

2008-09-21

Revision of SEEA 2003:

Issue paper: SEEA subsidies related to the environment

– Document to the London Group meeting in autumn 2008

Authors: Nancy Steinbach, Statistics Sweden: nancy.steinbach@scb.se

Viveka Palm, Statistics Sweden: viveka.palm@scb.se

Ute Roewer, Eurostat: ute.roewer@ec.europa.eu

We would like to thank the participants at the UNEP workshop on subsidies and the reflection group at Eurostat for discussions and input.

Table of contents

Table of contents	1
1 Introduction	2
2. State of the art	2
2.1 Current definitions on subsidies	2
2.2 Capital transfers.....	5
2.3 Preferential tax rates.....	5
2.4 Country experiences.....	5
2.4.1 Environmental subsidies in Sweden.....	5
2.4.2 Environmental subsidies in Denmark	6
2.4.3 Environmental subsidies in Norway	6
2.4.4 Environmental subsidies in the Netherlands	6
2.4.5 Environmental subsidies in Germany	6
2.4.6 European commission	6
3. Suggested methods.....	7
3.1 SEEA subsidies	7
3.2 Environmentally motivated subsidies	8
3.3 Potentially environmentally damaging SEEA-subsidies.....	9
3.4 Off-budget subsidies – Preferential tax treatments	11
4. Points for discussion.....	12
Literature	16
Annex	18
Comparisons against external costs for fuels	18

1 Introduction

This issue paper presents environmentally related subsidies, which are mentioned in chapter 5 *Accounting for economic activities and products related to the environment* and chapter 6 *Accounting for other environmental related transactions* of the SEEA 2003. Transfers are mentioned mainly in chapters 5 and 6 of the SEEA 2003 (such as in chapter 5.54 on forest management, chapter 5 in relation to environmental protection expenditure accounts, chapter 6 in a fiscal type of accounts (§6.33) and in relation to income/capital accounts in section E of chapter 6). It would be good to discuss these issues in one chapter in the coming standard.

The paper discusses some definitions that can be used when revising these chapters. This paper has the purpose to suggest a SEEA definition for subsidies that will both be aligned with the SNA and still cover the environmental economic aspects that are of interest for the SEEA. The main questions to be answered in this paper are what items seen as subsidies are to be included and how to define 'related to environment'.

Environmental subsidies are mentioned several times in chapters 5 and 6 in the SEEA 2003, but not specifically defined. However, the environmentally motivated subsidies are partly covered by the definitions of the public environmental protection expenditure statistics (EPE).

In the field of subsidies, regardless if it is environmentally motivated (EM) or potentially environmentally damaging (PED), the need for some internationally comparable data sets is very apparent. There is a further need to standardize definitions of environmentally related subsidies that can open up for a statistical approach, leading to time series that are comparable between nations. In particular, it is important to be clear on what type of subsidies that can be identified within the SNA and the SEEA system, as compared to the user needs. This issue may also include the suggestions for terminology that can ease the use of accounts data for institutions that are used to other definitions of subsidies.

2. State of the art

2.1 Current definitions on subsidies

The OECD and WTO are examples of institutions that study subsidies, and have suggested their own definitions. The expertise and knowledge of these institutions is of great value for understanding the issue and what types of analyses are conducted. These user needs should preferably be translated to a plan of data requirements for data providers to try and match. None of these organisations have regular collections of data series that can be used for new studies in the area. It is not always easy to understand the differences between the different definitions, and how it translates into different data sets. Still, we will mention some of them here, to get a flavour of what is intended to be covered by the term.

From the OECD a subsidy is defined as '*any measure that keeps prices for consumers below market levels, or for producers above market levels, or that reduces costs for consumers and producers*' (OECD, 1998).

The World Trade Organisation definition of subsidies contains three basic elements (WTO, 1994):

- a financial contribution, including direct transfers of funds (e.g. grants, loans, and equity infusion) and potential direct transfers of funds or liabilities (e.g. loan guarantees). A financial contribution also exists where government revenue that is otherwise due is forgone or not collected (e.g. fiscal incentives such as tax credits); where a government provides goods or

services other than general infrastructure, or purchases goods; or where a government entrusts or directs a private body to carry out these functions;

- the financial contribution must be made by a government or any public body, including sub-national governments and public bodies such as State-owned companies;
- it must confer a benefit.

To be more concrete about what are the main cash flows that are of interest, we turn to the literature that has measured environmental subsidies, with energy as the main focus. In *Energy subsidies* (UNEP, 2004) the following transfers or mechanisms are considered: Direct transfers to producers and households, public R&D, preferential tax treatments, price controls and loans. Other mechanisms mentioned are trade restrictions and infrastructure.

The SNA can be expected to cover the direct transfers to industries, to public authorities and to households. However, only the transfers to industry would be labelled subsidies in the SNA. The SEEA thus need to extend to encompass also public authorities and households in the SEEA subsidy definition.

The preferential tax treatments, at least for fuels, can be visualised with data from the SEEA, by comparing how different products or emissions are taxed. The other mechanisms, trade restrictions and loans and insurance guarantees, will not be covered in this paper.

