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STATISTICS DIVISION
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SEEA Central Framework 2028 update

Draft Guidance Note

Issue C7:

”Elaborating environmental tax abatements/reliefs”

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Questions for global consultation

1. Do you agree to include a new section (module) on tax reliefs in the SEEA CF, including a definition, scope, etc. for both environmentally motivated tax reliefs and potentially environmentally damaging tax reliefs?
2. Do you agree with the proposed definition of tax reliefs, i.e. *the reduction of, or exemption from, taxes, granted by government, to support certain production and consumption activities?*
3. Do you agree that as explicit tax reliefs (e.g. tax credits) are already recorded in ESST or PEDS these should not be recorded in the new module of tax reliefs, to avoid double counting?
4. Do you agree to include both implicit tax reliefs and ECRs, noting that in practice data for implicit tax reliefs are difficult to compile and ECRs may provide an alternative way that can represent tax reliefs by fuel and industry in an internationally harmonised way?
5. Do you have any additional comments?

1 Introduction

1. This Guidance note addresses **C7: Elaborating environmental tax abatements/reliefs**. The aim of this guidance note is to provide guidance on the treatment of issue C7 in the update of the SEEA CF.
2. Tax abatements, referred to hereafter as tax reliefs, are used by governments as a fiscal policy tool to meet environmental, social, and economic objectives, changing the price of certain goods, services or activities. There is a very broad range of interventions that can be summarised under the umbrella name of ‘tax reliefs’.
3. Tax reliefs refer to provisions within the tax system that reduce the amount of tax that would otherwise be payable under the standard tax structure. These may take the form of exemptions, reduced tax rates, tax credits, deductions, rebates, or preferential tax bases applied to particular goods, services and activities. Unlike direct subsidies, which involve explicit government expenditure and recorded financial transactions, tax reliefs operate by reducing tax liabilities and therefore lowering government revenue relative to what would be collected under the standard tax regime. In economic terms, these measures alter prices and incentives and can therefore influence production and consumption behaviour.
4. Tax reliefs can be implemented with a range of intentions and environmental impacts. In some cases, tax reliefs may be designed to fulfil an environmental purpose, while in many cases environmental effects may arise only as unintended consequences. As with explicit SNA subsidies and similar transfers, implicit tax reliefs can therefore be environmentally beneficial or potentially environmentally damaging.
5. In the context of further developing the SEEA-CF, the inclusion of tax reliefs is important to ensure that environmental-economic accounts provide a comprehensive and policy-relevant picture of fiscal instruments affecting the environment. Governments use a mix of environmental taxes, subsidies, and preferential tax treatments to influence behaviour. Where tax reliefs are excluded, the representation of fiscal policy within the SEEA-CF may be incomplete, particularly where reduced rates, exemptions, allowances or credits significantly alter effective environmental price signals.
6. Including tax reliefs in the SEEA CF would add analytical value in several important ways. First, it would improve the assessment of the overall environmental fiscal framework by allowing a clearer understanding of the net incentive structure created by taxation policy. Environmental taxes recorded in the accounts show the revenue side of environmental pricing, but do not necessarily reflect situations where certain sectors, fuels, or activities are partially or fully relieved from those taxes. Without identifying tax reliefs, the effective environmental burden across industries and households cannot be fully analysed.
7. Second, tax reliefs are directly relevant to existing SEEA-CF accounts. Environmental tax accounts already measure explicit fiscal flows. Environmental Subsidies and Similar Transfers measure explicit transactions that are beneficial to the environment. The inclusion of tax reliefs would complement these accounts by capturing implicit fiscal measures that may have comparable economic magnitude and environmental impact. This would enhance internal coherence across environmental statistics and accounts, and provide a more complete picture of government interventions affecting environmental outcomes.
8. Third, incorporating tax reliefs would strengthen policy analysis. In many countries, tax expenditures linked to energy use, transport, agriculture, or resource extraction can materially influence environmental outcomes. In some cases, these measures may counteract

environmental taxes, while in others they may support environmental objectives. Systematically identifying and classifying tax reliefs would therefore improve the ability of the SEEA-CF to inform climate, energy, and environmental policy evaluation.

9. Finally, inclusion of tax reliefs would improve transparency and comparability across countries. Differences in tax structures and preferential treatments can lead to substantial variation in effective environmental taxation, even where headline tax rates appear similar. Providing agreed definitions, scope and estimation guidance within the SEEA-CF would support more harmonised reporting and more meaningful cross-country comparisons.
10. Statistics produced and experience gathered within the statistical community over the last years, both in NSOs and in other organisations that are producing environmental-economic statistics, show that there are several aspects related to tax reliefs that need to be clarified. These aspects touch upon terminology and definition, categorisation, scope, data sources, calculation, classifications, links with other environmentally activity accounts and other flows, etc.
11. The SEEA CF currently records taxes and subsidies that involve explicit transactions between institutional units. However, it excludes the measurement of implicit fiscal interventions, such as tax reliefs or preferential tax rates, which do not involve explicit transactions¹ under the SNA principles (SEEA CF 2012). Consequently, no estimates of these fiscal flows are currently included in the SEEA CF. This is fully aligned to the SNA, which only records explicit transactions, with a few exceptions such as so-called ‘imputed transactions’, such as the owner-occupied dwelling services, which impute a rent paid and received to the household owning its residence.
12. Experience from existing statistical work, including the voluntary Eurostat on potentially environmentally damaging subsidies, suggest that in some countries implicit tax reliefs can be significantly larger in monetary value than explicit subsidies and similar transfers. This highlights the analytical importance of better understanding these fiscal measures.

2 Review of existing measurement and research

13. Tax reliefs as such are not considered in the SEEA CF 2012. However, there are existing statistics on tax reliefs being produced regularly within the statistical community both in National Statistical Offices (NSOs) and in international organisations, such as Eurostat, OECD, IEA, IMF, and UNEP, using different methods.
14. Regarding potentially environmentally damaging tax reliefs, the OECD (OECD, 2025), IEA (IEA, 2025), IMF (IMF, 2022), and UNEP (UNEP, 2019) have all developed data collections, databases, and/or reports on fossil fuel supports, many including fossil fuel tax reliefs which are a very significant category of potentially environmentally damaging tax reliefs. The different approaches applied include measuring fossil fuel tax reliefs against national tax reference rates, and measuring fossil fuel supports relative to the cost of externalities (economic costs of environmental damage) arising from fossil fuel consumption. The different methods can produce quite varied results.
15. The OECD inventory of support measures for fossil fuels contains data on individual fossil fuel supports including tax reliefs. Similar work has been carried out by NSOs in the Netherlands

¹ To be noted that some tax reliefs do involve explicit transactions as a part of the construction, when the rebate is paid after the expense has been made as a refund.

(CBS, 2024) and Ireland (CSO Ireland, 2025), for example. The Netherlands paper showed that most fossil fuel supports in the country were implicit supports. They found that there were different reference tax rates that could be used to measure some of the implicit tax reliefs, and that in certain cases this could result in differing results. Furthermore, they pointed out that the reference rates would be different again in other countries, and proposed that Effective Carbon Rates (ECRs), calculated using SEEA standards, could be a suitable indicator to allow for international comparability. Similarly, Ireland’s statistical release on Fossil Fuel Subsidies showed that most fossil fuels supports in the country were implicit measures. The reference rates used to calculate tax reliefs were shown in the report. As tax reliefs were included in the calculation of both fossil fuel and environmentally motivated supports (as part of ESST) it was possible to make a comparison between the different accounts (see Figure 1). Data on ECRs were published alongside the data on individual tax reliefs as a complementary indicator.

