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Issue #6: Environmentally Related Taxes¹

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¹ This outcome paper has been prepared by the SEEA Editor. It is based on papers presented to the London Group of Experts on Environmental Accounting and discussions among those experts. Investigation and research for this outcome paper was led by Nancy Steinbach, Viveka Palm and Maja Cederlund of Statistics Sweden, and Julie Hass and Anda Marina Georgescu of Eurostat.

A. Introduction

1. One motivation for the development of environmental and economic accounting is the recognition of the linkages between the economy and the environment. Some of these linkages concern the unpriced use and extraction of environmental resources both as input to, and sinks for, economic activity. Consequently, the boundary between the economy and the environment contains many and varied externalities reflecting the inability of naturally forming markets to operate effectively. In this situation there is a role for governments to enact relevant policy to ensure a use of the environment consistent with societal expectations.
2. Two primary mechanisms of government in this regard are taxes and subsidies. This issue considers how environmentally related taxes should be defined and accounted for amongst other forms of government revenue. A separate issue on the definition and treatment of environmentally related subsidies is also the subject of the revision of the System of Environmental and Economic Accounts (SEEA). The relevant outcome paper is Issue #7: Environmentally related subsidies.
3. The discussion of environmentally related taxes is particularly pertinent given long-standing discussions on various taxes to encourage pollution abatement and reduced use of fossil fuels (eg carbon taxes). However, since there are many schemes and policies with similar natures and intent it is important that clear definitions of environmentally related taxes be defined such that analysis and policy monitoring can be undertaken effectively.
4. The basic approach to determining those taxes that are considered to be environmentally related is to select the relevant transactions from the 2008 System of National Accounts (SNA) and then, within each of those transaction types, determine the ones which are environmentally related. This second stage presents particular challenges and the approach taken depends, in part, on the nature of the analysis that is to be undertaken. One approach is to take a more economic theoretic approach with the aim of obtaining an aggregate of environmentally related taxes that can be related to the value of the externalities being taxed. A second approach is to examine the various tax bases and determine the extent to which tax revenue is being earned by taxing those tax bases that have a negative environmental impact.
5. The paper is structured as follows. First, relevant SNA transactions are defined in sections B and C, and then in section D environmentally related taxes are defined. The remaining sections consider the classification of environmentally related taxes and the treatment of specific taxes. Recommendations for the revised SEEA are presented through the paper.

B. Taxes in the System of National Accounts

6. As with other aspects of environmental accounting one area of particular interest is the identification of analytically relevant economic transactions that are in the core economic accounts (as articulated in the SNA but not clearly visible in those accounts as being of an environmental nature. The starting point for determining treatment of these transactions is therefore to identify the relevant types of transactions in the SNA and then determine which of those transactions should be considered to be environmental.
7. The general types of transaction of interest in this paper are payments to government. This section considers different types of taxes in the SNA and the following section considers other payments to government.
8. The majority of the different payments made to government are forms of taxes. Taxes may be labelled in different ways and thus care must be taken to ensure that the underlying basis of the payment is well understood. Taxes are defined in the 2008 SNA as

“Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units” (2008 SNA paragraph 7.71)

9. They are grouped in the following categories in the 2008 SNA:

- Taxes on production and imports, including taxes on products and other taxes on production,
- Taxes on income
- Other current taxes
- Capital taxes.

10. Taxes on products are defined in the SNA 2008 as

“...a tax that is payable per unit of some good or service. The tax may be a specific amount of money per unit of quantity of a good or service ..., or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted.” (2008 SNA paragraph 7.88)

11. Within scope of taxes on products are Value added type taxes (VAT), import taxes and duties, export taxes and excise duties. Many of these types of taxes will be relevant in considering the definition of environmentally related taxes.

12. Other taxes on production are *“... all taxes except taxes on products that enterprises incur as a result of engaging in production.”* (2008 SNA paragraph 7.97) Of particular interest in this category are taxes on land and taxes on pollution.

13. It is likely that the majority of environmentally related taxes are taxes of these types.

14. Taxes on income are defined in the SNA 2008 as

“... taxes on incomes, profits and capital gains. They are assessed on the actual or presumed incomes of individuals, households, NPISHs or corporations.” (2008 SNA paragraph 8.61).

