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Public environmental protection expenditures and subsidies in Sweden

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Preface

This report has been prepared on commission from EUROSTAT, which supports and coordinates the development of environmental statistics in the EU Member States. The European Commission through DG Environment has contributed financially to the project. Annika Mårtensson and Maja Larsson have carried out the work and are responsible for the contents of the report. The authors would like to give thanks to Viveka Palm who has contributed to chapter 4. We would also like to thank those authorities who have contributed with data as well as valuable thoughts and comments.

In 1993, Statistics Sweden, the National Institute of Economic Research and the Swedish Environmental Protection Agency were instructed by the Government to prepare a study covering the physical links between the economy, the environment and natural resources, the monetary reflection of these relations, and the state of the environment. The aim of the work on environmental accounts at Statistics Sweden is to develop and maintain a system of physical accounts that are linked to the production and consumption activities described in the national accounts. In practice this means developing and maintaining a system of environmental and natural resource statistics linked to the industry, product and sector categories used in the national accounts, thus forming a satellite system of accounts around the national accounts.

According to the UN, a system of environmental accounts should in principle cover[1]:

• Flows of materials through the economy, e.g. energy and chemicals, together with the emissions and waste to which these flows give rise. Within the EU, many countries have opted to use the NAMEA system[2] to describe these flows.
• Economic variables that are already included in the national accounts but are of obvious environmental interest, such as investments and expenditure in the area of environmental protection, environment-related taxes and subsidies, and environmental classification of activities and the employment associated with them.
• Natural resources: Environmental accounts should make it possible to describe stocks and changes in stocks of selected finite or renewable resources. Environmental accounts should deal both with questions related to the monetary valuation of this natural capital and qualitative aspects that do not have any market or other defined monetary value, e.g. the value of outdoor life and biodiversity.

Statistics Sweden, February 2006

[1] The SEEA handbook can be downloaded at http://unstats.un.org/unsd/envAccounting/seea2003.pdf
[2] NAMEA stands for National Accounting Matrix including Environmental Accounts. In principle this is a Social Accounting Matrix (SAM) supplemented by environmental accounts data on, e.g., emissions to air and waste, linked to the Use and Supply Matrices that a SAM is constructed around. Just as a SAM is a way of presenting national accounts data, NAMEA is a way of presenting environmental accounts data.

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Summary

The present project intends to develop the methods of collecting data for both environmental protection expenditures (EPE) of the public sector and environmentally motivated subsidies in Sweden. Only expenditures financed directly by the Swedish Government are included (not including financing by for example EU). However, expenditures paid outside of Sweden are included, such as for example environmental aid.

The definition of EPE consists of all expenditures for domestic activities for environmental protection and it includes all goods and services aimed for protecting the environment. The definition of environmental subsidies says, in accordance with OECD's database on economic instruments[3], that it is the original motive that determines if the subsidy is environmentally motivated.

For public EPE a number of different sources have been used to compile data. The main sources are the Results of the Government budget and the survey for municipal accounts. Data from the Government budget has been supplemented by data and information from annual reports and a small survey to central authorities. Information is gathered about amount of expenditure, type of expenditure, COFOG[4] and receiving authority. All expenditures have been categorized to the environmental domains of CEPA[5].

The total public EPE in Sweden were about EUR 2 164 million in 2004. That was about 0.8 per cent of GDP. The environmental domains with the largest public EPE are wastewater management and waste. Together these two domains account for 56% of total expenditures. Looking at type of expenditures, current expenditures dominate with 74% out of the total. The largest part of the investments is aimed at wastewater management and is mostly appearing within municipalities. Due to the responsibility of treatment of wastewater and waste, the largest contributing sector to public environmental expenditures is the municipality sector.

The largest group of environmentally motivated subsidies is the resource-related subsidies, followed by the energy-related and emission-reducing subsidies. The total amount of environmentally motivated subsidies in Sweden was about EUR 570 million in 2004. That was about 1 per cent of the total subsidies/transfers in Sweden and 24 per cent of the total public EPE in Sweden. Of this total, about 25 per cent was SNA subsidies (subsidies as defined in the system of national accounts); the remaining 75 per cent was "other subsidies".

The definition of a subsidy used in the SNA is too narrow for the purpose of collecting environmental subsidies and therefore other subsidies have also been gathered. In Sweden many environmental subsidies are paid as investment subsidies, which are not included in the SNA definition and therefore fall under the category "other subsidies". Only identifying SNA subsidies is therefore not satisfactory in Sweden's case. Moreover, the relationship between SNA subsidies and "other

[3] http://www2.oecd.org/ecoinst/queries
[4] National accounts system of classification of expenditure by purpose
[5] Environmental Protection Activities and Expenditure (CEPA-2000)

subsidies” may differ among countries, depending on how the country chooses to give out subsidies. Therefore a comparison between countries ought to be based on a wider definition of subsidy in order to also identify the country’s share of “other subsidies” in addition to SNA subsidies. The comparison among countries on just SNA subsidies could otherwise be misleading as well as irrelevant.

In the future it is recommended to use the Government budget from the Swedish National Financial Management Authority (ESV) as the main source for compiling both public EPE and environmental subsidies. Data from municipal accounts and annual reports should also complement this compilation.

1 Introduction

The SEEA (System of Integrated Economic and Environment Accounting) pictures the links between the economy and the environment[6]. One of the aspects is how much capital is devoted to environmental protection measures.

1.1 Background

In making it possible to identify the units that bear the costs of environmental protection measures (enterprises, households or general Government) and to determine the amount of transfers (subsidies, taxes etc), the basis for an analysis of the *polluter-pays-principle* is provided. This project is a further step to a broader basis of information in this direction. There is an interest in and need for data, in Sweden and internationally, on public-funded subsidies as well as on the public sectors' environmental protection expenditures (EPE).

At Statistics Sweden, EPE for industry have been collected since 1997. The survey regarding EPE for industry is considered to be of high quality and now further steps towards developing Environmental Protection Expenditures Accounts (EPEA) can be taken. In 1997 the report "Adaptation of Swedish data on environmental protection in the public sector to the SERIEE system"[7] was published. The present project intends to collect more recent environmental protection (EP) data of the public sector.

Included in the public sector's EPE are environmentally motivated subsidies. These subsidies comprise money paid from the Government with a clear purpose to improve the environment. The public EPE cover all expenditures given for this purpose. Environmentally motivated subsidies only cover the Government expenditures given as subsidies, and not things like salaries or research in the ministries or authorities. The term environmentally motivated subsidies is defined as the money actually transferred to someone else with an environmental purpose. Both variables are important to measure.

In 2003 Statistics Sweden carried out a project looking at the direct subsidies in Sweden that promote the environment in relation to total subsidies. The starting point for compiling data was the national accounts subsidy data, used in the calculation of GDP. The project in 2003 showed the need of complementing the national accounts subsidy data with for example investment subsidies and environmental aid data in order to make the data useful for environmental policy issues. The present report therefore develops the method further in order to capture more subsidies using one single source.

1.1.1 Subsidies as a policy tool

In this context, subsidies are transfer payments from Government to producers, individuals, organisations, non-profit-making associations, municipalities and county

[6] The SEEA handbook can be downloaded at http://unstats.un.org/unsd/envAccounting/seea2003.pdf
[7] Johansson, 1997, *Adaptation of Swedish data on environmental protection in the public sector to the SERIEE system*

councils as well as to EU countries and international activities. Broadly speaking, a subsidy keeps prices below the market price by giving financial support.

There are many signals showing the increasing interest in environmentally motivated subsidies as a policy instrument today, which also creates a need for good quality data in the area, as well as for internationally comparable definitions. The OECD and European Environment Agency have developed a database on economic instruments where environmentally motivated subsidies, among other instruments, are included[8]. Examples of environmental subsidies being attractive instruments can be taken from work by several international organisations. For example, in the IISD (International Institute for Sustainable Development) and the UNEP (United Nations Environmental Programme) handbook for trade, it states that it may make sense for Governments to subsidise the development and dissemination of solar technologies as alternatives to fossil fuels since this could lower emissions of greenhouse gases[9]. If environmental costs are factored in, such subsidies actually move relative prices closer to their true level since the environmental cost of technologies giving rise to fossil fuels is much higher.

The WTO (World Trade Organisation) also recognises that some subsidies are desirable, and has provided an exception in the Agreement on Subsidies and Countervailing Measures that allows for certain subsidies to be paid to enterprises to meet new environmental regulations (up to 20 per cent of the costs of a one-time expenditure) [10]. In addition, a number of proposals for WTO rules have been made to allow subsidies to encourage the spread of environmentally sound technologies. These subsidies, among others, are protected since they are considered extremely unlikely to cause adverse effects or because they are considered to be of particular value and should not be discouraged. By giving subsidies for a specific environmental purpose, the risk for inefficiency and misuse of resources can be decreased. These subsidies may be beneficial when they encourage producers, such as companies or farmers, to take action that is environmentally beneficial to the community as a whole and not simply to the producers themselves.

A subsidy does, when introduced, change the marginal cost of a good or service and can therefore change its price. One result of an environmentally motivated subsidy could be that it becomes more economically viable to clean or protect the environment. This could motivate enterprises to invest in environmentally friendly technology or individuals to change heating systems to a system resulting in less emission.

1.2 Sweden's public sector

In Sweden there are three democratically elected levels of Government, all with their own powers and responsibilities: the Riksdag (Swedish Parliament) at national level, county administration boards at regional level and municipalities at local level.

[8] The database can be found at: http://www2.oecd.org/ecoinst/queries/index.htm
[9] IISD & UNEP, 2000, *Environment and trade – a handbook.*
[10] *Goods: rules on trade remedies*, WTO. Training package on *www.wto.org*.

Sweden is made up of 290 municipalities. They have a significant degree of autonomy and administrate local matters such as lower and upper secondary education, pre-school, elderly care, roads and water, waste and energy. Municipalities also issue various kinds of licenses such as building permits or licenses to sell alcohol on premises. Municipalities also play an active role in promoting local business development schemes, tourism and cultural activities.

County councils administrate matters that are too costly to handle at municipal level. There are 21 county councils and regions. Their chief purpose is to manage all public health and medical care services in Sweden. In addition to these tasks, county councils share with municipalities the task of running the public transport services in each county. County councils also conduct activities to promote regional growth and development and provide support to businesses and the region's tourism and cultural activities.

A county administration board is a central authority at regional level that coordinates the various interests around the country and promotes issues in the county's interest. It is a service authority, an appeal instance and also has a supervisory role in several areas. County administration boards ensure that the national goals established by central Government are implemented at county level. There are 21 county administration boards – one for each county. The county administration boards' responsibility includes civil preparedness and rescue services, nature conservation, environmental care, regional development, hunting, fishing, social planning, communications, culture and social services.

In Sweden there are around 320 central committees, offices, authorities and state-owned companies that are controlled by the Government and which break down into various ministries. These authorities implement the decisions made by the Swedish Parliament (Riksdag) and the Government. Government authorities are autonomous in that they act on their own initiative within the guidelines drawn up by the Government through budget line directions.

1.3 Objective of the study

The objective of this study is to further develop:
- the methods for collecting data on environmental protection expenditures (EPE) for the public sector
- the methods for collecting data on environmentally motivated subsidies, including policy-relevant environmental subsidies not included in the SNA-definition, e.g. investment subsidies and environmental aid.

The objective is also to:
- provide a smaller international outlook on data availability and methods used.

1.4 Definitions

In order to identify the public environmental expenditures and environmental subsidies that are of particular importance for the environment, definitions are

crucial. The whole idea with an accounting system is based on common definitions in order to enhance international and national comparisons.

1.4.1 Public expenditures

The European System for the Collection of Economic information on the Environment (SERIEE)[11] sets out the conceptual framework for a monetary description of environmental protection activities. The manual was published by Eurostat in 1994. After this a compilation guide for Environmental Protection Expenditure Accounts (EPEA) was designed to help compilers in practical construction of expenditure accounts. The main objective of EPEA is to assess the actual expenditures for EP made by the total economy. The definition of environment protection expenditures (EPE) is that they include all expenditures for domestic activities for environmental protection and they describe all goods and services aimed at protecting the environment.

EPE estimates are collected to help analyse the impact of economic and social policy on the environment, and to provide an indication of economic responses to environmental policies and regulations. They can also enable a calculation of the contribution of the environment industry towards Gross Domestic Product (GDP).

The Classification of Environmental Protection Activities and Expenditure (CEPA-2000) is designed to classify activities, products and actual expenditures and transfers for EP. CEPA is designed to classify transactions and activities whose primary purpose is EP. The management of natural resources (e.g. water supply) and the prevention of natural hazards (landslides, floods etc) are not included in CEPA.

The level 1 structure of CEPA consists of nine classes, seven of which are known as environmental domains. The classes of CEPA are presented in table 1.1 below. Classification should be made according to the main purpose. Multi-purpose actions, activities and expenditures that address several CEPA classes should be divided into these classes.

The structure of the CEPA classification has been used as a framework in the present project.

Table 1.1 CEPA 2000 classes: first digit classification of environmental protection activities

1. Protection of ambient air and climate
2. Wastewater management
3. Waste management
4. Protection and remediation of soil, groundwater and surface water
5. Noise and vibration abatement
6. Protection of biodiversity and landscape
7. Protection against radiation
8. Research and development
9. Other environmental protection activities

[11] Eurostat and European Commission, 2002, SERIEE, *Environmental Protection Expenditure Accounts – Compilation Guide - Methods and nomenclatures*, Luxembourg

1.4.2 Subsidies

In order to define environmental subsidies you first need to define what a subsidy is. It is also relevant to define indirect and direct subsidies. The next step is to define subsidies that can be seen as promoting or damaging to the environment.

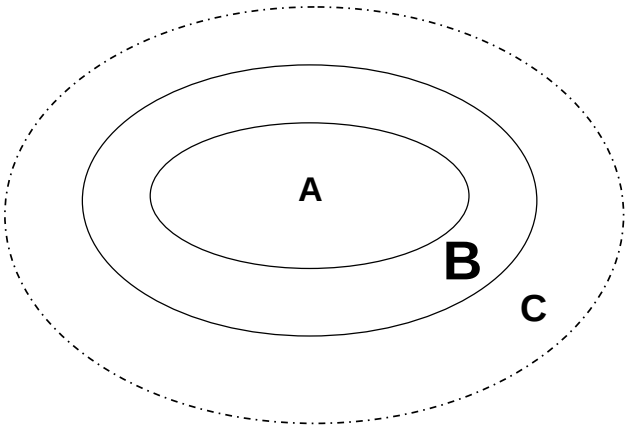
1.4.2.1 Subsidies

Broadly speaking, a subsidy keeps prices below the market price by giving financial support. But there is no universally accepted definition of a subsidy. Instead, there are several definitions of what a subsidy is depending on the viewpoint and purpose of the analysis. All people who use the term, national account statisticians, trade negotiators, environmental economists and the general public, use different definitions[12].

