

# Draft LG Paper on Environmental Taxes, Transfers (Subsidies) and Emissions Trading Schemes

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## Reasoning, Principles and Findings

The System of Environmental-Economic Accounting – Central Framework (SEEA CF) must be more than just a detailed extension of the SNA. The economic guidelines from the SNA do not always adequately address environmental-economic questions. The aim of the SEEA CF is to create significant added value in reporting environmental and economic interrelationships beyond what can be achieved in the SNA. Therefore, where necessary, the SEEA CF should establish different provisions than those in the SNA.

The guiding principle must be that the accounts are coherent, consistent and harmonised. Their main task is not direct communication, but rather they should form the basis from which easily interpretable and communicable results—such as indicators—can be derived through appropriate summarisation. This dualism must be taken into consideration when compiling the accounts.

When defining the accounts, it is important to ensure that they are designed so that they can be analysed in a wide variety of directions. This ensures that an analysis can also be adapted to changing requirements through different combinations. Political communication requirements should not be incorporated in accounting definitions but should be met by downstream analysis of the accounts.

The SEEA CF 2012 currently provides only rudimentary guidance on how taxes and subsidies should be recorded within the Environmental-Economic Accounting framework, such as how they should be broken down by sectors and at which points in time they should be recorded. This paper aims to establish more concrete principles for this purpose. Additionally, different types of emissions trading schemes (ETS) are gaining increasing significance as policy instruments. Therefore, existing SNA and SEEA CF guidance on these instruments, which are currently treated as taxes,

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<sup>1</sup> With the lots of support and input of Matthew Chambers (U.S. Bureau of Economic Analysis), Nina Hiltunen (Statistics Finland) and Mark de Haan (Statistics Netherlands) as well as Simon Schürz.

should be reviewed. We propose the following general guidelines for refining the SEEA CF guidance on taxes, subsidies, and ETs:

- Monetary flows generally follow physical flows.
- Efforts should be made to ensure that the recording of monetary flows is accounted for when the environmental impact occurs.
- Guidelines on delineation, allocation, and classification of taxes and subsidies should fundamentally be based on clear definitions and explicitly named terms.
- The accounts should be organised in such a way that different analyses for different needs<sup>2</sup> are easily possible.

From this, the following specific recommendations for a clarification in the SEEA CF are put forward:

- Taxes
  - The definition of an environmental tax should remain unchanged<sup>3</sup>.
  - Allocations to sectors/industries and periods must be harmonised with the physical flows. This should be specified in the SEEA CF text.
  - Environmental taxes should be recorded such that an allocation to the sector and time period from which the closest environmentally damaging physical flow originates<sup>4</sup> is possible. However, other views such as allocating the tax to downstream sectors or industries might be relevant, and should also be possible—harmonised with physical flow accounts.
  - The breakdown and allocation of taxes to the tax categories energy, transport, pollution, and resource needs to be revised, in particular to make taxes on GHG emissions more visible and to offer wider comparability to different physical flow accounts.
- Transfers
  - General
    - Subsidies and similar transfers are defined as those

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<sup>2</sup> Such as a meaningful combination of taxes with emissions but also with energy products.

<sup>3</sup> SEEA CF 2012 4.149 and 4.150

<sup>4</sup> In the SNA the timing of recording a tax coincides with the legal obligation to pay the tax. This is not necessarily the same period the environmental impact happens. A common example are energy taxes: The obligation for a tax on fuel arises commonly when the energy carrier is put on the market (e.g. by the refinery). However, we suggest accounting for it when the fuel is combusted (which is normally later and by a different sector). By analogy to the accrual principle, we could term this concept “environmental accrual.”

payments or money-like transfers made by the government as defined in 4.138 of the SEEA CF 2012. Payments that are triggered by the government, but where another institution that performs budget tasks for the government and executes the payment, could also fall under this category.