15. Of interest concerning environmental taxes are situations in which the underlying income or profits being taxed can be directly linked to the extraction of natural resources.

16. Other current taxes is a category composed of two groups of taxes. The first group is Current taxes on capital. These are

“...taxes that are payable periodically, usually annually, on the property or net wealth of institutional units, excluding taxes on land or other assets owned or rented by enterprises and used by them for production, such taxes being treated as other taxes on production.” (2008 SNA paragraph 8.63)

17. The second group is Miscellaneous current taxes. Of interest in this group of taxes are payments by households to obtain certain licences including the ownership of vehicles and licences to hunt and fish.

18. The final type of tax in the SNA is Capital taxes. These are:

“... taxes levied at irregular and infrequent intervals on the values of the assets or net worth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos or other transfers.” (2008 SNA paragraph 10.207)

Recommendation 6.1: That within the revised SEEA the scope of environmentally related taxes should include all transactions defined as taxes according to the 2008 SNA – i.e Taxes on production and imports, Taxes on income, Other current taxes and Capital taxes.

C. Other payments to government

Rent on natural resources

19. There are certain natural resources, particularly mineral and energy resources, that are often owned by government and payments to government are often required to be made by

extractors of the resources. These payments are treated in the SNA as rent. Rent is defined as follows.

“Rent is the income receivable by the owner of a natural resource (the lessor or landlord) for putting the natural resource at the disposal of another institutional unit (a lessee or tenant) for use of the natural resource in production.” (2008 SNA paragraph 7.154)

20. Payments of rent in respect of mineral and energy resources are commonly referred to as royalties and in resource rich countries can represent an important component of total government revenue. Since the government usually both owns the resources and has the ability to set the price for the extraction of the resources, the boundary between the treatment of any payments as rent or as taxes on incomes from extraction may not be clear and is likely to depend on the nature of the arrangement put in place by the government.

21. It may well be that flows of rent are labelled as taxes, often resource taxes, and it is important the basis for the payment be well understood to ensure the correct treatment. The most common distinction is that payments of rent are usually determined on the basis of income from sales of extracted resource (quantity extracted x resource price) whereas income taxes are usually calculated taking into account both income from sales and costs of extraction and may not be able to target solely income earned from extraction since they will usually relate to the taxable income of a complete business unit.

Sales of goods and services

22. In a wide number of situations the government undertakes a range of activities which provide goods and services to households and businesses. Sales of these goods and services constitute output by general government units and are generally referred to as “fees”. In some cases making the distinction as to whether these payments are fees or taxes can be difficult to assess. The general guidance provided in SNA is that

“If the issue of such licences involves little or no work on the part of the government, the licences being granted automatically on the payment of the amounts due, it is likely that they are simply a device to raise revenue, even though the government may provide some kind of certificate, or authorisation, in return. However, if the government uses the issue of licences to exercise some proper regulatory function, for example, checking the competence, or qualifications, of the person concerned, checking the efficient and safe functioning of the equipment in question or carrying out some other form of control that it would otherwise not be obliged to do, the payments should be treated as purchases of services from government rather than payments of taxes, unless the payments are clearly out of all proportion to the costs of providing the services.” (2008 SNA paragraph 8.54)

Fines and penalties

23. In the SNA there is a separate treatment of fines and penalties. They are defined as

“... compulsory payments imposed on institutional units by courts of law or quasi-judicial bodies.” (2008 SNA paragraph 8.135)

24. In the SNA these payments to governments are treated as miscellaneous current transfers and need to be distinguished from payments of taxes and payments for services. It may well be that some fines and penalties are related to illegal environmental activity and hence may be of interest in the context of environmentally related taxes.

Other receipts of government

25. Two other cases are considered in this section together with the relevant SNA treatment.

- Receipts from the use of a produced asset owned by government – treated as sales of service if use is for less than one year; treated under a lease arrangement (either operating or financial) if use is for an extended but defined period of time; treated as the sale of an asset if the payment is for the use of the asset for the rest of its economic life. In no case is the receipt treated as a tax.
- Receipts from the use of a non-produced asset owned by government – treated as rent if the use is for a defined period of time for example under the terms of an extractive licence; treated as the sale of an asset if the payment is for the use of the asset for the rest of its economic life. In no case is the receipt treated as a tax.

