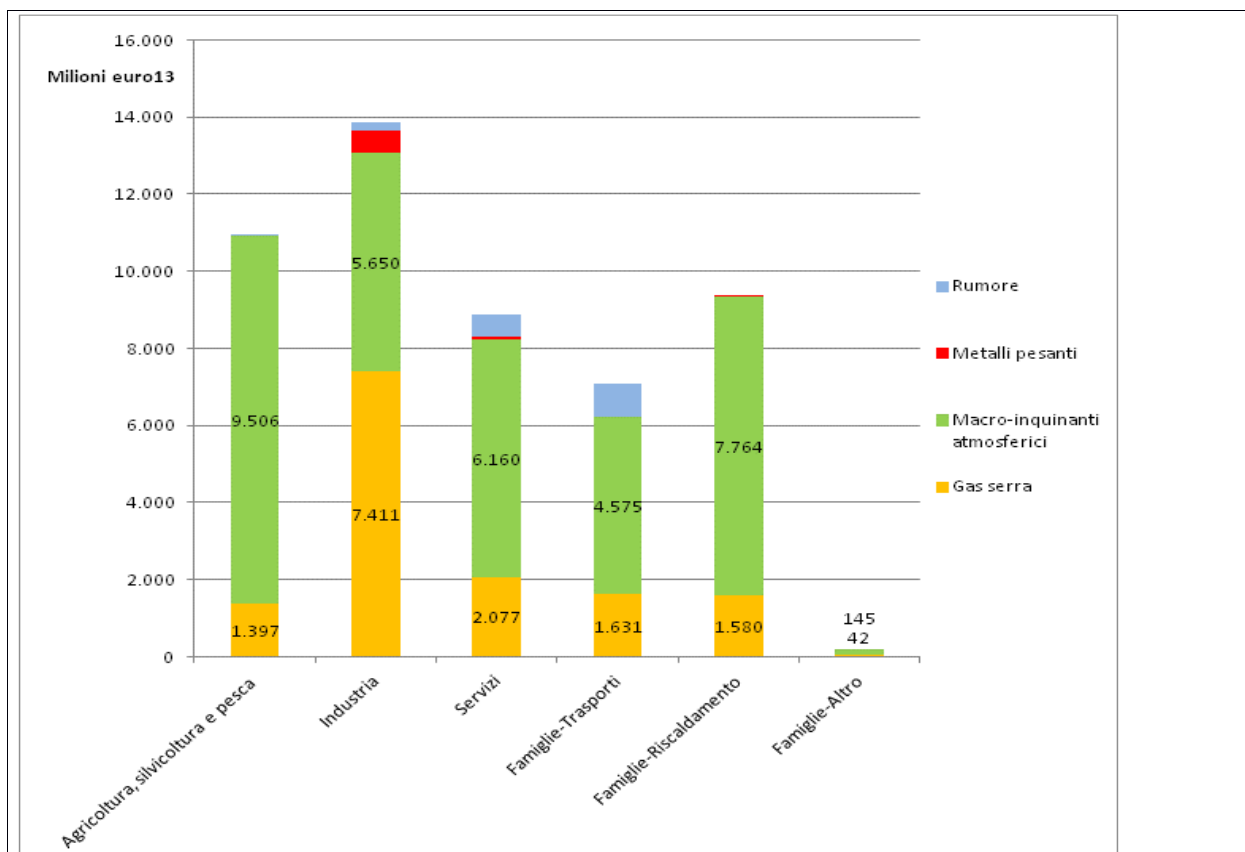
The starting point

Quoted in the first Environmental Action Programme of the European Community (1973-1976) and in the Rio de Janeiro Declaration on Environment and Development (1992), the 'Polluter pays' principle has been included in the Treaties of the European Union ever since 1986 and is mentioned under article 191.2 of the consolidated version of the Treaties (2016).

Figure 1 - Distribution of externalities between activity macro-sectors, year 2013, in millions of Euros

L-R: Agriculture, forestry and fisheries, Industry, Tertiary, Households-transport, Households-heating, Households-other

T-B: Noise, Heavy metals, Macro atmospheric pollutants, Greenhouse gases



Source: A. Molocchi calculation based on NAMEA emission data provided by ISTAT

Analysis

Environmental externalities are the damages, caused by an economic or social activity, that affect third parties (in terms of effects on health and damage to economic assets and activities) **or the environment** (impacting natural capital and ecosystems).