In the SNA 93¹ subsidies are included in the primary distribution of income accounts (chapter 7, section D3). The income account consists of two accounts: the generation of income account and the allocation of primary income account. The primary allocation of income account show how primary incomes are distributed among institutional units and sectors. This account includes compensation of employees, taxes on production and on imports, subsidies, operating surplus or mixed income, and property income.

The meaning of a subsidy in the SNA is very specific, as defined below. In order to get closer to what the users of environmentally related subsidy data would want, it will therefore be necessary to create a SEEA-subsidy package combining this information with other parts of the SNA, notably with capital transfers and transfers to households.

When it comes to defining what a **subsidy** is, the SNA1993 states in section D.3:

*§7.71 Subsidies are current unrequited payments that government units, including non-resident government units, make **to enterprises** on the basis of the levels of their production activities or the quantities or values of the goods or services which they produce, sell or import. They are receivable by resident producers or importers. In the case of resident producers they may be designed to influence their levels of production, the prices at which their outputs are sold or the remuneration of the institutional units engaged in production.*

*§7.72. Subsidies are not payable to final consumers, and **current transfers that governments make directly to households as consumers are treated as social benefits**. Subsidies also **do not include grants** that governments may make to enterprises in order to finance their capital formation, or compensate them for damage to their capital assets, such grants being treated as capital transfers*

(...)

§7.78 Other subsidies on products.

¹ <http://unstats.un.org/unsd/sna1993/toclev8.asp?L1=7&L2=4>

Other subsidies on products consist of subsidies on goods or services produced as the outputs of resident enterprises that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. The most common types are the following:

(a) Subsidies on products used domestically: these consist of subsidies payable to resident enterprises in respect of their outputs which are used or consumed within the economic territory;

*(b) **Losses of government trading organizations:** these consist of the losses incurred by government trading organizations whose function is to buy and sell the products of resident enterprises. When such organizations incur losses as a matter of deliberate government economic or social policy by selling at lower prices than those at which they purchased the goods, **the difference between the purchase and the selling prices should be treated as a subsidy.** Entries to the inventories of goods held by such organizations are valued at the purchasers' prices paid by the trading organizations and the subsidies recorded at the time the goods are sold;*

(c) Subsidies to public corporations and quasi-corporations: these consist of regular transfers paid to public corporations and quasi-corporations which are intended to compensate for persistent losses - i.e., negative operating surpluses - which they incur on their productive activities as a result of charging prices which are lower than their average costs of production as a matter of deliberate government economic and social policy. In order to calculate the basic prices of the outputs of such enterprises, it will usually be necessary to assume a uniform ad valorem implicit rate of subsidy on those outputs determined by the size of the subsidy as a percentage of the value of sales plus subsidy.

The definition in §7.72, stating that ‘current transfers that governments make directly to households as consumers are treated as social benefits’, may not be helpful for the users of the SEEA. See chapter on suggested methods below, where this is suggested to be included.

The SEEA 2003 refers to the definition of System of National Accounts 1993 (SNA) subsidies on production. The SEEA presents environmental protection expenditure accounts (EPEA) type environmental² subsidies in the income/capital accounts: Table 6.3 in SEEA, divided into Environmental subsidies and Non-environmental subsidies (the rest).

SERIEE gives guidance on the motive being the selection criteria (Eurostat, 2007, page 83, specific transfers). The so-called Joint questionnaire, a biennial survey from OECD/Eurostat is adapted to this definition.

(...)

§7.79b *Other subsidies on production:*

Subsidies to reduce pollution: these consist of subsidies intended to cover some or all of the costs of additional processing undertaken to reduce or eliminate the discharge of pollutants into the environment.

² Environmental subsidy is equivalent to what we term environmentally motivated subsidy

2.2 Capital transfers

In discussions with the broader public, that is, with researchers and national or international agencies, the terminologies for subsidies are not within the limits of the SNA-definition for subsidies. Often, investment grants are included, which in the SNA are placed elsewhere in the system compared with subsidies.

Investment grants are included in the capital account (chapter 10) of the SNA, that is, the accumulation accounts and balance sheets. These form a group of accounts that are concerned with the values of the assets owned by institutional units or sectors, and their liabilities §10.1. The capital account includes gross capital formation, consumption of fixed capital and capital transfers (in which investment grants are included).

Investment grants D.92 §10.137

Investment grants consist of capital transfers in cash or in kind made by governments to other resident or non-resident institutional units to finance all or part of the costs of their acquiring fixed assets. The recipients are obliged to use investment grants received in cash for purposes of gross fixed capital formation, and the grants are often tied to specific investment projects, such as large construction projects. If the investment project continues over a long period of time, an investment grant in cash may be paid in instalments. Payments of instalments continue to be classified as capital transfers even though they may be recorded in a succession of different accounting periods.

To conclude, the state of the art points to a need for SEEA users to complement the SNA-subsidy definition with several other items in the SNA.

2.3 Preferential tax rates

In some countries, for reasons such as preventing fuel poverty, the tax rates can be lower for fossil fuels than other products. In the SNA, differentiated tax rates are used as a part of the calculations of the GDP. However, the differing tax treatments are not explicitly shown as results from the national accounts. Preferential tax treatments can be used both as EMS, such as tax reductions for bio fuels, and as PEDS, such as tax/VAT reductions of fossil fuels for social reasons.