Recommendation 6.2: That payments to general government of rent, fees, penalties, fines and other payments relating to the use of assets owned by general government should be excluded from the scope of environmentally related taxes in the revised SEEA.

D. Definition of environmentally related taxes

26. The discussion in the previous section concerned the types of transactions in the 2008 SNA that should be considered when seeking to identify environmentally related taxes. However, it is not the case that all SNA taxes should be considered environmentally related – thus a method for determining the environmental status of different taxes is required.

27. As noted in the introduction, defining environmentally related taxes presents a challenge and definition of environmentally related taxes have been developed in a number of contexts. In general terms there is interest in those taxes that have an impact on the relative prices of environmentally related products and activities. From this starting point a more economic theoretic perspective may be taken where focus is on the relationship between specific tax rates and the marginal abatement cost for activities which impact on the environment. For example, to what extent does the tax revenue collected from polluters reflect the abatement cost of the pollution.

28. Alternatively, the impact on relative prices might be examined by considering various tax bases and determining which tax bases involve goods or activities which have a negative environmental impact. One limitation of this approach is that because the imposition of taxes is usually always motivated by fiscal requirements to some degree, the extent to which the tax revenue should be considered environmental is not assessed.

29. At the same time measuring the environmental “share” of a tax is not straightforward. It requires the use of techniques to measure the marginal damage and abatement costs of particular environmental impacts. While such techniques exist generally agreed techniques and standard methods have not yet been developed in the context.

30. The approach that has been taken is to focus on the nature of the tax base. The following definition is considered by the London Group to be the most useful in the revised SEEA.

“An environmentally related tax is a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment”.

31. It is recognised that this choice means that there is not a tight link between the aggregate measure of environmentally related taxes and the general concept of externalities as presented in the introduction.

32. This definition is consistent with the definition described in the Eurostat publication “Environmental Taxes – A Statistical Guide (Eurostat 2001) and in the SEEA-2003. In

practice this definition is applied by looking at all of the various taxes levied in a country and making an assessment as to whether the tax base in each circumstance is something that has a negative environmental impact. A listing of tax bases considered to be environmentally related within the European Union is attached in Annex 1.

33. It is noted that the definition of environmentally related taxes does not follow the same logic as used to define environmentally related subsidies (see SEEA Revision Issue #7: Environmentally related subsidies.) environmentally related subsidies are defined by considering whether the subsidy has an environmentally related purpose which can be determined from assessment of the intent behind the payment.

34. In this regard it is worth noting that no attempt is made to determine the environmental status of a tax on the basis of what the tax revenues might be used for. The linking of taxes and government expenditure is known as “hypothecation” or “ear-marking”. While there are instances of this, generally tax revenues are considered to be part of a general pool of resources for government expenditure and hence linking the purpose of the expenditure to specific taxes is not possible.

Recommendation 6.3: That an environmental tax be defined as a tax whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific negative impact on the environment.

E. Tax bases and categories

35. There are four broad categories into which environmentally related taxes are generally grouped - energy, transport, pollution and resources. The London Group agreed that these categories are appropriate and have been shown to facilitate analysis. The following text describes each of these categories.

36. It is noted that because environmentally related taxes are not defined on the basis of environmental purposes or in reference to specific environmental activities it is not possible to classify these taxes using classifications such as the Classification of Environmental Protection Activities (CEPA).

Energy taxes

37. This category includes taxes on energy products used for both transport and stationary purposes. The most important energy products for transport purposes are petrol and diesel. Energy products for stationary use include fuel oils, natural gas, coal and electricity. CO₂ taxes are included under energy taxes rather than under pollution taxes. There are several reasons for this. First, it is often not possible to identify CO₂ taxes separately in tax statistics, because they are integrated with energy taxes, e.g via differentiation of mineral oil tax rates. In addition, they are partly introduced as a substitute for other energy taxes and the revenue from these taxes is often large compared to the revenue from the pollution taxes. This means that including CO₂ taxes with pollution taxes rather than energy taxes may distort international comparisons. If they are identifiable, CO₂ taxes should be reported as a separate category next to energy taxes.