The estimated externalities generated by enterprise and household activities in Italy, limited to emissions into the atmosphere and transport noise pollution, **topped 50 billion Euros in 2013, that's 3.2% of the country's GDP.**

Most of these externalities are generated by the productive sectors of the economy

(33.6 billion Euros, which account for 66.9% of the total), while **household activities generate 16.6 billion** (33.1%).

The industrial sector generates the highest environmental externalities (13.9 billion Euros), followed by agriculture (10.9 billion).

Home heating takes third place (9.4 billion), preceding externalities generated by households' transport (7 billion).

Particulate matter emissions account for 29% of externalities, followed by CO₂ with 22%, ammonia (NH₃) and nitrogen oxides (NO_x) with 16% respectively, sulphur oxides (SO_x) with 5%, methane (second most prevalent greenhouse

gas) with 4% and transport noise with 3%.

A breakdown: the more you pollute, the less you pay?

According to Istat, revenues from environmental taxation in Italy (energy, transport, pollution) totalled 55.3 million Euros in 2015, that's 7.8% of the overall taxation revenue (3.4% of GDP).

Pollution taxes play a very marginal role (1% of the overall environmental taxation revenue), while excise duties on energy products account for the vast majority of environmental taxation revenue (81%), followed by transport taxation, with about 18%.

In particular:

Excise duties on fossil fuels contributed

some 56% in 2013 (53% in 2015).

The excise duty on electricity and system charges (to incentivise the use of renewable energy and other items) accounted for 25% in 2013 (27% in 2015).

Vehicle property tax, which in Italy vary according to the engine power (in kW) and Euro standard category, account for slightly more than 10% of the overall environmental taxation revenue.

While fuel and vehicle taxes can theoretically represent a tool to enforce the 'Polluter pays' principle, the excise duty on electricity and system charges on energy bill no longer represent such principle, rather the "User pays" principle, since they are paid by consumers, who do not directly control pollution sources.

Table 1 - Environmental taxation revenue in Italy, 2013 and 2015, in millions of Euros, current prices

Environmental tax category	2013		2015	
	M €	%	M €	%
Energy	44.649	81,3%	45.025	81,4%
Special import duty on non-condensable gases	50	0,1%	60	0,1%
Special import duty on mineral oils	11	0,02%	10	0,02%
Tax on mineral oil and oil products (excise duties)	26.277	47,9%	25.611	46,3%
Tax on non-condensable gases	564	1,0%	585	1,1%
Tax on electricity (excise duty) and system charges on electricity bills to incentivise renewables	13.542	24,7%	15.042	27,2%
Taxes on natural gas consumption (excise duties)	4.083	7,4%	3.196	5,8%
Tax on coal consumption (excise duties)	55	0,1%	43	0,08%
Tax on energy operators revenues, to be allocated to the Authority for electricity, gas and water system	66	0,1%	59	0,1%
Proceeds of the Italian Central Petroleum Depot	1	0,002%	12	0,02%
Revenues from the Emission Trading System (ETS)	-	-	407	0,7%
Transport	9.762	17,8%	9.678	17,5%
Motor vehicle registration office (PRA)	1.359	2,5%	1.569	2,8%
Tax on car liability insurance (RCA)	2.637	4,8%	2.137	3,9%
Automobile taxes paid by enterprises	1.395	2,5%	1.422	2,6%
Automobile taxes paid by households	4.342	7,9%	4.535	8,2%
Aerotaxi tax, levied on passengers	7	0,01%	8	0,01%
Boat and private aeroplane taxes	22	0,04%	7	0,01%
Pollution	488	0,9%	597	1,1%
Special tax on landfills	129	0,2%	98	0,2%
Tax on the emission of sulphur dioxide and nitrogen oxides	15	0,03%	7	0,01%
Provincial tax for environmental protection	344	0,6%	475	0,9%
Regional tax on aircraft noise	-	-	17	0,03%
Total	54.899	100,0%	55.300	100,0%

Source: Istat (2016)

Focus

The comparison between the total revenues from environmental taxes paid by residents and externalities reveals that:

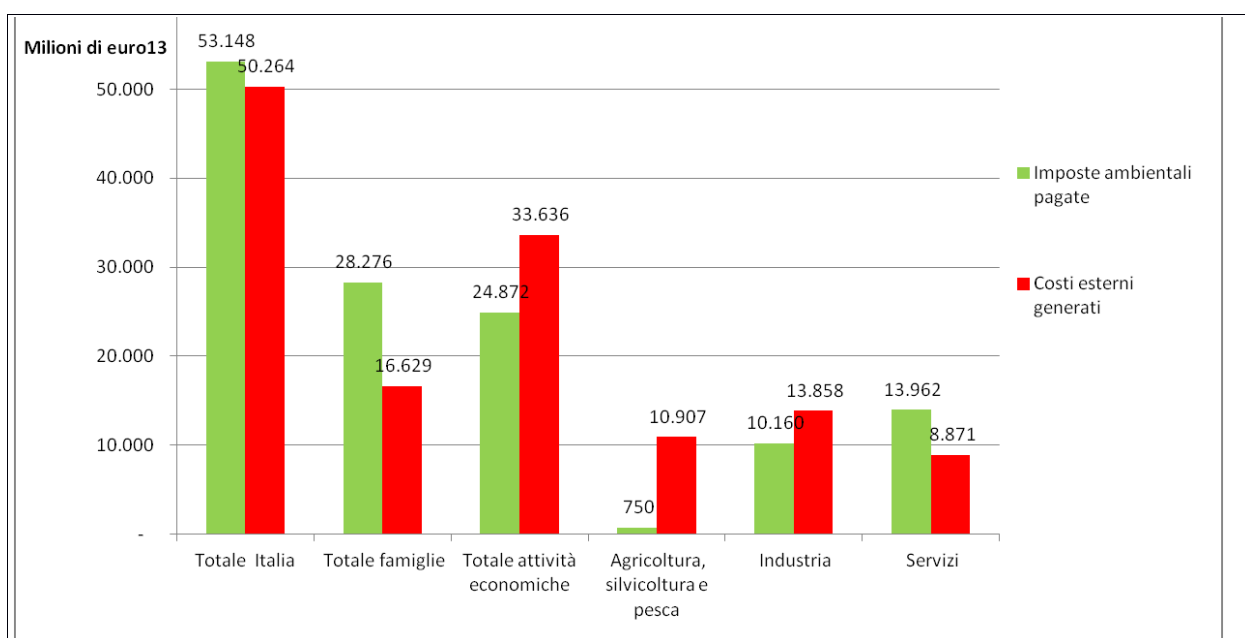
- **households pay 70% more than their environmental externalities**
- **enterprises pay 26% less**
- with reference to specific economic sectors, **the agricultural and industrial sectors pay 93% and 27% less than their environmental externalities, respectively**
- the tertiary sector pays 57% more.

A more disaggregated analysis reveals fur-

ther disparities. At least **four sectors of the economy, out of the 64 examined, pay a very marginal sum compared with damages produced**, to be borne by the community:

- maritime transport, 1%
- air transport, 6%
- agriculture, 6.6%
- electricity and gas, 16.9%.

Figure 2 - Environmental taxation and externalities generated by the main activity sectors, 2013



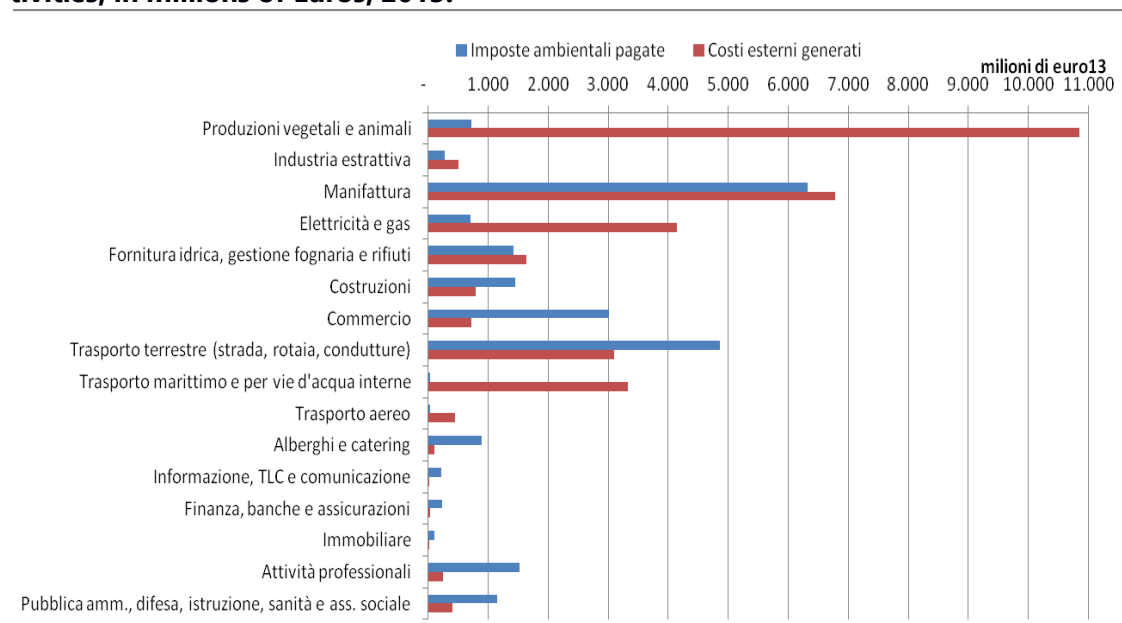
Source: Istat for the environmental taxation revenue; A. Molocchi for external costs estimation

