



EUROPEAN COMMISSION
EUROSTAT

Directorate E: Sectoral and regional statistics

Unit E-2: Environmental statistics and accounts; sustainable development

**Potentially environmentally harmful subsidies – definitions and
approaches for measurement**

[draft of 4 October 2019]

Eurostat – Unit E2

1 Purpose of the document

The primary purpose of this document is to briefly review a range of concepts and metrics developed to date to capture transactions which support production and consumption of goods and services causing substantial environmental pressures (in terms of the use of resources, pollution or waste generation). Given that the transactions are not intended to, and do not themselves directly, cause environmental harm, statisticians refer to them as ‘*potentially* environmentally damaging subsidies’ (hereinafter referred to ‘PEDs’).

The document seeks to provide an overview of various types of PEDs, and how each type of subsidy could be measured (Section 2). Next, it attempts to map the identified types of PEDs with the concepts and metrics developed in macroeconomic statistics, environmental economic accounts and in the work on measurement of fossil fuel subsidies (Section 3). It closes with recalling Eurostat’s envisaged way-forward on collecting data on environmental subsidies (Section 4).

2 Typology of PEDs and how to measure them

Subsidies have been studied extensively with regard to their impact on market and trade. With this impact in mind they have also been used as a government policy instrument.

A broad, generic definition of ‘subsidies’ has been formulated for the purpose of world trade negotiations, to investigate, and possibly eliminate, their trade- and competition-distorting effects¹. It focuses on the benefit conferred (to domestic producers or consumers) through a number of different measures, including:

- (i) a direct transfers of flows by government or a public body (e.g., grants, loans, and equity infusion, potential transfers of funds or liabilities (e.g., loan guarantees),
- (ii) government revenue that is otherwise due is foregone or not collected (e.g., fiscal incentives such as tax credits),
- (iii) government (or a public body) provides goods or services other than general infrastructure, or purchases goods,
- (iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in (i) to (iii) which normally would be vested in the government and the practice, in no real sense, differs from practices normally followed by government.

In macroeconomic statistics, such as ESA 2010, subsidies are defined in a relatively narrow manner, as ‘*current unrequited payments which general government or the institutions of the European Union make to resident producers*’. ESA cites the following examples of reasons for which government provide subsidies: (a) influencing level of production, (b) influencing the prices of products; or (c) influencing the remuneration of the factors of production (ESA2010 para 4.30). First two reasons specified under ESA would, in most cases, lead to an increase in the quantity of the products at the market equilibrium. The third motivation might leave the market equilibrium unaffected provided that the subsidies are entirely passed over to the owners of the factors of production.

WorldBank’s Policy Research Working Paper ‘*Fossil fuel subsidies. Approaches and valuation*’², in its definition of subsidies, disregards the form in which a subsidy is supposed to be provided (such as ‘the payment’ in ESA 2010 definition, and points (i)-(iv) in WTO definition), focusing on the

¹ WTO definition of subsidies in Agreement on Subsidies and Countervailing Measures

² <http://documents.worldbank.org/curated/en/961661467990086330/pdf/WPS7220.pdf>

impacts of the measure. It defines a subsidy (for fossil fuels, hereinafter referred to ‘FFS’) as a deliberate policy action by the government that specifically targets fossil fuels, or electricity or heat generated from fossil fuels, and has one or more of the following effects:

- a. reducing the net cost of energy purchased,
- b. reducing the cost of production or delivery of fuels, electricity or heat
- c. increasing revenues retained by resource owners, or suppliers of fuel, electricity or heat.

The definition is customised to a sub-set of product markets (for energy, fuel, electricity and heat). It does not determine a beneficiary of the policy action, implying that, other than under ESA 2010 definition, payments to purchasers or consumers of energy (households) would also fit the description. It still insists that the measure is ‘deliberate’ and requires government action. This definition would cover a range of various ESA transactions (transfers, transactions in financial assets) and some measures that are not recorded under ESA.

Relaxing the constraint that a ‘subsidy’ is a benefit conferred by government deliberate action would extend the concepts of ‘subsidies’ also to benefits enjoyed by economic agents, as a consequence of government’s failure to act, e.g. to correct the economic calculus at a micro-level for negative society-wide externalities. By further extension, instead of looking at the benefit of producers or consumers arising from their not covering the full social costs of manufacturing or consumption of a given good or service, one could consider as a PED directly a need to restore the damage allowed by government inaction.

Table 1 summarise and briefly describes the different types if subsidies referred to above; in each case explaining or proposing how they could be measured.