- Climate change mitigation subsidies should be treated as part of ESST and should follow the same rules. Climate change mitigation subsidies are part of the climate change mitigation expenditures of the government.
- Climate change adaptation subsidies are part of the climate change adaptation expenditures of the government. As far as applicable they should follow similar rules to climate change mitigation subsidies but they are not part of ESST.
- ESST
  - Environmentally friendly subsidies and similar current or capital transfers should be recorded in the sector whose environmentally harmful (beneficial) behaviour is expected to be reduced (increased) and in the period in which they are granted.
  - Environmentally friendly transfers for investments (and likewise for the acquisition of durable consumer goods) should be recorded in the sector whose environmentally harmful (beneficial) behaviour is expected to be reduced (increased) in the future due to the subsidised investment in the period in which they are paid/received.
- PEDS
  - Potential environmental damaging subsidies should follow a similar definition used for environmental taxes and thus have a direct relation to a physical unit that has a specific negative impact on the environment.
- Tax abatements
  - Tax abatements are not transfers.
  - Tax abatements should be presented differently depending on the tax and the motivation.
  - If abatements are to be displayed, for consistency they should be placed in separate categories and not mixed with transfers.
- Emissions trading schemes
  - ETS permits should no longer be treated as taxes in SEEA CF

but as non-produced, non-financial assets rather than as taxes<sup>5</sup>.

- These permits should be accounted for in physical units and valued at market price throughout their lifetimes:
  - At the time they are sold or allocated for free. All equivalent permits should have the same value, regardless of how they were distributed.
  - When the emissions occur. An expense reflecting the current market value of the corresponding permits should be recorded in the emitting entity's account at this time in accordance with the accrual principal.
  - The financial position of the issuing government should not be affected by shifts in the secondary market for permits.
- ETS permits allocated for free are transfers but not necessarily PEDS. This depends on the circumstances they are granted.<sup>6</sup>

#### → Conclusions

- As part of the SEEA CF revision, rules must be defined for the allocation of taxes and transfers to sectors and periods that allow flexible analysis with respect to different environmental topics or physical flows.
- PEDS in the narrower sense can be defined analogously to ESST and environment-related taxes.
- The inclusion of tax relief for non-environmental taxes seems feasible and useful. For this purpose, analogous definitions should be used as for the ESST (intention of the tax relief) or for potentially harmful ones the relation to a physical quantity.
- What is not yet ripe for decision or needs further investigation:
  - How to recognise tax payments and subsidies received by local units abroad?
  - How to deal with subsidies or tax relief that are both intended to protect the environment and have a potentially negative impact on the environment (in the same or another area) via an underlying physical variable?

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<sup>5</sup> Details on this proposed treatment may be found in a companion paper, *Accounting for Emission Trading Schemes in SEEA* (Chambers and Kaumanns 2024), also being presented at the 30th London Group Meeting.

<sup>6</sup> They could even be ESST if they are granted as a reward for saving emissions or incentive to environmentally friendly behaviour (e.g. free certificates for operators of electric vehicles).

- How to deal with missing baselines in the case of tax relief?

## Taxes

### Status

*“... an environmental 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.”*<sup>7</sup> While the general definition of an environmental tax appears to be comprehensive, we should add that such a tax can relate either to a direct physical environmental impact (like an emission) or to the operation of something expected to have generally negative environmental effects. While this is implicitly handled with the vehicle tax—which represents permission to operate a vehicle—similar taxes are conceivable, perhaps levied on the operation or the operational readiness of a facility. This distinction should also be reflected in the presentation of the taxes.

The current structure in the SEEA CF includes a division into four main types of taxes:

- Energy taxes
- Transport taxes
- Pollution taxes
- Resource taxes.

Taxes on CO<sub>2</sub> and other GHG emissions are to be classified—separately, if possible—under energy taxes<sup>8</sup>.