38. Taxes on sulphur have many similar characteristics in reporting terms to CO₂ taxes but should be recorded under the category pollution tax. Studies on environmental taxes have highlighted the practical issue of separating taxes on sulphur from taxes on carbon dioxide and they have argued that taxes on sulphur are important from an energy perspective as they directly put a higher price on fuels with higher sulphur content. However, sulphur taxes are not very common worldwide and in the northern hemisphere sulphur taxes were established as a way to reduce SO₂ emissions. After discussion it was the conclusion of the London Group that taxes on sulphur should continue to be treated as pollution taxes.

Transport taxes

39. This category mainly includes taxes related to the ownership and use of motor vehicles. Taxes on other transport equipment (e.g. planes), and related transport services (e.g. duty on charter or scheduled flights) are also included here, when they conform to the general definition of environmentally related taxes. The transport taxes may be ‘one-off’ taxes related to imports or sales of the equipment or recurrent taxes such as an annual road tax. Taxes on petrol, diesel and other transport fuels are included under energy taxes.

Pollution taxes

40. This category includes taxes on measured or estimated emission to air and water, generation of solid waste and noise. An exception is taxes on carbon dioxide, which are included under energy taxes as discussed above. Taxes on sulphur are included here.

Resource taxes

41. This category typically includes taxes on water abstraction, extraction of raw materials (except oil and gas) and other resources (e.g. forests). A particular consideration is the treatment of payments to government relating to the extraction of natural resources (eg oil and gas extraction) which may be treated as rent rather than as a tax following SNA definitions. Following the conclusions of earlier sections, those payments that are treated as rent or fees within the SNA, are not considered as environmentally related taxes and hence are excluded from the category of resource taxes.

Recommendation 6.4: That environmentally related taxes should be classified according to the four categories: energy taxes, transport taxes, pollution taxes and resource taxes.

Recommendation 6.5: That taxes on sulphur should be categorised as pollution taxes.

F. Treatment of Value Added Tax

42. Value Added Taxes (VAT) were excluded from the definition of environmentally related taxes in the SEEA-2003 because they are deductible for many producers but not for the final consumption of households. This was considered to have no influence on relative prices in the same way that other taxes on environmentally related tax bases do (i.e. VAT is related to price and not to the good itself).

43. However, discussions have determined that there is one case under which VAT should be included. This is the case where the VAT is calculated on a price that includes a duty or tax already determined to be an environmentally related tax. It should be classified based on the nature of the underlying tax base.

44. An example of this occurs in the United Kingdom where the VAT on petrol is calculated as a fixed proportion of the duty paid on hydrocarbon oils. This means that UK drivers pay two taxes on the fuel purchased at the pump (i) fuel duty on hydrocarbon oils and (ii) VAT charged on the duty (VAT is also charged on the price of the petrol).

Recommendation 6.6: That, where the tax base of a VAT includes an environmentally related tax, the relevant proportion of the VAT should be included as part of environmentally related taxes.

Annex 1: Tax bases included in the environmental tax statistics framework (Eurostat 2001)

Measured or estimated emissions to air

- Measured or estimated NO_x emissions
- SO₂ content of fossil fuels
- Other measured or estimated emissions to air

Ozone depleting substances (e.g. CFC or halon)

Measured or estimated effluents to water

- Measured or estimated effluents of oxydizeable matters (BOD, COD)
- Other measured or estimated effluents to water
- Effluent collection and treatment, fixed annual taxes

Certain non-point sources of water pollution

- Pesticides (Based on e.g. chemical content, price or volume)
- Artificial fertilisers (Based e.g. on phosphorus or nitrogen content or price)
- Manure

Waste management

- Waste management in general (e.g. collection or treatment taxes)
- Waste management, individual products (e.g. packaging, beverage containers)

Noise (e.g. aircraft take-off and landings)

Energy products

- Energy products used for transport purposes
 - Unleaded petrol
 - Leaded petrol
 - Diesel
 - Other energy products for transport purposes (e.g. LPG or natural gas)
- Energy products used for stationary purposes
 - Light fuel oil
 - Heavy fuel oil
 - Natural gas
 - Coal
 - Coke
 - Biofuels
 - Other fuels for stationary use
 - Electricity consumption
 - Electricity production
 - District heat consumption
 - District heat production

Transport

- Motor vehicles, one-off import or sales taxes
- Registration or use of motor vehicles, recurrent (e.g. yearly) taxes

Resources

- Water abstraction
- Extraction of raw materials (except oil and gas)
- Other resources (e.g. forests)

References

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