The tax exemptions are not explicitly mentioned in SEEA 2003. Instead, they are shown as the visual difference, as percentages of the country total, e.g. between the energy taxation by industry and their use of energy (SEEA 2003 page 479).

2.4 Country experiences

2.4.1 Environmental subsidies in Sweden

In Sweden, the environmental accounts have worked on subsidies several years (SCB, 2000; SCB, 2003; SCB, 2005 and SCB, 2007). The definitions on what is to be regarded as an environmental or a potentially damaging subsidy have been tested and discussed with users. The work has been reported in the regular publication series, in articles (OECD, 2006; Palm and Larsson, 2007) and on the web-site.

The work on environmentally motivated subsidies is a part of official environmental accounts statistics. For potentially environmentally damaging subsidies, several definitions have been tested in cooperation with the Swedish EPA. The most recent report, assessing the EMS and

PEDS in the state budget relied on emission intensities above the country mean as criteria for selecting PEDS.

The EPA has reported on the size of the indirect subsidies that preferential tax treatment is giving rise to (NV, 2003 and NV, 2005).

2.4.2 Environmental subsidies in Denmark

In Denmark, data on environmental subsidies are provided yearly in the environmental accounts. Statistics Denmark offers a time series from 1997 to 2005 on environmental subsidies on their web (<http://www.statbank.dk/mreg4t>). They cover what we here call environmentally motivated subsidies, as well as subsidies to public transport.

2.4.3 Environmental subsidies in Norway

Norway has conducted some studies on environmentally motivated subsidies SSB, 2005; within the framework of SEEA.

The environmental ministry has published a study on the environmentally motivated transfers in the state budget (Norwegian ministry of environment, 1994). Recently the finance ministry commissioned a study of damaging subsidies, which could be a base for a quantitative estimation (Norwegian Ministry of Finance, 2007).

2.4.4 Environmental subsidies in the Netherlands

Netherlands statistical bureau are currently working on a report on subsidies (Pers com, Cur Graveland). Prime focus lies on the environmentally motivated subsidies, but there is some interest for measuring potentially damaging subsidies too. A distinction is made between direct and indirect subsidies. Investment grants are conceptually part of the indirect subsidies, but have limited importance these days in the Netherlands. In the future, the environmental subsidies are to be distributed to the different industries.

2.4.5 Environmental subsidies in Germany

In Germany, the Central Government has been reporting yearly in detail on the size and extent of subsidies (among others coal subsidies) since the 1960-ies.

2.4.6 European commission

The European Commission is about to produce a roadmap that identifies environmentally harmful subsidies, sector by sector, as requested by the 2006 EU Sustainable Development Strategy. The road map is planned to be published in 2008 and is requested to contain specific measures on phasing out those subsidies that are considered to be environmentally harmful. Earlier assessments of the situation has been reported (IEEP, 2007), with some quantifications based mainly on EEA, IEA and OECD reports.

The European Commission has a yearly data collection on state aid since 2004, which covers some types of subsidies, but not a major part.

3. Suggested methods

3.1 SEEA subsidies

The starting point is to add on more items from the SNA to form the SEEA subsidies. By adding several variables of the SNA that are related to the environment a better overview is given to government activities. The suggestion includes more transfers than the ordinary subsidy definition of the SEEA. This is due to the fact that also transfers to households, to public authorities and to international receivers are of interest for the analysts of environmentally related subsidies.

The transactions that are visible in the accounting framework and in government budgets are termed “on-budget”. In the table below, we outline the accounting identities that are planned to be part of the SEEA subsidies.

A. The SEEA subsidies are formed by adding the SNA-subsidies, the transfers to public authorities and to households, and to also include the capital transfers. Both on-budget and off-budget items are of interest to cover.

Discussion: .In order to capture the more general scope of subsidies that users are discussing, like e.g. the OECD definition ‘any measure that keeps prices for consumers below market level’, the transfers to public authorities and households must also be considered. The off-budget items are specifically mentioned in the WTO definition: ‘A financial contribution also exists where government revenue that is otherwise due is forgone or not collected’.

The definitions that constitute what part of ordinary transactions that are related to environment can be constructed in several ways. Two main points of departure are to understand what is done in order to promote environmental activities (the active decisions to use subsidies as environmental policy instruments) and what is being done to promote other goals but that has non-wanted environmentally damaging consequences (like subsidising mining of coal or purchases of fossil fuels). A third category will be the transfers that are neither environmentally motivated, nor given to environmentally intensive activities.

This means finding reference values for what activities are regarded as better, worse or neutral (or at least less easy to distinguish along these lines).

Subsidies can be categorised in several ways. In relation to environment-economic assessments there are environmentally related subsidies and general subsidies.

We will divide the subsidies into two categories; on-budget and off-budget (See Table 1). For the subsidies recorded on-budget there is further subdivision in current transfers and capital transfers (investments). These are assumed to be part of the SEEA standard. For the off-budget subsidies there are two categories; the preferential tax treatments and an external cost reference value estimate. These are assumed to be part of Volume two of the SEEA.