Definitions are important, particularly if the results are to be compared with something else, such as another country or another sector. In order to explain how this report defines a subsidy, three different levels of subsidies will be discussed below *(see Figure 1.1)*. The level system indicates that every higher level includes more parts in the definition of subsidies. In other words, level B includes the subsidies included in level A and level C includes the subsidies included in level B.

This report uses the definition of level B as a subsidy. Level A can be comparable to the definition of a subsidy used in the system of national accounts (SNA). The level B definition is slightly broader, also including support not included in the SNA definition of a subsidy. (Throughout the present report it is possible to discern the SNA subsidies from the B level.) Level C is yet a wider definition of a subsidy, including several types of support and effects not possible to find data for in this project.

Figure 1.1 Illustration of different levels of a subsidy. (Level B used in present report!)



[12] Cox, Anthony, 2004, *Synthesis report on environmentally harmful subsidies*

Level A - subsidies in the System of National Accounts (SNA subsidies)
A subsidy included in level A only covers Governmental financed transfers and only those to producers in the economy. A subsidy is defined by the European System of Accounts (ESA 1995 §4.30) as:

"…current unrequited payments from Government to producers with the objective of influencing their levels of production, their prices or the remuneration of the factors of production".

In this SNA definition of a subsidy, some forms of payments are excluded, for example;
• Capital transfers, such as investment subsidies (D.92[13])
• Current transfers from the Government to households in their role as consumers (D.75)

This makes the definition one of the narrowest used by economists, in that it covers only budgetary payments and only those to producers. This implies that transfers such as investment subsidies or support paid from Government to the county administrative boards will not be included. Nor are subsidies given to activities in other countries included.

Level B - Subsidy definition in the Swedish environmental accounts (including SNA subsidies)
A subsidy included in level B still only covers Governmental financed transfers, as in level A, but to many more recipients in the economy. This additional subsidy information (that is except SNA subsidies) is included in the national accounts, but not in the label "subsidy". The SNA definition is therefore the starting point, but other national accounts data *not* defined as subsidies today in the national accounts are also included.

Included in level B are for example:
- investment subsidies (labelled capital transfers in SNA)
- subsidies, both SNA and for investment, paid to households (labelled current transfers in SNA)
- subsidies, both SNA and for investment, paid to municipalities, organisations, EU countries etc. (*see more about recipients in chapter 2*)

In this context, subsidies are thus payments from Government to producers, individuals, organisations, non-profit-making associations, municipalities and county councils as well as to EU countries and international activities. Included in definition B are transfer payments with the purpose to be used both in the production and for investment. The definition of a subsidy used by the environmental accounts in Sweden is therefore broader than the one used in the national accounts.

[13] Denomination in the national accounts. D stands for distributive transactions in the system of national accounts. The first number, for example 9, stands for a capital transfer Together with a second number each form of capital transfer can be discerned, for example 2 stand for an investment subsidy (D.92). (D.3 stands for a subsidy.)

Level C – Yet wider definitions of a subsidy (not used in report)
Level C includes everything else that could be regarded as a subsidy outside of level A and B. In the literature the definition sometimes goes as far as to include the effects of markets having "wrong" prices due to lack of Government regulations that would require producers to bear the true costs[14]. Concerning data collection these wide definitions would be very difficult to use. The reason why there are so many definitions of a subsidy is due to the different kinds of studies that are carried out, all with different purposes. For example, a study carried out in the fishing sector may have different focus than a study for example in the energy sector, due to different kinds of subsidies paid out.

Included in the much wider level C, but not in level B, are:
• Government interventions that affect trade, regardless of whether they involve financial transfers, that can potentially reduce costs and/or increase revenues of producers in the short-term.
• tax benefits, loans and loan guarantees.

1.4.2.2 Indirect and direct subsidies

Subsidies can be classified as direct and indirect subsidies. An indirect subsidy does not have the same given purpose of *directly* influencing the level of production, prices or remuneration of the factors of production. An example of an indirect subsidy is a tax subsidy. Tax subsidies are exceptions allowed by the tax legislation relative to a normal rate of taxation[15]. These tax subsidies can be seen as an alternative to direct subsidies but there may be problems in defining what the normal tax rate would be.

As mentioned above, indirect subsidies (i.e. tax subsidies) are not included in the definition used in this report. However, tax subsidies have a large impact on the environment. Nevertheless, they have mostly been discussed regarding environmentally harmful subsidies and not for subsidies with a positive effect on the environment.

1.4.2.3 Environmental subsidies - the impact on the environment vs. the purpose of the subsidy

An environmental subsidy has the purpose of giving incentives for more environmentally friendly actions. There are mainly two different alternatives for a definition of an environmental subsidy, either focusing on the effect of it or focusing on the motive behind the subsidy. Denmark uses the definition "*In order to be an environmental subsidy, it has to reduce the use of one or more physical units that have a proven specific negative impact on the environment*". The OECD, on the other hand, focuses on the subsidy's motive in their database on economic instruments, and therefore names the subsidy "environmentally motivated subsidy". With regard to the difficulty in proving a subsidy's positive environmental effect, the Swedish approach has concentrated on the "environmentally motivated subsidies".

[14] FAO, 2000, *Report of the expert consultation on economic incentives and responsible fisheries* Can be downloaded at :
http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/004/X9143E/x9143e09.htm
[15] For more information about tax subsidies, see for example SCB 2000:3.

According to the OECD definition, it is the original motive of the subsidy that determines whether or not the subsidy is an environmentally motivated subsidy.

Subsidies have been classified into either environmentally motivated or not environmentally motivated in this project. If, for example, regional reasons or cultural reasons have been the main motive for a budget line, it will not be classified as environmentally motivated. Examples are the support for the public procurement of public railways and the grant for investment, management and operation of railways, which are *not* primarily motivated from environmental motives and therefore not included.

The environmentally motivated subsidies are classified into similar groups as the environmental taxes are grouped in, namely:

- Energy-related subsidies
- Transport-related subsidies
- Pollution-reducing subsidies
- Resource-related subsidies

1.4.2.4 Environmentally harmful subsidies

The interest in environmentally harmful subsidies has grown internationally in the past years, but international comparisons are still hampered by difficulties in finding a common definition. An earlier study at Statistics Sweden[16] used a report by the Swedish EPA from 1997 which listed a selection of subsidies harmful to the environment. A recent study on the Swedish harmful subsidies by the Swedish EPA mainly listed tax subsidies as examples of harmful subsidies and since tax subsidies are not included in the definition of a subsidy used in this report this is not discussed further in the report.

1.4.2.5 Different frameworks for measuring subsidies

The way of approaching the measurement of subsidies based on an accounting system, as we do in this project, is one of two ways brought up by Ronald Steenblik at OECD[17]. The other way consists of sectored subsidy accounts, i.e. accounts that relate to a specific industry or sector such as agriculture, fisheries, coal, transport or energy. One reason for the emergence of these sectored accounts is the limitation in the narrow definition of a subsidy in the national accounts. However, two major limitations of sectored subsidy accounts are, firstly, that by excluding non-specific subsidies, they leave out general subsidies that may affect the allocation of resources within an economy and, secondly, that the sectored accounts are put together using different classification systems and therefore provide different results. The environmental accounts approach show the total impact on the economy and therefore also the industries or environmental problems that are not regulated. Since we in this project show that it is possible to broaden the definition of a subsidy, the largest obstacle against the accounting way of measuring subsidies is removed. Consequently the combination of economic data and environmental data in an international accounting framework is a very promising analytic tool.

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[16] Statistics Sweden, 2000, *Environmental taxes and environmentally harmful subsidies*, Report 2000:3.

[17] OECD, 2003, *Environmentally Harmful Subsidies*, (Article: *Subsidy measurement and classification: developing a common framework*) OECD, Paris

1.5 Limitations

1.5.1 Public expenditures

Data for EPE are compiled and reported for the year 2004. Initially the ambition was to compile and present data from 1993 until 2004. Due to the demand of work for finding sources of data, ways of gathering data besides the Government budget and avoiding double counting, we have decided to only focus on 2004. If several years would have been collected there would have been less possibility to discover problems, advantages and disadvantages with different sources and methods.

Data for county councils are not included in this report. This is because there are problems in finding a suitable source for identifying EPE. Since county councils are responsible for, among other things, public transportation, they might have EPE for activities carried out.

The report does not include expenditures for environmental management for all Swedish authorities. In the project a small survey was sent out to 240 authorities with the purpose to ask for their costs for environmental management as well as for their other environmentally related costs. The questions were sent out for reply voluntarily and the authorities did not have much time to respond. Due to these circumstances it is hard to draw conclusions on the results from the questionnaire. All the results that came in are included in this report but no adjustment has been done for the authorities not answering.

Only expenditures financed directly by Sweden are included as environmental EPE. We have not included public EPE financed from EU in this report. In cases where EU funding goes through the Government budget the expenditures from these specific budget lines have been excluded, such as the agri-environmental support financed from EU (Sweden's own share of this support is included).

1.5.2 Subsidies

The project studies public subsidies funded by state grants. The Government budget includes more than just what is coming from state grants and there could possibly be subsidies paid out from these other resources (regarding EPE the goal has been to collect all expenditures, not only those financed by state grants.)

The environmental subsidies in this report do not include subsidies given from other countries or the EU. The reason for this is that in the chosen data source only given EU subsidies paid through the Swedish Government are included (for example the agri-environmental support financed by EU), not the ones given directly to the receivers (for example LIFE support given for projects regarding aspects of the environment, since it does not go through the Swedish Government). Future studies could easily also include support from other countries included in the Government budget. However, subsidies paid directly, from for example the EU, might be more difficult to collect.

Only data for the years 2000 to 2004 is presented in this report. It is however possible to use the same methods for before the year 2000.

2 Methodology and sources

2.1 Public environmental expenditures

2.1.1 Sources

A number of different sources have been used to compile public EPE. These are listed in Table 2.1. The points of departure are the Government budget and the survey for municipal accounts. Data from the Government budget has been supplemented by data and information from annual reports and a small survey to central authorities. Each source is shortly described in the following table.

Table 2.1 Sources and data for public environmental expenditures

Source:	**What data has been used?**
Government budget	Data from budget lines within the environmental field
Annual reports	Environmental protection expenditures within central authorities not identified by study of the Government budget or by survey.
Small survey/questions to authorities	Environmental protection expenditures within central authorities not identified by study of the Government budget or annual reports.
Annual accounts for municipalities	Environmental protection expenditures for municipalities.

2.1.1.1 The result of the Government budget

The Result of the Government budget, which is a part of the Official Statistics of Sweden, has been used as the main source. It is produced by the Swedish National Financial Management Authority in Sweden (ESV). ESV develops financial management for central Government agencies and makes analyses and forecasts of central Government finances. The statistics describe revenues, expenditures and balance of the Government budget and the final result in the form of statistical tables. The tables comprise, in general, the results from 1995-2004. Statistics are disseminated in current prices. ESV compiles the official statistics then used by the National accounts at Statistics Sweden.

Expenditures are accounted according to the same structure as the Government budget, i.e. expenditure areas and budget lines. From 2001 onwards the Government budget is divided into 47 political areas. The purpose of the subdivision is to improve the connection between costs, goals and results of the Government budget. To simplify the analysis concerning longer time-series there are also statistical expenditure tables classified according to international standards for Government functions and type of expenditure. The classification according to function and expenditure type is made in accordance with European System of Accounts (ESA).

Each year ESV compiles data over the results of the Government budget. The definitive version of this for 2004 has been used to compile the information needed

for producing this report. All budget lines within this are classified by COFOG and there is the possibility of getting information about different kinds of expenditure and which authority the budget line has been paid to. One disadvantage of using this source is that it is not synchronized with national accounts in periodicity.

Difference between the results of the Government budget and the state profit and loss account

By using the result of the Government budget we capture all expenditures from the Government budget. However, there are also other expenditures than the ones from the state budget, such as fees that the authorities collect. In addition, the expenditures paid from this revenue should be classified as EPE, if the pay back is dependent on environmental restrictions. The only chance to include these from Government budget is to use annual reports, or to contact the authorities directly. Therefore, regarding the public EPE, other sources than the Government budget have been used in order to collect more data *(see 2.1.1.2 and 2.1.1.3 for more information).*

ESV also produces the state profit and loss account. Theoretically this would be perfect data material in order to collect public EPE since it includes *all* expenditures and is better synchronized with the national accounts. It is however impossible to discern EPE from other expenditures in this material. There is no information of what the money is related to except for a COFOG classification according to the main activity of each authority and not as detailed as needed. For the Swedish Board of Agriculture, as an example, all expenditure not coming from the Government budget is classified under Economic affairs since that is their main activity. For the expenditure coming from the Government budget, ESV classifies each grant according to its correct COFOG but many times a grant is environmental in some way, but also related to another activity, and therefore classified according to the main activity, for example agriculture. *(More about the limitations in the COFOG classification in 2.1.2)*

2.1.1.2 Annual reports

In situations where we have not received data from the questions sent to central authorities and we know they probably do have costs for EP (because they are responsible for following up environmental objectives or they are in other ways involved in different environmental matters) we have looked at the annual reports for 2004. Since this data cannot be identified by looking at the Government budget, this data can be seen as "hidden costs" in the perspective of this project. Information from annual reports has also sometimes been used as a source of information on how to split budget lines from the Government budget.

Data regarding EPE occurring at the county administrative boards has been possible to collect from their annual reports. They add a more detailed appendix in their annual reports for the purpose of analysing their expenditures in more detail, which works well for our purpose. From this data material it has been possible to distribute their EPE to environmental domains.

2.1.1.3 Questions/survey to central authorities

As a supplement to data from the Government budget a small survey has been sent to central authorities who work with environmental data management systems[18]. The reason for sending a survey to these authorities is because their expenditures for environmental management and other environmentally related purposes cannot be identified by only analyzing the Government budget. In order to reach the expenditures which we have called "hidden costs" ("hidden" in such way that it cannot be identified by looking at Government budget and budget proposition) for environmental protection we sent two questions to 240 central authorities by e-mail. By doing so we received data which is included in budget lines, for instance, to finance the authorities' main assignments.. We have also received information about expenditures financed by other means, such as fees or external assignments.

This small survey included questions about:
1. Expenditures for environmental management
2. Other environmentally related costs (examples mentioned: treatment of waste, environmentally related activities)

The questions were sent to all central authorities on the website for Governmental environmental management[19].

2.1.1.4 Annual accounts for municipalities

Data for municipal EPE has been compiled from Statistics Sweden's annual accounts for municipalities. All 290 municipalities are covered[20]. A large number of economic variables are included and the statistics are an aggregation of the municipalities' final accounts. The expenditures accounted for in this report are following:

- Environment- and health protection, exercising public authority: costs and incomes for activities according to Swedish environmental law, law on food provision, law on protection of animals and other work of authorities according to law within the field.
- Environment, health and sustainable development: costs and income for measures which the municipality perform besides exercising public authority.
- Water supply and treatment of sewage
- Treatment of waste: tax on waste and costs for future restoration of refuse dumps.