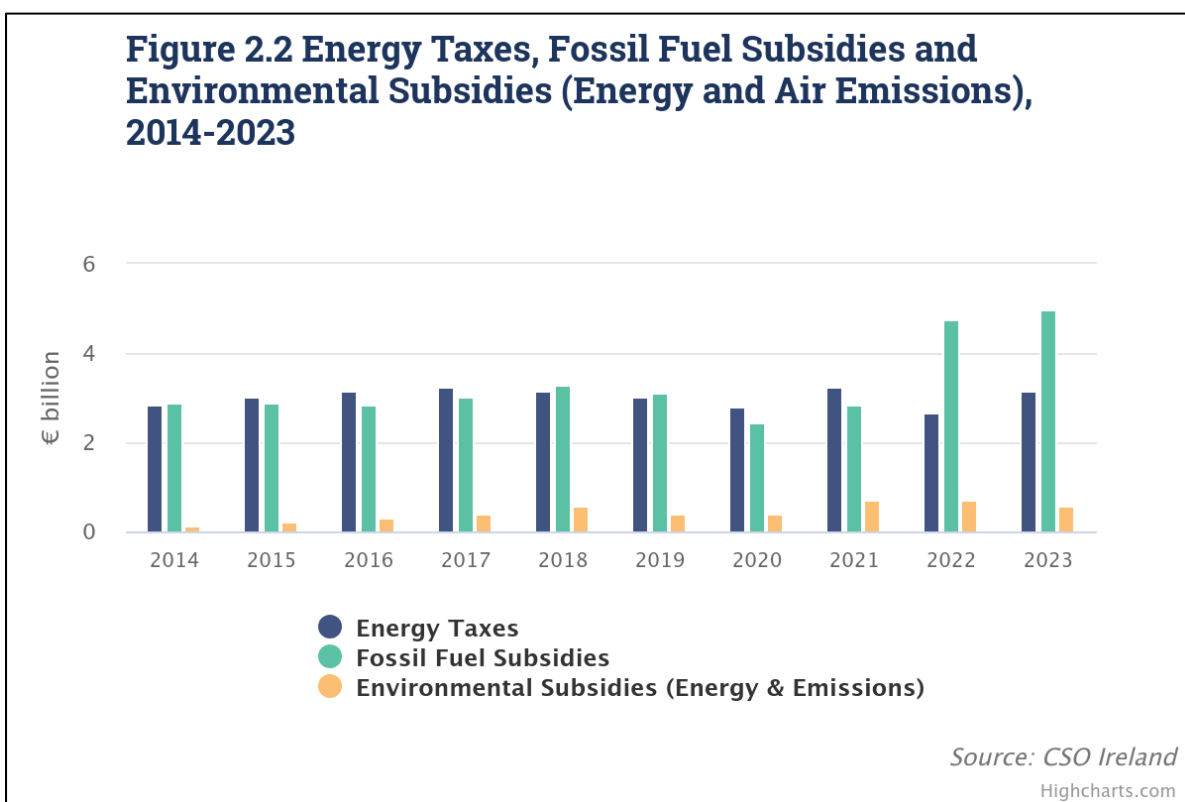


Figure 1 Comparison of data from different environmental accounts. Source: CSO Ireland

16. NSOs such as Sweden (Statistics Sweden, 2021), the Netherlands (CBS, 2024) and Ireland (CSO Ireland, 2025), have thus published statistical reports presenting data on Effective Carbon Rates (ECRs), which portray the amount of energy consumption taxes paid per tonne of carbon dioxide emissions, often using a formula taking the form of:

$$\text{Effective Carbon Rate} = \frac{\text{Energy tax paid on fossil fuels}}{\text{Carbon dioxide emissions from fossil fuels}}$$

17. The SEEA CF already contains a framework for measurement of environment taxes and air emissions by economic activity (ISIC), therefore compilation of ECRs appears a natural fit for NSOs. An ECR account is relevant because it can implicitly measure and show tax reliefs as

lower ECRs for particular sectors (see Figure 2) and can be implemented in an internationally harmonised manner which does not require tax reference rates.

Figure 5: Average ECR per aggregated sector (2008-2019)

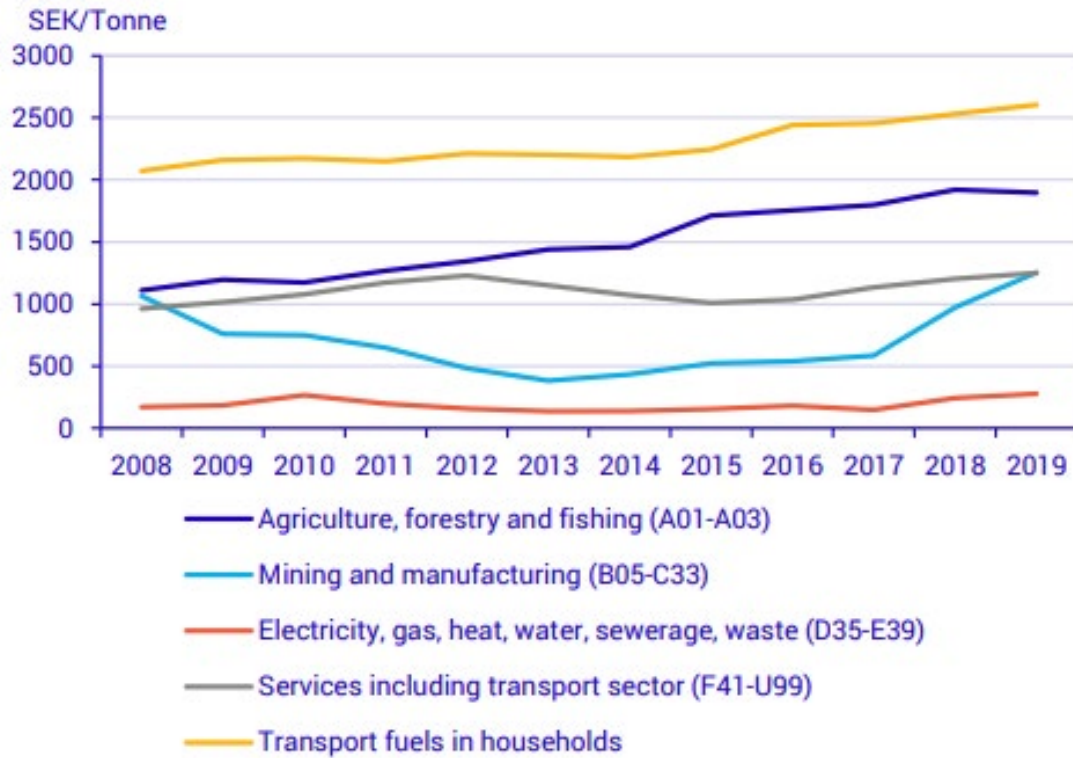


Figure 2 Example of ECRs by NACE with lower ECRs implicitly showing tax reliefs for NACE B, C, D, E. Source: Statistics Sweden, 2021