L-R: Italy total; household total; economic activities total; agriculture fisheries forestry; industry; tertiary. T-B: Environmental taxes paid; externalities

The **manufacturing sector**, which, on the whole, appears to be consistent with the *Polluter Pays* principle (94% of externalities covered), actually **conceals a significant disparity**: 15 of the 19 manufacturing sectors offset their externalities through environmental taxation, and in some cases end up paying much more, thus

subsidising the **four remaining manufacturing sectors, which pay much less than they should (coke and refining; glass, ceramics, cement and other minerals; metallurgy; pulp and paper industry)**.

Figure 3 - Environmental taxation paid and externalities generated by sectors of economic activities, in millions of Euros, 2013.

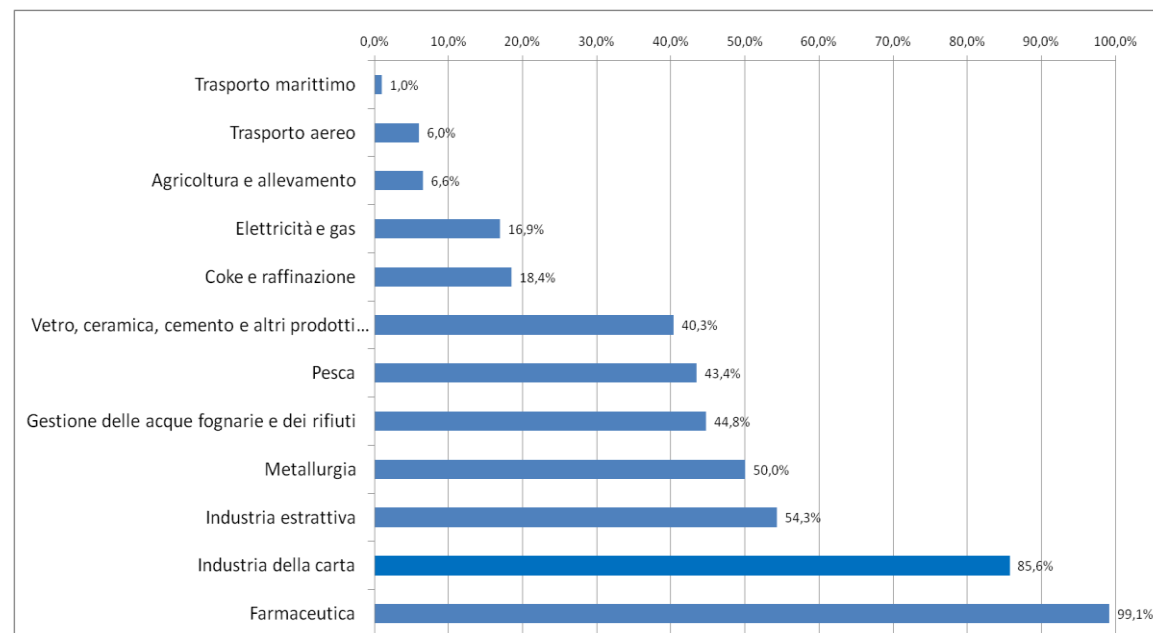


Source: Istat for the environmental taxation revenue; A. Molocchi for external costs estimation

Blue: environmental taxes paid – Red: externalities generated

T-B: crops and animal products; mining; electricity and gas; water supply, wastewater and waste management; constructions; commerce; land transport (road, railway, pipelines); maritime and inland waterways transport; air transport; hotels and catering; IT, TLC and communication; finance, banks and insurances; real estate; professional freelance activities; public administration, defence, education, healthcare and national insurance

Figure 4 - Environmental taxes paid as a percentage of environmental external costs, broken down into economic activity sectors (maximum disaggregation level), 2013¹



Source: Istat for the environmental taxation revenue; A. Molocchi for external costs estimation.

