

Rapport 2003:4

Environmental subsidies

– a review of subsidies in Sweden
between 1993 and 2000



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Environmental accounts

Miljösubventioner - en översikt av subventioner i Sverige mellan 1993 och 2000.

Producent
Producer

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Preface

In 1993, Statistics Sweden, the National Institute of Economic Research and the Swedish Environmental Protection Agency were instructed by the Swedish 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 work on environmental accounts at Statistics Sweden is to develop and maintain a system of physical accounts that is linked to the economic activities described in the national accounts. In practice, this means developing a system of environmental and natural resource statistics that can be linked to industry, product and sector categories used in the national accounts, thus forming a satellite system of accounts around the national accounts.

To begin with, the focus has been on developing the environmental accounts for energy and certain emissions. Data on environmental taxes has been included in the Swedish environmental accounts since 2000 when the report "Environmental taxes and environmentally harmful subsidies" was published (SCB 2000:3). The present report is the first project that incorporates descriptions of environmentally motivated subsidies into the Swedish environmental accounts. The result also shows that there are no unitary definitions, either of a subsidy or of an environmental subsidy, and the results are quite different depending on the definitions used.

Subsidies, and especially environmentally harmful subsidies, have been on the international agenda for the last couple of years. The report from 2000 (SCB 2000:3) illustrates a selection of harmful subsidies that may run counter to sustainable development. This report focuses instead on subsidies that may support the environment, here called environmentally motivated subsidies. These are presented for the period from 1993 to 2000 on an aggregated level as well as broken down by industries and sectors. Due to the narrow definition of a subsidy used by the programme of national accounts in Sweden, the definition of a subsidy in this report is extended by adding several different investment subsidies.

The report has been prepared by Maja Larsson, at Statistics Sweden, with contributions from Viveka Palm.

Table of contents

SUMMARY	6
SAMMANFATTNING	12
1 INTRODUCTION.....	17
1.1 BACKGROUND.....	17
1.2 PURPOSE	18
1.3 DEFINITIONS	18
1.3.1 <i>Subsidies</i>	<i>18</i>
1.3.2 <i>Direct and indirect subsidies</i>	<i>19</i>
1.3.3 <i>Product subsidies and other subsidies on production.....</i>	<i>19</i>
1.3.4 <i>Environmental subsidies</i>	<i>20</i>
1.4 LIMITATIONS.....	21
1.5 METHOD.....	22
1.5.1 <i>Source of data on subsidies</i>	<i>22</i>
1.5.2 <i>Classifying environmentally motivated subsidies</i>	<i>22</i>
1.5.3 <i>Information about the specific subsidies</i>	<i>23</i>
1.6 ORGANISATION OF THE REPORT.....	23
2 SUBSIDIES.....	24
2.1 SUBSIDIES: BACKGROUND	24
2.2 SUBSIDIES: A POLICY TOOL	25
2.2.1 <i>Subsidies and taxes</i>	<i>25</i>
2.2.2 <i>Environmentally harmful subsidies</i>	<i>27</i>
2.2.3 <i>Environmentally motivated subsidies</i>	<i>28</i>
3 RESULTS - SUBSIDIES IN SWEDEN.....	29
3.1 TOTAL SNA-SUBSIDIES IN SWEDEN	29
3.2 DEVELOPMENT OF ENVIRONMENTALLY MOTIVATED SUBSIDIES	30
3.3 RESOURCE SUBSIDIES	32
3.3.1 <i>Nature conservation measures in the agricultural sector (NOLA) ..</i>	<i>33</i>
3.3.2 <i>Supplementary measures in the agricultural sector.....</i>	<i>33</i>
3.3.3 <i>Other subsidies for agriculture.....</i>	<i>36</i>
3.3.4 <i>Subsidy for fish cultivation.....</i>	<i>36</i>
3.3.5 <i>Research subsidies.....</i>	<i>37</i>
3.3.6 <i>Subsidy for environmental work.....</i>	<i>37</i>
3.4 ENERGY SUBSIDIES.....	37
3.4.1 <i>Subsidies aiming at more efficient use of energy</i>	<i>38</i>
3.4.2 <i>Energy research subsidies</i>	<i>40</i>
3.4.3 <i>Measures for providing heat and power in southern Sweden</i>	<i>40</i>
3.4.4 <i>Energy efficiency measures in the Baltic States and eastern Europe</i>	<i>41</i>
3.5 TRANSPORT SUBSIDIES.....	41
3.5.1 <i>Research subsidy for electrical and hybrid vehicles</i>	<i>41</i>
3.6 THE IMPACT ON THE ECONOMY.....	42
3.7 INVESTMENT SUBSIDIES AND OTHER SUPPORTS IN SWEDEN	43
3.7.1 <i>Resource-related investment subsidies</i>	<i>45</i>
3.7.2 <i>Energy-related investment subsidies</i>	<i>46</i>

3.7.3	<i>Additional environmentally motivated subsidies</i>	47
4	COMPARISONS	49
4.1	COMPARABLE STATISTICS ON ENVIRONMENTAL SUBSIDIES	49
4.1.1	<i>Denmark</i>	49
4.1.2	<i>Support to railways and public transportation in Sweden</i>	52
4.2	DIFFERENT DEFINITIONS OF AN ENVIRONMENTAL SUBSIDY	53
4.2.1	<i>Divided on resource and energy subsidies</i>	54
4.3	ENVIRONMENTALLY “HARMFUL” SUBSIDIES	55
4.3.1	<i>Agricultural, forestry and fishing sector</i>	56
5	CONCLUSIONS	57
5.1	FUTURE DEVELOPMENTS	58
6	REFERENCES	60
6.1	BOOKS AND REPORTS	60
6.2	INTERVIEWS	62
	APPENDIX 1: THE INDUSTRY CLASSIFICATION	63
	APPENDIX 2: TABLES	64

Summary

The use of taxes and subsidies as policy instruments has increased in recent years. In 2000, Statistics Sweden published a report focusing on environmental taxes and environmentally harmful subsidies (Environmental accounts, SCB 2000:3). The present report aims to go one step further with a wider documentation of subsidies, focusing on subsidies with a positive impact on the environment. By using different definitions of what a subsidy and an environmental subsidy are, the report presents different approaches useful for future work in this area. Since this work has been undertaken using the system of national accounts, most of the environmental subsidies are discerned from, and can be compared to, the total subsidies. The subsidies from the national accounts are called SNA-subsidies¹ in this report.

Subsidies, in this context, are current unrequited² payments from government to producers with the objective of influencing their levels of production, their prices or the remuneration³ of the factors of production. The subsidies from the Swedish government and the EU consist mainly of production subsidies, i.e. subsidies given for a commitment in production.

Several studies in recent years have focused on environmentally harmful subsidies but a practicable definition for international comparisons has not yet been identified⁴. As the pressure on the environment in this country is recorded in the environmental accounts by industry, there are possibilities to investigate how the policy instruments and the pressure on the environment are distributed between industries and between countries. This is a way of investigating subsidies and environmental pressure without having to use any specific definition of harmful subsidies. However, subsidies are not a standard feature of the environmental accounts today, even if the issue is under discussion.

Environmentally motivated subsidies

An environmental subsidy has the purpose of giving incentives for more environmentally friendly actions. With regard to the difficulty in proving a subsidy's positive environmental effect, this report chooses to use the term "environmentally motivated subsidy", where the motive is the guiding star.

The resource-related subsidies are dominated by subsidies to the agricultural sector. Other resource-related subsidies in Sweden affect the fishing sector as well as research. The majority of the energy-related subsidies aims to increase energy efficiency and improve energy technology. Others are subsidies for research, subsidies for heat and power in southern Sweden and in the Baltic states and eastern Europe. Only one subsidy is classified as a transport-related subsidy with an environmental motive in the national accounts. Since the definition of an environmentally motivated subsidy focuses on its motive and not its effects, the large amount of subsidies for public transportation and railways are not included in *table A*. The main motives

¹ SNA = System of national accounts

² Swedish term: *ensidiga* (not reciprocated or returned in kind)

³ Swedish term: *ersättningen* (to pay an equivalent to for a service, loss, or expense)

⁴ The OECD, among others, has debated this issue. For more information on this matter, see www1.oecd.org/agr/ehsw

for these subsidies are regional, and not environmental, according to the budget proposals.

Table A. Environmentally motivated SNA-subsidies in Sweden, 1993-2000. SEK million in current prices.