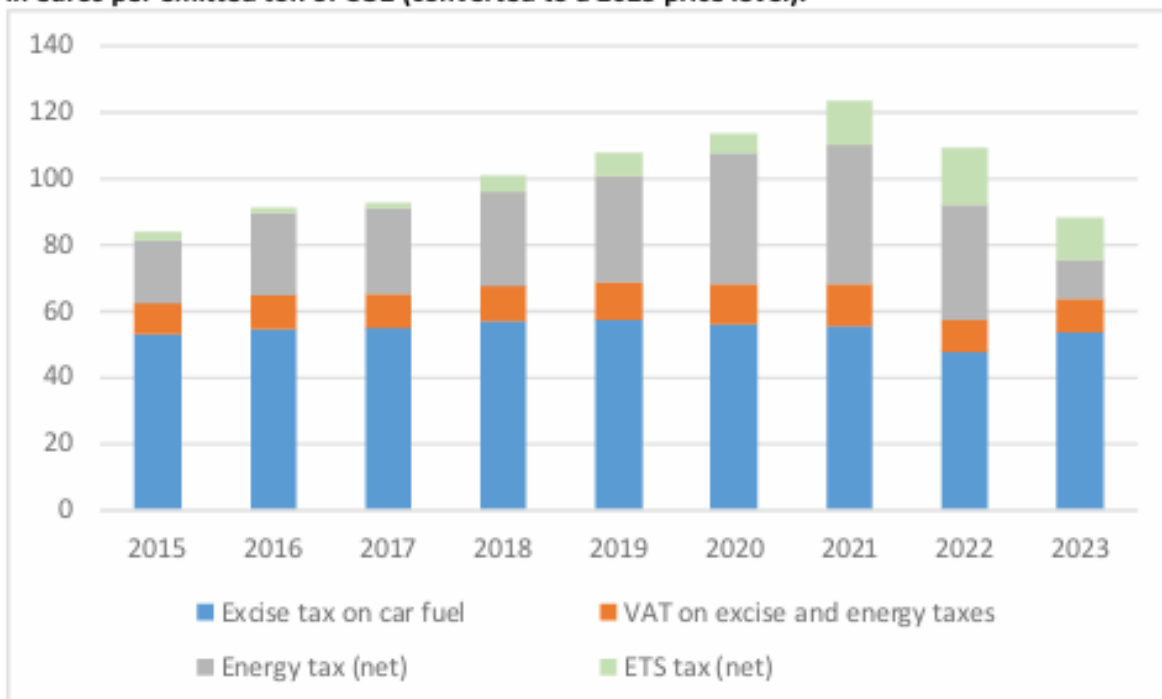
18. Effective carbon rates were first compiled by the OECD who have been producing an annual report since 2018 (OECD, 2025). At the EU level, Eurostat have been piloting a data collection on average effective carbon rate per industry (see Figure 3), using aggregated data from the environment tax and air emissions accounts, and work is currently underway to establish a common recommendation on what types of economic instrument to include.

Average ECR and emission range by institutional sector, in national currency per tonne	2018	Standard forecast consistency	Explanatory footnote	2019	Standard forecast consistency	Explanatory footnote	2020	Standard forecast consistency	Explanatory footnote	2021
Average (Corporations + households)										
Households as final consumers										
Corporations										
NACE A Agriculture, forestry and fishing										
NACE B Mining and quarrying										
NACE C Manufacturing										
NACE D Electricity, gas, steam and air conditioning supply										
NACE E Water supply, sewerage, waste management and remediation activities										
NACE F Construction										
NACE G Wholesale and retail trade; repair of motor vehicles and motorcycles										
NACE H Transportation and storage										
NACE I-U Services (except wholesale and retail trade, transportation and storage)										
Not elsewhere classified										

Figure 3 Eurostat Data Collection on Average Effective Carbon Rates. Source: Eurostat

19. The informative ECR study from the Statistics Netherlands (CBS, 2024) has recommended a way forward based on a comparison between three different studies that assess Effective Carbon Rates: one by OECD, one by Eurostat, and one by two Dutch researchers. The choice of taxes is shown to be important, and with country specific information it can be possible to include taxes that are relevant but hard to identify as fossil-relevant in an international context. The recommended method starts with the guidance already provided by Eurostat, however with some adjustments. The study suggests that an internationally harmonised tax list for ECRs would be welcome if that can be achieved. They also argue that some of the SNA recording conventions are less suitable for ECR calculations, and that SEEA needs to consider VAT as the consumers are of interest as buyers of fossil fuels, and that freely allocated ETS permits are important to consider.
20. They include the non-deductible VAT on excise taxes and energy taxes in their calculations, and they provide a modified recording of ETS related taxes and subsidies. In the Eurostat guidance, direct subsidies are not considered in the calculation, while in the Dutch calculation the market value of the freely allocated ETS permits and the government induced price compensation for gas in 2023 are also taken into account. A further difference is that the Dutch study also includes the carbon dioxide emissions from industrial processes that are also part of the ETS taxation, in addition to that of the combustion of fossil fuels that are included in the Eurostat guideline.
21. Another interesting aspect of the Dutch study is how the results are presented. They show the taxes brought within the scope of the various studies. It shows the importance of including excise tax on car fuel, energy tax on gas, ETS and VAT for the nominator in the calculation. One study included taxes on electricity, while the others did not. Thus, instead of a separate classification, the types of taxes or instruments are among the main information to understand the figures (see Figure 4).

Effective carbon rates at the level of the Dutch economy: producers and household consumers, in euros per emitted ton of CO₂ (converted to a 2023 price level).



source: the Dutch national and environmental accounts and own calculations.

The ETS figures are based on net taxes (taxes minus subsidies)

The price compensation in 2023 is subtracted from energy taxes.

Figure 4 Contribution of different taxes to ECR calculations in the Netherlands. Source: CBS Netherlands

22. It is also noted in the paper that the CO₂ emissions from international transport such as shipping and aviation remain almost untaxed. It is also reflected in the text that if all greenhouse gases would be part of the scope, then also methane, nitrous oxide would be included, and any potential tax that may be applied on emissions of these greenhouse gases.

3. Definition of Environmental Tax Relief

3.1 Terminology and Definition

23. Different terms are used in the literature and statistical practice to describe reductions in tax liabilities granted by government. The term ‘tax abatements’ is not used in the SNA or SEEA CF 2012, although it is used in the Eurostat ESST data collection. However, the term is sometimes used in a narrower sense, particularly in relation to reliefs from real estate or property taxes. For this reason, it may be preferable to use a broader and more neutral term.
24. The term ‘tax reliefs’ is used in the revised SNA (SNA25 par. 30.96) and is also acknowledged as a term in the 2022 Manual of Government deficit and debt. This terminology is therefore consistent with the national account’s framework. While the term “tax expenditures” could be another possibility and is used by the OECD, Eurostat points out in the ESST handbook that in the context of environmental accounting it may be preferable to avoid the term "expenditure," as it does not correspond to its meaning in national accounts.
25. Tax reliefs are reductions in, or exemptions from, taxes that would otherwise apply under the standard tax structure to specific sectors, activities or products. These measures are granted by government to support or influence certain production or consumption activities. By lowering tax liabilities relative to the benchmark tax system, tax reliefs reduce the amount of revenue that would otherwise be collected.
26. Tax reliefs can take different forms, such as exemptions, allowances, credits, rate reliefs, deductions and reductions, among others. Tax exemptions, deductions, and allowances are subtracted from the tax base before the tax liability is computed, while tax credits are subtracted directly from the tax liability due by the beneficiary household or corporation after the liability has been computed. Reduced tax rates may be applied to a class of taxpayers or taxable transactions. (SNA, para. 30.96). The objective of this paper is not to provide an exhaustive list of tax reliefs, particularly as there does not appear to be an internationally agreed taxonomy. However, all measures that meet the definition below should be considered relevant.
27. Relevant tax reliefs may include reliefs from taxes with an environmental tax base such as energy or transport taxes as well as reliefs from other types of tax including income tax or corporate tax, where these measure influence environmentally relevant activities.
28. In most cases, tax reliefs represent implicit transfers because they operate through the tax system by reducing liabilities rather than through explicit financial transactions. However, in certain cases, such as the case of payable tax credits, tax reliefs may involve an explicit transaction and thus may be recorded in National Accounts. Explicit tax reliefs are dealt with in Section 3.2.