T-B: maritime transport; air transport; agriculture and animal husbandry; electricity and gas; coke and refining; glass, ceramics, cement and other products; fisheries; wastewater and waste management; metallurgy; mining; pulp and paper industry; pharmaceuticals

¹ Because of the limited amount of space, the figure only shows the sectors whose payments through environmental taxes do not cover the relevant externalities (12 sectors out of 64).

The paradox of “environmental” taxation: the environment does not benefit from the revenue it generates; on the contrary, such revenue is often bound to non-environmental goals.

ISTAT’s survey on environmental taxation revenue in Italy certified that only 1% of environmental taxation revenue is allocated to fund environment protection expenses. What the survey fails to point out is that the State often raises some items of “environmental” taxes (usually excise duties on fuels) to fund extraordinary and non-strictly environmental expenses, such as earthquake relief measures, international peace-keeping missions and other public finance emergencies: in these cases the State chooses, after considering alternative tax options, to disregard the Polluter pays principle that should inspire environmental taxation. Currently there are no official figures concerning the amount of environmental taxation revenue earmarked to non-environmental expenses.

A closer look: Do polluters unfairly receive environmentally harmful subsidies?

The *Catalogue of environmentally Harmful or environmentally Favourable Subsidies* (Environment Ministry – AT Sogesid, 2017) identified direct subsidies and tax breaks (for both households and enterprises) harmful to the environment, totalling **16.2 billion Euros in 2016**.

Over 97% of Environmentally Harmful Subsidies (EHS) is in the form of tax breaks, many of which are granted to the most polluting activities:

- **five sectors (air transport, maritime transport, fisheries, refining, agriculture and animal husbandry)** receive **huge amounts** of subsidies, despite having extremely high environmental costs;
- another group of sectors (**road transport, metallurgy, products**

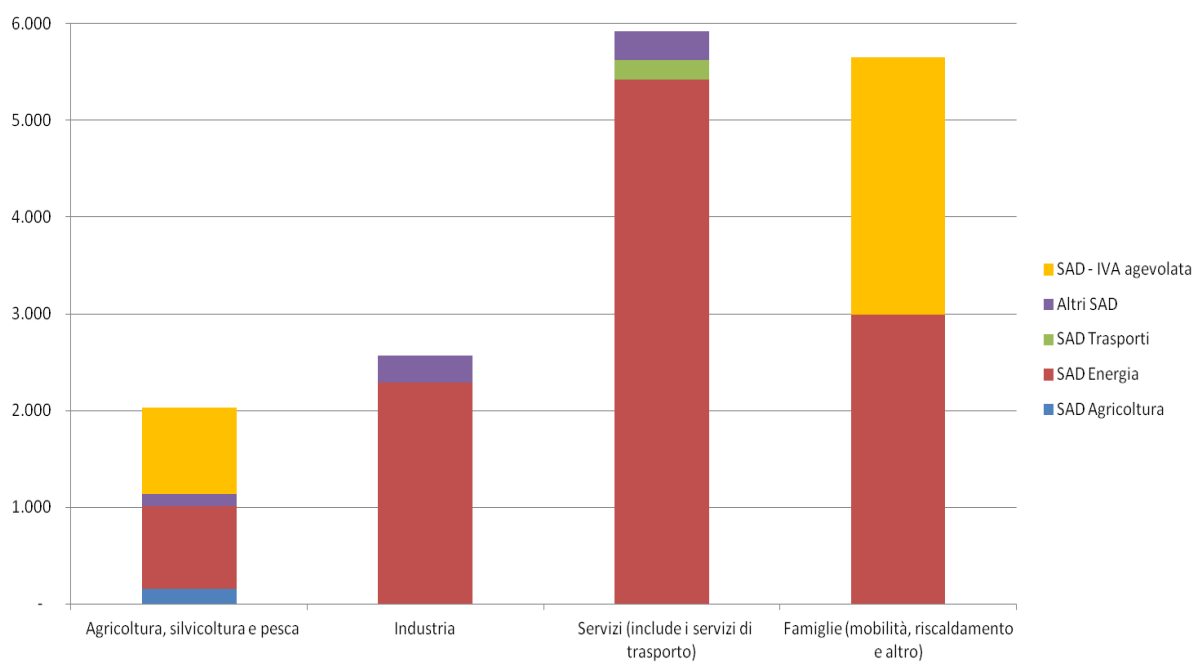
from non-metallic minerals, electricity and gas, waste management, chemistry and water management) shows medium-high values, in terms of both subsidies and externalities.