Environmentally motivated SNA-subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
Resource-related subsidies	248	296	1 110	947	1 638	2 694	2 423	2 028
Nature conservation measures in the agricultural sector (NOLA)	226	250	245	-	-	-	-	-
Supplementary measures in the agricultural sector	-	-	825	890	1 410	2 446	2 188	1 786*
Landscape conservation measures	17	30	4	0	0	0	0	0
Measures for improving the environment in the agricultural sector	5	1	1	1	8	15	5	13
Subsidy for fish cultivation	0	2	0	3	1	4	0	0
Research about environment and eco-cycles	0	2	6	7	4	5	4	2
The Council for Forestry and Agricultural Research	0	11	26	38	204	209	226	223
Subsidy for environmental work	0	0	3	8	11	15	0	4
Energy-related subsidies	121	71	152	141	165	178	191	154
Energy efficiency measures	23	-4**	3	5	1	13	12	6
Energy technology support	-	-	-	-	-	-	51	27
Introduction of new energy technologies	-	-	-	-	-	0	67	32
Energy research	86	64	134	122	164	165	43	66
Bio-energy research	12	11	15	14	0	0	0	0
Measures for providing heat and power in southern Sweden	-	-	-	-	-	0	15	23
Energy efficiency measures in the Baltic States and eastern Europe	0	0	0	0	0	0	3	0
Transport-related subsidies	0	0	14	2	3	3	14	0
Research subsidy on electrical and hybrid vehicles	0	0	14	2	3	3	14	0
Total environmentally motivated subsidies	369	367	1 276	1 090	1 806	2 875	2 628	2 182
<i>Environmentally motivated SNA-subsidies as per cent of GDP in Sweden</i>	<i>0,02</i>	<i>0,02</i>	<i>0,07</i>	<i>0,06</i>	<i>0,10</i>	<i>0,15</i>	<i>0,13</i>	<i>0,10</i>
<i>Environmentally motivated SNA-subsidies as per cent of total subsidies in Sweden***</i>	<i>0,62</i>	<i>0,63</i>	<i>2,08</i>	<i>1,98</i>	<i>3,74</i>	<i>6,77</i>	<i>6,54</i>	<i>6,44</i>

* The payments may be higher in 2000 than illustrated here, due to a possible new budget line not recorded by the national accounts/ESV

** The negative payment for 1994 is due to a presumed repayment (Marelius, M. Swedish National Financial Management Authority. Telephone interview, June 2003.

***Not including subsidies from local authorities and county councils.

A zero indicates that the budget line did exist but no payments were made as subsidies. A line indicates that the budget line did not exist.

Source: The national accounts. The Swedish Board of Agriculture (for NOLA).

The largest subsidies in table A are given to *the agricultural sector* (NACE 01). This is due to the large resource subsidies which are given in the agricultural environmental programme. The second largest sector receiving payments is *research* (NACE 73). The third largest industry given environmentally motivated subsidies is *electricity, gas and water* (NACE 40-41).

Other transfers – investment subsidies

The definition of a subsidy in the system of national accounts does not include for example investment subsidies or support given to households. The long-term intention of the environmental accounts at Statistics Sweden is to compile statistics on all the major payments from the government to producers, households and others.

Therefore, the report will discuss some of the investment subsidies in Sweden between 1993 and 2000.

Table B illustrates a selection of investment subsidies introduced with an environmental motive as well as one other direct subsidy not included in table A, the support for liming of lakes and watercourses. (Two additional supports are also discussed in the text but not included in Table B, i.e. support for nature reserves and support for the sanitation and restoration of polluted areas.) The reason these subsidies are not accounted for as direct subsidies in the national accounts are that they are paid from central government to local municipalities and county administrative boards.

Table B. Environmentally motivated investment subsidies and other subsidies in Sweden, 1993-2000. SEK million in current prices.

Environmentally motivated investment subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
Resource-related investment subsidies:	0	0	39	70	64	2 438	1 519	1 595
Support for local investment programmes	-	-	-	-	-	2 320	1 433	1 487
Investment subsidy for an ecological restructuring	-	-	-	-	13	27	47	26
LIFE environmental fund	-	-	39	70	51	91	39	82
Energy-related investment subsidies	178	288	321	303	160	281	451	220
Investment subsidy for renewable energy	178	227	232*	232*	98	89	172	174
Investment subsidy to reduce the use of energy in houses and for conversion	-	-	-	-	-	100	119	25
Subsidy for solar heat establishments in houses, apartments and premises	-	-	-	-	-	-	-	2
Investment for extension of district heating	**	1	25	0	5	0	0	0
Investments in energy technology	**	52	49	50	47	84	144	15
Energy efficiency measures	**	2	13	19	10	6	8	3
Energy research	**	0	0	0	0	2	3	1
Bio-energy research	**	6	2	2	0	0	0	0
Measures for providing heat and power in southern Sweden	**	-	-	-	0	0	5	0
Additional environmentally motivated subsidies of interest:								
Resource-related subsidies	148	156	190	172	145	184	170	183
Liming of lakes and watersheds	148	156	190	172	145	184	170	183
Total environmentally motivated investment subsidies	326	444	550	545	369	2 903	2 140	1 998
<i>Resource SNA-subsidies</i>	<i>248</i>	<i>296</i>	<i>1 110</i>	<i>947</i>	<i>1 638</i>	<i>2 694</i>	<i>2 423</i>	<i>2 028</i>
<i>Energy SNA-subsidies</i>	<i>121</i>	<i>71</i>	<i>152</i>	<i>141</i>	<i>165</i>	<i>178</i>	<i>191</i>	<i>154</i>
<i>Transport SNA-subsidies</i>	<i>0</i>	<i>0</i>	<i>14</i>	<i>2</i>	<i>3</i>	<i>3</i>	<i>14</i>	<i>0</i>
Total environmental subsidies in the report	695	811	1 826	1 635	2 175	5 778	4 768	4 180
<i>Total environmental subsidies as per cent of GDP in Sweden***</i>	<i>0,04</i>	<i>0,05</i>	<i>0,10</i>	<i>0,09</i>	<i>0,12</i>	<i>0,29</i>	<i>0,23</i>	<i>0,19</i>

* The original payment of SEK 464 million for 1995 has been divided between 1995 and 1996 in this table. 1996 does not exist in the state administrative records due to a transition to the calendar year, which made 1995 longer. There are no corrections for the earlier years in table 5, when the year was between July to June (Hugard, Å. Swedish Energy Agency. Mail correspondence June 2003)

** Payments from these budget lines have not been received for year 1993 from the Swedish National Financial Management Authority (ESV).

*** Investment subsidies are not included in the definition of a subsidy used in ESA (1995) but they can be seen as included in the item "investments" used for calculating the GDP. Included in this item are investments, not excluding the subsidies given from the government (Liwendahl, C. The national Accounts, Sweden. Telephone and mail correspondence, 2003)

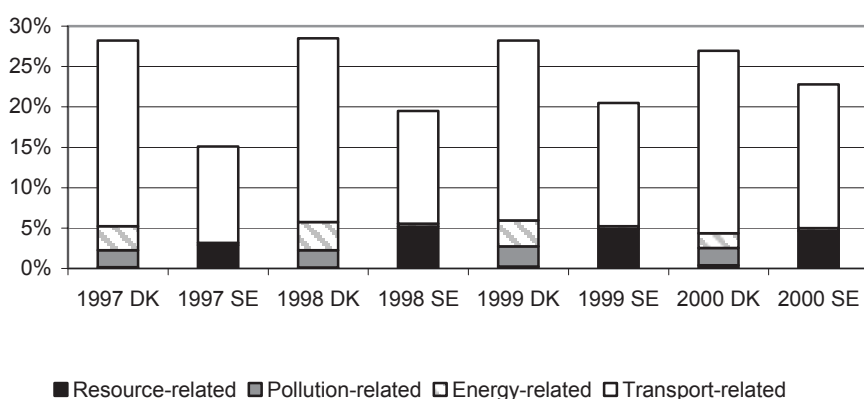
Source: Swedish EPA, Swedish Energy Agency, National Board of Housing, Building and Planning and The Swedish National Financial Management Authority (ESV, all marked with **).

Comparisons

Comparable statistics on environmental subsidies

Denmark is the only country in Europe that compiles similar statistics on environmental subsidies on regular basis in their environmental accounts. Statistics Denmark uses a different definition of an environmental subsidy than the one applied by Statistics Sweden and the OECD. Denmark uses a definition focusing on the environmental effect of the subsidy rather than the original motive, including, for example, the support to public transportation and railways since these are assumed to have a positive effect on the environment. Therefore, the statistics are not directly comparable between the countries as presented for Sweden in this report. In order to make a relevant comparison the report includes some more subsidies in Sweden, namely the different subsidies to the railway and subsidies for operating public transportation. In *Figure A*, these new subsidies are illustrated as transport-related subsidies.

Figure A. Environmental SNA-subsidies in Denmark (DK) and Sweden (SE), as a percentage of total SNA-subsidies in each country. Inclusive subsidies for public transportation and railway.



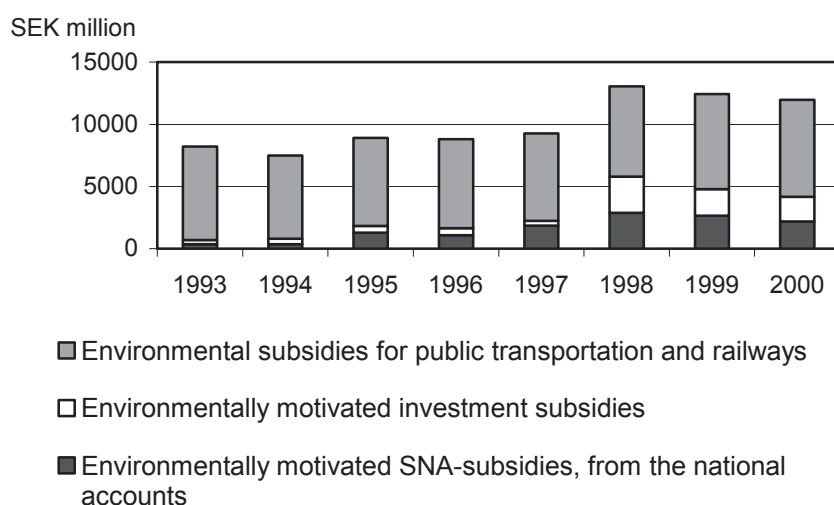
Source: *The national accounts in Sweden. Statistics Denmark.*

The Danish energy-related and transport-related subsidies are larger than the Swedish, as a percentage of the total subsidies in each country.