Terminology recommendation: We would recommend using the term ‘tax reliefs’ instead of ‘tax abatements’. This will ensure consistency with the SNA.

Definition recommendation: We propose to define tax reliefs as *the reduction of, or exemption from, taxes, granted by government, to support certain production and consumption activities.*

3.2 Tax Reliefs in the national accounts

29. An important aspect to clarify is to what degree tax reliefs are accounted for in the national accounts, namely whether they involve explicit transactions as defined and recorded in SNA, or whether they remain outside the transaction boundary.
30. On one hand, tax reliefs can sometimes be explicit transfers. This is the case of payable tax credits, for which, according to SNA para. 30.96, any amount of the credit that exceeds the tax liability is paid to the beneficiary. While SNA does not specify the transaction category to be used for recording payable tax credits, guidance from the Eurostat Manual on Government Deficit and Debt² (MGDD, 2022 version, para. 28, page 85) recommends a few options such as subsidies (D.3), social benefits other than social transfers in kind (D.62), miscellaneous current transfers (D.75), investment grants (D.92) or other capital transfers (D.99). Payable tax credits therefore involve an explicit transaction as described.
31. On the other hand, tax reliefs are often *implicit* transfers, in that they reduce tax liabilities but do not involve explicit payments between institutional units and are therefore not recorded as transactions in the SNA.
32. While tax reliefs that are recorded in national accounts as explicit transfers, they should already appear within existing environment-economic accounts where relevant. In particular, such transactions may be recorded within ESST or PEDS where appropriate. To avoid double-counting, these measures should not be included again in any statistical framework developed for tax reliefs.
33. A framework for recording tax reliefs should be coherent with the approaches used to record explicit ESST and PEDS transactions, as well as environment taxes (ETEA). Figure 5 shows the interactions between ESST, PEDS, and ETEA accounts, and where they lie in relation to the broader SNA and SEEA frameworks.

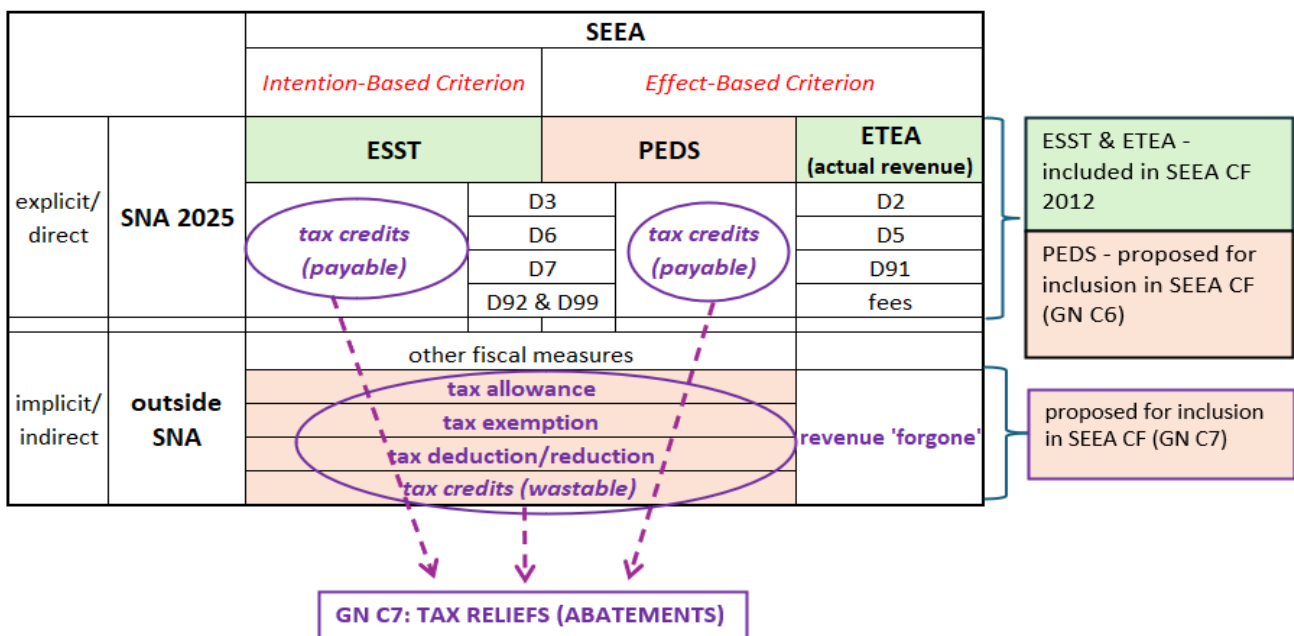


Figure 5 Tax reliefs and links with other SEEA accounts; Source. Own elaboration

² <https://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/w/ks-gq-23-002>

3.3 Environmentally motivated and environmentally damaging tax reliefs

34. Tax reliefs may have different environmental motivations and impacts. In some cases, they are introduced specifically to support environmental objectives. Examples include tax credits or tax exemptions designed to promote to invest in renewable energy technologies, energy efficiency improvements, or the adoption of low-emission vehicles.
35. In other cases, tax reliefs may be introduced for economic, social, or sectoral policy reasons, without an explicit environmental objective. However, these measures may nevertheless influence environmental outcomes. For example, reduced tax rates on certain fuels or exemptions for particular sectors may lower the effective cost of environmentally harmful activities and thereby weaken environmental price signals.
36. For SEEA, tax reliefs can broadly be classified according to their environmental impact. Some measures may support environmental policy objectives, while others may be considered potentially environmentally damaging. Identifying these measures is important for understanding the overall interaction between fiscal policy and environmental outcomes.

Environmentally motivated tax reliefs

37. Eurostat have included environmentally motivated tax reliefs for over a decade as a memorandum item in their Environmental Subsidies and Similar Transfers (ESST) data collection (Eurostat, 2025). These implicit ESST tax reliefs are identified using the primary purpose criterion and classified by environmental purpose and economic activity of the beneficiary, similarly to explicit ESST transactions.
38. Unlike explicit subsidies or transfers, these measures do not appear in government finance statistics and hence must be measured against a reference tax rate or benchmark for the environmental product or activity they are intended to support. To date there does not appear to have been a significant uptake in reporting of tax reliefs in the ESST module. Whether this is due to measurement challenges, lack of data, memorandum item status, scarcity of such measures, or other reasons, is unknown. In the cases where they are reported, they appear to represent a small proportion of environmentally motivated support measures overall but,

as shown in Figure 6, can be quite significant within specific environmental purpose categories (CSO Ireland, 2023).