The external costs are not suggested to be part of official statistics or thought to be included in the standard. However, for the sake of clarity, we maintain this category in the discussion here. It will make it possible to discuss what type of official data that the users can obtain to make such estimates. A step-wise approach is recommended whereby countries interested in these types of assessment test the modules suggested here. Hopefully, these activities can take

place parallel to the process of writing the SEEA standard, with the help of interested people in the reflection group that Eurostat has created³.

Table 1. Main categories of environmentally related SEEA subsidies.

On-budget subsidies

Current transfers to industry, public authority and households

Environmentally motivated (EM)

Potentially environmentally damaging (PED)

Capital transfers to industry, public authority and households

Environmentally motivated (EM)

Potentially environmentally damaging (PED)

Off-budget subsidies

Preferential tax treatments

Environmentally motivated (EM)

Potentially environmentally damaging (PED)

External cost reference

The environmentally related subsidies are divided into environmentally motivated (EM) subsidies and potentially environmentally damaging (PED) subsidies. First we consider the direct “on- budget” transfers of environmentally motivated subsidies, potentially environmentally damaging subsidies and general subsidies. They are called on-budget, as they are recorded in the national accounts and in the state budget.

Indirect subsidies, so called off-budget subsidies, such as preferential tax treatments will also be discussed. These subsidies are not directly shown in the national accounts, and have to be calculated.

B. Environmentally related subsidies are suggested to be divided into two groups

Discussion: The revised SEEA needs to address subsidies that are environmentally related at large, both the environmentally motivated and those which are motivated by other criteria but have a potentially environmentally damaging character.

B1. It is proposed that the environmentally related subsidies are divided into two groups: The environmentally motivated subsidies and the potentially environmentally damaging subsidies.

3.2 Environmentally motivated subsidies

C. Selection criteria for environmental economic SEEA-subsidies is suggested to be the motive

Discussion: A subsidy given by a government to an enterprise is clearly defined. Depending on the selection criteria to single out the environment part of the identification the results can differ. §7.79 identify subsidies *undertaken* to reduce or eliminate the discharge. From this paragraph it can be deduced that it was the *motive behind* the subsidy that was of importance

³ Eurostat created in 2008 a reflection group on subsidies that aims to assist Eurostat in planning the future work in this area. The project description is available on circa:
http://circa.europa.eu/Public/irc/dsis/pip/library?l=/environmental_expenditur/environmental_statitisti&vm=detailed&sb=Title

when allocating the expenditure to the accounting framework and not the *results* of the actions.

There are proposals to use, similar as for taxes a sort of “tax-base” for subsidies. This suggestion can work in the cases where subsidies are being paid for fossil fuels, but this type of subsidy will not be part of a package of environmentally motivated subsidies. However, as taxes are selected on a physical value and environmentally motivated subsidies are not this criteria falls short.

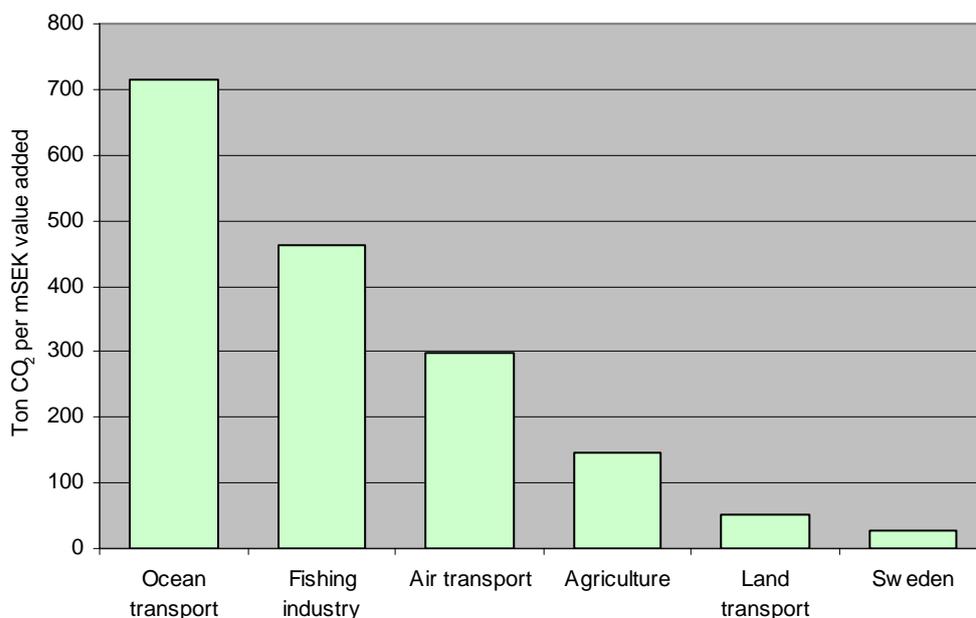
C1. It is proposed that it is the motive behind the subsidy that is taken as the criteria for the inclusion of a subsidy or investment grant as an environmental economic policy instrument.

3.3 Potentially environmentally damaging SEEA-subsidies

There is a demand for a follow up of the amount of potentially damaging subsidies. These economic instruments are designed for other motives, but as an indirect effect they change the incitements for environmentally intensive activities. The criteria for potentially environmentally damaging SEEA subsidies need to be set. We will propose criteria for assessing this in an objective way. The method is similar to what was tested in a study of the environmentally related transfers from the Swedish state budget.