Different definitions of an environmental subsidy

The report uses three different definitions of an environmental subsidy, based on differences in the definition of a "subsidy" as well as in the definition of an "environmental subsidy". *Figure B* illustrates three different definitions.

Figure B. Subsidies in Sweden 1993 – 2000, divided by subsidies according to the three different definitions.



It becomes clear that the definition used by the national accounts is narrow, since both categories of subsidies (i.e. SNA-subsidies and investment subsidies) are considered to be subsidies in broad definitions used by, for example, the OECD. If the subsidies to railway and public transportation are considered as environmental subsidies they will dominate the subsidies.

The third comparison is between a selection of potentially harmful subsidies from report 2000:3 and the environmentally motivated subsidies in the present report, all in the agricultural, forestry and fishing sector (NACE 01, 02 and 05). The potentially harmful subsidies are considerable larger than the environmentally motivated.

Conclusions

Environmentally motivated SNA-subsidies accounted for 6.44 per cent of the total SNA-subsidies in 2000. In 1994 this percentage was only 0.62 per cent, which indicates a significant increase. The environmentally motivated *investment* subsidies are about the same size as the environmentally motivated SNA-subsidies, SEK 1 998 million in 2000. When focusing on the environmental effect rather than the environmental motive, according to the Danish model, transport-related SNA-subsidies have accounted for the largest payments of subsidies. The total environmental SNA-subsidies are almost 23 per cent of the total SNA-subsidies in 2000 if the subsidies for public transportation and railway are included.

This report has shown that environmental subsidies and taxes tend to work in different areas. The environmentally motivated subsidies are mainly classified as resource-related compared to the taxes, which are mainly classified as energy and transport taxes.

It is necessary that a general definition of environmental subsidies is specified in order to make comparative studies possible. There are two main ways of defining an environmental subsidy today, focusing either on the effect or the motive that gave rise to the subsidy. Eurostat and the OECD elaborated a definition of environmental taxes that has been accepted by the Member States, making comparative studies possible between different countries in terms of tax structure, tax base, revenues, etc.

Future developments

Future work will focus on developing methods for the comparison of the subsidy payments with the effect they have on the economy and the environment. The environmental accounts (SEEA) are a good starting point for doing this. If subsidies are recorded in the SEEA, it will be possible to make international comparisons. As can be seen in this report, the subsidy policy instrument is often intended to influence the use of natural resources such as land, fish and energy. It may be of interest to combine the data on subsidies with the resource accounts in the SEEA. In the frameworks of land accounts, fishing accounts and energy accounts, the issue of subsidies has yet not been discussed.

The environmentally motivated SNA-subsidies will be published yearly at Statistics Sweden's databases and on the web page, by industry and compared to GDP. The environmentally motivated *investment* subsidies will also be presented in some similar form.

Sammanfattning

Skatter och subventioner har ökat som styrmedel under senare år. År 2000 publicerade Statistiska centralbyrån en rapport om miljöskatter och miljöskadliga subventioner (Miljöräkenskaperna, SCB 2000:3). Föreliggande rapport syftar till att gå ytterligare ett steg och dokumentera subventionerna bredare, denna gång med ett fokus på subventioner som har en positiv inverkan på miljön. Genom att använda olika definitioner av en subvention och en miljösubvention visar rapporten olika metoder som kan användas i framtida arbete. Eftersom denna rapport utgått från nationalräkenskaperna och subventionerna inledningsvis är tagna därifrån, kan de jämföras med de totala subventionerna i Sverige. I denna rapport benämns subventioner från nationalräkenskaperna som SNA-subventioner⁵.

I rapporten definieras subventioner som löpande ensidiga betalningar från den offentliga sektorn eller Europeiska unionen till inhemska producenter, med syftet att påverka produktionsnivåerna, priserna eller ersättningen till produktionsfaktorer. Subventionerna från staten och EU består främst av produktionssubventioner, d v s subventioner för deltagande i produktionen.

Flera olika studier under senare år har fokuserat på miljöskadliga subventioner, men trots detta har inte en internationell godtagbar definition identifierats⁶. Miljöräkenskaperna gör det möjligt att redovisa miljöpåverkan per bransch vilket öppnar för jämförelser med olika ekonomiska styrmedel som används, som skatter och subventioner. Därigenom kan de totala subventionerna till en bransch jämföras med dess miljöpåverkan, vilket minskar behovet av att klassificera vissa subventioner som miljöskadliga. Ännu är inte subventioner en standard komponent i miljöräkenskaperna men det finns ett intresse för fler länder att rapportera dem som en del av systemet.

Miljömotiverade subventioner

En miljösubvention har som syfte att ge incitament till fler miljövänliga aktiviteter. Med hänsyn tagen till att det är svårt att avgöra en subventions positiva miljöeffekt väljer denna rapport att definiera en miljösubvention utifrån subventionens motiv och använder därför termen miljömotiverade subventioner.

De olika jordbrukssubventionerna dominerar de resursrelaterade subventionerna. Andra resursrelaterade subventioner består av subventioner till fiskevård, forskning och till generellt miljöarbete. Majoriteten av de energirelaterade subventionerna syftar till ökad energieffektivitet och förbättrad energiteknik. Övriga energirelaterade är subventioner för energiforskning, åtgärder för att stärka el- och värmeförsörjningen i södra Sverige och åtgärder för energieffektivisering i Baltikum och Östeuropa. Enbart en subvention är klassificerad som en miljömotiverad transportsubvention. Då definitionen ser till motivet och inte den miljöeffekt subventionen för med sig så inkluderas inte subventionerna till kollektivtrafik och järnväg i Sverige i *tabell A*. Det främsta syftet för de senare är regionala, och inte miljömässiga, enligt budgetpropositionerna.

⁵ SNA = System of national accounts.

⁶ OECD, bland andra, har diskuterat denna fråga. För mer information om detta se: www1.oecd.org/agr/ehsw

Tabell A. Miljömotiverade SNA-subventioner i Sverige, 1993-2000. Miljoner kr.

Miljömotiverade SNA-subventioner (miljoner kr)	1993	1994	1995	1996	1997	1998	1999	2000
Resursrelaterade subventioner	248	296	1 110	947	1 638	2 694	2 423	2 028
Naturvårdsåtgärder i odlingslandskapet (NOLA)	226	250	245	-	-	-	-	-
Kompletterande åtgärder inom jordbruket*	-	-	825	890	1 410	2 446	2 188	1786
Landskapsvårdande åtgärder	17	30	4	0	0	0	0	0
Miljöförbättrande åtgärder i jordbruket	5	1	1	1	8	15	5	13
Bidrag till fiskevård	0	2	0	3	1	4	0	0
Miljö- och kretslopps forskning	0	2	6	7	4	5	4	2
Skogs- och jordbrukets forskningsråd	0	11	26	38	204	209	226	223
Bidrag till miljöarbete	0	0	3	8	11	15	0	4
Energirelaterade subventioner	121	71	152	141	165	178	191	154
Åtgärder för effektivare energianvändning	23	-4**	3	5	1	13	12	6
Energiteknikstöd	-	-	-	-	-	-	51	27
Introduktion av ny energiteknik	-	-	-	-	-	0	67	32
Energiforskning	86	64	134	122	164	165	43	66
Bioenergiforskning	12	11	15	14	0	0	0	0
Åtgärder till el- och värmeförsörjning i Syd-sverige	-	-	-	-	-	0	15	23
Åtgärder för energieffektivisering i Baltikum och Östeuropa	0	0	0	0	0	0	3	0
Transportrelaterade subventioner	0	0	14	2	3	3	14	0
Bidrag till forskning om el- och hybridfordon	0	0	14	2	3	3	14	0
Total	369	367	1 276	1 090	1 806	2 875	2 628	2 182
<i>Miljömotiverade SNA-subventioner som procent av BNP i Sverige</i>	<i>0,02</i>	<i>0,02</i>	<i>0,07</i>	<i>0,06</i>	<i>0,10</i>	<i>0,15</i>	<i>0,13</i>	<i>0,10</i>
<i>Miljömotiverade SNA-subventioner som procent av de totala SNA-subventionerna i Sverige***</i>	<i>0,62</i>	<i>0,63</i>	<i>2,08</i>	<i>1,98</i>	<i>3,74</i>	<i>6,77</i>	<i>6,54</i>	<i>6,44</i>

* Utbetalningen för 2000 kan vara större än vad som visas, p g a ett eventuellt nytt statsanslag som inte finns med hos nationalräkenskaperna/ESV.

** Den negativa utbetalningen beror på en trolig återbetalning (Marelius, M. Ekonomistyrningsverket, juni 2003)

*** Inkluderar ej subventioner från kommuner och landsting

Källa: Nationalräkenskaperna. Statens Jordbruksverk (för NOLA).