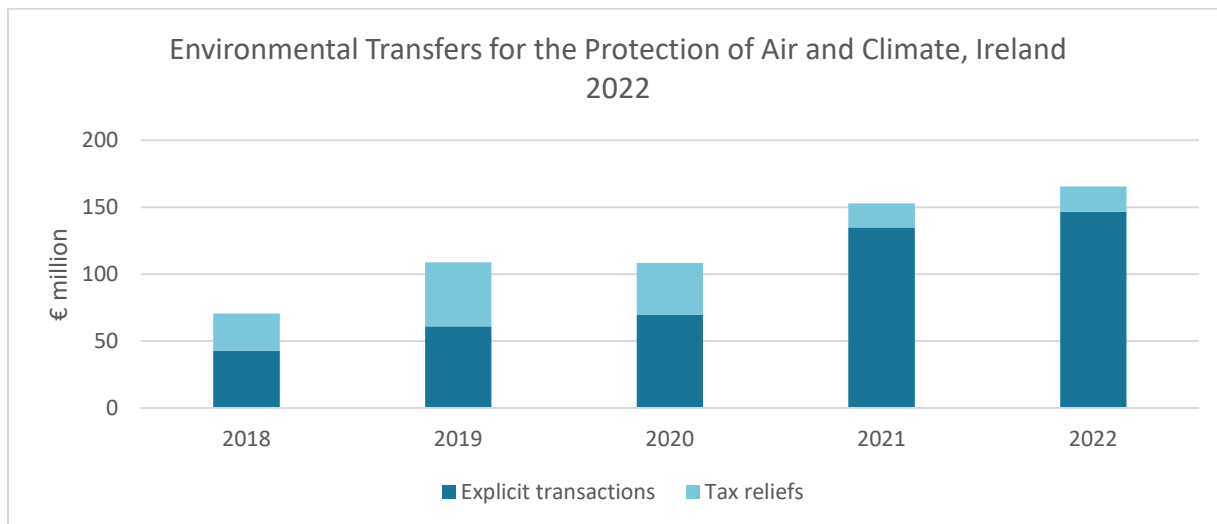


Figure 6 Example showing relative size of explicit and implicit ESST supports for protection of air and climate. Source: CSO Ireland

39. The basic principle of environmental purpose for identifying environmental transactions along with the fact that a framework for the measurement of environmental subsidies and similar transfers has already been provided in the SEEA CF 2012, is an advantage when it comes to considering environmentally motivated tax reliefs as it can be expected that these aspects of the framework should be directly applicable. Data on tax reliefs may be published by national tax agencies, while the issue of measurement of tax reliefs relative to a reference rate is addressed in this guidance note in the annex.

Environmentally damaging tax reliefs

40. In contrast, it is more challenging to identify existing research or statistical measurement of potentially environmentally damaging tax reliefs, apart from the well-documented case of fossil fuel tax reliefs. Compared with the relatively developed statistical treatment of explicit Environmental Subsidies and Similar Transfers (ESST), work on Potentially Environmentally Damaging Subsidies (PEDS) is still evolving.
41. However, the measurement of PEDS is currently being examined as part of the SEEA CF update. It is expected that the conceptual and methodological developments arising from this work will also be relevant to potentially environmentally damaging tax reliefs, helping to ensure consistency and coherence between different types of fiscal transfers considered within environmental-economic accounting.
42. Some measures related to environmentally damaging activities may be indirectly captured through indicators such as (ECRs).

3.4 Classifications

43. For SEEA, it is proposed to classify tax reliefs with existing classifications. The Classification of Environmental Purposes (CEP) can be used to classify environmentally motivated tax reliefs as these are directly linked to environmental purposes.
44. The CEP cannot be used for classifying PEDS tax reliefs as they are not based on intention but on potential to be harmful. The ETEA tax base is a good starting point here. The (potential) environmental damage is likely to be an unintended consequence of the design of the tax relief. Further argumentation on classifications for PEDS can be found in the guidance note C6.

Recommendation: Use the existing classifications: use the CEP for environmentally motivated tax reliefs and align with recommendations on PEDS from guidance note C6. Classify beneficiaries by Economic activity/ISIC and/or institutional sectors.

3.5 Relationship with existing SEEA-CF Accounts

45. The development of a framework for recording tax reliefs should not modify the existing monetary environmental accounts within the SEEA-CF. In particular, the setup for Environmental Subsidies and Similar Transfers (ESST) should remain unchanged. To ensure coherence across the environmental accounts, any framework for tax reliefs should align with the conceptual approaches already used in these accounts, including the application of the environmental purpose criterion and the related classifications.
46. Following the ESST definitions, environmentally motivated tax reliefs can therefore be understood as tax reliefs intended to support activities that protect the environment or reduce the use and extraction of natural resources. In this sense, the identification of environmentally motivated tax reliefs should follow the same environmental purpose criterion that is applied in the ESST accounts.
47. Similarly, it would be desirable that the framework currently under development for the measurement of Potentially Environmentally Damaging Subsidies (PEDS) as part of the SEEA-CF update should also apply, where relevant, to potentially environmentally damaging tax reliefs. This could include the use of list-based approaches, such as lists of environmental tax bases that may serve as a starting point for identifying potentially environmentally damaging tax reliefs, as well as consistent use of definitions, terminology and links with related environmental accounts.
48. The environmental taxes account should also remain unchanged. Environmental taxes are defined based on their tax base and continue to be recorded according to the existing SEEA methodology. Where tax reliefs relate to taxes other than environmental taxes, such as income taxes or corporate taxes, it may be useful to explicitly distinguish these measures in the statistical framework, as they may still influence environmentally relevant activities even though they do not apply directly to an environmental tax base. The treatment of VAT and VAT related tax reliefs, which are generally excluded from the environment taxes under SEEA but may still influence environmentally relevant activities, is discussed in the Annex (Tax reliefs on VAT).
49. In practice, there are many interactions between environmental taxes, environmental tax reliefs and explicit environmental transactions recorded in the accounts. The example of payable tax credits discussed above illustrates one such interaction. Another example arises in certain carbon leakage compensation schemes, where electricity-intensive industries may receive compensation for the carbon cost of emissions allowances embedded in electricity prices. In this case, emission permits are treated as an environmental tax paid by electricity generators, while the compensation payment received by electricity users is not considered a tax relief but rather an explicit subsidy that may be recorded as a potentially environmentally damaging subsidy.
50. These examples illustrate that the boundaries between environmental taxes, tax reliefs and explicit transfers can be closely related in practice. Careful conceptual and statistical treatment is therefore required to ensure that transactions are recorded consistently across the different environmental accounts within the SEEA framework.