In the study, the transfers in the budget were divided according to which industries were receiving them. Then, the emission intensity (CO₂/value added) for the industries in question was compared to the mean intensity for Sweden⁴. For those industries that had emission intensities above the mean, the transfers were analysed in more detail. The industries in question were e.g. agriculture and transport (Figure 1). If the transfers were directed to activities that could be seen to increase the activity in the industry (and thus the emissions), it was labelled potentially environmentally damaging.

Figure 1. Emission intensive industries above the Swedish mean. MIR2008:1



⁴ Denmark suggests that emission/production value could be a better choice. This could be tested in future studies. For the result of the study, this would not change the types of subsidies included.

In countries where price controls of certain products are used, it is suggested that the transfers to the authority or organisation that pay the resulting difference should also be regarded as a potentially environmentally damaging subsidy, particularly if the product is a fuel. It is suggested that the same list that defines the tax bases for environmental taxes is used and be included on-budget. Here, the first analysis would thus be to find the yearly lump sum paid out to control the price for a fuel. Further analysis of SEEA data could make it possible to assess how that subsidy is distributed over the industry, public authorities and households.

Table 2. 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)

D. Selection criteria for Potentially Environmentally Damaging SEEA-subsidies is suggested to be the list on tax bases from the environmental tax area, combined with an intensity criteria for different industry support.

Discussion: The selection criteria need to be established for selecting appropriate items of subsidies/investment grants. It is necessary to identify criteria for what is to be considered as potentially environmentally damaging. In order to make international reporting possible the criteria need to be based on a limited amount of data.

D1. It is proposed that the emission intensity of an industry, as compared to the country mean, or to a region mean, is used to single out what subsidies should be regarded a PEDS. When the state supports products through the transfers to another authority, the same list that defines what is regarded as an environmental tax is suggested to be used.

3.4 Off-budget subsidies – Preferential tax treatments

Through preferential tax treatments the costs for industry and households to use for example different types of fuels or products can be influenced. This type of support is also a type of policy instrument. When comparing between countries, the differences in uses of environmental taxes is apparent. This means that the external costs associated with using environmentally intensive products, such as fossil fuels, are sometimes partly covered and sometimes not at all accounted for.

E. Preferential tax treatments are calculated and reported separately as off-budget SEEA subsidies

Discussion: Preferential tax treatments are an important off-budget support to economic activities. The SEEA has possibilities to combine the information on taxes with the information on resource use and emissions, and thus to create information about these economic instruments in a harmonised way. This item needs to be tested in international studies, and so is suggested to be part of Volume 2 of the SEEA.

E1. It is recommended that the country make an estimate of the emission quantity and the financial size of the tax exemptions.

E2. It is proposed that to calculate the estimates two reference levels are used. One would be a country specific reference. The other would be a recommended internationally agreed reference, in order to be able to make comparisons between countries.

The OECD/EEA data base on economic instruments list different preferential tax treatments for countries, but actual estimates on the sizes of these subsidies in emission quantities or in financial terms are lacking.

Several ministries in countries and regions bring out reports on tax exemptions (e.g. Canada and the EU). This material can be used to calculate the size of the subsidies as compared to the reference tax.

The tax rates on fuels set by the finance ministry can be expressed in several ways, by kWh, by tonnes or cubic metres. In order to make an assessment it is necessary to have a common denominator and we suggest that Euro/kWh is used for international comparison. (In some cases the comparison could also be based on a particular emission, such as global warming potentials, depending on what policy is assessed.) The European countries have the highest tax rates for fuels, while still not being at the rates suggested by external cost estimates. Europe also has a common reporting of environmental taxes. Therefore, the Euro seems to be a good currency to take as a common standard. In general, the suggestion is to first make a national comparison against the highest tax rate in Euro/ kWh in the nation.

Then for international comparisons some other measures need to be distinguished. Here more work needs to be conducted in comparison between countries. Is the comparison to be made against current prices or purchase power parities rather than tax levels? It is necessary to very clearly state the questions that are intended to be answered by analysing these items together with other statistics. The main questions could be how large are the differences between the state support to different types of fuels. Will these differences have consequences for the

environment, the economy or for the poor people that were different from the intended policy? Are there lessons to be learned that could give a more efficient governance to achieve the political goals? It is evident that sector policy can bring about unintended consequences and these data would be of importance to combat climate change, economic development and poverty in a coherent international effort.

4. Points for discussion

The major shortcoming today is the lack of internationally comparable and available data on the transfers that are driving forces for the environmental problems. The issue on subsidies is a topic that is discussed in many international organisations. The lack of common definitions and information hampers negotiations and analyses in the field. This is an area where the SEEA is particularly well suited to bring forward some reliable definitions and comparable data.

As environmental pressure can be expressed in many ways, we are faced with the dilemma to find criteria that can be used in many countries and so will not be very data-demanding, but that will allow coverage of the sectors that are of most concern. A step-wise approach is recommended. If CO₂ can be the first criteria used, then gradually other criteria such as land use or use of chemicals could be included as the data become available.