De största subventionerna i *tabell A* går till *jordbrukssektorn* (SNI 01). Den största posten är miljöstöden till jordbruket (Kompletterade åtgärder inom jordbruket). Den näst största branschen som tar emot miljösubventioner är *forskning och utveckling* (SNI 73). Den tredje största branschen som får miljösubventioner är *el, gas och vattenförsörjning* (SNI 40-41). De flesta branscher tar inte emot utbetalningar från miljömotiverade subventioner.

Andra transfereringar – investeringsbidrag

Den definition av en subvention som används i nationalräkenskaperna inkluderar inte alla statens stöd. Exempel på subventioner som inte inkluderas är investeringsbidrag och subventioner till hushållen. Miljöräkenskaperna syftar långsiktigt till att framställa statistik över alla utbetalningar och därför diskuterar denna rapport även ett antal miljömotiverade investeringsbidrag.

Tabell B visar ett urval av investeringsbidrag som introducerats med ett miljösyfte. Även ett ytterligare stöd som inte finns med i *tabell A* finns inkluderat, för kalkning av sjöar och vattendrag. (Ytterligare två stöd diskuteras i texten men finns inte med i *tabell B*, bidrag till naturreservat och bidrag till sanering och återställande av förorenade områden.) Anledningen till att dessa bidrag inte finns med bland nationalrä-

kenskapernas subventioner är att de betalas till kommuner och länsstyrelser, inte till producenter.

Tabell B. Miljömotiverade investeringsbidrag och andra subventioner i Sverige, 1993-2000. Miljoner kr.

Miljömotiverade investeringsbidrag och andra subventioner (Miljoner kr.)	1993	1994	1995	1996	1997	1998	1999	2000
Resursrelaterade investeringsbidrag:	0	0	39	70	64	2 438	1 519	1 595
Stöd till lokala investeringsprogram	-	-	-	-	-	2 320	1 433	1 487
Investeringsbidrag för en ekologisk hållbar samhällsutveckling (sk. kretsloppsmiljarden)	-	-	-	-	13	27	47	26
LIFE miljöfond (till natur och miljö)	-	-	39	70	51	91	39	82
Energirelaterade investeringsbidrag	178	288	321	303	160	281	451	220
Investeringsstöd till förnyelsebar energi	178	227	232*	232*	98	89	172	174
Investeringsbidrag för att minska energianvändningen och för konvertering	-	-	-	-	-	100	119	25
Stöd till solvärme	-	-	-	-	-	-	-	2
Insatser för utbyggnad av fjärrvärmenäten	**	1	25	0	5			
Bidrag till energiteknikfonden	**	52	49	50	47	84	144	15
Vissa åtgärder för effektivare användning av energi	**	2	13	19	10	6	8	3
Energiforskning	**	0	0	0	0	2	3	1
Bioenergiforskning	**	6	2	2				
Åtgärder till el- och värmeförsörjning i Syd-sverige	**	-	-	-	0	0	5	0
Andra miljömotiverade subventioner:								
Resursrelaterade subventioner:	148	156	190	172	145	184	170	183
Kalkning av sjöar och vattendrag	148	156	190	172	145	184	170	183
Total	326	444	550	545	369	2 903	2 140	1 998
<i>Resursrelaterade SNA-subventioner</i>	248	296	1 110	947	1 638	2 694	2 423	2 028
<i>Energirelaterade SNA-subventioner</i>	121	71	152	141	165	178	191	154
<i>Transportrelaterade SNA-subventioner</i>	0	0	14	2	3	3	14	0
Totala miljömotiverade subventioner	695	811	1 826	1 635	2 175	5 778	4 768	4 180
<i>Miljömotiverade subventioner som procent av BNP i Sverige***</i>	0,04	0,05	0,10	0,09	0,12	0,29	0,23	0,19

* Den ursprungliga utbetalningen var på 464 miljoner kronor och gällde enbart för 1995. Här har detta belopp delats upp på 1995 och 1996. År 1996 existerar inte i den statliga förvaltningen eftersom Sverige tidigare hade budgetår från 1 juli till 30 juni, vilket förändrades till kalenderår 1995 och gjorde detta år längre. Ingen korrigerig har skett för åren före 1995 i tabell B (Hugard, Å. Energimyndigheten, juni 2003)

** Utbetalningar från dessa statsanslag har inte erhållits för år 1993 av ESV.

*** Investeringsbidrag är inte inkluderade i nationalräkenskapernas definition av en subvention men de kan ses som inkluderade i "investeringar" som används för att beräkna BNP. Dessa "investeringar" exkluderar inte de bidrag som erhållits från staten (Liwendahl, C. Nationalräkenskaperna, 2003)

Källa: Naturvårdsverket, Energimyndigheten, Boverket och Ekonomistyrningsverket (ESV, markerade med **).

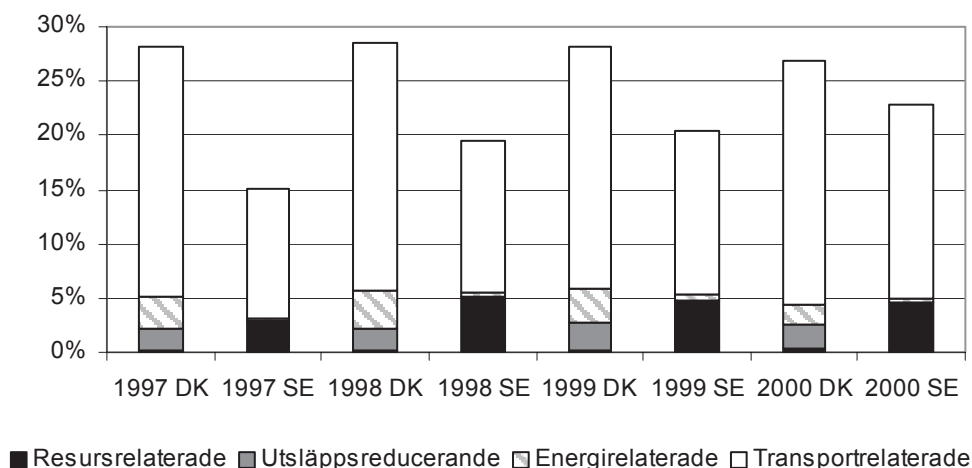
Jämförelser

Jämförbar statistik över miljösubventioner

Danmark är det enda land i Europa som återkommande presenterar statistik över miljösubventioner på ett liknande sätt som denna rapport gör. Danmarks Statistik använder dock en annan definition för en miljösubvention än Sverige och OECD. Danmark använder en definition som fokuserar på subventionens miljöeffekt snarare än dess motiv vilket till exempel inkluderar subventioner till kollektivtrafik och järnväg, då dessa antas ha en positiv effekt på miljön. På grund av detta är inte Sveriges och Danmarks statistik direkt jämförbar. För att kunna jämföra de två ländernas miljösubventioner inkluderas ytterligare ett antal subventioner i Sverige, för

kollektivtrafik och järnväg. I *figur A* är dessa nya subventioner inkluderade som transportrelaterade subventioner.

Figur A. Miljörelaterade SNA-subventioner i Danmark (DK) och Sverige (SE), i procent av de totala SNA-subventionerna i varje land. Inklusive subventioner till kollektivtrafik och järnväg.



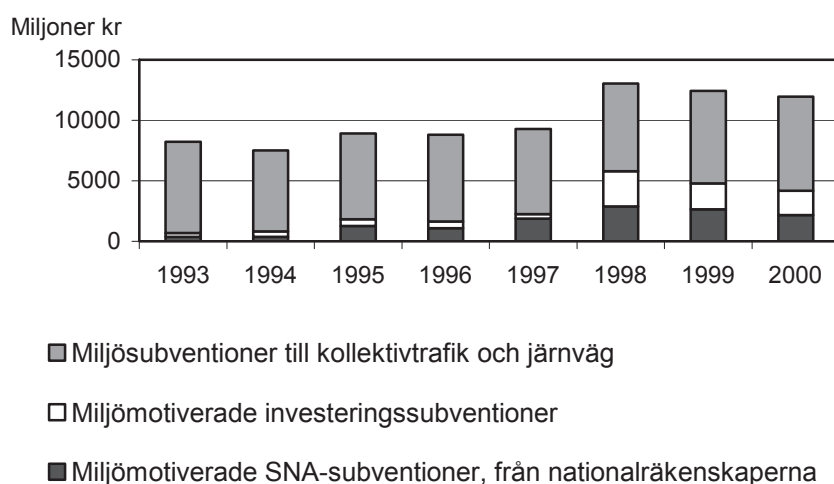
Källa: Nationalräkenskaperna, Sverige. Danmarks Statistik, Danmark.

De danska energirelaterade och transportrelaterade är större än de svenska, som procent av de totala subventionerna i länderna.

Olika definitioner av en miljösubventioner

Rapporten använder olika definitioner av en miljösubvention, baserat på olikheter i definitionen av en "subvention" liksom i definitionen av en "miljösubvention". *Figur B* illustrerar tre olika definitioner.

Figur B. Subventioner i Sverige 1993 – 2000, uppdelat på tre olika definitioner av en subvention.



Det blir tydligt att den definition som nationalräkenskaperna använder är begränsad, då båda kategorierna av en subvention (SNA-subventioner och investeringssubventioner) anses vara subventioner i vidare definitioner som används av till exempel OECD. Om subventionerna till kollektivtrafik och järnväg inkluderas dominerar de miljösubventionerna.