Recommendations:

- **Environmentally motivated tax reliefs should be identified using the same primary purpose as explicit ESST transactions, and should be classified using the same environmental and economic classifications. (Note that, similarly to explicit ESST transactions, this means that some environmentally beneficial tax reliefs may be out of scope if the intended purpose of the tax relief was not environmental.)**
- **Potentially environmentally damaging tax reliefs should be identified and classified in a consistent manner to potentially environmentally damaging subsidies and similar transfers, according to the framework developed through the SEEA CF Update C6 guidance note.**

4 A framework for recording tax reliefs in the SEEA-CF

4.1 A framework for recording implicit tax reliefs

51. For the purposes of methodological coherence, it would be possible to include environmentally motivated tax reliefs and potentially environmentally damaging tax reliefs under respectively the ESST and PEDS accounts. Nonetheless, it is recommended to treat the tax reliefs as a separate account within the SEEA-CF. Such an approach would allow tax reliefs to be analysed systematically while maintaining consistency with existing environmental accounts.
52. For all tax reliefs a similar measurement method can be applied, and the national revenue forgone can be calculated as

$$\text{Revenue forgone} = \sum(\text{Quantity} \times (\text{Reference rate} - \text{Applied rate}))$$

Reference rates and other calculation details are discussed in the annex.

53. For potentially environmentally damaging tax reliefs, the forgone revenue reflects reduced taxation on potentially environmentally damaging harmful activities, while for environmentally motivated tax reliefs it represents preferential tax treatment granted to support environmental objectives.
54. The relevant sections of the SEEA that could be updated to reflect these changes are outlined here.
55. As regards the potentially environmentally damaging tax reliefs, SEEA 2012 para 4.147 already states in the context of PEDS that *“In some definitions, this measure (PEDS) also includes so-called implicit (or indirect) subsidies, such as preferential tax rates.”* Implicit tax reliefs can therefore be considered, in terms of definitions and classification principles under the umbrella of PEDS. Furthermore, the following actions could be undertaken in the update of the SEEA:

Updating SEEA para. 4.147 by explaining that some ‘potentially damaging tax credits’ could already be included in national accounts (SNA para. 30.96 -payable tax credits), and thus in PEDS

Elaborating the text for tax reliefs in the updated SEEA by building on what was already stated in the SEEA 2012 para 4.147.

56. For the environmentally motivated tax reliefs, the SEEA CF 2012, para 4.129 points out 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". In this case as well, environmentally motivated tax reliefs could be considered, in terms of definitions and classification principles, under the umbrella of ESST. As explained above, two actions could be undertaken in the update of the SEEA:

SEEA para 4.129 can be elaborated (updated) by explaining that some 'beneficial tax credits' could already be included in national accounts (SNA para. 30.96- payable tax credits), and thus in ESST.

57. The future text for tax reliefs could explain that there might be 'beneficial tax credits' that are not recorded in national accounts and thus might be more difficult to estimate). An example of an environmentally motivated tax relief from Luxemburg is an income tax credit for enterprises investing in an ecological and energy transition project³. The amount is applied before the liability is calculated, typically by using a percentage of the investment cost. If further examples from countries are available, they could be added.

Emission trading schemes - freely allocated emission permits

58. Emission trading schemes are flexible market mechanisms that establish a maximum level of pollution. They were discussed in a specific guidance note under the update process of the SNA. Currently they are described in the SNA pre-edit version under the section 'permits to use the environment as a sink'.
59. The issuance of permits is regarded as the purchase of a financial asset – accounts receivable/payable – where the payment grants the acquirer the right to emit a pre-specified quantity of emissions sometime in the future. When the company surrenders the permit, it is recorded as taxes on production. (SNA, para. 27.80). Taxes on production are part of environmental taxes which are included in SEEA (section 4.4.3).
60. A particular situation occurs for emission permits provided freely, which is of interest for environmental tax reliefs. SNA 2025 explains in para 27.81, that "given the complexity, conceptual and practical difficulties, and notwithstanding the need for imputations, compilers should preferably not record any asset/liability for freely issued emission permits and instead revalue them back to zero every time there is a transaction with an emission permit that was freely issued". Under this SNA recommendation, emission permits provided freely would be an implicit tax relief; this is consistent as well with the current practice of Eurostat which includes free emission permits under the umbrella of (implicit) potentially environmentally damaging subsidies and similar transfers.
61. There are as well current discussions in various national accounts related groups⁴ that try to deal with the recording aspects of freely allocated emission permits that might imply the possibility of a treatment which is different than the SNA 2025 recommendation. In the October 2025 meeting⁵ of the Advisory expert group on national accounts for example, it was acknowledged that "there are good arguments that could be considered for emission permits issued freely to be assigned a value or considered as current/capital transfers, it may be

³ <https://guichet.public.lu/en/entreprises/fiscalite/bonification-impot-investissement/bonification-transition-ecologique-energetique.html>

⁴ In the context of the Advisory expert group on national accounts, revision of the European System of Accounts (ESA), as well as in the context of government finance statistics

⁵ https://unstats.un.org/unsd/nationalaccount/aeg/2025/M28/M28_10_Emission_Permits.pdf

difficult to consistently assign values and countries may need to resort to imputations leading to further asymmetries. As a result, the recommendation is not to assign an asset or liability”.

62. Independently of the ongoing discussions recording treatment in national accounts of freely provided emission permits, we consider that freely allocated emission permits should be part of the tax reliefs scope. They can be calculated as the number of free permits multiplied by the price.
63. Emission permits that are recorded as taxes in the national accounts and environment tax account are very important as well in the calculation of effective carbon rates.
64. The number of used emission rights that has to be cleared is of interest. The free allocation of ETS can be recorded as a (implicit) tax relief and included in a potentially environmentally damaging tax relief table.

Recommendation: freely allocated emissions permit should be part of the tax reliefs scope. Tax revenue from emission permits should be included in the calculation of effective carbon rates.

Tax reference rates

65. Since implicit tax reliefs are not recorded as transactions within the SNA, their value must be estimated using an appropriate methodological approach. Several estimation methods have been proposed in the literature and in fiscal analysis, each reflecting different assumptions about how tax reliefs affect government revenue and economic behaviour. For the purposes of this guidance, the revenue forgone method is used as the primary approach, as it is generally the most straightforward to implement and requires the least modelling assumptions. Other estimation approaches, including the revenue gain method and the outlay equivalence method, are described in Annex for completeness. These approaches involve additional modelling of behavioural responses and fiscal effects and are therefore generally less suitable for the routine production of official statistics.

Estimation of tax reliefs using the revenue forgone approach

66. Revenue forgone due to tax reliefs is calculated using a reference rate of tax, sometimes called the benchmark. Often the standard national tax rate applied within the tax system for the particular tax and product in question is used as the reference rate.
67. There are alternative options that could be used as reference taxes, such as the maximum tax rate (e.g. the tax rate on petrol when considering fossil fuels), a national average tax rate, or an international benchmark rate (e.g. a commonly used international carbon rate). The calculated value of the tax relief can be very sensitive to the reference rate applied.
68. In some countries, data on tax reliefs are calculated and published by the national tax agency, providing a valuable data source to aid in the identification, classification, and measurement of both environmentally motivated and potentially environmentally damaging tax reliefs. For tax refunds and repayments, the tax relief is simply the amount of tax repaid to the taxpayer. Where data on tax reliefs need to be calculated, perhaps the simplest approach is to use the existing tax system to select the reference rate, as in the following examples.
69. In Ireland, electric vehicles with a market value of up to €40,000 are granted relief from Vehicle Registration Tax (VRT) of up to €5,000. The standard rate of VRT for the lowest

emission passenger vehicles is 7% of the market price. The tax agency provides the following example calculation of the amount of this environmentally motivated tax relief:

Example 1

Open Market Selling Price: €40,000

VRT calculated at 7%: €2,800

Less relief (up to a max of €5,000): €2,800

VRT Payable: €0

Figure 1 Sample calculation of VRT on electric vehicles. Source: Revenue Commissioners Ireland

70. Another example is the temporary reduction in excise tax on petrol to offset high energy prices. This potentially environmentally damaging tax relief can be calculated as the volume of petrol multiplied by the deviation from the standard rate (before the temporary reduction).
71. As a final example, jet kerosene used for commercial purposes may be exempt from excise tax while jet kerosene used for private aviation is liable for excise tax. Therefore, the exemption can be calculated as the volume of jet kerosene used for commercial purposes multiplied by the standard jet kerosene rate that applies to non-commercial use. In this last example, it is worth noting that it is also possible to include the extra revenue forgone if the highest rate in the tax system were applied to the volume of jet fuel, rather than the jet fuel rate.
72. In some cases, it is more challenging to identify a reference rate. For example, if the excise rate on a fuel is set at zero on a long-term basis, should we include this as a tax relief, and if so, how should we measure it? Situations such as this can be included if we count differential tax rates (such as the different rates applying to petrol and diesel) as tax reliefs, as we can use the rate applied to a substitutable product as the reference rate. Should cases arise where no such substitutable products were available it would be advisable to include this information in the metadata.
73. The results obtained by applying the above approach will depend on the tax rates inherent in the national tax system and it is therefore essential that data on the reference rates used should be provided along with the results for them to be interpretable. These results portray the amount of revenue forgone a state is willing to forfeit in support of environmentally motivated or potentially environmentally damaging activities, relative to the state tax system. Determining international reference rates would be a significantly more challenging task, as, while OECD/EU averages may be available for different products, it is not clear that these benchmarks would be suitable across wider geographical regions, and there may even be significant variation between members of these groups.
74. The results should be relevant to national policy makers. Data on environmental tax reliefs (both environmentally motivated and environmentally harmful) can be compared with environmental tax revenue, environmental subsidies, and potentially environmentally damaging subsidies. Thus, the addition of data on environmental tax reliefs should provide a better view of national fiscal policy instruments affecting the environment.
75. The dependence of the results on national tax systems poses a difficulty in terms of international comparability. Effective carbon rates appear to be an ideal measure to overcome this issue of requiring and determining reference tax rates. One option, pursued for example by Ireland, is to compile data on both measures. Data on tax reliefs can be useful for national

policy needs, and allow for comparisons across ESST, PEDS and ETEA accounts, while data on effective carbon rates can show comparisons across sectors, fuels and countries without the need to determine a reference tax. Effective carbon rates are discussed in more detail in the next section.

76. While some of these approaches are particularly relevant for fossil fuels, ideally the concepts in the SEEA CF should allow to develop a general approach to define reference tax rates for environmental tax reliefs that can be applied consistently across different environmental domains and not be limited to energy or carbon-related cases.

4.2 Effective Carbon Rates in the context of tax reliefs

77. A brief overview of existing measurement of Effective Carbon Rates was provided in Section 2, where it was demonstrated that effective carbon rates can be used to implicitly represent fossil fuel tax reliefs as lower ECRs for industries receiving higher amounts of tax reliefs, i.e. where tax exemptions, reduced tax rates or other preferential tax treatments lower the amount of energy tax paid on certain fuels, or by certain sectors, this will be reflected in a lower ECR. In this way, ECR can support the interpretation of fossil fuel tax reliefs without requiring national reference tax rates.
78. Effective Carbon Rates (ECRs) are usually defined as the amount of energy consumption taxes paid per tonne of carbon dioxide emissions, often using a formula taking the form of:

$$\text{Effective Carbon Rate} = \frac{\text{Energy tax paid on fossil fuels}}{\text{Carbon dioxide emissions from fossil fuels}}$$

Environment taxes in the SEEA include taxes on energy products for both transport and stationary purposes, and taxes on carbon (including tradable emission permits). From experience, these taxes are mainly excise taxes, carbon taxes, and emission permits on fossil fuel consumption. The SEEA CF suggests that a breakdown of payments by industry following the industry structure of the air emissions accounts may be relevant.

79. Therefore, as the SEEA CF contains a framework for measurement of environment taxes and air emissions by economic activity (ISIC), the idea from an NSO perspective is that data can be taken from other SEEA accounts to produce effective carbon rate statistics for different industries. The significant advantage of this approach is that internationally harmonised data are already available to build these statistics (although there are some conceptual and technical aspects that must be considered; these are outlined below).
80. The calculation and interpretation of effective carbon rates in the context of tax reliefs involves a number of methodological considerations. These include the potential inclusion of non-deductible VAT, the treatment of explicit fossil fuel transfers, the distinction between marginal and average effective carbon rates, the choice between residence and territorial principles, and the treatment of emission permits under emissions trading systems. Each of these issues may influence the interpretation of the carbon price signal faced by different sectors and therefore requires careful consideration when compiling or analysing effective carbon rate indicators. While the core methodology for calculating effective carbon rates is presented in this section, further discussion of these methodological considerations and their implications is provided in Annex
81. ECRs therefore offer a complementary perspective to potentially environmentally damaging tax reliefs. By focusing on the effective carbon price embedded in the tax system, they can

show which industries/households bear the weight of paying for carbon emissions and which industries are beneficiaries of tax reliefs. Furthermore, they can capture the contribution of different instruments to the overall carbon price; they can allow international comparisons across different tax systems; and they can reveal areas where emissions are priced at a low or zero rate.

4. Recommendations on conceptual treatments

- Recommendations: Include ECRs in the SEEA Central Framework as a method that can implicitly represent tax reliefs by fuel and industry in an internationally harmonised way.
- Recognise that an international method with central types of taxes and economic instruments is valuable, but that local taxes and extra information can be added for country analyses.
- Recognise that VAT is of importance for the pricing of fossil fuels for households.
- Recognise that the full ETS liability of companies within a given state is important to include in the analysis as it affects the price for some industries.
- Recognise that there are other greenhouse gases than carbon dioxide that can also be included in the analyses, such as methane, but that it is not clear how to do that at present.
- Recognise that it is also possible to include explicit transfers in ECRs.

An important issue is how to consider international transport emissions from aviation and shipping. The residence principle that is normally used in the SEEA both for physical and monetary calculations is being discussed in the context of the availability of tax information (or the lack of taxation) for international transports. Further reflections are needed on how to cover the taxes and emissions in the same way and what type of policy questions that are in focus. To make an adjustment for residents abroad and consider possible options for international aviation.

5. Other considerations in advancing the issue (1-2 pages)

1. If relevant, propose **indicators** (and their derivation methods) that could be derived for this issue to support reporting and analysis
2. Document **key terms and definitions** for inclusion in the SEEA CF Glossary

6. Links to other SEEA CF update issues

In taking forward work on tax reliefs, links should be made to the following SEEA CF update issues:

1. Issue A6 – Introduction of thematic accounts and strengthening the link to policy: Environmental tax reliefs are classified as tax incentives that directly impact the environment, enabling a clearer assessment of the effects of related policies. By incorporating these into the SEEA CF framework, it enhances the ability to monitor the environmental outcomes of policies. This also strengthens the connection between policy objectives and their environmental impacts, facilitating more informed decision-making and communication regarding their environmental consequences.
2. Issue A5 – Harmonization with other international classifications and updates of relevant frameworks/manuals.
3. Issue C1 – Inclusion of the Classification of Environmental Purposes (revised CEA): Could the accounting and communication of tax reliefs be improved by adopting a classification system similar to the Classification of Environmental Purposes (CEP)?
4. Issue C2 – Inclusion of the integrated framework for monetary accounts: Any integration of implicit transaction must fit with existing recording structures for explicit transactions, such as those in EGSS and EPEA.