One important matter in this data is that it not is possible to sort out health related activities from *Environment- and health protection, Exercising public authority* and *Environment, health and sustainable development.* These expenditures are therefore overrated.

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[18] In the year of 1996 it was decided that the public administration should be developed to a role model for the purpose of reaching sustainable development. 240 central authorities has since then introduced systems for environmental management.
http://www.sverige.se/sverige/templates/page____7458.aspx
[19] The Swedish Environmental Protection Agency convenes the work for authorities who have implemented systems for environmental management. (http://www.naturvardsverket.se/miljoledning).
[20] Municipal accounts, Räkenskapssammandrag för kommuner (RS) 2004 OE0107)

2.1.2 Methodology public environmental protection expenditures

2.1.2.1 Steps in collecting data of public environmental protection expenditures

The method used to collect public EPE in Sweden can be described in 5 steps. Below some of the steps are described in more detail.

1) A start is to look at the definition of EPE. The main definition is concerned with costs that are related to EP. However, there are a number of environmentally related expenditures covering the use of natural resources that will also be compiled but presented separately. *(See more about definitions in chapter 1*)

2) The Government budget has been used as a starting point for identifying EPE within budget lines. Firstly the ones classified as COFOG 05[21] are included. Thereafter the budget proposals are read in detail which makes it possible to classify several more budget lines as EPE. In many cases it is impossible to discern from the information given in the budget proposal whether, or how much of, a budget line is environmental. Therefore, when possible, either annual reports or direct contact with the authorities has been used as a source to take out only a share of the budget line's expenditure.

3) Other sources, such as annual reports and contacts with central authorities, are consulted in order to identify EPE that is not possible to collect from the results of the Government budget. There are two reasons for this. Firstly it could be possible to use these sources as a complement to the Government budget in order to compile a share from a budget expenditure which not mainly is environmental (for example when a budget line is given to an entire authority). Secondly the expenditure may not descend from the Government budget (revenue could come from for example an environmental charge).

4) Several important EP areas in Sweden are the responsibility of local Government, including areas with large expenditures such as waste and wastewater. The expenditures for municipal EP have been collected for four activities from the municipal accounts within Statistics Sweden:

- Environment- and health protection authority exercise
- Environment, health and sustainable development
- Water supply and treatment of sewage
- Treatment of waste

5) After collecting data from these different sources the data should be recorded together with the information needed. To minimise the risk of double counting it is important to keep track of which source has been used. It should be decided if the expenditure is in accordance with CEPA and it should then be classified according to environmental domain.

2.1.2.2 Identifying data in the Government budget (step 2)

When compiling data from the Government budget we collect four different items for each given budget line classified as environmental in some way namely;

[21] National accounts system of classification of expenditure by purpose according to the COFOG classification. COFOG 5 is the code for environment protection.

investment, consumption, financial transactions[22] (which we later exclude) and transfers.

The work of identifying budget lines started by looking at budget lines classified as COFOG 05 within the Government budget. However not only budget lines classified as COFOG 05 are environmentally related; moreover, not all expenditures classified as COFOG 05 have the primary purpose[23] of environmental activities. Therefore this study has gone beyond the classification of COFOG *(classifications of COFOG in appendix 1).*

Those budget lines which are environmentally related but not classified as COFOG 05 are often parts of large grants for authorities working with environmental quality objectives but are classified according to their main activity. Another example would be if an authority's main activity is, for example, Housing and community amenity issues (COFOG 06), but also work with EP related activities. For instance, they could pay out support for eco-building which is clearly an EPE.

In order to find other environmental budget lines among those *not* classified as COFOG 05 the budget proposal for 2004 has been used as the main information source. Focus has been on budget lines within following *Expenditure areas:*
(the Government budget is, besides presentation by purpose, COFOG, divided into expenditure areas):

- 05 – international cooperation
- 06 – defence and military preparedness
- 07 – international aid
- 18 – national planning and construction
- 19 – regional development
- 20 – environment and nature conservation
- 21 – energy
- 22 – communications
- 23 – agriculture, forestry, fishery

If it is clearly stated that the purpose of the grant is environmental it is classified as environmental (as *protection* if it fits within the definition of EPE or environmentally *related* if it is outside the definition. *See more about this in 2.1.2.4 Classifications of expenditures*).

Only a share of the budget line as environmental
In some cases we have used either annual budgets or direct contacts with different authorities in order to take out only a share of a budget line as environmental. Examples are international environmental aid and environmental support to agriculture. For environmental aid we have taken 11 per cent of the Swedish International Development Agency's (SIDA) total aid as environmental, since that is the share they state is primarily paid out for environmental purposes. An additional 44 per cent is paid out to projects having the environment as a secondary goal, but this is not included.

[22] Included as financial transactions are for example amortizations and expenditures from interests.
[23] Sometimes these include for example transfers for regional development. Such has been excluded.

Another budget line affected is the one named “Measures for the structure and environment in landscapes”. It contains, among other things, measures for an environmental and rural development plan for Sweden, of which only about half of the paid financial support can be said to be EPE. It also includes other support not possible to classify as environmental, such as measures included for an economically and socially sustainable development in rural areas.

2.1.2.3 Identifying expenditures by the use of other sources than the Government budget (step 3)

As a complement to expenditures found in the Government budget, annual reports and central authorities were consulted in order to get detailed information about expenditures which cannot directly be pointed out as being environmentally related in the budget proposal. The reason for this is that EPE can be part of general budget lines (for example a budget line to the administration, supervision and commission performed by the authorities) or because some activities are financed by other financial sources than grants.

Annual reports

By looking at annual reports it is possible to find expenditures and information not found in the Government budget. Among other things, the annual report has been used to identify incomes financed by environmental fees and expenditures financed by budget lines which are general and given for a larger field. One example of an authority with a large share of its activities financed by charges is the Swedish Chemicals Inspectorate and there we used the annual report as a source rather than the Government budget.

Questions to the authorities (survey)

The other method used to supplement the expenditures identified in the Government budget is direct contact with central authorities.

In situations where we have received answers about EPE expenditures from authorities which also receive budget lines identified as EPE we have generally used the information from the Government budget and not from the survey. Those authorities which did not answer the survey or are not members of EPA's network for environmental management have clearly been studied in order to see if they are likely to have EPE. If we for some reason believe they should have EPE we have most often looked in their annual reports. In some cases we have also looked at their websites for more information or contacted the authority by telephone. When we presume they only have costs for environmental management and this cannot be identified by the annual report we have not contacted the authority since these expenditures are small in this context. (*Read more about the questions sent to a selection of the authorities in 2.1.1.3.).*

2.1.2.4 Classification of expenditures (step 5)

By studying the budget proposition, annual reports or information given by authorities we get information to categorize the budget lines according to environmental domains of CEPA. Some budget lines found are environmentally related, but are not EPE according to CEPA. These have been collected and will be accounted here as environmentally related and not included in EPE.

The categories used for classifying the expenditures within this report are listed in table 2.2. In table 2.3 we can see those environmental expenditures found which are not defined as EPE according to CEPA.

Table 2.2 Categories for environmental protection expenditures

Environmental domain
1. Protection of ambient air and climate
1.1 Supervision, performance and treatment
1.2 Education and information
2. Wastewater management
2.1 Supervision, performance and treatment
3. Waste collection, treatment and prevention
3.1 Supervision, performance and treatment
4. Protection of soil and groundwater
4.1 Supervision, performance and treatment
5. Noise and vibration abatement
5.1 Supervision, performance and treatment
6. Protection of biodiversity and landscape
6.1 Supervision, performance and treatment
6.2 Education and information
7. Protection against radiation
7.1 Supervision, performance and treatment
8. Research and development
9. Other environmental protection activities
9.1 General administration and multifunctional activities
9.1.1 Administration, regulations and other
9.1.2 Environmental management
9.2 Education and information
9.3 Activities leading to indivisible expenditure*
9.4 Activities not elsewhere classified
9.5 International aid

* due to lack of information available and because the activity is related to several domains

Table 2.3 Categories for environmentally related expenditures*

Environmentally related expenditures*
Energy
Health
Natural resources
Totalt

*not EPE according to CEPA

As seen in the results (chapter 3) a great deal of data has not been possible to allocate to any of the environmental domains. The reason is because the work within the public sector contains different activities than within the manufacturing sector. Some examples of activities are working with regulations, disseminating information, implementing means and carrying out supervision rather than, for example, industrial manufacturing and processing.

A number of activities cover several environmental fields since they have the ambition of being transverse and integrated with each other. Therefore it is not possible to classify these according to one single domain, these have been classified

as *9.3 – Activities leading to indivisible expenditure*. The purpose of performing an environmental activity may also be of a different purpose for the industrial sector than the public. The purpose of using energy in a more efficient way may maybe not be for environmental reasons for the industrial sector. But campaigns for the same carried out by the public sector are difficult to find other reasons for. In some cases we have lacked the understanding of where to categorize certain expenditures, for example expenditures/budget lines described as activities for environmental engineering or sustainable tourism. We have registered these as *9.4 – Activities not classified elsewhere*.

Information is gathered about amount of expenditure, type of expenditure, COFOG and receiving authority. The types of expenditures which are presented in the report are current expenditures, investments and transfers. The transfers are a total of transfers to enterprises, transfers to households, transfers to municipalities and transfers to foreign countries. We have assumed that the expenditure is current expenditure if it is not stated to be an investment (sometimes incomplete information is given in the annual report or through contacts with authorities). When accounting for EPE as a part of a larger budget line we have assumed the same relation between types of expenditures for the environmental share as for the whole grant.

Income (negative amounts within the budget line) has been deducted when compiling data. The reason is because it does not contribute to expenditure for the environment. These reversed grants are not very large but to get as accurate figures as possible they have been excluded. Financial transactions, which consist of amortisations and interest, are one part of the budget lines. These have been excluded since SERIEE states that amortisations and interests not are EPE.

2.1.2.5 Environmental protection expenditures on local Government level (municipalities)(step 4)

From municipal accounts we have used costs in gross amount and deducted internal income in order to avoid double counting (internal income from other activities within the municipality). Expenditures for investments have also been compiled.

In the municipal accounts water supply and wastewater treatment are not separated. To clear out the expenditures for treatment of sewage, information from a survey made by the Swedish Water and Wastewater Management Association has been used.

2.1.2.6 Avoid double counting

Since several sources have been used, there is a risk that some of the data overlap each other. We have however tried to keep track of transactions between different sectors in order to avoid double counting. To avoid double counting among the Government, county administrative boards and municipalities we have excluded transfers to municipalities from the Government budget. Often this goes via county administrative boards and therefore we have excluded it there as well. One example of this is transfers for liming. There may however be some transfers left, leading to double counting, which has not been possible to trace.

When possible, assignments performed by central authorities on commission by other authorities have been excluded in order to avoid double counting. Examples are Statistics Sweden and Swedish Meteorological and Hydrological Institute which both undertake assignments besides their activities financed by budget lines. Assignments on commission by entities are however included and should be excluded if looking at all EPE accumulated.

2.2 Subsidies

2.2.1 Sources

The environmental accounts are a satellite account to the national accounts. Because of this the starting point for collecting environmental subsidies in Sweden has been to receive information on payments from the national accounts rather than directly from the authorities responsible for the disbursement of the subsidies. A previous project on environmental subsidies carried out in 2003[24] showed that by taking only subsidy data from the national accounts it was not possible to receive enough information about the environmental subsidies given in Sweden, since the definition used in the national accounts was (and still is) too narrow to fit our objective. The method in 2003 ended up collecting both subsidies from the national accounts (known as SNA subsidies) as well as complementary data of subsidies from the different authorities handling the subsidies. This resulted in a complicated method where risks of double counting existed. However, the present project has found a new way through this former dead-end. Below, the new source, the Swedish National Financial Management Authority and their statistics of the results of the Government budget will be described.

2.2.1.1 The Swedish National Financial Management Authority (ESV)

Data for subsidies in this project, as for public EPE, has been taken from the Swedish National Financial Management Authority (ESV). In this project we use the results of the central Government budget as our data source. However, it does not change the quality of the subsidy data, compared with our previous method, since the same data is also used by the national accounts for their subsidies as well as for their current and capital transfers. The new source enables us to collect more detailed data than from the national accounts' processed data on subsidies. It is possible to read more about the Government budget in the section about public EPE. Further descriptions of the different choices of data from the central Government budget will be described below.

As mentioned above for public EPE *(see section 2.1.1.1)* the Government budget does not include all expenditures of the state. For this you would have to use the state profit and loss account, unfortunately without enough information to single out environmental expenditures. Regarding subsidies only Government subsidies are included in our definition so no efforts have been made to include other data than included in the Government budget.

[24] Statistics Sweden, 2003, *Environmental subsidies - a review of subsidies in Sweden between 1993 and 2000*, 2003:4, Örebro

2.2.1.2 Old sources - National accounts and authorities

The previously used method for collecting data on subsidies had two main sources, the national accounts (for SNA subsidies) as well as a selection of authorities responsible for other environmental subsidies. None of these sources are directly used in this new method. However, the data is still of the same quality since we now use the source used by the national accounts for their subsidy and transfer data regarding the Government. This enables us to receive the subsidies collected from both the national accounts (SNA) and the different authorities from only one source, as well as some other types of subsidies not possible to collect before.

2.2.2 Methodology environmentally motivated subsidies

2.2.2.1 Steps in collecting data of environmentally motivated subsidies

The method to collect and put together statistics on environmental subsidies for Sweden can briefly be described in the following 4 steps:

1) The first step is to find usable definitions on both a subsidy and an environmental subsidy. *(See more about definitions in chapter 1*)

2) Use the same data source as the national accounts, in order to collect both SNA subsidies and other relevant subsidies in accordance with the chosen definition. Therefore, for each chosen year, start out from the data material resulting from the Government budget expenditures. In Sweden this is managed by the Swedish National Financial Management Authority (ESV), to which each beneficiary of a Government grant must record the amount after given standards. New data is available 3 months after the end of a given year. (For example, 2005 was available in March 2006.)

3) Compile all data classified as transfer payments from this data material. In Sweden this is done by the names of the different state grants (here called budget lines), which makes it possible to identify the grants' motive. Also make sure to examine what is included as transfer payments in the data[25]. From this data it is possible to discern the SNA subsidies out of the total subsidies, since we know which transfers the national accounts uses for their subsidy data (see Table 2.4).

4) Select the subsidies that are environmentally motivated from the data over total subsidies. In some cases only a share of the subsidy given from the budget lines can be regarded to be an environmental subsidy. *(See more about the selection of environmental subsidies below*)

These 4 steps have been used for collecting environmentally motivated subsidies, but the same method can be used to collect any kind of subsidy (i.e. potentially harmful, subsidies with a positive effect of the environment, subsidies for infrastructure etc.)