Table 1. Typology of PEDs, with examples and (potential) metrics

Type of PED		Description/ examples	How to measure?
Subsidy		Unrequited payment made by government to resident producers to influence level of production, prices of products; or remuneration of the factors of production	Value of the payment
Other explicit transfer		(i) Unrequited payments made by government to households or other institutional level to reduce costs of products; (ii) Unrequited exceptional/one-off payments/ transfers of assets to or assumption/cancellation of liabilities of producers by government	Value of the payment/liability, value of asset transferred
Direct market intervention	On the supply side	(i) Government or public corporation(s) provide(s) goods or services, (ii) Domestic supply obligations (iii) Quantitative export or import restrictions	(i) Quantity x (market value – price at which products are supplied) (ii) (Quantity supplied – market quantity)xmarket price (iii) Quantity x (diff. global market value and price at which products are supplied)
	On the demand side	(i) Government or public corporation(s) purchases goods and services, (ii) Purchase requirements	(i) Quantity x (Price at which products are supplied-market value) (ii) (Quantity supplied – market quantity)x market price
	Price control	Administrative price setting	Quantity x (difference between market price and administrative price)
Permits		Underpricing of permits and licences	Quantity x (difference between market price and administrative price)
Preferential tax treatment	Vis-à-vis other payers	(i) Tax exemption (ii) Tax credit (iii) Tax allowance	By tax (Value of tax base x tax rate) less tax receivable
	Vis-à-vis other products	(i) Reduction in tax rate (ii) Adjustments to a tax base	(Value of GDP x largest tax rate for consumption taxes) less tax receivable
Financing		(i) Provision of loan (ii) Provision of loan at preferential interest rate (iii) Equity injections	(i) Expected loss (not returned part of loan) (ii) Expected loss + lower value of interest on returned part of loan (iii) Expected loss + lower return from investment compared to the market value

Type of PED		Description/ examples	How to measure?
Shift of risk	Contingent liabilities	Guarantees	Expected loss
Government permits or tolerates infliction of externalities	Health	Government does not corrects the prices of products for negative impact on health of their manufacturing, use or disposal	Estimated value of 'damage', e.g., costs of treatment, mortality
	Environment	Government does not corrects the prices of products for negative impact on the environment of their manufacturing, use or disposal	Estimated value of 'damage', e.g., costs of restoration
	Other	Government does not corrects the prices of products for other negative impact on the society of their manufacturing, use or disposal	Estimated value of 'damage', e.g., costs of restoration
Need to restore		Amount needed to reverse or reduce the negative impacts of externalities	Estimated value or committed value

Source: Eurostat's own analysis, drawing on some definitions and considerations presented in M.Kojima, D. Koplow, 'Fossil fuel subsidies. Approaches and valuation. World Bank Group, Policy Research Paper 7220, March 2015.

3 Concepts and metrics of PEDs developed to date

Table 2 seeks to depict how the various types of PEDs have been taken into consideration in the statistical concepts and datasets in place to estimate the value of fossil fuel subsidies. It also includes OECD effective carbon rates as an example of setting of benchmark values for carbon prices and calculating gaps between the values and existing carbon taxation.

Table 2. Concepts and metrics of PEDs developed in economic statistics and to measure FFS

Type of PED	ESA 2010 subsidy	ESA 2010 transfer	ESST	OECD [Inventory of FFS]	IEA FFS [Price gap]	IMF – pre-tax FFS [Price gap]	IMF – post-tax FFS [Price gap]	OECD effective carbon rates
Subsidy			As ESA 2010		If impacts on prices	If impacts on prices	If impacts on prices	
Other explicit transfer					If impacts on prices	If impacts on prices	If impacts on prices	
Direct market intervention	On the supply side	Individual consumption goods provided for free or at not economically significant prices	As ESA 2010	[not clear whether the measures are covered]	If impacts on prices	If impacts on prices	If impacts on prices	
	On the demand side	Potentially for some transactions with public corporations	As ESA 2010		If impacts on prices	If impacts on prices	If impacts on prices	
	Price control							
Permits		For some transactions with public corporations	As ESA 2010		If impacts on prices	If impacts on prices	If impacts on prices	
Preferential tax treatment	Vis-à-vis other payers		Tax abatements	Tax credits/allowance	If impacts on prices	If impacts on prices	If impacts on prices	
	Vis-à-vis other products		Tax abatements		If impacts on prices	If impacts on prices	If impacts on prices +estimated	
Financing		For some transactions with public corporations	As ESA 2010	Under development?	If impacts on prices	If impacts on prices	If impacts on prices	
Shift of risk	Contingent liabilities	For some transactions with public corporations	As ESA 2010	Under development?	If impacts on prices	If impacts on prices	If impacts on prices	
Government permits or tolerates infliction of externalities	Health						Estimated	
	Environment						Estimated	
	Other						Estimated	
Need to restore							Estimated as a proxy of the value of environmental externalities	Estimated (adjusted for already collected carbon taxes)

Source: Eurostat's own analysis, drawing on some definitions and considerations presented in M.Kojima, D. Koplow, 'Fossil fuel subsidies. Approaches and valuation. World Bank Group, Policy Research Paper 7220, March 2015.

4 Eurostat's way-forward

Eurostat will further investigate the best way of setting a frame for its pilot data collection planned for late 2019/ early 2020 - for specifics, see the May 2019 MESA WG [paper](#) on this matter³.

³ https://circabc.europa.eu/sd/a/549ba8f4-f8b4-453e-b50a-6ef606a889f8/ENV_MESA_WG_2019%2005b%20PEDS.pdf