Slutsatser

De miljömotiverade SNA-subventionerna utgjorde 6.44 procent av de totala SNA-subventionerna år 2000. 1994 var denna procent enbart 0.62 procent vilket indikerar en betydande ökning. Investeringssubventionerna är ungefär lika stora som de miljömotiverade SNA-subventionerna. År 2000 var investeringssubventionerna 1 998 miljoner kronor. Rapporten visar på två olika definitioner av en miljösubvention genom att jämföra Sverige och Danmark. Då fokus är på miljöeffekt snarare än motiv, i enlighet med Danmarks definition, är de transportrelaterade subventionerna de största utbetalningarna. De totala miljörelaterade SNA-subventionerna är nästan 23 procent av de totala SNA-subventionerna år 2000, om stödet till kollektivtrafik och järnväg inkluderas.

Rapporten har visat att miljöskatter och miljösubventioner tenderar att användas på olika områden. Majoriteten av de miljömotiverade subventionerna är klassificerade som resursrelaterade subventioner medan miljöskatterna främst är klassificerade som energi och transportskatter.

Det är viktigt att klart ange vad definitionen av en subvention innebär för att möjliggöra jämförande studier. Idag existerar två olika sätt att definiera en miljösubvention, med fokus antingen på miljöeffekten eller motivet. Eurostat och OECD arbetade fram en definition av en miljöskatt som antagits av medlemsländerna vilket möjliggör komparativa studier mellan olika länder vad gäller skattestruktur, skattebas, intäkter etc. Nationalräkenskapernas definition av en subvention visade sig också behöva kompletteras med investeringsbidrag.

Fortsatt utveckling

Framtida arbete kommer att fokusera på att utveckla metoder för att jämföra utbetalningarna med dess effekt på ekonomin och miljön. Miljöräkenskaperna (SEEA) är en god utgångspunkt för detta. Om subventioner finns med i miljöräkenskaperna är även internationella jämförelser möjliga. Som visas i denna rapport används ofta subventioner för att påverka naturresurser som land, fisk och energi.

De miljömotiverade SNA-subventionerna kommer att publiceras i de statistiska databaserna (SSD) årligen liksom på SCB:s hemsida, per bransch och jämfört med BNP. De miljömotiverade *investeringsbidragen* kommer också att presenteras på liknande sätt.

1 Introduction

1.1 Background

In the national accounts, subsidies are treated symmetrically to taxes and several studies in the past have concentrated on environmental subsidies as well as on environmental taxes. In 2000, Statistics Sweden published a report focusing on environmental taxes and environmentally harmful subsidies, divided by industry (Environmental accounts, SCB 2000:3). The starting point for the definition of environmentally harmful subsidies was a report published by the Swedish Environmental Protection Agency in 1997, which selected some subsidies with a presumed potential negative impact on the environment. Other examples of studies concentrating on environmental subsidies and taxes are a Danish study⁷ from 2000, a report from 1997 by the Portuguese National Institute of Statistics that also looked at environmental subsidies⁸ and a report published by Eurostat (the Statistical Office of the European Communities) in 1995 focusing on taxes, subsidies and transfers related to environmental protection⁹. The latter report aimed to develop a theoretical framework for the definition, description, classification and collection of data on taxes and subsidies.

This report aims to go one step further with a wider documentation of subsidies, this time focusing on subsidies with a positive impact on the environment. By using different definitions of what a subsidy and an environmental subsidy are, the report presents different approaches useful for future work in this area. Since this work has been undertaken using the system of economic environmental accounts, the environmental subsidies are discerned from, and can be compared to, the total subsidies.

In the international arena, the use of environmental policy instruments has increased. Environmental taxes have been discussed for many years and a definition has been elaborated by Eurostat and the OECD (the Organization of Economic Cooperation and Development)¹⁰. The interest in potential environmentally harmful subsidies has also grown internationally. The work on examining subsidies that positively affect the environment has not yet attracted the same amount of interest. The OECD and EEA (European Environment Agency) have developed a database on economic instruments and voluntary approaches in the past few years, following on from a report on economic instruments for pollution control and natural resource management published in 1997¹¹. The report was based on a survey in OECD countries and the information received was incorporated into the database. Member

⁷ Hornum [2000] *Environmental taxes and subsidies in the Danish NAMEA*

⁸ Portuguese national Institute of Statistics [1997] *Environment-related taxes, charges and subsidies in Portugal*

⁹ Eurostat [1995] *Taxes, subsidies and transfers related to environmental protection*

¹⁰ An environmental tax is determined according to its tax base, which is the product, activity or substance that the tax rate is based on. A number of environmentally related tax bases has been identified from this definition.

¹¹ OECD [1999] *Economic instruments for pollution control and natural resource management in OECD countries: a survey*

states are currently updating their information to ensure more accuracy in the future. The instruments included in the database are¹²:

- Tradable permit systems
- Deposit refund systems
- Environmentally motivated subsidies
- Voluntary approaches

Environmental subsidies can be seen as affecting the economy in the same way as taxes, if subsidies are seen as negative taxes. They are important policy tools and it is thus important to compile statistics on them. The fact that taxes and subsidies are treated symmetrically in the national accounts is another reason to introduce environmental subsidies into the environmental accounts¹³. Denmark has presented statistics on environmental taxes and subsidies together since 2000. Another benefit that follows on from documenting environmental subsidies is the more general picture of policy tools that will emerge, which can help policy-makers when taking decisions in the environment area.

1.2 Purpose

This project has three main purposes:

- To identify and document the subsidies in Sweden that can be defined as environmental subsidies.
- To find definitions suitable not only for this report but also for the future work on environmental subsidies, internationally as well as in Sweden.
- To develop the environmental accounts further by including data on environmental subsidies. The aim is to present these subsidies annually, similarly to how environmental taxes are reported.

1.3 Definitions

A definition of a general subsidy will be given below, as well as definitions of indirect and direct subsidies, product and production subsidies and subsidies that can be seen as promoting the environment.

1.3.1 Subsidies

A common opinion is that there is no universally accepted definition of a subsidy today¹⁴. Instead, there exist several definitions of what a subsidy is depending on the viewpoint and purpose of the analysis. For our purposes, we will initially use the definition put forward in the European system of accounts, since this is the framework of the analysis in this report.

A subsidy is defined by the European system of accounts (ESA 1995 §4.30) as:

¹² Database on economic instruments: <http://autoeval.com/eea/index.htm>

¹³ Eurostat [2001] *Environmental taxes – A statistical guide*

¹⁴ Steenblik, R. [2002] *Subsidy measurement and classification: developing a common framework*

“...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”¹⁵.

The Swedish national accounts follow the international standard for national accounts and define a subsidy in the same way (further SNA-subsidies). Furthermore, the national accounts distinguish between subsidies on products and on other production, see below.

In this definition of a subsidy, some forms of payments are excluded, for example¹⁶;

- Capital transfers, such as investment subsidies (D.92¹⁷)
- Current transfers from the government to households in their role as consumers (D.75)

This definition is therefore one of the most narrow used by economists, in that it covers only budgetary payments and only those to producers¹⁸. This means that, for example, transfers such as investment subsidies or support paid from government to the county administrative boards will not be included. This report attempts to use wider definitions by adding, for example, investment subsidies and subsidies paid to households to the total environmentally motivated subsidies but primarily the above definition is used.

1.3.2 Direct and indirect subsidies

Subsidies can be classified as direct and indirect subsidies. This report concentrates on direct subsidies. An indirect subsidy does not have the 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 taxation¹⁹. These tax subsidies can be seen as an alternative to direct subsidies.

1.3.3 Product subsidies and other subsidies on production

According to the European System of National Accounts (ESA 95), subsidies are classified as:

- Product subsidies (D.31)
- Other subsidies on production (D.39)

The subsidies classified as environmentally motivated subsidies in the first part of this report are all classified as “other subsidies on production” by the programme for national accounts. However, in the comparison with Denmark in *chapter four*, two

¹⁵ Eurostat [2001] *Environmental taxes – A statistical guide*

¹⁶ ESA distinguishes between current and capital transfers and the difference depend on the nature of the receiving party and whether or not market producers are addressed. Eurostat [1995].

¹⁷ 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 and the number 3 for a subsidy. Together with the second number each form of capital transfer can be discerned, for example 2 stands for an investment subsidy.

¹⁸ Steenblik, R. [2002] *Subsidy measurement and classification: developing a common framework*

¹⁹ For more information about tax subsidies, see for example SCB 2000:3.

different product subsidies are included as the subsidies for railway and public transportation are added to the definition.

Product subsidies

A product subsidy is a subsidy payable per unit of a goods item or a service produced, either as a specific amount of money per unit or as a specified percentage of the price per unit. It may also be calculated as the difference between a specified target price and the market price actually paid by a buyer. A subsidy on a product usually becomes payable when the goods item or service is produced, sold or imported.

Examples of product subsidies are price support to some agricultural products and support to railway transportation.

Other subsidies on production

Other subsidies on production consist of subsidies, except subsidies on products, which enterprises in Sweden may receive as a consequence of engaging in production (e.g. subsidies on payroll or workforce or subsidies for environmental protection). These are not linked to the quantity or the value of goods produced or sold.