### Proposed Allocation

This division makes sense from a perspective centred on energy and economic policy, emphasizing mainly energy aspects. However, the SEEA CF should prioritize environmental significance and system consistency. Consequently, the grouping of taxes should be reconsidered. In particular, the topic of GHG emissions should be given more prominence in the SEEA CF and should ideally be presented as an independent topic, not just as part of the energy tax.

GHG emission taxes however might overlap with energy taxes and easy transferability to the old structure—which will be probably still used in national accounts—is indispensable. A structure is therefore needed that allows taxes on (energy-related) GHG emissions to be mapped in a way that is compatible with both the air emission accounts and the energy flow accounts. The allocation of individual taxes—e.g. on energy carriers—to energy or emissions taxes should therefore not take place in the accounts themselves. Instead, a structure should be created in which these taxes,

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<sup>7</sup> SEEA CF 2012 4.150

<sup>8</sup> SEEA CF 2012 4.155

which affect both areas, are managed separately in the accounts and summarised only in the downstream evaluations. The summary may look different depending on the country and the purpose of the evaluation. A structure that could serve as a starting point for discussion can be found in the annex.

In general, taxes can be viewed from (two) different perspectives: as government revenues or as expenditures by enterprises and private households. Currently, the SEEA CF only recognises the actual taxes paid to the domestic general government, as government tax revenues provide the relevant information. However, this is a one-sided approach. While the quota of environmental tax revenues in relation to total tax revenues can provide information on ecological tax reforms, it is becoming more and more relevant to consider the costs of using the environment at the individual or economic sector level. Currently, taxes paid by domestic units to foreign governments are not included in the SEEA CF view. An inclusion of such taxes paid by domestic units paid abroad seems desirable. However, information availability seems poor. If such an inclusion would succeed, taxes paid to foreign governments should be presented separately, as they might relate to impacts on foreign environments/flows abroad.

When looking at taxes as expenditures for enterprises and private households the questions arise: to which entities should the tax burden be attributed? when should this occur? (potentially) what should the amount of the tax burden be?

Regarding the allocation to individual industries or sectors, the SEEA CF so far makes only quite rudimentary statements. In general, different approaches could be chosen here, each of which would be justified from different perspectives.

The standard distinctions include:

- **Taxpayer:** The individual or entity that actually pays the tax.
- **Taxable entity:** The individual or entity that is obligated to fulfil a tax liability as imposed by tax laws.
- **Tax debtor:** The individual or entity that meet the conditions for the tax liability.
- **Tax incidence bearer:** The individual or entity that economically bears the tax.
- **Intended tax incidence bearer:** The individual or entity that is intended by the legislator to economically bear the tax.

Very often, the same person or entity holds several of these roles — but not always. In the case of the energy tax, for example, the entity that uses the energy is often intended to bear the tax burden. However, the tax liability often arises from the act of placing the energy on the market, making the petroleum trade sector regularly the taxable entity, the taxpayer and the tax debtor. Who ultimately bears the tax incidence is generally difficult to identify without specific economic analysis in each case. In the national accounts, the assignment to the tax debtor and the timing of the tax-liable

event are regularly used for attribution. However, this tax-liable event is not always identical to the event that impacts the environment. To return to the example of the energy tax: the initial domestic sale of a fossil energy carrier as the tax-liable event is not necessarily identical to the time of its combustion and thus the time of the emission as an environmental impact.<sup>9</sup> This means that the common attribution methods in terms of their compatibility with physical flows and their environmental-economic interpretability are sometimes of limited use. Therefore, it is proposed to attribute the tax to the entities from which the environmental impact directly originates – such as the operation of a facility, the combustion of an energy carrier, the emissions, the use of electricity or heat, or the impact of extraction. This attribution assumes that these entities, through their production or consumption behaviour, are most likely to influence the respective environmental impact and potential substitutions.