[25] In order to discern total subsidies out of the total transfer payments, some transfers might have to be removed if not suited to be included in the chosen definition of a subsidy. For Sweden the transfer to the system of retirement pension was originally included but removed to suit the definition of a subsidy.

Choice of variables in order to collect total subsidies

Each month the state authorities and ministries report to ESV about their transfer payments. In the data from the results of the Government budget there are several different options regarding what type of transfer payments, i.e. expenditure, that can be taken out as subsidy data. To collect data for different transfers, data is taken out per "type of expenditure". This is not exactly the same retrieval of data as used for the public EPE, but it comes from the same data source. In order to get as detailed data as possible, the variable "type of expenditure" is better since it contains more detailed information of each specific transfer made by the authorities. The payments according to table 2.4 are collected in this project and thereafter named total subsidies. The table also shows which of these subsidies that are included in the definition used by the national accounts (i.e. SNA subsidies).

Table 2.4 Subsidy data breakdown in this project

Purpose of the payment:	**Transfer payment to:**	**Included as a subsidy in the national account?**
In the production[26]	Government-owned enterprises	**Yes**
In the production	Municipal companies	**Yes**
In the production	Private companies and private economic associations	**Yes**
In the production	State companies	**Yes**
In the production	Individuals	No
In the production	Organisations and non-profit making association (divided on state sector, municipal sector or other)	No
In the production	Municipalities	No
In the production	County councils	No
In the production	International activities	No
In the production	Activities in EU institutions	No
In the production	EU countries	No
For investment[27]	Government-owned enterprises	No
For investment	municipal companies	No
For investment	private companies and private economic associations	No
For investment	state companies	No
For investment	Individuals	No
For investment	Organisations and non-profit making association (divided on state sector, municipal sector or other)	No
For investment	Municipalities	No
For investment	County councils	No
For investment	International activities	No
For investment	Activities in EU institutions	No
For investment	EU countries	No

There may be small errors in the data material. One example could be the classification between payments used "In the production" and "For investment", which also affects the amount that the national accounts register as SNA subsidies. Some of the subsidies classified as a subsidy "In the production" could in fact be subsidies paid "For investment". The reason is that all expenditures are registered at the occasion of the first transfer. Some of the subsidies go from the ministries or authorities *through* the municipalities, before being paid out to for example individuals or companies. In those cases the transfer could be regarded as a subsidy to be used in the production (daily work) at the municipality. Some examples like

[26] Named "In the production" since they are used in the business and not to create a new asset.
[27] Named "For investment" since they are used to create a new asset (for ex roads, constructions, etc.)

this have been found in the data. The correct amount of the subsidy is in those cases still correct but the classification is not entirely true. This could be investigated further in the future in order to see if it is a common problem.

ESV and the national accounts present the Government budget expenditures on the basis of a real economic classification and not by “type of expenditure”, as we have used here. The real economic classification distributes the expenditures on four different items, namely;

- Investment
- Consumption
- Financial transactions, and
- Transfers (transfers broken down by receiver: businesses, households, municipalities, retirement pension system or abroad).

However, this only gives the option to collect each budget grant transfer by receiver and not to the purpose of the payment (in order to see if it is given as an investment subsidy or as an SNA-subsidy). It would therefore not give us the detailed data level shown in Table 2.4.

2.2.2.2 Selection of environmentally motivated subsidies

The selection of which of the total subsidies can be considered to be environmentally related is done by deciding which budget lines in the budget proposal that have an environmental purpose. This is detected by a detailed review of budget proposals mainly for the period 2000 to 2004, but also for earlier and later years if needed. If there is an environmental motive written in the budget proposal, the paid subsidies from this budget line are taken as environmental motivated. In some cases additional information about the motive behind the budget line must be given.

The subsidy is recorded under the name of the budget line and not of the specific subsidy in the results. In the final table of total environmentally motivated subsidies these names have sometimes been further re-grouped together if necessary. The name of the subsidy can therefore be said to inform about the area to which the subsidy is given rather than give the exact name of the subsidy scheme.

As already described for public EPE there are cases when the whole budget line cannot be regarded as environmentally motivated. For EPE we therefore used a calculated share of all expenditures resulting from the specific budget line in cases when only a share of the line was environmental. For subsidies we have used the same method for the recorded subsidies from the specific budget line. Examples are the same for subsidies as for public EPE, namely for environmental aid and environmental supports in the agriculture. In addition, here we have taken the same share from each subsidy, and no consideration is taken for whom the receiver is. A future project could look into this more thoroughly.

3 Result - public environmental protection expenditures

3.1 Environmental protection expenditures 2004

In this chapter the public environmental protection expenditures (EPE) will be presented in several different ways; per environmental domain, per type of expenditure (current expenditures, investments or transfers) and per sector (central and local Government). It will also illustrate the different sources used, the result broken down on COFOG (Expenditure of General Government by Function) as well as a comparison between 1995 and 2004.

3.1.1 Public environmental protection expenditures per environmental domain

According to CEPA environmental protection expenditures should be presented into 9 classes. These classes can be further divided into a number of categories. The latter has not been adapted here since the data compiled does not come with that much information to make it possible to classify in detail. We have however made further subdivisions by distinguishing expenditures for supervision and treatment from education and information.

The classification of expenditures into the 9 environmental domains of CEPA has sometimes not been obvious. The categories are not optimal for the public sector since most of them are focused on activities of the industrial sector. But since the purpose in the long run is to build a full picture of EPE within the society, the same definition should be used for the public sector as for manufacturing.

The environmental activities within the public sector are different than for those in the manufacturing sector. A number of activities cover several environmental fields since they have the aim to be transverse and integrated with each other. Therefore it is not possible to classify these according to one single domain. The purpose of performing an environmental activity may also be different for the industrial sector than for the public sector. The purpose of using energy in a more efficient way may not be for environmental reasons in the industrial sector. But campaigns for energy efficiency executed by the public sector are mostly for environmental reasons. The consequence can be seen in table 3.1 where some data has not been allocated to any of the environmental domains. Category *9.3,* which contain expenditures for activities not possible to distribute to other domains, accounts for 8% of the total public EPE. In this category we have placed expenditures which we have not been able to categorise in any of the other domains. The expenditure may be related to several of the environmental domains but since we lack sufficient information it is not possible to make a separation to other domains. An example is development of industrial techniques which is less damaging for the environment. There is also the item of *9.4 – Activities not classified elsewhere,* for EUR 10 million. In this domain we have placed for example budget lines given for local investments programs.

The environmental domains with most public EPE are treatment of wastewater and waste. Together these two domains account for 56% of total expenditures.

Table 3.1 Public environmental protection expenditures per environmental domain 2004

Environmental domain	Expenditure thousand Euro
1. Protection of ambient air and climate	
1.1 Supervision, performance and treatment	127 515
1.2 Education and information	1 083
2. Wastewater management	
2.1 Supervision, performance and treatment	653 219
3. Waste collection, treatment and prevention	
3.1 Supervision, performance and treatment	553 569
4. Protection of soil and groundwater	
4.1 Supervision, performance and treatment	54 971
5. Noise and vibration abatement	
5.1 Supervision, performance and treatment	21 993
6. Protection of biodiversity and landscape	
6.1 Supervision, performance and treatment	76 436
6.2 Education and information	3 315
7. Protection against radiation	
7.1 Supervision, performance and treatment	15 462
8. Research and development	55 998
9. Other environmental protection activities	
9.1 General administration and multifunctional activities	13 805
9.1.1 Administration, regulations and other	212 659
9.1.2 Environmental management	3 209
9.2 Education and information	5 197
9.3 Activities leading to indivisible expenditure*	176 121
9.4 Activities not elsewhere classified	10 022
9.5 International aid	179 133
Total	**2 163 707**

* due to lack of information available and because the activity is related to several domains

Some environmental expenditures found outside the CEPA definition are presented below (table 3.2). In the Government budget and annual reports these are described as linked to environmental activities. The largest part belongs to the category energy, 83%, which consist of activities aimed at more efficient use of energy. The second largest category is natural resources for approximately EUR 21 million. There are also some expenditures which we have identified having the purpose of protecting human health related to environmental hazards, EUR 4 million.

Table 3.2 Environmentally related expenditures 2004

Environmentally related expenditures*	thousand EUR
Energy	123 865
Health	4 076
Natural resources	20 788
Totalt	**148 728**

*not EPE according to CEPA

3.1.2 Public environmental protection expenditures per type of expenditure

In table 3.3 below expenditures are reported divided into type of expenditures. Current expenditures dominate with 74% out of total. The largest part of investments is aimed at wastewater management and is mainly performed within municipalities.

Table 3.3 Public environmental protection expenditures per type of expenditure 2004

	thousand Euro			
Environmental domain	**Current exp.**	**Investments**	**Transfers**	**Total exp.**
1. Protection of ambient air and climate				
1.1 Supervision, performance and treatment	72 774	1 333	53 407	127 515
1.2 Education and information	0	1 083	0	1 083
2. Wastewater management				
2.1 Supervision, performance and treatment	496 738	156 481	0	653 219
3. Waste collection, treatment and prevention				
3.1 Supervision, performance and treatment	525 729	27 840	0	553 569
4. Protection of soil and groundwater				
4.1 Supervision, performance and treatment	22 052	1 625	31 295	54 971
5. Noise and vibration abatement				
5.1 Supervision, performance and treatment	0	21 993	0	21 993
6. Protection of biodiversity and landscape				
6.1 Supervision, performance and treatment	51 536	22 823	2 077	76 436
6.2 Education and information	3 315	0	0	3 315
7. Protection against radiation				
7.1 Supervision, performance and treatment	15 423	40	0	15 462
8. Research and development	45 495	35	10 468	55 998
9. Other environmental protection activities				
9.1 General administration and multifunctional activities	13 710	27	68	13 805
9.1.1 Administration, regulations and other	211 458	135	1 066	212 659
9.1.2 Environmental management	3 209	0	0	3 209
9.2 Education and information	4 707	13	477	5 197
9.3 Activities leading to indivisible expenditure*	116 352	56 722	3 047	176 121
9.4 Activities not elsewhere classified	3 004	0	7 018	10 022
9.5 International aid	4 045	0	175 088	179 133
Total	**1 589 547**	**290 150**	**284 010**	**2 163 707**

3.1.3 Public environmental protection expenditures per sector

The largest contributing sector to public environmental expenditures is the municipality sector. This is not surprising since it performs most of the public sectors' environmental work, such as treatment of wastewater and waste. This can be seen in table 3.4 where county administrative boards are included in central Government[28]. The biggest expenditures item by central Government is the category international aid, EUR 179 million. Second largest domain is protection of ambient air and climate, EUR 128 million.

[28] In Sweden county administrative boards are categorized as central authorities and therefore they are in this report always included in central Government

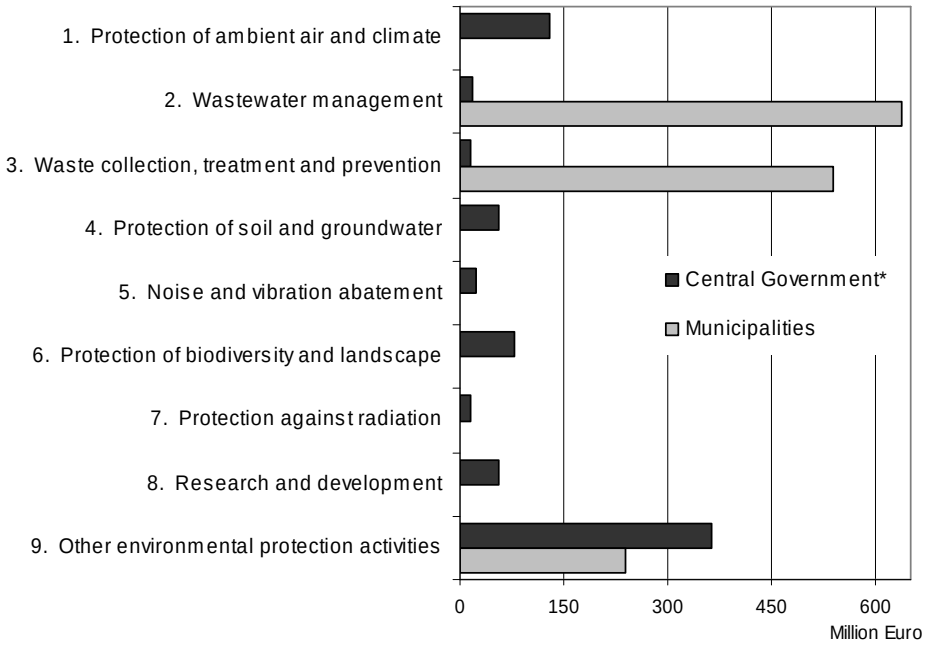
Table 3.4 Public environmental protection expenditures per sector 2004

	Expenditure thousand Euro		
Environmental domain	**Central Government***	**Municipalities**	**Total**
1. Protection of ambient air and climate			
1.1 Supervision, performance and treatment	127 515		127 515
1.2 Education and information	1 083		1 083
2. Wastewater management			
2.1 Supervision, performance and treatment	17 102	636 117	653 219
3. Waste collection, treatment and prevention			
3.1 Supervision, performance and treatment	15 481	538 088	553 569
4. Protection of soil and groundwater			
4.1 Supervision, performance and treatment	54 971		54 971
5. Noise and vibration abatement			
5.1 Supervision, performance and treatment	21 993		21 993
6. Protection of biodiversity and landscape			
6.1 Supervision, performance and treatment	76 436		76 436
6.2 Education and information	3 315		3 315
7. Protection against radiation			
7.1 Supervision, performance and treatment	15 462		15 462
8. Research and development	55 998		55 998
9. Other environmental protection activities			
9.1 General administration and multifunctional activities	13 805		13 805
9.1.1 Administration, regulations and other	76 126	136 533	212 659
9.1.2 Environmental management	3 209		3 209
9.2 Education and information	5 197		5 197
9.3 Activities leading to indivisible expenditure*	75 199	100 922	176 121
9.4 Activities not elsewhere classified	10 022		10 022
9.5 International aid	179 133		179 133
Total	**752 048**	**1 411 659**	**2 163 707**

* including county administrative boards

In figure 3.1 the distribution on environmental domains for central Government and municipalities is further illustrated. It is clear that the expenditures for treatment of wastewater and treatment of waste within municipalities are a large share of public environmental expenditures.