In the preparation of this paper, the wish to set the definitions on the grounds of a full *impact analysis* has been raised. However, such analysis will need valuations that are likely to be difficult for statistical bureaus to use as parts of official statistics. Instead, the suggestions here will be based on more pragmatic solutions, using the data at hand in the SEEA as well as the written material from the budget process.

The selection criteria for finding the environmental economic policy subsidies have been the motive of the government as main stated driver for a subsidy or transfer. Thus, transfer to farmers for keeping meadows with production practices that maintain biodiversity, is an example of such transfers. Other can be government expenditure for R&D that is allocated for wind power. As many subsidies have more than one purpose, and often used to support a region or an activity in general terms, this can seem like a difficult criteria to use. However, it makes it possible to show how subsidies are used as economic steering instruments in the environmental policy.

Subsidies are common economic instruments, and to discuss them only in terms of being damaging in general is probably not going to help the collection of data. By presenting different subsidies in some groups helps the non-specialists to get a grasp of the situation and makes international comparison easier. *The motivation itself is not an assessment of the impact, but a statement of the reported intention of the state.* A transfer can be labelled both as environmentally motivated and as a potentially environmentally damaging subsidy. The categories are not mutually exclusive. Thus, it is possible for the users to argue for more optimal subsidy schemes or other more suiting economic instruments, based on separate assessments.

The users can take the resulting subsidies and make the impact analysis with environmental pressure data from the SEEA or from other statistics, e.g. social statistics. Based on their valuations and assumptions there will then be possibilities to assess the usefulness of the subsidies at hand.

We have also learned from the discussions in preparing this paper that the users need to have a transparency in the reporting of the subsidies. Thus, the table suggested at the end of this paper is aimed at summarising the outcome and boundaries of the SEEA subsidies. For the users, it will be important to be able to have underlying information on what items used in the preparation of the tables.

Another strong recommendation from the user community is to be clear in the communication that the on-budget subsidies are not the total amount of subsidies in a country, but that the off-budget part is often at the same size or larger.

As is shown above, the SNA covers many of the mechanisms that are of interest. With the extra data available in the SEEA, some of the indirect subsidies can also be assessed. As a new and possible interesting feature in the environmentally related subsidy discussion, the separation between current transfers and capital transfers can also be made.

A. The SEEA subsidies are formed by adding the SNA-subsidies, the transfers to public authorities and to households, and to also include the capital transfers. Both on-budget and off-budget items are of interest to cover.

Discussion: In order to capture the more general scope of subsidies that users are discussing, like e.g. the OECD definition ‘any measure that keeps prices for consumers below market level’, the transfers to public authorities and households must also be considered. The off-budget items are specifically mentioned in the WTO definition: ‘A financial contribution also exists where government revenue that is otherwise due is forgone or not collected’.

B. Environmentally related subsidies are suggested to be divided into two groups

Discussion: The revised SEEA needs to address subsidies that are environmentally related at large, both the environmentally motivated that are part of environmental policy and those transfers that have a potentially environmentally damaging character.

B1. It is proposed that the environmentally related subsidies are divided into two groups: The environmentally motivated subsidies and the potentially environmentally damaging subsidies.

C. Selection criteria for environmental policy SEEA-subsidies is suggested to be the motive

Discussion: A subsidy given by a government to an enterprise is clearly defined. Depending on the selection criteria to single out the environment part of the identification the results can differ. §7.79 identify subsidies *undertaken* to reduce or eliminate the discharge. From this paragraph it can be deducted that it was the *motive behind* the subsidy that was of importance when allocating the expenditure to the accounting framework and not the *results* of the actions.

There are proposals to use, similar as for taxes a sort of “tax-base” for subsidies. However, as to our knowledge, the environmental policy subsidies are not based on physical values this criterion falls short.

C1. It is proposed that it is the motive behind the subsidy that is taken as the criteria for the inclusion of a subsidy or investment grant as part of environmental policies.

D. Selection criteria for Potentially Environmentally Damaging SEEA-subsidies is suggested to be the list on tax bases from the environmental tax area, combined with an intensity criteria for different industry support.

Discussion: The selection criteria need to be established for selecting appropriate items of subsidies/investment grants. It is necessary to identify criteria for what is to be considered as potentially environmentally damaging. In order to make international reporting possible the criteria need to be based on a limited amount of data.

D1. It is proposed that the emission intensity of an industry, as compared to the country mean, or to a region mean, is used to single out what subsidies should be regarded a PEDS. For payments from the government to price controlled products, the same list that defines what is regarded as an environmental tax is suggested to be used.

E. Preferential tax treatments are calculated and reported separately as off-budget SEEA subsidies

Discussion: Preferential tax treatments are an important off-budget support to economic activities. The SEEA has possibilities to combine the information on taxes with the information on resource use and emissions, and thus to create information about these economic instruments in a harmonised way. This item need to be tested in international studies, and so is suggested to be part of Volume 2 of the SEEA.

E1. It is recommended that the country make an estimate of the emission quantity and the financial size of the tax exemptions.

E2. It is proposed that to calculate the estimates two reference levels are used. One would be a country specific reference. The other would be a recommended internationally agreed reference, in order to be able to make comparisons between countries.

F. Data for the calculation of external costs are provided and reported separately to streamline the estimation of off-budget SEEA-subsidies. Work in progress.