At this point, it must be ensured that an analogy to the allocations and tables of the physical accounts such as the Air Emission Accounts and the Energy Accounts is possible. This means that the tax must be allocated to the unit and period from which a corresponding flow into or out of the environment or energy utilisation is evident from the material and energy flow accounts. A uniform standard must be established for this purpose. This becomes particularly difficult if the material and energy flow calculations do not allocate the corresponding flows to the units from which the flows originate directly, but instead allocate them to subsequent units. In order to meet different needs, it may be necessary to show in more detail in both the tax accounts and the material and energy flow accounts who has a direct impact on the environment and who benefits downstream from a corresponding activity. In a further step, which is not (yet) possible at this point, the two systems must be checked and later harmonised.

## Subsidies and similar transfers

### General

Subsidies and similar transfers maybe categorized along three dimensions. First, transfers should be categorized as positive or negative in relation to the environment. Second, they could be categorize based on their target/intention, impact or technical nature. Finally, they could be granted on a product, production or be simply a transfer (social, capital or other current transfer).

### ESST

#### Status

In 4.139 – 4.144, similarly to environmental taxes in 4.150 – 4.155, the SEEA CF 2012 provides the framework for determining when a subsidy should be

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<sup>9</sup> When calculating annual accounts, the simplifying assumption of a temporal analogy may be justifiable. Therefore, the standard should point out the time lag, but offer a simplification for annual accounts in cases such a simplification can be justified by the national circumstances.

considered environmentally related. Accordingly, a subsidy is considered environmentally related if *“the primary intent or purpose of the government is for resources to be used for either environmental protection or resource management purposes. In principle, a decision on whether the primary purpose of a transfer is environmental should be made for each individual transfer. Then, once a decision on the primary purpose has been made, the total value of the transfer is treated as being for that primary purpose. (...) The determination of primary purpose should not be based on whether the use of the resources by the recipient of the transfer results in positive outcomes for the environment. While it is reasonable to consider that the purpose of the government in making the transfer and the purpose of the recipient are the same, it may not be the case that the expenditure of the transferred resources results in beneficial environmental outcomes, even if this was the intent.”*

Accordingly, unlike the EU Commission in its guidelines<sup>10</sup>, the SEEA CF assumes that the intention behind granting the subsidy should be the only classification criterion. An assessment or assumption by statistical agencies of the impact of a subsidy is therefore not required.

### **Suggestion**

This SEEA CF definition should be upheld, despite the potential for inflation of this measure (sometimes called “greenwashing”). Its advantage is that it is straightforward and that, as statisticians, we can refer to the original purpose of granting a subsidy without being required to evaluate its effectiveness, which would be difficult or impossible to do consistently across countries. In addition, the greenwashing potential is limited, as it would lead to a very low efficiency in terms of the positive environmental impact of the transfer payments when viewed as a whole. However, if national circumstances require it, the technical nature can be used as an auxiliary parameter for the classification if it becomes clear that the corresponding technology is essentially promoted for environmental policy objectives.

For other areas of government spending or investments related to environmental, resource, or climate protection, this straightforward approach should be adopted as well.

## **PEDS**

### **Status**

Currently, the SEEA CF 2012 does not address Potentially Environmentally Damaging Subsidies (PEDS). It is also clearly stated that *“In some cases, there is interest in the value of so-called implicit subsidies, for example, through tax exemptions or preferential tax rates. However, as there are no transactions recorded in relation to these amounts following standard national accounts principles, no estimates of the values of these flows are included in the SEEA”*<sup>11</sup>

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<sup>10</sup> ESTAT environmental subsidies and similar transfers - Guidelines 2015

<sup>11</sup> SEEA CF 2012 4.129



## Suggestion

It is therefore clear that PEDS (Potentially Environmentally Damaging Subsidies) must generally meet the requirements for subsidies and comparable transfers. However, within these subsidies and comparable transfers, we need to identify those that should be classified as "Potentially Environmentally Damaging" based on clear delimitation criteria.

For reasons of systemic consistency, it is advisable to use the definition of environmental taxes as a basis here. Accordingly, PEDS could be considered as subsidies and comparable transfers of production, use, consumption, or operation of a physical unit (or a proxy for it) of something that has a proven, specific, negative impact on the environment. This means that, like taxes, the subsidy must directly relate to a physical unit. It cannot be a general support of consumption, production or a sector.

