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 effects. 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’, 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

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

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:

- reducing the net cost of energy purchased,
- reducing the cost of production or delivery of fuels, electricity or heat
- 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**

<table>
<thead>
<tr>
<th>Type of PED</th>
<th>Description/examples</th>
<th>How to measure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidy</td>
<td>Unrequited payment made by government to resident producers to influence level of production, prices of products; or remuneration of the factors of production</td>
<td>Value of the payment</td>
</tr>
</tbody>
</table>
| 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 |
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>
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<th>Type of PED</th>
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<th>How to measure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift of risk</td>
<td>Contingent liabilities</td>
<td>Guarantees Expected loss</td>
</tr>
<tr>
<td>Government permits or tolerates infliction of externalities</td>
<td>Health</td>
<td>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</td>
</tr>
<tr>
<td>Environment</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Need to restore</td>
<td>Amount needed to reverse or reduce the negative impacts of externalities Estimated value or committed value</td>
<td></td>
</tr>
</tbody>
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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