Figure 3.1 Public environmental protection expenditures per sector 2004



* including county administrative boards

3.1.4 Sources

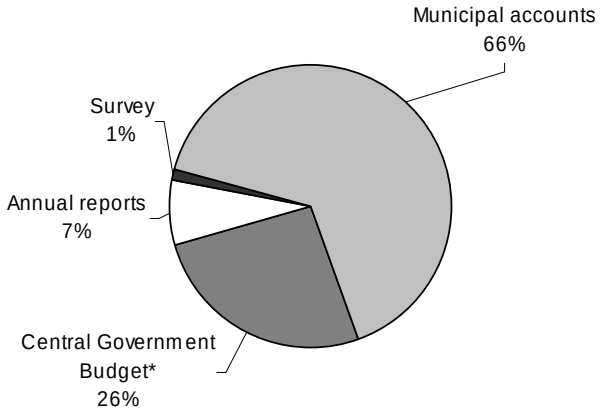
Since a number of different sources have been used it is interesting to see their respective share of data compiled. This can indicate the most important ones to use in the future. If we look at the total of public expenditures it is municipal accounts which contributes the most, 66% or EUR 1.4 billion (see table 3.5 and figure 3.2). The small survey carried out only accounted for 1% of the total expenditures. We have as far as possible tried to avoid double counting by using methods described in chapter 2.

Table 3.5 Environmental protection expenditures from different sources 2004

Source	thousand EUR
Central Government Budget*	565 674
Annual reports	159 610
Survey	26 764
Municipal accounts	1 411 659
Total	**2 163 707**

* including county administrative boards

Figure 3.2 Environmental protection expenditures from different sources 2004



* including county administrative boards

3.1.4.1 Sources for central Government

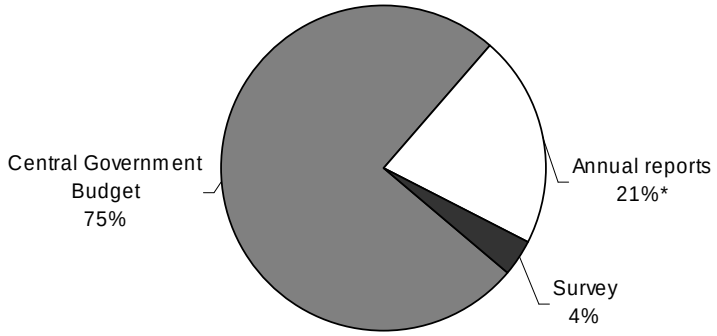
Since EPE within the central Government is provided by a number of different sources it is motivated to look at these one by one. The Government budget accounts for 75% of total Governmental environmental expenditures *(see table 3.6 and figure 3.3 on the next page).* Another useful source has been annual reports which account for 21%. Out of these the county administrative boards accounts for 6%. The small survey which was sent to a sample of authorities accounted for 4% of the total Government EPE.

Table 3.6 Central Governmental environmental protection expenditures from different sources, 2004

Source	Thousand Euro
Central Government Budget	565 674
Annual reports*	159 610
Survey	26 764
Total	**752 048**

* including county administrative boards

Figure 3.3 Central Governmental environmental protection expenditures from different sources, 2004



* including county administrative boards

3.1.4.2 Public environmental protection expenditures according to purpose (COFOG)

The major source for Statistics Sweden to report data for public EPE has, up until now, been to use data from national accounts and the classification of COFOG (Expenditure of General Government by Function). COFOG 05 is environmental protection. This data has however been understood to be underestimated. The results in the table below verify this presumption. In this table we can see the public EPE ordered by purpose, i.e. COFOG. Those not classified are included in the source *Central Government budget*, but lack a COFOG classification since they have been collected separately[29].

Budget lines identified as EPE within COFOG 05 account for 37% out of the total EPE compiled from the Government budget (based on a total *without* data from other sources, i.e. EUR 566 million) (see table 3.7). If Governmental data gathered from other sources is added (annual reports and survey), COFOG 05 only accounts for 28%. The EPE within budget lines classified as COFOG 01 contributes largely to the expenditures categorized as EPE, approximately EUR 200 million, corresponding to 27% of all Governmental EPE.

Table 3.7 Public environmental protection expenditures per COFOG 2004

Cofog	thousand EUR
01General government administration	200 593
02 National defence	1 582
04 Trade and industry	78 603
05 Environmental protection	208 624
not classified	76 273
Other sources	186 374
Total	**752 048**

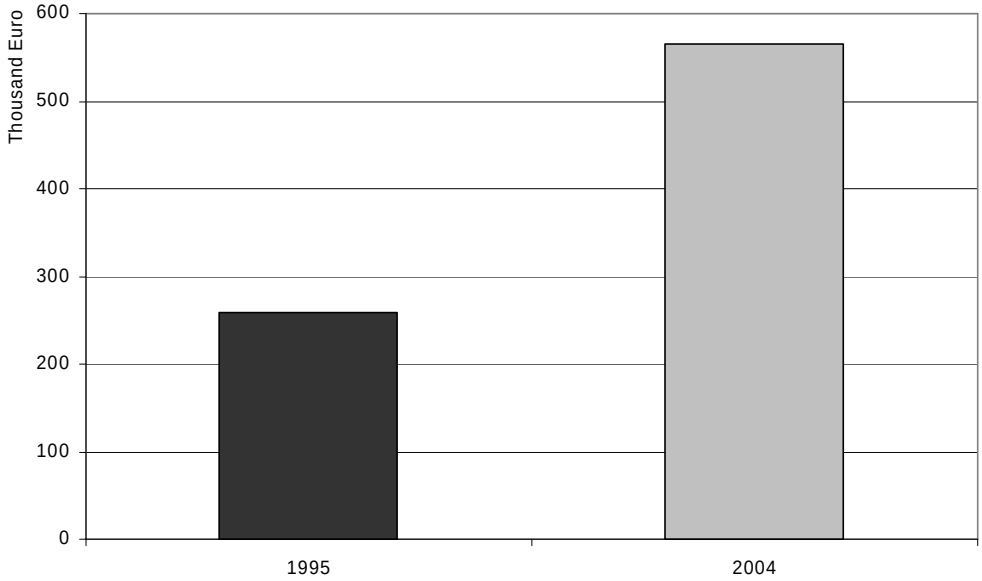
[29] Concerns two fees, the NOx-fee and fees for the battery fund. These are included, but not COFOG classified, in the national accounts.

3.2 Development of environmental protection expenditures

In 1997 the report "Adaptation of Swedish data on environmental protection in the public sector to the SERIEE system"[30] was published. Just as for the data in this report, the Government budget was used as the main source. Annual reports were used to look at possibilities to calculate shares of larger grants which not only had the purpose of EP. The annual reports were however only used for this information and not to gather extra data, as done in this project. Departments for EP at county administrative boards were included using a similar source as today. Not included then, but in the present study, is data from other sources not possible to find in the Government budget and environmental aid within the Government budget.

In order to make a fair comparison between EPE in 1995 and 2004 we take data compiled only from the Government budget (including county administrative boards) for the year 2004 (EUR 566 million). The result in figure 3.4 shows that governmental EPE has more than doubled since 1995, being 119% more in 2004 than in 1995. This is to some extent due to the fact that environmental aid is included today. However, looking at the data for 2004 without aid gives a governmental EPE of EUR 387 million (still with the same two sources). Compared to 1995 it is still 50% more. The explanation for this is more information used to complement the budget leading to more budget lines identified as environmental in 2004. There might also be an actual increase of EPE between the years.

Figure 3.4 Environmental protection expenditures from the Central Government Budget 1995 and 2004



Both in 1995 and 2004 the largest sums of EPE from the central government budget were within the environmental domain *9 – Other environmental protection activities* and *6 – Protection of biodiversity and landscape*. The largest increases between 1995 and 2004 have been in Protection of ambient air and climate (from 2% to 17%) and Protection against radiation (from 4% to 10%).

[30] Johansson, 1997, *Adaptation of Swedish data on environmental protection in the public sector to the SERIEE system*

Looking at municipal EPE a number of different sources were used in the report from 1997[31]. However, it was not possible to compile data on all areas for 1995 and therefore a comparison can instead be made with municipal EPE from 1991, included in the same 1997 report. In 1991, the municipal EPE was EUR 1 627 million, which is 14% more than the 2004 figure of EUR 1 412 million.

[31] Johansson, 1997, *Adaptation of Swedish data on environmental protection in the public sector to the SERIEE system*

4. Results - environmental subsidies

4.1 Introduction

Statistics Sweden started to collect data on environmentally motivated subsidies in 2003 and has since then updated the data every year[32]. However, the method of using several different data sources has been quite difficult, especially in avoiding double counting of the subsidies. The present project has therefore used a new data source in order to get both better and more accurate subsidy data. The results from this new method are presented in this chapter. A comparison with the old method is carried out in section 4.6.1.

Environmentally motivated subsidies have not yet attracted the same amount of interest as the ones negative to the environment, often labelled environmentally harmful. Environmentally harmful subsidies are a lot more difficult to define and without a useful definition it is difficult to compare between studies. The environmentally motivated subsidies can however provide a short-cut to the dilemma of the missing definition. By collecting the subsidies with a clear environmental motive from the total given subsidies we clearly see the size of the share of the subsidies that are *not* environmentally motivated. It is therefore important with high-quality data on all subsidies in order to "single out" environmental subsidies. Environmental subsidies can be defined in different ways, for example as environmentally motivated (as in this report), as environmental subsidies focusing on the given effect[33] or as environmentally harmful.

4.1.2 Total subsidies in Sweden

A majority of what is considered total subsidies in this report are referred to as transfers in the system of national accounts. (Figure 4.3 illustrates what the total subsidies are made up of and subsidies as defined in the national accounts (SNA subsidies) only account for 5%.)

Transfers constitute, together with taxation, the most important instruments for the Government and the Swedish Parliament to redistribute resources between, for example, different groups in the society. Since there is no uniform definition of a subsidy today these transfers, including the SNA subsidies, are in this report labelled total subsidies since the transfer in fact also gives support to different receivers. (*Read more about definitions in Chapter 1 and method in Chapter 2).* Examples of what is included in the total subsidies are therefore pensions, child allowance, unemployment benefits, sickness benefits and also environmentally motivated subsidies such as for energy research or local investment programmes. Sweden's contributions to the EU budget and international development cooperation are also regarded as given subsidies. (However, not transfers from EU or municipalities[34]).

The total subsidies in 2004 were, using this definition and data source, about EUR 53 000 million. This is about two thirds of the total Government budget expenditures as

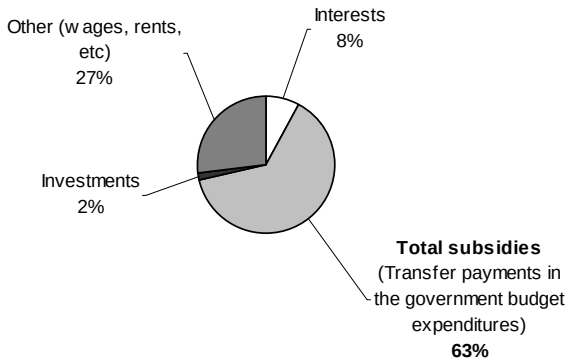
[32] Read more in Statistics Sweden (2003:4) *Environmental subsidies – a review of subsidies in Sweden between 1993 and 2000*

[33] Denmark uses this definition of an environmental subsidy.

[34] See more about this in *Method.* Both EU and municipalities should be included in future studies.

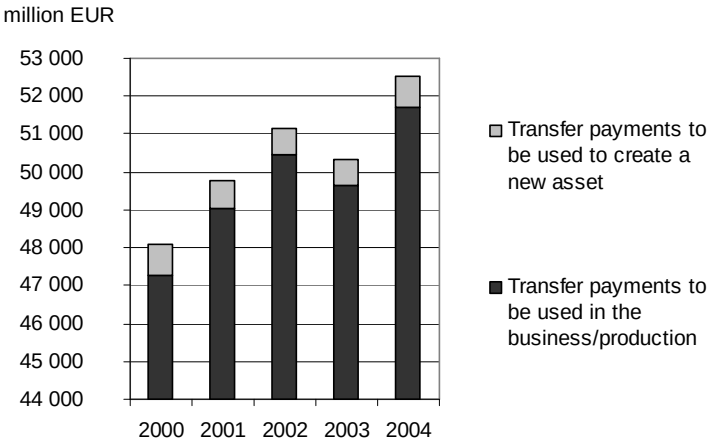
seen in figure 4.1. Investments were about 2 per cent of the total expenditures and the group Other (consumption, including wages, rents etc) was about 27 per cent of the total expenditures.

Figure 4.1 Government budget expenditures, 2004. Percent of total expenditures



By focusing only on the given total subsidies in figure 4.1, it is possible to split between total subsidies given with the purpose of being used in the business/production and on subsidies/transfers given to be used for creating new assets (for investment). This division is showed in figure 4.2. As seen in the figure, the total subsidies have increased between 2000 and 2004.

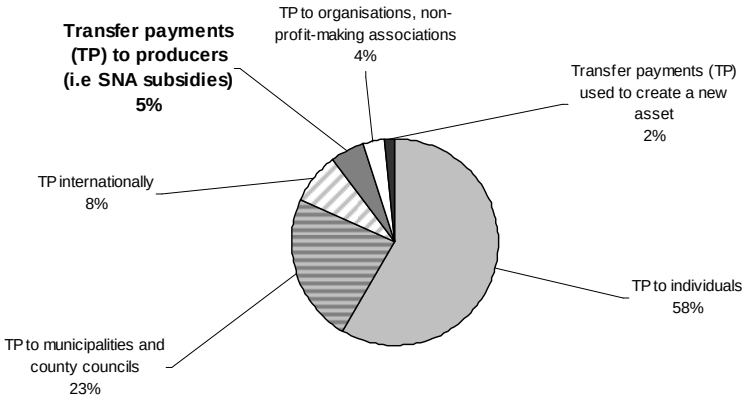
Figure 4.2 Total subsidies, from Government budget expenditures 2000-2004



It is important to remember that this definition of a subsidy is broader than the definition used in the national accounts (here called SNA subsidies), where they only include a smaller part of the transfer payments given to be used in the business/production (depending on the purpose of the transfer and its receiver, see more about method in section 2.2.2). Figure 4.3 illustrates the difference between the SNA subsidies and the total subsidies based on transfer payments. Only 5 per cent of what in this report is considered total subsidies are actually included in the definition of a subsidy used by the national accounts (see the item “Transfer payments to producers, i.e. SNA subsidies”). Future studies should further discuss what is to be

taken as total subsidies, but since we in the present report include other subsidies as environmentally motivated subsidies they must also be included in the total concept.

Figure 4.3 Percentage of SNA subsidies of the total subsidies in Sweden, 2004



The largest subsidy is given as transfer payments to individuals (with the purpose to be used as consumption) where EUR 30 700 million was paid out in 2004. The SNA subsidies were about EUR 2 500 million.

We can look more thoroughly at transfers to municipalities as an example of why also these other transfers should be included in the definition of a subsidy. Transfer payments given to municipalities, with the purpose to be used in the production, are classified as current transfers between public administrations in the national accounts[35]. Not including these transfers as subsidies would result in some obvious environmentally motivated subsidies being left out in the result of Sweden's environmental subsidies, such as for example support for climate investments, support for local investment programs and support for liming and for protecting the nature. All of these examples are registered as transfer payments to the municipalities. In some cases these subsidies are given to municipalities and in others they are given to municipalities in order for them to disburse.