Following this definition, capping energy prices (and having the state cover the costs beyond this cap) would be considered a PEDS. However, increasing social assistance in response to higher energy prices or distributing general financial aid for this reason would not be classified as such. Support of production would also be considered PEDS if the support is directly related to a physical unit with a negative environmental impact – e.g. extraction of resources, or if it reduces the prices of products that have such a negative effect.

## Outstanding obstacles

If it comes to sectorial allocation, it has to be discussed which sector such a "negative" subsidy or similar transfer should be allocated to. Like in taxes, again different options are thinkable. This question needs further discussion and investigation – especially to ensure consistency with physical accounts.

It must also be recognised that the assessment of PEDS as supporting potential negative environmental impacts only ever relates to the respective country. However, while they may have a negative impact on environmental use in the country where they are paid/received or where a tax is not levied<sup>12</sup> (especially if this country has a relatively high environmental standard), they may prevent an even greater impact on the environment in other countries. In particular for global environmental impacts—such as GHG emissions—a reduction in certain PEDS could even be counterproductive from a national environmental perspective. These could on a global level act like ESST.

## Tax abatements

Tax abatements are neither subsidies nor transfers. This should continue to be the case with an update of the SEEA CF.

Some tax reliefs are already implicitly considered in SEEA CF as part of the environmental taxes – they have a reducing effect on these. This means for reasons of consistency within the accounts they may not be reported twice.

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<sup>12</sup> See below

Thus, this treatment that abatements are neither subsidies nor transfers is mandatory to keep consistency within the accounts and common terminology with SNA.

However, when reporting on (financial) support with a (negative) environmental impact, it can be interesting to present certain tax reliefs together with subsidies and other transfers.

In the case of potentially environmentally harmful tax reliefs, a distinction must be made between two cases:

1. Reductions in environmental taxes for individual sectors, industries or uses could be considered tax relief if they are based on different (lower) taxation of an otherwise identical situation. The reference value should generally be the normal taxation.
2. A reduction of a non-environmentally related tax—e.g. a general sales tax—could be considered a potentially environmentally damaging tax relief if it is based on the purposes of the environmentally related taxes. This means that the tax relief has to be linked to a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment.

If the law provides for a general tax rate and then downwardly varying tax rates for individual industries, sectors or uses, the calculation of both cases is rather straight forward. Further discussion is required however, if the law does not provide for a "normal" tax rate but only for different tax rates. In this case, it is at least questionable if the highest rate can automatically be regarded as normal. Further discussions are necessary here in order to arrive at a sensible solution.

However, this view - based on possible negative environmental impacts - is only half the picture. Similar to ESST, tax relief can also be based on environmental policy motivations. These reliefs on top may (or not) still have negative environmental impacts in the same or other environmental domains.

If tax reductions that supposedly lead to negative environmental impacts are to be presented in addition to the PEDS, it is thus also necessary to discuss presenting those tax reductions that are motivated by environmental policy in addition to the ESST.

In the case of tax relief, thus, four different categories must therefore be differentiated in connection with the SEEA CF:

- Tax relief can relate to taxes that are counted as environment-related taxes - in this case, they are already implicitly included in the SEEA CF as a tax payment that has not taken place.
- They can also relate to other taxes not previously included in the SEEA CF, such as a general sales tax.

The second differentiation criterion is the intention of the tax reduction:

- Tax relief can be motivated by environmental policy (e.g. exemp-

tion from motor vehicle tax for low-emission vehicles or the exemption of GST when purchasing a heat pump)

- They can also be motivated by other economic or social policy reasons.

For the calculation of indicators such as the effective carbon rates, tax relief that does not relate to environmental taxes is particularly relevant.