1.3.4 Environmental subsidies

We need to find a suitable definition of subsidies that have a positive environmental effect. Concerning taxes, it is the tax base (e.g. fossil fuels) that determines whether or not they are environmental. It is thus not the explicit motivation that determines the issue, since a tax will have the same impact on the environment regardless of whether it is motivated by the interest of public finance or by environmental interests.

In order to facilitate an overview of environmental taxes, Eurostat, the OECD and the IEA have classed these tax bases into four major categories, energy, transport, pollution and resource taxes²⁰. In order to facilitate the documentation of environmentally motivated subsidies in the same way, equivalent categories will be used in this report to identify the environmentally motivated subsidies that existed in Sweden between 1993 and 2000. In Denmark, the environmental subsidies are divided in these categories as well, which allows for comparisons.

An environmental subsidy has the purpose of giving incentives for more environmentally friendly actions²¹. There are mainly two different alternatives for a definition of an environmental subsidy, given a definition of what a subsidy is.

When reporting their environmental subsidies, 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”*²².

The OECD, on the other hand, focuses on the subsidy's motive instead of on the environmental effect in their coming updated database on economic instruments, and therefore names the subsidy, *“environmentally motivated subsidy”*²³.

²⁰ Eurostat [1998], Steuer, A. *Environmental taxes in the EU*.

²¹ Brännlund et al, [1998] *Miljöekonomi (Environmental economics)*

²² Hornum [2000] *Environmental taxes and subsidies in the Danish NAMEA*.

²³ Braathens N. A. OECD and information from the OECD database on economic instruments. (<http://autoeval.com/eea/index.htm>)

With regard to the difficulty in proving a subsidy's positive environmental effect, this report chooses to use the term "environmentally motivated subsidy". A unitary definition of an environmentally motivated subsidy has not been found. According to the OECD definition, it is the original motive of the subsidy that determines whether or not the subsidy is an environmentally motivated subsidy²⁴. The specific effect on the environment is therefore of less importance.

In 1997, a report by the Swedish Environmental Protection Agency, commissioned by the Ministry of the Environment, reviewed several subsidies harmful for the environment²⁵. Statistics Sweden later continued this work in a report published in 2000²⁶. In assessing whether a subsidy was harmful to the environment or not, the government's three criteria for ecologically sustainable development²⁷ were used in both these reports:

- Protection of the environment
- Efficient usage (of energy and other natural resources)
- Sustainable providence (closed eco-cycles)

This report will look at subsidies promoting the environment, including all three criteria above. A subsidy that has the motive of protecting the environment will be defined as an environmentally motivated subsidy. Examples of subsidies not included as environmentally motivated subsidies, are those introduced on regional or cultural grounds.

1.4 Limitations

This report mainly accounts for national direct subsidies and EU subsidies. Subsidies provided by local authorities and county councils are only partly included when the definition of a subsidy used by the national accounts is broadened. The main source of information is the national accounts in Sweden and their distribution among industries.

In the first stage of the report, only SNA-subsidies will be considered, i.e. subsidies included in the definition of a subsidy used by the European System of Accounts. Investment subsidies are therefore not considered in this first stage since they are considered to be capital transfers, and not subsidies, in the Swedish national accounts. In the second part of the report, the definition of an environmentally motivated subsidy will be broadened to include some investment subsidies, as well as some other subsidies given from the government to the county administrative boards in Sweden. Indirect subsidies, such as tax subsidies, are not included in the report. In future work, this form of subsidy is of interest to document within the environmental accounts.

²⁴ Ibid

²⁵ Naturvårdsverket [1997] *Ett urval av statliga subventioner som kan motverka en ekologisk hållbar utveckling* (Swedish Environmental Protection Agency, Selected state subsidies that may be inconsistent with ecologically sustainable development).

²⁶ SCB [2000:3] *Environmental taxes and environmentally harmful subsidies*

²⁷ Proposition (Government Bill) 1996/97: 150, appendix 5.

1.5 Method

1.5.1 Source of data on subsidies

One of the aims of this report is to further develop the environmental accounts, which is a satellite account to the national accounts, by including environmental subsidies. For this reason, the starting point for this report was to receive information on payments from the national accounts in Sweden rather than directly from the different authorities responsible for the disbursement of the subsidies. In the second part of the report, a broader definition of a subsidy is used which includes data on additional payments, taken directly from the responsible authorities or from the Swedish National Financial Management Authority (ESV).

One reason for using the existing data in the programme for national accounts is that the environmental economic accounts function as a satellite system to the national accounts. By using the accrual adjusted²⁸ subsidies in the national accounts we ensure consistency with the national accounts.

The national accounts programme distributes the subsidies according to the name of the budget line that gives rise to the subsidy. The national accounts receive information on all disbursed payments to companies, according to the budget line it is derived from, from the Swedish National Financial Management Authority (ESV). ESV is a government agency for financial management in Sweden and accounts for the government agencies' transfer expenditures by receiving sectors. From this data, the national accounts divide the subsidies by different industries in the economy.

Within the international field of subsidy measurement, two basic frameworks are applied²⁹. One consists of the method described above, comprehensive accounting systems as symbolised by the SNA. The other, not used here, consists of sectoral 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 sectoral accounts is the limitation in the narrow definition of a subsidy in the national accounts. However, two major limitations of sectoral 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 sectoral accounts are put together using different classification systems and therefore provide different results.

1.5.2 Classifying environmentally motivated subsidies

Subsidies have been classified into either environmentally motivated or other, through a detailed review of budget proposals for the period from 1991 to 2000 to determine which budget lines have an environmental motive. This is due to the fact that the national accounts in Sweden distribute the subsidies according to the name of the budget line rather than the precise name of the subsidy. If the budget line that gives rise to a specific subsidy has an environmental purpose it is classified as envi-

²⁸ Accrual means that the subsidies are recorded in the period when the claim arises. Other authorities do not usually document their data this way. The Swedish Board of Agriculture record the time of the actual payment in their annual report (Johansson, M. Mail correspondence, spring 2003)

²⁹ Steenblik, R. [2002] *Subsidy measurement and classification: developing a common framework*

ronmentally motivated. There may be subsidies included in budget lines that are not included in the national accounts and these will not be included in the first section of the report, which is primarily based on the national accounts.

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 and these are therefore not amongst the documented subsidies in the first section of the report.

1.5.3 Information about the specific subsidies

Most of the information concerning the resource, energy and transport subsidies is taken from the budget proposals (1991 to 2000). Additional information regarding agricultural support has been found at the Swedish Board of Agriculture (www.sjv.se), in the Yearbook for Agricultural Statistics (2000 and 2002) and in the brochure *Miljöstöd* [1999] (Environmental supports).

Finally, the information on investment subsidies has been taken from the budget proposals if the data is taken from the Swedish National Financial Management Authority (ESV). In cases where the data has been received from the responsible authorities, the information has been researched on their websites. The authorities are the Swedish Environmental Protection Agency (www.naturvardsverket.se), the Swedish Energy Agency (www.stem.se) and the National Board of Housing, Building and Planning (www.boverket.se).

1.6 Organisation of the report

In *chapter two*, a background and description of the subsidies is presented.

Chapter three begins by briefly presenting information on the total SNA-subsidies in Sweden. The chapter then reviews all the environmentally motivated SNA-subsidies in Sweden between 1993 and 2000. The subsidies are presented as resource-, energy- and transport-related. The chapter also illustrates which industries are receiving the subsidy payments. Finally, the environmentally motivated investment subsidies in Sweden between 1993 and 2000 are presented as a complement to the definition of a subsidy used by the national accounts.

Chapter four compares the statistics on environmentally motivated SNA-subsidies with comparable statistics in Denmark, which is the only country known to account for environmental subsidies in a similar way. The comparison gives rise to an extension of the Swedish statistics on environmentally motivated SNA-subsidies by adding the subsidies for railway and public transportation. Thereafter, the environmentally motivated SNA-subsidies are compared to the environmentally motivated *investment* subsidies to find out the difference between the original definition and the broader definition. Finally the subsidies are compared to a selection of environmentally harmful subsidies in Sweden, presented in an earlier report by Statistics Sweden.

Chapter five concludes the report and makes recommendations for future developments in this area.

2 Subsidies

The central government has a range of informative, administrative and economic instruments at its disposal for influencing actors in the economy. Informative instruments include campaigns, guidance and education. The administrative instruments include laws, standards and ordinances. The economic instruments consist primarily of charges, taxes and subsidies. The use of taxes and subsidies has grown in significance in recent years, both of which work towards sustainable development by changing the current price of the environment.

This chapter will give a theoretical background as well as information about subsidies as a policy tool and how they are used today. It will also show subsidies in a larger context, together with taxes.

2.1 Subsidies: background

Environmental resources, such as clean air and biodiversity are public goods for which no owner exists in the market. This fact means that the non-regulated market cannot price environmental values and that this can lead to the over-use of environmental resources. As a result of paying attention to this market failure, the use of economic instruments, such as subsidies and taxes, has increased in recent years. The purpose of an economic instrument is to establish a price on the environment. When governments use these economic instruments, the price of an environmental good is affected. Subsidies can be introduced for several reasons. The motive can, for example, be regional or employment-related. Another motive can be to improve the environment and the subsidies introduced for this reason are the ones discussed in this report.