4.2 Total environmentally motivated subsidies in Sweden

In order to make environmentally motivated subsidies comparable to other economic instruments, such as environmental taxes, the same classifications have been used. The four groups for subsidies are therefore resource-related, energy-related, emission-reducing and transport-related subsidies.

Table 4.1 illustrates the total environmentally motivated subsidies in Sweden between 2000 and 2004. The environmentally motivated subsidies consist of both SNA subsidies and other subsidies, i.e. other transfer payments than subsidies in the national accounts. (Table 4.2, 4.3 and 4.4 will illustrate the percentage of SNA subsidies by environmental groups). The largest group is the resource-related subsidies, followed by the energy-related and emission-reducing subsidies. Only one

[35] Denomination D73 in the national accounts. Current transfers between public administations (D73)

transport-related subsidy was found. The total environmentally motivated subsidies in Sweden were about EUR 570 million in 2004. That was about 1 per cent of the total subsidies.

The environmentally motivated SNA subsidies consisted of EUR 150 million in 2004, about 6 per cent of the total SNA subsidies.

Table 4.1 Total environmentally motivated subsidies in Sweden 2000-2004

Environmentally motivated subsidies[1] (thousand EUR)	2000	2001	2002	2003	2004
Emission-reducing subsidies	**1 265**	**1 959**	**2 364**	**4 679**	**27 080**
Different supports in the climate area	1 265	1 959	2 278	4 047	18 507
Support for climate investments	-	-	87	632	8 573
Energy-related subsidies	**113 438**	**134 280**	**165 323**	**112 619**	**105 469**
Investment subsidy to reduce the use of energy	12 477	7 591	18 798	18 407	11 998
Investment subsidy for renewable energy	18 788	24 026	18 130	5 880	15 768
Energy research	32 897	28 496	31 689	26 818	17 702
Support related to nuclear safety	3 358	3 646	4 358	1 255	1 352
Energy technology support	15 909	33 143	40 706	34 908	42 073
Small-scale electricity support	18 713	25 952	26 380	11 444	0
Support to introduce windpower etc on the market	-	-	-	-	7 289
Energy efficiency measures	6 424	6 552	6 278	9 945	9 287
Measures for providing heat and power in southern Sweden	4 874	4 874	18 984	3 962	-
Resource-related subsidies	**471 083**	**485 399**	**480 432**	**430 999**	**436 201**
Subsidy for eco-building	-	542	1 590	5 058	3 047
Support for environmental marking	417	412	477	477	477
Subsidy to preserve the fish	237	354	411	958	455
Environmental research	14 948	21 132	10 457	10 286	10 480
Support for prevention of landslides etc.	3 286	2 674	3 136	2 914	2 704
Investment subsidy for an ecological restructuring	3 988	1 579	1 342	604	-
Measures for improving the environment in the agricultural sector	1 407	2 384	2 830	2 611	1 537
Other (environmental goals, supervision etc)	1 836	2 296	1 474	2 114	2 747
Support to sanitation of polluted areas	2 111	11 653	44 830	17 612	48 510
Support for local investment programs	64 497	120 725	67 500	46 241	20 209
Return of taxes on fertilizer and pesticides	-	-	6 624	25 511	27 173
Support for liming and protecting the nature	36 379	35 953	37 262	43 629	55 106
Environmental supports in agriculture	197 925	118 894	139 570	113 152	81 651
Environmental aid	138 941	162 463	156 915	153 351	175 088
Support for international environmental cooperation	2 889	3 684	3 691	6 481	7 018
Support for improved environment in Baltic sea	2 223	655	2 323	-	-
Transport-related subsidies	**668**	**0**	**0**	**0**	**0**
Research subsidy on electrical and hybrid vehicles	668	-	-	-	-
Total	**586 454**	**621 637**	**648 119**	**548 298**	**568 749**
Environmentally motivated subsidies as per cent of total subsidies/transfer payments in Sweden	*1,22%*	*1,25%*	*1,27%*	*1,09%*	*1,08%*
Environmentally motivated subsidies as per cent of GDP in Sweden	*0,24%*	*0,26%*	*0,27%*	*0,23%*	*0,24%*

The classification into groups is not certain since there is no manual on the environmental subsidy area which could guide the breakdown of subsidies. The resource-related subsidies in table 4.1 include a broader selection of subsidies than what may traditionally be labelled as resource. Included here in the resource area are also for example environmental research, environmental support in agriculture and environmental aid. Many of the subsidies currently classified as resource-related also have the purpose to reduce emissions and could therefore be classified under both groups. To solve this only subsidies *solely* focusing on reducing emission are classified as emission-reducing subsidies in this report, meaning that the majority of subsidies are still classified as resource-related.

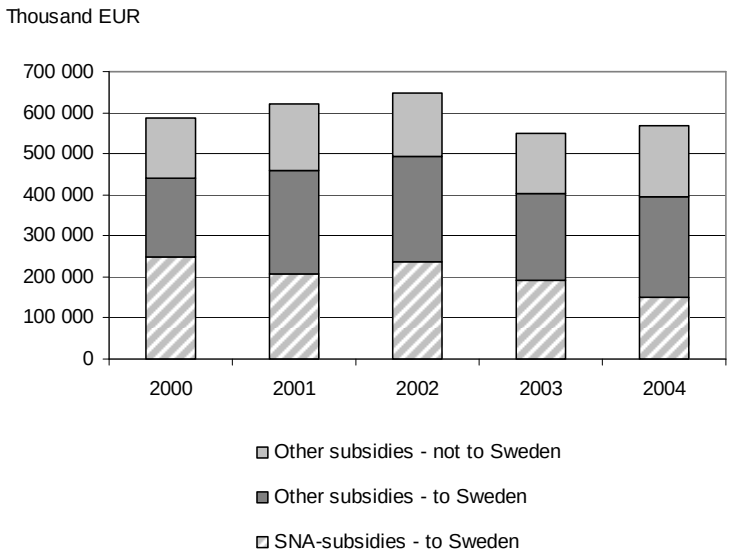
By comparing the result with environmental taxes it can be noted that environmental taxes and environmentally motivated subsidies tend to work in different areas. Almost 80 per cent of the subsidies are classified as resource-related[36], while the

[36] If only looking at SNA subsidies, 75 per cent are resource-related.

taxes are mainly used in the transport and energy area. It might therefore be that subsidies are used in an area harder to impose taxes on.

Subsidies to Sweden and abroad
It is possible to investigate the environmentally motivated subsidies further, for example by receiving country. Figure 4.4 shows that in 2004, 43 per cent of the subsidies were "Other subsidies paid to Sweden", 31 per cent were "Other subsidies paid to other countries" (mostly as environmental aid) and the remaining 26 per cent were "SNA subsidies paid to Sweden".

Figure 4.4 Environmentally motivated subsidies broken down by kind of subsidy and receiving country 2000-2004



Below we present resource-related, energy-related and emission-reducing subsidies more in detail. Since transport-related subsidies only consist of one research subsidy on electrical and hybrid vehicles it will not be studied closely. It has also been removed after 2000. In 2000 about three fourths of this subsidy was presented as an SNA subsidy.

4.3 Resource-related subsidies

Table 4.2 presents the resource-related subsidies broken down by SNA subsidies and other subsidies. The largest subsidy is environmental aid, EUR 175 million in 2004. Other large subsidies in 2004 were Environmental support in agriculture (EUR 82 million[37]) and the support for liming, sanitation of polluted areas and protection of nature (all three amounting to EUR 104 million).

Only EUR 112 million of the 436 million were SNA subsidies in 2004 (26 per cent). One reason for the larger share of other subsidies is that the majority of environmental aid is not considered to be a subsidy in the national accounts.

[37] Not including support from EU

Table 4.2 Resource-related subsidies 2000-2004

Resource-related subsidies (thousand EUR)	2000	2001	2002	2003	2004
Subsidy for eco-building	**0**	**542**	**1 590**	**5 058**	**3 047**
Other subsidies	*0*	*542*	*1 590*	*5 058*	*3 047*
Support for environmental marking	**417**	**412**	**477**	**477**	**477**
SNA-subsidies	*417*	*412*	*477*	*477*	*477*
Subsidy to preserve the fish	**237**	**354**	**411**	**958**	**455**
SNA-subsidies	*18*	*285*	*301*	*552*	*321*
Other subsidies	*219*	*69*	*110*	*406*	*134*
Environmental research	**14 948**	**21 132**	**10 457**	**10 286**	**10 480**
SNA-subsidies	*12 104*	*16 935*	*4 585*	*4 190*	*5 465*
Other subsidies	*2 844*	*4 197*	*5 871*	*6 097*	*5 015*
Support for prevention of landslides etc.	**3 286**	**2 674**	**3 136**	**2 914**	**2 704**
Other subsidies	*3 286*	*2 674*	*3 136*	*2 914*	*2 704*
Measures for improving the environment in the agr. sector	**1 407**	**2 384**	**2 830**	**2 611**	**1 537**
SNA-subsidies	*1 390*	*2 384*	*2 290*	*2 450*	*750*
Other subsidies	*17*	*0*	*540*	*161*	*788*
Return of taxes on fertilizer and pesticides	**0**	**0**	**6 624**	**25 511**	**27 173**
SNA-subsidies	*0*	*0*	*1 897*	*23 029*	*22 300*
Other subsidies	*0*	*0*	*4 727*	*2 482*	*4 872*
Support for local investment programs	**64 497**	**120 725**	**67 500**	**46 241**	**20 209**
SNA-subsidies	*0*	*487*	*0*	*430*	*0*
Other subsidies	*64 497*	*120 238*	*67 500*	*45 811*	*20 209*
Environmental supports in agriculture	**197 925**	**118 894**	**139 570**	**113 152**	**81 651**
SNA-subsidies	*197 925*	*118 894*	*139 570*	*113 152*	*81 651*
Support for liming and protecting the nature	**36 379**	**35 953**	**37 262**	**43 629**	**55 106**
SNA-subsidies	*75*	*0*	*397*	*203*	*118*
Other subsidies	*36 305*	*35 953*	*36 865*	*43 426*	*54 987*
Support to sanitation of polluted areas	**2 111**	**11 653**	**44 830**	**17 612**	**48 510**
SNA-subsidies	*28*	*0*	*0*	*19*	*357*
Other subsidies	*2 083*	*11 653*	*44 830*	*17 594*	*48 154*
Investment subsidy for an ecological restructuring	**3 988**	**1 579**	**1 342**	**604**	**0**
Other subsidies	*3 988*	*1 579*	*1 342*	*604*	*0*
Support for improved environment in Baltic sea	**2 223**	**655**	**2 323**	**0**	**0**
Other subsidies	*2 223*	*655*	*2 323*	*0*	*0*
Other (environmental goals, supervision etc)	**1 836**	**2 296**	**1 474**	**2 114**	**2 747**
SNA-subsidies	*408*	*582*	*341*	*549*	*551*
Other subsidies	*1 428*	*1 714*	*1 133*	*1 565*	*2 196*
Environmental aid	**138 941**	**162 463**	**156 915**	**153 351**	**175 088**
SNA-subsidies	*495*	*276*	*726*	*715*	*401*
Other subsidies	*138 447*	*162 186*	*156 189*	*152 636*	*174 687*
Support for international environmental cooperation	**2 889**	**3 684**	**3 691**	**6 481**	**7 018**
Other subsidies	*2 889*	*3 684*	*3 691*	*6 481*	*7 018*
Total resource-related subsidies	**471 083**	**485 399**	**480 432**	**430 999**	**436 201**

The division between SNA subsidies and other subsidies may have faults in the results. Since the classification depends on which receiver the subsidy is registered under, there may be mistakes if the transfer is registered incorrectly. It may be because the subsidy and its type is registered at its first “station” on its way to the true receiver. It can also be because municipalities register subsidies as their own consumption and not for what it actually is given for. One example is the support for local investment programmes, which is an obvious investment subsidy, recorded as consumption at the municipalities.

As mentioned before, the EU support for environmental supports in the agriculture are not included in this report. If included the amount paid out from the subsidy scheme “Environmental supports in agriculture” would be about twice as much. The decrease may be a result of changes in the relation between EU and domestic subsidies or due to data mistakes, and not a true decrease.

It could be discussed whether the support for liming of lakes, protection of nature and for sanitation of polluted areas is indeed considered as subsidies or if it should lie outside the definition. In this report it is however regarded as subsidies since it is a given subsidy to the municipalities.

4.4 Energy-related subsidies

The energy-related subsidies are presented in table 4.3. Support for energy technology was the largest in 2004; EUR 42 million was paid out, most of which was given as an SNA-subsidy. The subsidy for energy research decreased between 2000 and 2004. A reason for a decrease could be the removal of the support in order to replace it with another economic instrument. That is the case for the small-scale electricity support which was replaced in 2003 by the system of electricity certificates (which is not to be included in our definition of a subsidy since it is a marked-based system where the cost for renewable energy is paid by the user of electricity). Only 36 per cent of the energy-related subsidies were presented as SNA subsidies in 2004.

Table 4.3 Energy-related subsidies 2000-2004

Energy-related subsidies (thousand EUR)	2000	2001	2002	2003	2004
Investment subsidy to reduce the use of energy	**12 477**	**7 591**	**18 798**	**18 407**	**11 998**
SNA-subsidies	*0*	*279*	*478*	*17*	*8*
Other subsidies	*12 477*	*7 312*	*18 320*	*18 390*	*11 990*
Investment subsidy for renewable energy	**18 788**	**24 026**	**18 130**	**5 880**	**15 768**
SNA-subsidies	*19*	*6 297*	*13 840*	*1 637*	*4 173*
Other subsidies	*18 769*	*17 729*	*4 290*	*4 243*	*11 595*
Energy research	**32 897**	**28 496**	**31 689**	**26 818**	**17 702**
SNA-subsidies	*6 989*	*8 562*	*12 268*	*10 282*	*6 963*
Other subsidies	*25 907*	*19 934*	*19 421*	*16 536*	*10 739*
Energy technology support	**15 909**	**33 143**	**40 706**	**34 908**	**42 073**
SNA-subsidies	*6 682*	*20 868*	*19 884*	*17 603*	*24 301*
Other subsidies	*9 227*	*12 274*	*20 821*	*17 305*	*17 772*
Support related to nuclear safety	**3 358**	**3 646**	**4 358**	**1 255**	**1 352**
Other subsidies	*3 358*	*3 646*	*4 358*	*1 255*	*1 352*
Small-scale electricity support	**18 713**	**25 952**	**26 380**	**11 444**	**0**
SNA-subsidies	*18 713*	*25 693*	*24 479*	*11 158*	*0*
Other subsidies	*0*	*260*	*1 901*	*286*	*0*
Support to introduce windpower etc on the market	**0**	**0**	**0**	**0**	**7 289**
SNA-subsidies	*0*	*0*	*0*	*0*	*1 496*
Other subsidies	*0*	*0*	*0*	*0*	*5 793*
Energy efficiency measures	**6 424**	**6 552**	**6 278**	**9 945**	**9 287**
SNA-subsidies	*829*	*440*	*521*	*713*	*518*
Other subsidies	*5 595*	*6 112*	*5 757*	*9 233*	*8 769*
Measures for providing heat and power in southern Sweden	**4 874**	**4 874**	**18 984**	**3 962**	**0**
SNA-subsidies	*2 556*	*4 332*	*15 536*	*2 877*	*0*
Other subsidies	*2 318*	*542*	*3 448*	*1 086*	*0*
Total energy-related subsidies	**113 438**	**134 280**	**165 323**	**112 619**	**105 469**

4.5 Emission-reducing subsidies

Since most of the Swedish subsidies do not have the sole purpose to reduce emissions, not many subsidies have been classified as emission-reducing subsidies. About EUR 27 million was paid out as emission-reducing subsidies in 2004, all in the climate area working to reduce the greenhouse gas emissions. The climate investment programme started in 2002 and a total of EUR 134 million is to be paid out.