F1. It is proposed that a standard reference value be used to provide data for estimating the external costs of the use of energy in transport and different countries. As a start the ExternE values could be used. In the longer time perspective the statistical community should agree on a methodology to estimate the external costs in a harmonised way.

Figure 3. **Tentative table for SEEA subsidy reporting**

Suggested table for SEEA subsidy reporting, in monetary units. Example of nace/isic groups

NACE and final demand categories	Agriculture, fishing, forestry	Industry	Energy	Transport	Public expenditure	Private consumption
A. On-budget						
Current transfers						
-EM						
-PED						
-G						
Capital transfers						
-EM						
-PED						
-G						
Total EM SEEA on-budget subsidies						
Total PED SEEA on-budget subsidies						
Total G SEEA on-budget subsidies						
B. Off-budget						
Preferential tax treatments						
-EM						
-PED						
(External cost reference value estimate)						
-PED						

EM: Environmentally motivated, PED: Potentially environmentally damaging, G: General: Other transfers, nor EM nor PED.

Current transfers: Subsidies (D.3), other transfers and Social transfers in kind Ch 8 §D.63 §899.

Current transfers consist of all transfers that are not transfers of capital; they directly affect the level of disposable income and should influence the consumption of goods or services.

Capital transfers: Investment grants

Literature

Azar, C. and Sterner, T. [1996], "Discounting and distributional considerations in the context of global warming," *Ecological Economics* 19, 169-184.

EEA 2005. Market based instruments for environmental policy in Europe. EEA Technical report No 8/2005

EEA 2007 Size, structure and distribution of transport subsidies in Europe. EEA Technical report No 3/2007

Eurostat 1994. SERIEE 1994.

Eurostat 2001. Environmental taxes – a statistical guide.

Eurostat 2002. SERIEE – Environmental Protection Expenditure Accounts – a compilation guide.

Eurostat 2007. Environmental expenditure statistics – General government and specialised producers data collection handbook.

Fankhauser as cited in SOU 1996:117, Expertrapporter från skatteväxlings kommittén IEEP, 2007. Reforming environmentally harmful subsidies.

Istat 2007. The Classification of Resource Use and Management Activities and expenditure – CRUMA. Developed by Istat consistently with CEPA2000 for the Resource Use and Management Expenditure Accounts of SERIEE. Carolina Ardi, Federico Falcitelli.

OECD 1998. Improving the environment through reducing subsidies, Part I: Summary and conclusions.

OECD 2006.

http://www.oecd.org/document/1/0,3343,en_2649_37425_36566913_1_1_1_37425,00.html

Palm V and Larsson M, 2007. Economic instruments and the environmental accounts. *Ecological Economics*, Volume 61, issue 4, pp 648-692

SCB, 2005. Public environmental protection expenditures and subsidies in Sweden

<http://www.scb.se/templates/PlanerPublicerat/ViewInfo.aspx?publobjid=4281>

SCB 2003. MIR2003:4 Environmental subsidies - a review of subsidies in Sweden between 1993 and 2000

<http://www.scb.se/templates/PlanerPublicerat/ViewInfo.aspx?publobjid=1898>

SCB, 2000. MIR2000:3 Miljöskatter och miljöskadliga subventioner

<http://www.scb.se/templates/PlanerPublicerat/ViewInfo.aspx?publobjid=1887>

SCB, 2007. MIR2007:2 Miljöekonomiska indikatorer i statsbudgeten 1995-2006

<http://www.scb.se/templates/PlanerPublicerat/ViewInfo.aspx?publobjid=7059>

NV, 2003. Rapport 5333. Ekonomiska styrmedel inom miljöområdet – en sammanställning.

NV, 2005. Miljöskadliga subventioner en förstudie.

SSB, 2005; .Pilot studies for the development of environmental accounting: Norwegian Economic and Environmental Accounts (NOREEA) Project 2005.

Norwegian ministry of environment, 1994. Grönbok, 1994. Miljötiltak I statsbudsjettet. Miljöverndepartementet.

Statistics Denmark 2006. Integrated Environmental and Economic Accounts for Tradeable Carbon Dioxide Emission Permits.

UN. Research Agenda – a preliminary consolidated list of issues. ESA/STAT/AC.117. UNSD for the UNCEEA meeting of 22-23 June 2006.

UN. Update of the 1993 SNA – Issue No. 35 Issue paper for the meeting of the AEG, July 2005 Tax revenues and tax credits. SNA/M1.05/07.

UN. Tax revenues, uncollectible taxes and tax credits. Recommendations from the AEG 2005-09-30

UN et al. 1993. System of National Accounts.

WTO 1994. Agreement on Subsidies and Countervailing Measures, Article 1.