Until the 1930s, public expenditure was seen primarily as a means to meet collective needs such as, for example, defence, a justice system, administration and agriculture³⁰. From 1930 to 1950, public spending and subsidies began increasingly to be used as instruments of economic policy. This development was stimulated by considerations of redistribution and stabilisation policies. In the 1960s and 1970s, public spending rose further still, partly because of increasing international competition. The export industries, such as the shipbuilding and steel industries, encountered a tougher market and their profitability declined. In order to avoid closures that would bring severe social and regional problems, the government gave these industries various forms of economic support. It was also during this period that regional policy was given a systematic form, the aim being to generate as high employment as possible and to even out the differences in competitiveness between industries in different regions. Since the 1960s, the usage of subsidies has grown rapidly and, in the 1980s, exceeded a total annual level of SEK 100 million³¹. Large areas subsidised during these years were housing, food and energy. The subsidies for housing and food aimed to change consumption patterns to benefit low-income earners. The energy subsidies, on the other hand, had the primary goal of decreasing the risk of a new energy crisis.

³⁰ Södersten, B. [1987] *Marknad och politik: Strukturer och problem i svensk ekonomi* (The market and politics: structures and problems in the Swedish economy).

³¹ Ds 1988:28 *Subventioner i kritisk belysning* (Subsidies: a critical view)

2.2 Subsidies: a policy tool

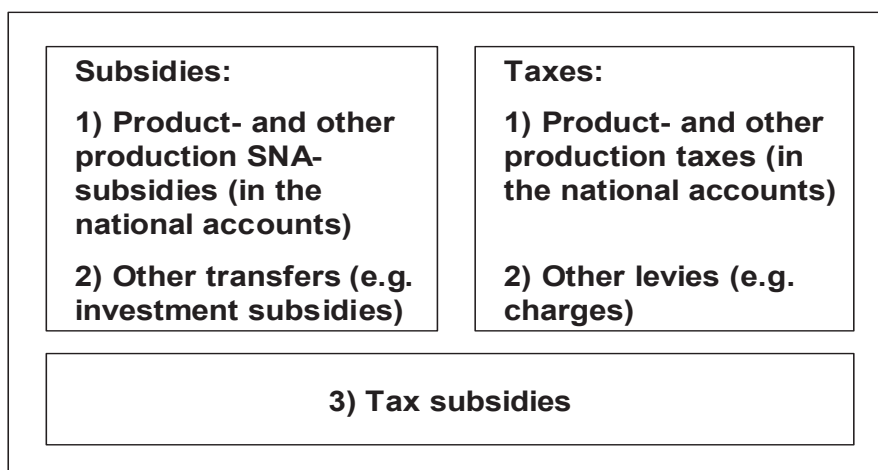
Subsidies, in this context, are current unrequited³² payments from government to producers with the objective of influencing the levels of production, the prices or the remuneration³³ of the factors of production. Broadly, what a subsidy does is to keep prices below the market prices by giving financial support to producers for their production. A subsidy is introduced to change the marginal cost of a good and can therefore change the price of a good or service. Producers are willing to accept a price lower than the actual cost of production because the subsidy makes up the difference. For example, one effect of environmental subsidies is that it becomes more economically viable to “clean” the environment. This can give incentives to enterprises to develop and invest in environmentally friendly technology.

The concept subsidy is broad and can include many forms of supports. The next section will illustrate what is included from the environmental accounts’ point of view, of subsidies as well as taxes since they are related.

2.2.1 Subsidies and taxes

As mentioned before, the national accounts treat subsidies symmetrically to taxes. *Figure 1* illustrates how the different parts of a subsidy and a tax can be covered, from an environmental accounts’ (SEEA) perspective. Firstly, *product- and production subsidies/taxes* are collected from the national accounts. If there is a need to broaden the concept, other categories of subsidies/taxes may be included, such as for example *other transfers* like investment subsidies. *Other levies* may be charges, not currently reported in the national accounts since the sums remitted are reimbursed to those liable to pay the charge. Both these forms of other transfers and levies may be important to follow, since they are important tools used for reaching environmental goals.

Figure 1. Subsidies and taxes in a larger context



There are more combinations of and hybrids between taxes and subsidies than one at first notices, such as tax subsidies (also called indirect subsidies)³⁴. These hybrids can be very interesting from a policy perspective since they allow decision makers to

³² Swedish term: *ensidiga* (not reciprocated or returned in kind)

³³ Swedish term: *ersättning* (to pay an equivalent to for a service, loss, or expense)

³⁴ Sterner [2003] *Policy Instruments for Environmental and Natural Resource Management*

keep some of the positive aspects from one instrument while avoiding some of the negative ones. By comparing the shares of emissions with the share of tax payments by industry, some of the different tax subsidies can be shown. Tax subsidies are also an alternative to direct subsidies, and are therefore illustrated as subsidies as well as taxes in *figure 1*. The report 2000:3 discusses different methods to calculate tax subsidies more thoroughly.

Product and production subsidies and taxes can be analysed from the demand side as well, given the assumptions that they are passed along to the final consumer. This can be done either through traditional input-output analysis that simply details the allocation of the taxes and subsidies levied on each industry directly or through the use of inputs, to the appropriate product that these industries participate in producing. If changes in taxes and subsidies are the focus of the analysis a price version of the input-output model can be used to study the possible impacts on the prices for the consumers of different products.

An often-discussed theoretical question is whether there is a difference, from the point-of-view of efficiency, between a tax and a subsidy used to correct the price³⁵. On the one hand, there may be no difference since it is the relative price between high quality and low quality goods that matters. Economists usually tend to think of subsidies as similar to taxes for this reason and, therefore, subsidies can partly be analysed as negative taxes³⁶.

An example of how both instruments can be used is when the government is promoting the further reduction of a specific pollutant. An alternative to an environmental tax on the pollutant, used to increase the cost of the pollutant, is to subsidise the reduction by giving a specific payment to the producer for every unit of pollution reduced. The main difference is that, with the tax, the government “punishes” the company by imposing a charge and, with the subsidy, they “encourage” the company to improve their behaviour. However, in general, a tax is considered more efficient than a subsidy³⁷. This is the case in the long run because a subsidy reduces the average cost of production, while the tax increases the average cost of production. A firm with costs above the market price may still be able to operate if they receive a subsidy, which is not the case with a tax. Concerning a subsidy given for the use of natural resources, for example, it can encourage misuse and overuse of resources³⁸. There is also the risk of promoting the status quo in production processes by making it cheaper to continue with existing methods than to adopt costly new techniques. This risk states the importance of using policy tools that work towards environmental goals. The environmentally motivated subsidies listed in this report are, however, examples of subsidies contradictory to environmentally harmful subsidies, even though environmentally motivated subsidies can also be inefficient.

There are also other aspects as to why subsidies are not always preferred. One reason can be their large cost to the government³⁹. In Sweden, the total subsidies from the state and the EU (not including subsidies provided by the local authorities) con-

³⁵ Brännlund et al (1998) *Miljöekonomi* (Environmental economics)

³⁶ Sterner [2003] *Policy Instruments for Environmental and Natural Resource Management*

³⁷ Brännlund et al (1998) *Miljöekonomi* (Environmental economics)

³⁸ Myers [1998] *Perverse subsidies. Tax dollars undercutting our economies and environments alike*

³⁹ Ibid

stituted about 4 per cent of GDP in 1993, dropping to 3 per cent in 1996 and to 1.5 per cent in 2000. *See more about the total subsidies in Sweden in chapter 3.*

However, the different negative effects of subsidies listed above can be reduced by careful design⁴⁰. Subsidies are interesting policy tools for the environmental area because they are popular with polluters and because they can be a practical instrument in cases when other instruments are unfeasible, i.e. when it is difficult to identify the polluters.

2.2.2 Environmentally harmful subsidies

A subsidy can affect the environment in many different ways. National and international debates over recent years have often discussed harmful subsidies rather than subsidies with a positive effect on the environment.

Many subsidies target worthwhile causes, compensating where market or policy failures occur. For example, subsidies can promote competition by helping new companies compete with major players. They can also encourage the development and adoption of environmentally friendly technologies. However, many subsidies also support activities damaging the environment⁴¹. Such subsidies, generally labelled perverse, harmful or damaging, increase the number and the severity of destructive trends such as stratospheric ozone depletion or the decimation of renewable natural resources. Therefore, a relevant issue is the frequency of harmful subsidies. Well-known examples are oil-exporting countries giving large subsidies for energy use. There is therefore a new policy trend to abandon these harmful subsidies, a matter which in many cases is politically complicated because the subsidies have become entangled with other interests.⁴²

Several studies in recent years have focused on environmentally harmful subsidies but a practicable definition for international comparisons has not yet been identified⁴³. There are several problems with defining what exactly an environmentally harmful subsidy is. Therefore, most studies focus on a selection of subsidies expected to harm the environment rather than all such subsidies. As a complement to those specialised studies, the environmental accounts can track all subsidies that are included in the national accounts. As the pressure on the environment in this country is also recorded in the environmental accounts by industry, there are possibilities to investigate how the policy instruments and the pressure on the environment are distributed between industries and between countries. This is a way of investigating subsidies and environmental pressure without having to use any specific definition of harmful subsidies. However, subsidies are not a standard feature of the environmental accounts today, even if the issue is under discussion. Work is in progress to report environmental taxes internationally in the environmental accounts and we believe that subsidies could well be a next step in the harmonisation of accounting methods.