5. Issue C3 – Extending the scope of environmental activities: The concept of environmental tax reliefs should align with other established definitions of environmentally related activities. This alignment would ensure greater consistency across various related concepts, fostering a more coherent understanding of their role in environmental policy.
6. Issue C6 – Inclusion of potentially environmentally damaging subsidies/related transfers:
As tax reliefs can have a similar effect as subsidies, the underlying classification principles of PEDS could still be applied to them. It is important to define tax reliefs in a way that aligns with the frameworks of PEDS, ESST and ETEA to maintain logical consistency and ensure a coherent approach across related concepts.

7. References

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OECD: data base

1. <https://www.oecd.org/en/topics/tax-and-the-environment.html>
2. <https://www.oecd.org/fossil-fuels/>

UN London Group:

Draft LG Paper on Environmental Taxes, Transfers (Subsidies) and Emissions Trading Schemes https://seea.un.org/sites/seea.un.org/files/kaumanns_draft_paper_environmental_taxes.pdf

CBS

[An attempt to measuring fossil fuel subsidies by way of official statistics | CBS](#)
[Effective Carbon Rates by Manufacturing Industries and Household Consumers | CBS](#)

Tax relief examples references:

Czech Republic:

1. <https://ieep.eu/wp-content/uploads/2022/12/CZ-Air-Pollution-Fee-final.pdf>
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ANNEX

a) Tax reliefs on VAT

Tax reliefs on VAT would normally be subtracted from the tax base before the tax liability is computed and would therefore not be recorded in the national accounts. VAT reliefs could be either environmentally motivated or potentially damaging for the environment; both cases are discussed further below.

Generally, VAT is excluded from environmental taxes because its tax base is not a physical unit of something that has a proven, specific negative impact on the environment, except where the VAT is calculated on a price that includes a duty or tax already determined to be an environmental tax (SEEA CF para. 4.157-4.158). Another reason why VAT was generally excluded from environmental taxes is because of estimation difficulties for quite small amounts (only VAT which is levied on an environmental tax could in theory be considered). However, VAT can also be related to environmentally damaging products. Here, tax reliefs on VAT may be quite significant.

Some examples are the reduced VAT rates applied to the supply of coal and coke and mineral oil used for heating, or applied to the supply of natural gas, LPG. In Ireland, in response to rising energy costs the VAT rate on natural gas was reduced, while the following is an example of a temporary reduction of VAT on gas in Germany, that can be seen as a tax reduction for the customers. § 28 Abs. 5 UStG, https://datenbank.nwb.de/Dokument/827178_28/.

As for environmentally motivated VAT reliefs, the Eurostat ESST handbook provides (in Annex 2) the example of a VAT exemption on the production of organic tomatoes. Other examples could be reduced VAT rates for production/import of electric cars or reduced VAT on energy efficient materials for house renovation or building.

b) Tax Reference Rates

As implicit tax reliefs are not recorded in the SNA, it is necessary to calculate them. There are different methods available to do so, including the following three commonly cited approaches:

- Revenue forgone method: this approach calculates the tax relief as the amount of tax that would be paid on the same volume of product, should the tax relief not exist. It is the most straightforward approach to apply. This method does not take into account the change in consumer behaviour that may result from eliminating the tax relief.
- Revenue gain method: this approach estimates the expected increase in government revenue if the tax relief were eliminated, taking into account changes in consumer behaviour due to the product being taxed at the higher rate. The accuracy of this method is dependent on the availability of good quality estimates of price elasticities for the relevant goods.
- Outlay equivalence method: this approach estimates the (pre-tax) government expenditure that would have been required to achieve the same (post-tax) effect as the tax relief.

Experience shows that the revenue forgone approach is the least burdensome and most straightforward to implement. The other two approaches require estimation of price elasticities, modelling of consumer behavioural effects, and modelling of the results of fiscal and budgetary interventions; hence it is unlikely that these approaches are suitable for the production of regular official statistics.

c) Effective Carbon Rates

The following conceptual and/or technical issues have been identified for further consideration.

Average versus Marginal Effective Carbon Rates

Marginal effective carbon rates provide information on the energy tax that must be paid on the next tonne of carbon dioxide emitted by a particular industry, while average effective carbon rates show the overall average amount of energy tax paid per tonne of carbon dioxide across all emissions from a particular industry. The difference is important in particular for emission permits, as the marginal ECR will include the full price of an emission permit, whereas the average rate will implicitly account for free emission permits received by the sector. Therefore, the average ECR may be a more suitable indicator for official statistics, allowing for fair sectoral comparisons.

Residence versus Territorial Principle

It might be assumed that the calculation should be done with the residential principle as an underpinning, since that is the SNA and SEEA boundary. International transport is an important user of fuels with a low taxation regime. However, taxes paid by residents abroad are not part of the environment tax account, meaning some further consideration of options for calculations to follow the residence principle as opposed to the territorial principle will be required.

Whichever approach is chosen, consistency between the physical emissions data and the monetary instruments included in the ECR is desirable.

Treatment of ETS permits

Companies may purchase emission permits via state auctions in their own country, or via other means such as state auctions abroad or directly from other companies. Only permits purchased at state auction are counted as environment tax revenue in the environment tax account. However, emissions purchased through other means are unquestionably part of the carbon price paid by companies for their emissions. Hence, it appears that a divergence between environment tax accounts and effective carbon rates may be unavoidable in the case of tradable emission permits. It may be that the full liability of companies in a given state for their emissions under the trading scheme should be included in ECR calculations, even if that amount is greater or less than the amount of government tax revenue taken at auction in the same state.

Inclusion of VAT

The ECR study from the Netherlands statistical bureau (CBS, 2024) argues that some of the SNA recording conventions are less suitable for ECR calculations, and that SEEA should consider including VAT in ECR calculations as the consumers are of interest as buyers of fossil fuels. They include the non-deductible VAT on excise taxes and energy taxes in their calculations.

Incorporating Explicit Transfers

ECRs can be extended to include explicit transfers by subtracting these from the amount of energy tax paid per industry. This approach gives a fuller picture of the explicit and implicit support provided to fossil fuel consumption in different industries. For example, if a particular sector does not benefit from much tax relief but does receive explicit fossil fuel subsidies, this information will be contained in these extended ECRs. The formula would be amended to:

$$\text{Effective Carbon Rate} = \frac{\text{Energy tax paid on fossil fuels} - \text{explicit fossil fuel transfers received}}{\text{Carbon dioxide emissions from fossil fuels}}$$

Greenhouse Gases other than carbon dioxide

ECRs are most straightforward when applied to CO₂ emissions from fossil fuels, as these are directly linked to energy taxation and emission trading systems. Extending the indicator to other greenhouse gases such as methane or nitrous oxide may also be possible, even if these emissions are not taxed.