Annex

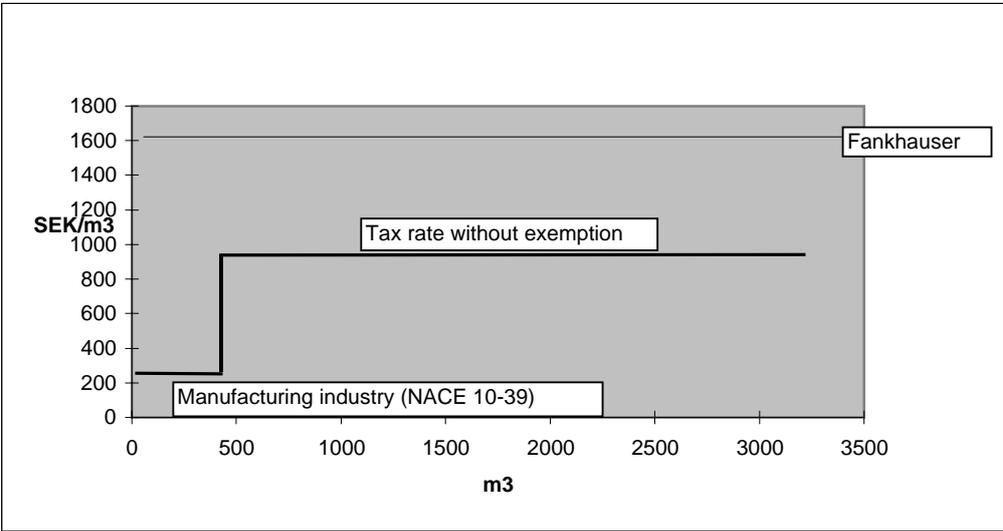
Comparisons against external costs for fuels

This is yet another category of subsidy estimation. The method outlined is based on one of the first Swedish report made on environmental subsidies. It is part of the annex as it is foreseen that more work has to be made to suggest an internationally comparable method.

For regions like the EU that have an explicit policy to include the external costs, such as environmental damage from air pollution in the price of commodities, this estimate is of interest. External cost estimates are not standard statistics, and the values calculated vary depending on what types of damages are included and what assumptions are used for rents. The fuel use, and the price policy that drives its development, is a crucial point for most if not all the environmental issues. Therefore, we will concentrate on fuels here, even though expansion to other areas could also be of interest, given that there is data available.

The main reason for including such an estimate, or rather to specifically point out what official data can be used in the process to obtain such an estimate, would be to high-light that today no country has included the external costs in their price policies other than in theory. This is in itself a subsidy to the economic activities. The European commission has valued the socio-economic effects of energy-related activities in a project named ExternE. (In Euro cent per kWh for EU 15)⁵. These values could be a possible recommendation for international comparisons, as proxies for external cost estimates.

Figure 4. Model of different tax norms for carbon dioxide tax on domestic fuel oil, 1993



Source: MIR 2003.

We may take domestic fuel oil in Sweden as an example. In estimating tax subsidies, the tax rate for sectors other than manufacturing has often been used as the tax norm. In 1993, this was SEK 920 / m3, a figure based on the carbon content of the fuel. All industries of the economy that paid a lower rate of tax were considered to receive a tax subsidy. Manufacturing, mining and quarrying (NACE 10-37) had a tax subsidy, since they paid only a

⁵ <http://www.externe.info/externpr.pdf>

quarter of 920 (SEK 230 / m³). Figure 4 shows how many cubic meters of fuel oil that was highly taxed and how much was taxed at a low rate.

Since the carbon dioxide tax is an environmental tax, it ought to reflect the external costs that emissions give rise to, so as to satisfy the “polluter pays principle”. Estimates of external costs of CO₂ emissions has been made e.g. by S. Fankhauser, among others (We use it because it is of the same size as the tax rates and thus easy to distinguish in the table). If Fankhauser’s estimate of the costs were to serve as the norm, all industries of the economy, including private consumers, would be in a receipt of a large tax subsidy. There is also a Swedish estimate, produced by C. Azar and T. Sterner, the result of which differs significantly from this estimates. In fact, it differs from the 1993 tax rate of SEK 920 / m³ by a factor of about ten (see Table 3), which means that in order to cover the external costs that can arise as a result of carbon dioxide emissions, the tax on domestic fuel oil should have been SEK 10 635 / m³.

The difference between the estimates is due primarily to the choice of discounting factors, the valuation of the welfare loss that can arise in poor regions and the fact that Azar and Sterner’s calculations are based on a more highly developed model of the carbon cycle. In this context it is also worth adding that Fankhauser’s estimates have been heavily criticised for their choice of discounting factors and for the individual assumptions underlying the model.

Table 3. Estimates of the external environmental costs from carbon dioxide emissions.

	SEK/kg CO ₂	SEK/m ³ gas oil
Azar C., Sterner, T.	3.70	10 635
Fankhauser	0.57	1 638
Tax rate (1993)	0.32	920

Azar and Sterner estimated the external environmental costs at between SEK 2.26 and SEK 5.13 / kg of carbon dioxide. The value given in Table 3 is an estimated average.

The reason why the different estimates of environmental costs vary so widely is the high degree of uncertainty that exists in this area. On the basis of the knowledge available now, it is difficult to assess the marginal cost to the national economy of carbon dioxide emissions.

As is evident from the discussion above, the estimated amounts of tax anomalies vary greatly depending on which norm is used.

F. Data for the calculation of external costs are provided and reported separately to streamline the estimation of off-budget SEEA-subsidies. Work in progress

F1. It is proposed that a standard reference value be used to provide data for estimating the external costs of the use of energy in transport and different countries. As a start the ExternE values could be used. In the longer time perspective the statistical community should agree on a methodology to estimate the external costs in a harmonised way.