A fundamental problem is the question of how to deal with tax concessions that are intended to protect the environment but at the same time have a negative impact on the same or another environmental area via an underlying physical variable. This can probably only be solved by a very detailed recording, in which tax abatements can be attributed to both directions.

## Emissions Trading Schemes

### Status

Guidance on how to handle permits for the use of the environment as a sink—such as in Emission Trading Schemes (ETSs)—can currently be found in paragraphs 4.182 - 4.189 of the SEEA CF 2012. They are currently considered a special form of energy tax. However, this does not do justice to the complexity and increasing significance of ETSs. The classification as energy tax is questionable, since ETS could also include emissions from non-energetic uses. Finally, with the international tradability of ETS, government revenues and the expenditures of greenhouse gas emitters may diverge significantly at the national level. Therefore, it is necessary to examine the topic of ETS more closely.

The cost of acquiring ETS permits—often referred to as (part of) the CO<sub>2</sub> price—is of significant environmental policy importance. Current SNA guidance is to separate ETS permits into a tax component and a securities component using a split asset approach. Although this method appears to solve many issues at first glance, it is not well suited to accounting for multinational ETSs or for permits allocated for free. In combination with the high complexity and data requirements of this method, these factors make it unsuitable for the Environmental-Economic Accounts.

To the best of our knowledge most current ETSs do not allow for the traceability of individual certificates—unlike banknotes, which have a serial number—but are instead organized more like a securities deposit system. Once sold, a certificate is no longer distinguishable from others. This makes it very difficult, as proposed in the context of the SNA reform, to determine the difference between the original purchase price on the primary market and the market value. Certificates in a depository do not show their original purchase price anymore, especially if they have already been traded multiple times.

In the case of multinational certificates, the issue arises that it is nearly impossible to determine whether all nationally issued certificates have indeed been returned for compensation of emissions in one of the participating countries. From the European Emissions Trading System, we know

that some member states on balance obtain around half of the necessary certificates to offset the emissions on their territory from abroad. We cannot assume that certificates in international systems are mostly used domestically or that imports and exports balance each other out.

Finally, the timing of accounting prescribed by the national accounts is not ideal for environmental economic accounting and its environmental policy information requirements. For these reasons (among others), we recommend that ETS permits be accounted for in the revised SEEA CF as non-produced, non-financial assets, rather than as taxes. A detailed description of the proposal on the treatment of ETSs is found in a companion paper, *Accounting for Emission Trading Schemes in SEEA* (Chambers and Kaufmanns 2024)<sup>13</sup>.

## Annex

Proposed possible structure to classify environmental taxes:

- Taxes related to the sale or purchase of energy carriers and related import taxes.
  - Taxes on carbon-based energy carriers.
    - Taxes on fossil carbon-based energy carrier (e.g. oil, coal, gas etc.).
    - Taxes on non-fossil or secondary material carbon-based energy carrier (e.g. biomass for energetic use, biogas, bioethanol, hydrotreated vegetable oils, etc.).
    - Taxes on secondary energy like electricity or produced heat.
- Taxes on the operation of facilities for using carbon-based or secondary energy carriers (excluding vehicles) depending or regardless of their actual usage (e.g. one-off operation permits, specific taxes on the output etc.).
- Transport Taxes.
  - Tax related to ownership or operation of a vehicle.
  - Taxes on transport services (like road tolls, air transport duties etc.).
- Taxes on use or extraction of natural resources and taxes on the operation of related equipment.
  - Taxes on extraction, direct use or harvest of geothermal, solar, wind, water energy or related equipment.
  - Taxes on the extraction of fossil fuels or related equipment.

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<sup>13</sup> Also presented at the 30<sup>th</sup> London Group meeting.

- Taxes on the extraction of other resources or related equipment.
- Pollution taxes.
  - Taxes on Emissions to air.
    - Taxes on GHG-Emissions from energetic use.
    - Taxes on other GHG-Emissions.
    - Taxes on other emissions to air.
  - Taxes on emissions into water.
- Other Pollution Taxes.