Table 2 – Environmentally Harmful Subsidies in Italy, year 2016

Subsidy category	Millions of Euros
Agriculture	154
Energy	11,550
Transport	202
Other	700
VAT reduction	3,561
Total (mn €)	16,167
– of which tax expenditures (mn €)	15,711

Source: Ministry of the Environment - AT Sogesid (2017)

Figure 5 - Environmentally Harmful Subsidies in Italy (EHS), broken down into activity macro-sectors, in millions of Euros



Source: A. Molocchi calculation based on Catalogue data (Ministry of the Environment – AT Sogesid; 2017) concerning Environmentally Harmful Subsidies.

L-R: agriculture, forestry, fisheries; industry; tertiary (including transport services); households (mobility, heating and other household activities)

T-B: reduced Vat, other, transport, energy, agriculture

The Polluter Pays principle is far broader than civil liability for pollution, which is inevitably linked to an ascertained damage following a judicial proceeding. It is a principle that **includes not only extensive environmental damage** due to single exceptional events, **but also the foreseeable and continuous risks** associated with the legitimate use of products and technologies commonly used in social and economic activities.

Enforceable through pigovian taxes (paid by the polluting actors for the amount of marginal external costs they cause on society) and through other environmental policy economic instruments (emission trading scheme or bonus/malus mechanisms), the principle aims to ensure greater social justice and higher flexibility in environmental policies, as compared to obligations and prohibitions.

Conclusions

In Italy there surely is **room for improvement when it comes to the quality of environmental taxation** (taxes on energy products, on transport vehicles, on pollution and on the use of natural resources), **through the assessment of environmental externalities and a fair enforcement of the Polluter Pays principle.**

Measuring external costs can provide valuable information to

- **reform excise duties on energy and taxes on transport vehicles**, making the relevant tax regime increasingly fair (for example, a mileage-based taxation system for vehicles covering the marginal external costs produced during their use)
- **eliminate or reduce fiscal expenditures**

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that are harmful to the environment (for example, tax exemptions provided on fuels used by air and maritime transport)

- **assess and reform environmentally harmful VAT allowances** (when a VAT allowance is granted to products that entail high externalities, such as electricity and gas, the environmental costs may outweigh other possible social benefits of the allowance).

Measures that go in this direction are particularly urgent in specific sectors of the economy, which cause more damage than is covered by environmental taxation (**air transport, maritime transport, fisheries, refining, agriculture and animal husbandry**).

An environmental taxation system that is more consistent with the carbon-content of energy products and, generally speaking, with the externalities of all the activities of a product's lifecycle, is feasible.

This study highlights three possible areas of reform:

- **Reduction/elimination of environmentally harmful subsidies**, most of which are tax breaks;
- **A further reduction of the EU ETS emissions cap**, avoiding free allocation of permits to specific sectors, and the **introduction of a carbon tax** in non-ETS sectors and on imports of goods from countries that do not already tax CO₂ emissions;
- **A higher use of taxes** on specific pollutants and on extraction of scarce natural resources.

Observations

The reform of the environmental tax system would allow the parallel reduction of taxes on labour, starting from the employee income tax. **A part of tax revenues** could be also be used to **fund a green economy plan** that blends the economic recovery goals with the enforcement of the Paris Agreements on climate and the United Nations 2030 Agenda.

The dossier

Examines the coherence of the national environmental taxation framework vis-à-vis the *Polluter Pays* principle, verifying whether the several economic activity sectors pay an amount of environmental taxes consistent with their environmental costs.

Analyses the environmental externalities generated by each sector of the national economy and by household activities.

Compares externalities with the overall total of environmental taxes paid by each sector (excise duties on energy products, taxes on vehicles, taxes on noise pollution and other pollution taxes) and **with the total sum of tax allowances and other subsidies that are granted to that very sector even if they are harmful to the environment**.

Suggests a reform of the national environmental taxation system inspired by the Polluter Pays Principle.

Credits

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