Table 4.4 Emission-reducing subsidies 2000-2004

Emission-reducing subsidies (thousand EUR)	2000	2001	2002	2003	2004
Different supports in the climate area	**1 265**	**1 959**	**2 278**	**4 501**	**18 540**
SNA-subsidies	*0*	*0*	*77*	*113*	*0*
Other subsidies	*1 265*	*1 959*	*2 201*	*4 388*	*18 540*
The climate investment programme	**-**	**-**	**87**	**179**	**8 540**
Other subsidies	*-*	*-*	*87*	*179*	*8 540*
Total emission-reducing subsidies	**1 265**	**1 959**	**2 364**	**4 679**	**27 080**

4.6 Comparisons

It is interesting to compare the subsidy data with other relevant data in order to broaden the outlook.

4.6.1 Two different methods to collect data

Since the project has resulted in an improved method for data collection it is of interest to see if the amount of subsidies described in the two methods differ. As seen in figure 4.5, more environmentally motivated subsidies can be collected using the new data source. (*Read more about the new method in chapter 2*).

The SNA subsidies in the previous and the new method are the same. The increase is therefore a result of more "other subsidies" being identified as environmentally motivated. The new method is more successful in identifying subsidies outside the SNA definition, which enables us to collect better data according to the wider definition of a subsidy used by the environmental accounts. This enables finding more data of environmentally motivated subsidies, such as environmental aid which is included in the new method. Environmental aid accounted for about 24 per cent of the total environmentally motivated subsidies in 2002 (EUR 157 million). In 2002 the total amount differed between the two methods by EUR 177 million. In the new method, agricultural support given by the EU is not included as it was in the old method. By also including this the difference between the methods will be even larger.

Figure 4.5 Comparison between collected data with previous and new method (as in this report) 2000-2002

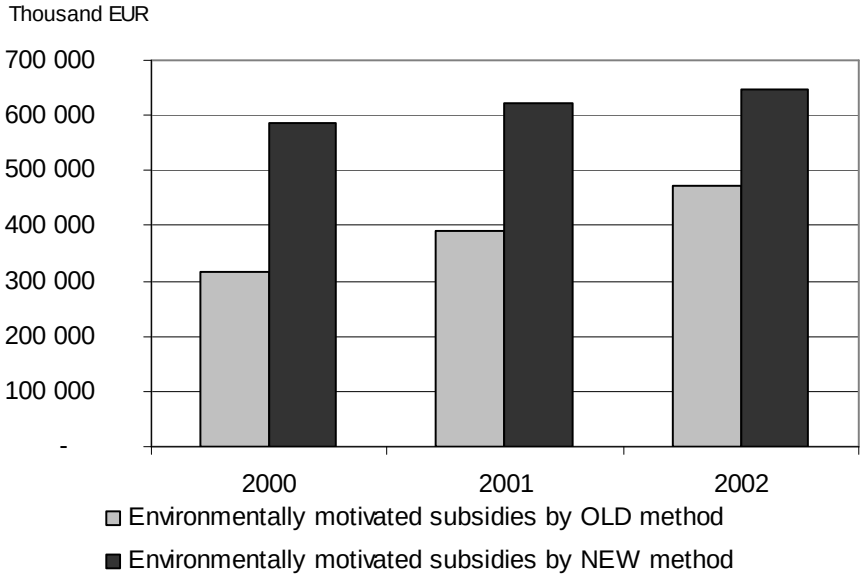


Figure 4.5 illustrates that the new method of collecting data on subsidies is better for collecting subsidies, since we both in the previous and new method used the same definition of a subsidy. It gives more accurate data, it gives us more possibilities regarding what kind of data we want to include, and also allows us to use only one source which avoids the risk of double counting. The data which before was

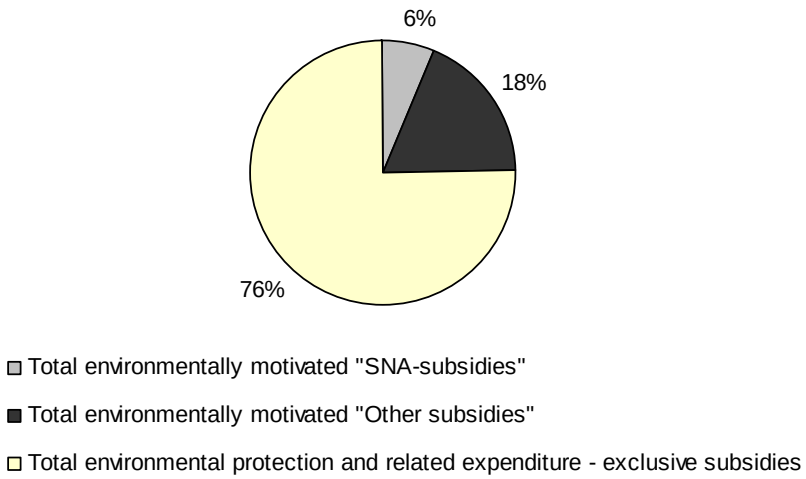
collected from some authorities handling environmental subsidies has been compared with the *new* data now directly collected from ESV and the data has been similar.

4.6.2 Public EPE and subsidies

It is of interest to find out how much of the public environmental protection expenditures that are publicly funded environmental subsidies. It is also interesting to see to which areas the subsidies are aiming towards, compared with which areas the total environmental protection expenditures are allocated to.

One large difference between the two is that the definition of environmentally motivated subsidies is wider, including more support in the energy efficiency area. The public EPE are based on a manual statement of what is and is not EP. However, while collecting data of public EPE in the present report, a wider perspective than the protection costs was used. As a result, another group of expenditures was collected. These are called environmentally related expenditures. The comparison below is based on both the EP *and* related expenditures. (The environmentally *related* expenditures are 6 per cent of the total amount). Six per cent of the public EPE are environmentally motivated SNA subsidies. If other subsidies (such as environmental aid and support paid to municipalities for liming, sanitation etc) are also included in the definition of a subsidy the figure is higher, 24 per cent.

Figure 4.6 Percentage of public EPE (including related EPE) that are paid out as SNA- and other subsidies, 2004



It is not possible to easily compare the two different amounts on a more detailed level since they are based on different environmental domains. As the data is broken down today it is difficult to do a satisfactory comparison between the two.

The environmentally motivated subsidies are classified in these groups (same groups as the environmental taxes are classified in): Emission-reducing subsidies, Energy-related subsidies, Resource-related subsidies and Transport-related subsidies. The public EPE are not classified into the same four groups, but instead 9 different

environmental domains. These domains are (briefly): Air, Water, Waste, Soil/groundwater, Noise, Biodiversity, Radiation, Research and Other.

In a comparison it would have to be noted that the emission-reducing subsidies and the Air-EPE categories overlap. Many other categories in EPE are directed towards the resource area of subsidies.

4.6.3 Presentation of subsidies and environmental pressure data

It is of interest to present the data on environmentally motivated subsidies (as other economic policy tools) together with environmental pressure data. As can be seen, major parts of the environmental subsidies are directed towards agriculture/nature and towards energy efficiency and technology.

The major environmental quality objectives that are concerned are thus eutrophication and biodiversity on the agricultural side. Both are state objectives with a considerable time delay between EP actions and measurable differences in the environment.

On the energy side the climate change and air quality issues dominate. Beside the environmental goals there may also be other goals for the subsidies, such as creating employment, pushing new technologies and energy safety issues, to mention a few. To monitor the effect of the subsidies on the environmental quality, it would therefore be of interest to present such variables.

Eutrophication
For eutrophication issues the flows of nitrogen and phosphorous are the substances concerned. Today the data on flows of nitrogen and phosphorous to water from agriculture are not part of the annual reporting of the environmental accounts, even if some data has been reported in the water accounts.

The actual annual flows will depend not only on the economic activity but also on climate factors and the amounts of nitrogen and phosphorous already stored in the ground. For several years there have been efforts at the University of Agriculture to create a model that would show the contribution from farmland depending on the agricultural regime used[38]. Yearly emissions of nitrogen and phosphorus were estimated for all known point sources. In addition, diffuse leaching from various types of land was estimated. By incorporating weather data for 30 years, model calculations of leaching and transport were performed and calibrated to most known measurements in Swedish rivers during this period. The “gross” (average) load, emissions and leaches, of phosphorus and nitrogen, were calculated for drainage areas larger than 1 000 km^2. For nitrogen, “net” loads were also calculated.

On the agricultural side several studies have been made at Statistics Sweden, although not with an explicit accounting perspective[39]. The economics have not been explicitly treated, but such work is under way in a new report. The payments of

[38] The project is presented on the Internet at http://www-nrciws.slu.se/TRK/index.html
[39] LRF 1997, 1998, 2001, *Miljöredovisning för svenskt jordbruk (Environmental report for Swedish farming)*, Lantbrukarnas Riksförbund, Stockholm, www.lrf.se

subsidies have been criticized for not being allocated to the areas with the largest environmental problems. However, the accounts do not contain local data and could therefore not provide information for this kind of analysis in the near future, at least not with the present priorities.

Biodiversity
Biodiversity has been a new environmental quality goal since 2005. Systems for overseeing the available data sources are being developed, and it has been proposed that the Swedish EPA should provide information with a web system that summarises the different initiatives to map the fauna and flora in Sweden. An attempt to include data on bio-diversity in the accounting system[40] concluded that no data sources that can give a picture for the whole nation are available yet. The Swedish Institute of Economic Research (NIER) has a two-year project to investigate how this data can be used for environmental economic analyses.

Energy and climate
The taxes and subsidies in Swedish energy- and climate politics have been discussed in a report from NIER[41] (Söderholm and Hammar, 2005). The aim of the study is to penetrate some common buzz-words such as cost-efficiency and energy efficiency and elaborate on how these can be measured. They conclude that ideally there should be one steering instrument for each goal/ market-failure for it to be properly analysed in terms of efficiency.

Often many different economic instruments have been regarded as relevant from a carbon-dioxide perspective, when in fact they have had other main goals to fulfil. Some of these other goals, such as employment or new emerging markets for bio-fuels or environmental exports can also be evaluated with the help of the SEEA.

The taxes that are directed towards SO2 and CO2, as well as the emissions trading system, are fairly clear-cut in design to decrease the emissions of these substances. It is easy to present relevant data for these taxes from the accounting system, such as emissions by industry. Further, the energy taxes can be presented together with the energy use, showing the trends and the coverage of the economic instrument.

For subsidies, more data will have to become available nationally on quality of different regimes and on local ecosystems. Given the costs for such detailed data systems, more research will have to be made before the accounts can provide such data.

[40] Eriksson H., Eriksson M., Norman L., Skånberg K., (2001), *Environmental accounts for forest – test of a proposed framework for Non ESA/SNA-functions,* report prepared for Eurostat www.scb.se/Statistik/MI/MI1202/2000I02/MIFT0105.pdf

[41] Söderholm P and Hammar H, 2005, *Kostnadseffektiva styrmedel i den svenska klimat- och energipolitiken? (Cost-efficient instruments in the Swedish climate and energy policies),* Metodologiska frågeställningar och empiriska tillämpningar, Specialstudier, Nr 8, November 2005, National Institute for Economic Research, Stockholm, www.konj.se

5 International review

5.1 Public expenditures

Below is a selection of countries compiling statistics on public EPE. Regarding those countries that do compile statistics over public EPE there are different methods and sources behind the data which complicate comparisons. Therefore no comparisons among countries are made regarding public EPE in this report.

5.1.1 Denmark

Statistics Denmark has reported data for public EPE since 1994. In the report *Offentlige miljoudgifter og- indtaegter 1994-2004 (public expenditures and incomes for the environment1994-2004)* [42] it is stated that total public EPE was EUR 3 239 million [43] in 2004. Municipalities account for the largest part of this, 68%. Looking at environmental domains, the largest part is spent on waste, 35%. Wastewater management is second largest, or 27% of total EPE.

The data has been compiled from a statistical database held by Statistics Denmark. It includes income and expenditures identified and classified from Governmental financial accounts and the municipal accounts. The statistics are limited to cover EPE with an environmental effect which directly is clear from the official accounts. Therefore, the figures do not totally cover all public EPE and items such as integrated environmental investments are left out. It seems however that all activities for energy are included (also saving) and coded either as *1 – Protection of ambient air and climate* or *8 – Research and development* and thereby can explain the rather large public EPE.

5.1.2 New Zealand

EPE in New Zealand has been compiled from the department of Conservation and the Ministry for the Environment[44]. These are the two major sources of expenditures on central Government level. The Ministry of Agriculture and Forestry, the Ministry of Fisheries and the Office of the Parliamentary Commissioner for the Environment also incur and contribute with significant expenses. Local Government expenditures were taken from annual plans of local authorities. Sometimes the finance departments of different councils were contacted as a supplement.

The calculated value of New Zealand's public sector EPE was NZ$1 165.3 million in 2003. This equals EUR 629 million[45].

[42] Denmark Statistics, *Offentlige miljoudgifter og- indtaegter 1994-2004 (public expenditures and incomes for the environment1994-2004)*
[43] Using the value of 1 Danish Krona=0,13 EUR
[44] Statistics New Zealand, *Environmental Protection Expenditure Account – for the public sector, Years ended June 2001 to June 2003*
[45] Using the value of 1 $ NZ=0,54 EUR

5.1.3 Germany

Germany does not publish anything in English about EPE in the public sector. They do not have a special survey in this field but use data from financial statistics to estimate the main categories for EPEA[46].

5.1.4 Spain

The statistical source used in Spain for publishing figures for the public sector is the Public Administration Accounts of the General State Administration Intervention[47]. The statistics provide information on the expenditure of the Public Administration on environmental protection, function 5 of the Functional Economic Classification, which at the same time is broken down into six sections with the following sub functions:

- 5.1 waste management
- 5.2 waste water management
- 5.3 reduction of pollution
- 5.4 protection of biodiversity and of the countryside
- 5.5 research and development in relation to environmental protection
- 5.6 other activities for environmental protection

The data makes it possible to prepare accounts for each of the corresponding sub functions.

The statistics are presented by environmental fields, according to the Classification of Protection of Environment Activities. This allows the users detailed analysis of the main aggregates.

5.1.5 Austria

In 2001 the Austrian EPE amounted to EUR 6.6 billion; about 24% was financed by the public sector (54% private enterprises, 23% private households)[48].

5.1.6 The Czech Republic

EPE are presented in two tables: "Environmental expenditures from central resources" and "Incomes and expenditures of the State Environmental Fund (SEF)"[49]. The incomes in the latter consist of various payments, charges and resources from the National Programme of Air Pollution Control (NPAPC), while the expenditures include grants and loans. The data has been compiled from the State Environmental Fund, National Property Fund and the Ministry of Finance of the CR. The EPE from central resources were in 2003 about EUR 446 million [50].

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[46] Lauber, Ursula, Destatis, personal contact

[47] Instituto Nacional de Estadistica, *Environmental protection expenditure account*, http://www.ine.es/en/daco/daco42/ambiente/aguasatelite/protambi_en.pdf

[48] Statistics Austria, http://www.statistik.at/englisch/results/raum/umwelt_txt1.shtml

[49] Czech Statistical Office, report can be downloaded at: http://www.czso.cz/eng/edicniplan.nsf/o/10n1-04--environment___methodology

[50] EPE from Czech Statistical Office was presented in 13 300 CZK million. Using a rate of exchange of 29,82 (1 Euro=29,82 CZK) gives 446 million EURO.

5.1.7 Portugal

For Portugal we have not been able to find any information about methods for collecting public EPE. Below are expenditures[51] for 2003.

Domains	Institutional sectors				
	Total	Public administration			ISFL (a)
		Central	Regional	Local	
	EUR thousands				
Total	**925 602**	**315 192**	**48 858**	**551 345**	**10 208**
Protection of ambient air and climate	1 827	911	543	373	-
Wastewater management	218 516	70 160	4 995	143 360	-
Waste management	381 093	8 332	19 842	352 919	-
Soil, groundwater and surface water	4 806	-	373	4 433	-
Noise and vibration abatement	5 582	5 210	-	372	-
Protection of biodiversity and landscape	257 840	200 683	12 360	40 630	4 167
Protection against radiation	-	-	-	-	-
Research and development	729	553	1	175	-
Other environmental protection activities	55 209	29 342	10 744	9 082	6 041

(*) Consolidated expenditure
(a) ISFL - Non-profit Institutions

5.2 Environmental subsidies

Not many countries have come far in estimating their environmentally motivated subsidies. Regarding those countries that do compile statistics over environmental subsidies there are different methods and definitions behind the data which complicate comparisons. Therefore no comparisons among countries are made regarding subsidies in this report.

One country that does produce statistics every year on environmental subsidies is Denmark. However, Denmark uses different definitions than OECD and Sweden and focuses on subsidies with a positive effect on the environment rather that on its original motive. In this definition they for example include subsidies for public transportation and railways as environmental subsidies, which we in this present report do not include (since the main motive is not environmental). A previous study at Statistics Sweden described the Danish method more thoroughly and also included some subsidies for public transportation and railways to the Swedish subsidies in order to make a comparison between Denmark and Sweden possible[52].

[51] Instituto Nacional de Estatistica Portugal, Environment Statistics, 2003
[52] Read more about this in SCB 2003:4, *Environmental subsidies – a review of subsidies in Sweden between 1993 and 2000*, Can be downloaded at www.scb.se/mi1301-en

6 Concluding remarks

6.1 Public expenditures

The total public EPE in Sweden were about EUR 2 164 million in 2004 which corresponds to about 2.7 per cent of the expenditures in the Government budget. It is noteworthy that municipal expenditures, which are financed by fees and taxes, are included in our total for public EPE. Looking only at central Government data (including county administrative boards) the total public EPE is EUR 752 million. This figure corresponds to approximately 1 per cent of the Government budget expenditures in 2004. Compared with GDP public EPE was 0.8 per cent in 2004.

The results from looking at annual reports and performing the small survey show that there are other expenditures besides the Government budget which need to be identified and compiled when tracking down a total for public environmental expenditures.

The largest single domain was wastewater management, or 30% of the total public EPE. Looking only at central Government, international aid was the largest environmental domain with 24% of the total central Government EPE.

6.1.1 Discussion on sources and method

This current project has tested a new method regarding data collection which has proved to be a better method in compiling more accurate data. The data which before was collected only from national accounts and COFOG 05 has been compared with the *new* data now collected from the Swedish National Financial Management Authority (ESV) and municipal accounts.

From ESV, which we have used as source in the present report, we have identified EUR 209 million as EPE and classified as COFOG 05. However, the total for 2004 for COFOG 05 in the same source was EUR 353 million. The difference of EUR 144 million included activities aiming at rural development, other environmentally related expenditures not defined as EPE or activities having the purpose of protecting human and health.

The last year we compiled and reported EPE for the public sector according to the Joint Questionnaire was in 2002. This was totally based on COFOG 05 from national accounts. Included in this were the Government and municipalities. The total EPE reported for general Government[53] amounted to EUR 877 million in 2002. Since our figure in this report is EUR 2 164 million, we can see that our presumptions about underestimations are true. However, it is really not comparable since it is two different years. Therefore we roughly compiled the same data for 2004 (from national accounts, COFOG 05) which turned out to be EUR 1 018 million. We can therefore draw the conclusion that in order to identify public EPE, national accounts and the classification of COFOG 05 are not a sufficient source. In the future it is therefore recommended to use the Government budget as the main source for

[53] Municipalities plus what we in this report call central Government since county administrative boards are categorized like authorities in the Government budget

compiling public environmental expenditures. This should be complemented with data from municipal accounts and annual reports.

The Government budget is useful and convenient for the purpose of compiling EPE for the public sector. It is however not possible to track parts of budget lines which are not described as environmental in the budget proposal. For instance, financing of environmental statistics at Statistics Sweden can not be identified by looking at Statistics Sweden's budget line. Of course that can be found by looking at directives for the budget line received, but that would be too demanding to do for all authorities. Another cost which is still mostly "hidden" in our data is EPE for education at universities. Only a small part of the universities responded to our survey and of these not many could easily give us their EPE.

The only chance of receiving EPE for county councils is to ask all 20 county councils. This demands a substantial effort in defining what kind of data is needed etc and puts a burden on the people answering. The county councils may also meet difficulties in discerning EPE from their other expenditures.

Annual reports are a useful complement to budgetary data. Looking at governmental figures this source accounts for 21%. Annual reports can rather quickly be searched. If an electronic version is used, the function "search" can be used to look for environmentally related items. The information found can then be completed by direct contact with the authorities.

The value of expenditures compiled from the survey is very low (only 4% of total governmental environmental expenditures) so the conclusion is that the method is not very lucrative bearing in mind the uncertainty of quality in data and load of work for authorities and Statistics Sweden. To assure better quality in data from a survey like this it is necessary to give extensive information on definitions and what to include. The authorities have pointed out the problem of identifying data due to the integration with other activities. The conclusion is therefore that we should not work further with a survey to central authorities.

The source of municipal accounts is effortless, easy to understand and simple to pick data from. The disadvantage is that some of the items cover a larger area than desired. The alternative for compiling municipal EPE is by asking/performing a survey directly to municipalities or analysing annual reports. Both of these methods would demand substantial work and would probably give data of less reliability. The conclusion is that the municipal accounts are very good to use as a data source, but it should be supplemented by a deduction[54] for health related data in order to present it separately just as we do with energy.

In order to avoid double counting we have tried to trace transfers between the Government, county administrative boards and municipalities. There may however be some left and to reach certainty it would demand an extensive effort. When

[54] This could be done by asking a sample of municipalities about their perception about distribution between health and environment. This information could then be used to make some sort of key for making distribution.

constructing EPEA for the whole society it is needed to sort out the fees paid by the industry to municipalities and county administrative boards for example for the service of waste management and environmental supervision.

All expenditures have, if possible, been categorized to the environmental domains of CEPA. This is however not optimal since CEPA is more focused on activities of the industrial sector. As the purpose in the long run is to build a full picture of all EPE in society, the same definition should be used for all sectors. According to CEPA the primary purpose of the expenditure is leading the way when deciding if a transaction is environmental protection or not. In resemblance with the industrial sector, there are problems in figuring out the primary objective for some expenditures. For the industrial sector the reasons are most of the time economical, but that is not the case for the public sector. The public sector does not have the same incentives for economic profit. Therefore it can be argued that some investments which have been excluded as EPE should have been included anyway.

6.2 Environmental subsidies

The total environmentally motivated subsidies in Sweden were about EUR 570 million in 2004. This was only about 1 per cent of the total subsidies/transfers in Sweden. About 25 per cent of the total environmentally motivated subsidies are known as SNA subsidies, i.e. subsidies as they are defined in the system of national accounts. The remaining 75 per cent are “other subsidies”. Many subsidies, for example in the transport sector, could probably be elaborated with a clearer environmental purpose, since only a very small share of the total subsidies today are environmentally motivated.

This current project has tested a new method regarding data collection which has proved to be a better method in many ways. It gives more accurate data (leading to increased results), it is more flexible with what kind of data that can be included and also makes it possible to use only one source, avoiding the risk of double counting. The data which before was collected from a number of authorities handling environmental subsidies has been compared to the new data now collected from the Swedish National Financial Management Authority (ESV) and the data has been similar enough. It is also possible to discern SNA subsidies out of the total using this new method, since ESV is the source for the subsidies, current transfers and capital transfers in the national accounts. One reason behind the increased result of about EUR 180 million for the environmentally motivated subsidies with the new method (compared to the former method) is because data on environmental aid now can be included. In 2002 environmental aid amounted to about EUR 155 million.

The subsidy definition used in this report is broader than the one in the system of national accounts, since it includes also subsidies going to municipalities and outside of Sweden as well as investment subsidies. An example of a subsidy to municipalities is the support for natural reserves and for liming. It is considered an environmentally motivated subsidy since it is indeed a transfer paid from the Government to someone else and given with an environmental motive. Another example are the subsidies given for climate investments or local investment programs in Sweden, which are not included as subsidies in the SNA.

It would not be sufficient to only collect SNA subsidies in the environmental accounts. This report has shown that in Sweden many environmental subsidies are paid as investment subsidies or as subsidies to for example households or municipalities, which are not included in the SNA definition and therefore fall under the category “other subsidies”. Only identifying SNA subsidies would therefore not be satisfactory for the case of Sweden. The relationship between SNA subsidies and “other subsidies” may also differ among countries, depending on how the country prefers to allocate subsidies. One country may prefer to pay the majority of the total environmental subsidies like investment subsidies and another may pay them in a different way. A comparison among countries therefore ought to be based on a wider definition of a subsidy in order to identify also the country’s share of “other subsidies” in addition to SNA subsidies. The comparison among countries on just SNA subsidies could otherwise be misleading as well as irrelevant.

Since we in this project show that it is possible to broaden the definition of a subsidy, the largest obstacle against the accounting method of measuring subsidies is removed. Consequently the combination of economic data and environmental data in an international accounting framework is a very promising analytic tool. The method used for collecting environmentally motivated subsidies in the present report can be used to collect also other definitions of subsidies (from the Government budget). However, in order to collect data on environmentally harmful subsidies, better definitions in the area will be needed, as well as a manual on how to collect and present the data.

6.3 Future work

6.3.1 Environmental protection expenditures

In the future it would be interesting to make a deeper comparison of Swedish public EPE with other countries in order to find out differences in results. It is interesting to see if the Governments prioritise different environmental areas. Another relevant aspect would be to analyse this prioritisation linked to environmental objectives, i.e. does public EPE reflect the environmental objectives? Harmonised international methods are however needed in order to make good comparisons. Classifications of environmental domains also need to be adjusted for environmental activities performed by the Government, work which Statistics Sweden would like to contribute to.

It would be preferable to look at several years in order to see consistency in the data. Therefore we would like to apply the method on years prior to 2004. We propose that EPE for county administrative boards would then be presented separately from central Government EPE.

To receive full coverage of public EPE, data for county councils should be included. The reason why it is not included here is because there has been a problem in finding a suitable source. The only method of compiling these will probably be by contacting the county councils directly. Some efforts could also be made into looking closer at universities since they are not very well covered in this report. Future work could focus on whether environmental educations are EPE as well as how to collect the costs for these.

Some other analyses could also be performed in order to develop the methods used in the present project. One is to look closer at data from municipal accounts and make a sample study of some municipalities in order to separate data for health. Another is to look deeper into data from annual reports and municipal accounts in order to make sure that double counting is avoided. There may be a risk that some data included also is integrated in data compiled from the Government budget. We have however tried to keep track of flows in order to avoid double counting in data.

In order to reach a full picture of all EPE in Sweden it is necessary to complement the data in the present report with revenues and financing of the environmental activities. A look at revenues is required to enable the compilation of supply and use (input/output) tables which is the long term goal for EPE accounting.

6.3.2 Subsidies

In order to obtain more internationally comparable subsidy data there is a need for a manual or similar framework to be compiled. Today many countries are compiling statistics in the area using different methods and definitions making it impossible to compare. This international work should mainly concentrate on how to define subsidies as well as environmental subsidies. The manual also ought to discuss how the environmental subsidies should be classified, in the same groups as environmental taxes, as in the present report, or in groups more similar to the CEPA categories[55]. If the resulting data is to be compared with public EPE data the two products must be made more comparable than they are in the present report. Support to energy efficiency and energy research is included as environmentally motivated subsidies but not in public EPE (according to the manual). The group of resource-related subsidies is used as a more general group in the present report, including both support to environmental aid, environmental research and liming. There is a need of guidance in order to classify subsidies into the correct environmental groups, otherwise countries will tend to classify subsidies in different ways making it difficult to compare.

The “other subsidies” (not SNA subsidies) need to be more thoroughly examined in order to make sure that no transfer payments unsuitable as subsidies are included. It should also be further discussed what should be considered as total subsidies and if this is a good unit to compare the environmental subsidies with. If not, a better unit should be found.

The data collected by this new method is possible to distribute (roughly) on industries in the future, using a similar method as the national accounts uses for their SNA subsidies from the Government budget. Future work will also use the method from this project to collect data on subsidies for the years before 2000.

Subsidies paid from the EU were not included in this project. EU subsidies going through the Swedish Government budget (such as agricultural support) can easily be included. Subsidies going instead directly from the EU to beneficiaries of the subsidy will however have to be manually included. Methods for this will have to be analysed.

[55] The Classification of Environmental Protection Activities and Expenditure.

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Appendix 1 – Classification of the Functions of Government (COFOG)

01. General public services

02. Defence

03. Public order and safety

04. Economic affairs

05. Environmental protection

06. Housing and community amenities

07. Health

08. Recreation, culture and religion

09. Education

10. Social protection