⁴⁰ Sterner [2003] *Policy Instruments for Environmental and Natural Resource Management*

⁴¹ Ibid.

⁴² For more information of harmful subsidies see, for example, Myers, N. and Kent, J. [2001] and [1998]

⁴³ The OECD, among others, has debated this issue. For more information on this matter, see www1.oecd.org/agr/ehsw

2.2.3 Environmentally motivated subsidies

For a considerable time, a number of different international organisations have highlighted environmental taxes as an effective instrument for promoting sustainable development⁴⁴. A subsidy that addresses previously unpaid environmental benefits may also be socially desirable, especially in cases where a tax is difficult to impose.

Kågeson (2001) discusses how subsidies of different kinds distort the competition between subsidised and non-subsidised products and services. However, according to Kågeson, there are several areas where the government should subsidise, for example, in areas where legal conditions to allocate responsibility are missing. Other situations where the government may intervene are concerning research and in cases where an external benefit is produced, i.e. in farming. Subsidies may be used in the following 6 situations;

- Sanitation of land where responsibility can not be claimed the present or preceding owner.
- The purchase of land for the creation of nature reserves.
- Construction of wetlands.
- Liming of acidified waters.
- Compensation for some forms of cultivation causing biodiversity and/or conserving the farmed landscape.
- Support for the introduction of new technology.

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 gases⁴⁵. 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)⁴⁶. 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 not to 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.

⁴⁴ See for example OECD [2001] and EEA [2000]

⁴⁵ IISD & UNEP [2000] *Environment and trade – a handbook*.

⁴⁶ *Goods: rules on trade remedies*, WTO. Training package on www.wto.org.

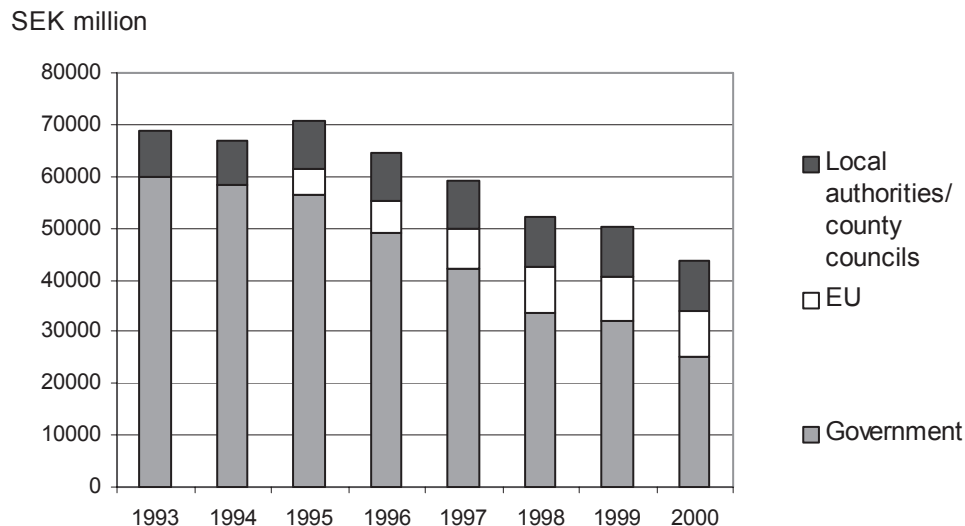
3 Results - subsidies in Sweden

This chapter will discuss the total, as well as the environmentally motivated, subsidies and also some environmentally motivated investment subsidies in Sweden for the period from 1993 to 2000. The main source of data in this chapter is the national accounts in Sweden. However, information on the different investment subsidies included in the following section does not originate from the national accounts but from the different central authorities responsible for the subsidies or the Swedish National Financial Management Authority.

3.1 Total SNA-subsidies in Sweden

Figure 2 illustrates the development of the total subsidies paid out from the government, the EU and local authorities and county councils in Sweden between 1993 and 2000. The subsidies from the Swedish government and the EU consist mainly of production subsidies, i.e. subsidies given for a commitment in production. A large part of the subsidies from local authorities and county councils consist of a product subsidy for public transportation, but there is a lack of information on what the rest of these subsidies consist of. The focus in this report is therefore on the government and EU subsidies.

Figure 2. The total SNA-subsidies in Sweden distributed by payments from the government, the EU and local authorities and county councils



Source: *The national accounts.*

The total amount of SNA-subsidies from the government and the EU in Sweden has decreased from SEK 59 833 million in 1993 to SEK 33 898 million in 2000. Subsidies from the EU have, on the other hand, increased from SEK 4 859 million to SEK 8 887 million between 1995 and 2000.

The SNA-subsidies are given to different recipients in the economy. The largest amount of subsidies, SEK 32 000 million, was given to private companies in 1996⁴⁷.

⁴⁷ The national accounts in Sweden, *BNI documentation*

Other receivers were state corporations, state businesses, private companies, the public sector and non profit-making household associations. Of the state subsidies to private companies, more than 75 per cent were interest subsidies for housing construction and approximately 15 per cent were subsidies for creating employment. Among the subsidies to private companies, interest subsidies for housing construction also dominated. Of the subsidies to state corporations, 85 per cent consist of subsidies to Samhall AB, a company that employs people with physical and psychological disabilities. Subsidies from the EU come from a range of different funds, with a large part going to the agricultural sector⁴⁸.

3.2 Development of environmentally motivated subsidies

In order for environmental subsidies to be more easily comparable to other economic instruments, such as environmental taxes, the same classifications should be used. For purposes of international comparison, environmental taxes are usually divided into four main categories. These are energy taxes, transport taxes, pollution taxes and resource taxes. The largest category in Sweden is energy taxes, with revenues of around SEK 53 000 million in 2000. Transport taxes were around SEK 7 000 million and pollution taxes SEK 2 000 million. There is only one tax classified as a resource tax, amounting to SEK 125 million in 2000.

The four categories used for subsidies are therefore:

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

Table 1 shows the total distributed payments from environmentally motivated subsidies that currently exist and those that formerly existed in Sweden between 1993 and 2000. No subsidy was classified as a pollution-reducing subsidy during this period.

⁴⁸ Most funding granted by the EU is not directly paid by the European Commission but via the national and regional authorities of the Member States. This applies for assistance under the common agricultural policy. One example of funding directly by the EU is LIFE - see more in *section 3.7*. http://www.europa.eu.int/comm/secretariat_general/sgc/aides/index_en.htm

Table 1. Environmentally motivated SNA-subsidies in Sweden, 1993-2000, SEK million in current prices

Environmentally motivated SNA-subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
Resource subsidies	248	296	1 110	947	1 638	2 694	2 423	2 028
Nature conservation measures in the agricultural sector (NOLA)	226	250	245	-	-	-	-	-
Supplementary measures in the agricultural sector	-	-	825	890	1 410	2 446	2 188	1 786*
Landscape conservation measures	17	30	4	0	0	0	0	0
Measures for improving the environment in the agricultural sector	5	1	1	1	8	15	5	13
Subsidy for fish cultivation	0	2	0	3	1	4	0	0
Research about environment and eco-cycles	0	2	6	7	4	5	4	2
The Council for Forestry and Agricultural Research	0	11	26	38	204	209	226	223
Subsidy for environmental work	0	0	3	8	11	15	0	4
Energy subsidies	121	71	152	141	165	178	191	154
Energy efficiency measures	23	-4**	3	5	1	13	12	6
Energy technology support	-	-	-	-	-	-	51	27
Introduction of new energy technologies	-	-	-	-	-	0	67	32
Energy research	86	64	134	122	164	165	43	66
Bio-energy research	12	11	15	14	0	0	0	0
Measures for providing heat and power in southern Sweden	-	-	-	-	-	0	15	23
Energy efficiency measures in the Baltic States and eastern Europe	0	0	0	0	0	0	3	0
Transport subsidies	0	0	14	2	3	3	14	0
Research subsidy on electrical and hybrid vehicles	0	0	14	2	3	3	14	0
Total environmentally motivated subsidies	369	367	1 276	1 090	1 806	2 875	2 628	2 182
<i>Environmentally motivated SNA-subsidies as per cent of GDP in Sweden</i>	<i>0,02</i>	<i>0,02</i>	<i>0,07</i>	<i>0,06</i>	<i>0,10</i>	<i>0,15</i>	<i>0,13</i>	<i>0,10</i>
<i>Environmentally motivated SNA-subsidies as per cent of total SNA-subsidies in Sweden***</i>	<i>0,62</i>	<i>0,63</i>	<i>2,08</i>	<i>1,98</i>	<i>3,74</i>	<i>6,77</i>	<i>6,54</i>	<i>6,44</i>

* The payments may be higher in 2000 than illustrated here, due to a possible new budget line not recorded by the national accounts/ESV

** The negative payment for 1994 is due to a presumed repayment (Marelius, M. Swedish National Financial Management Authority. Telephone interview, June 2003)

***Not including subsidies from local authorities and county councils

A zero indicates that the budget line did exist but no payments were made as subsidies. A line indicates that the budget line did not exist.

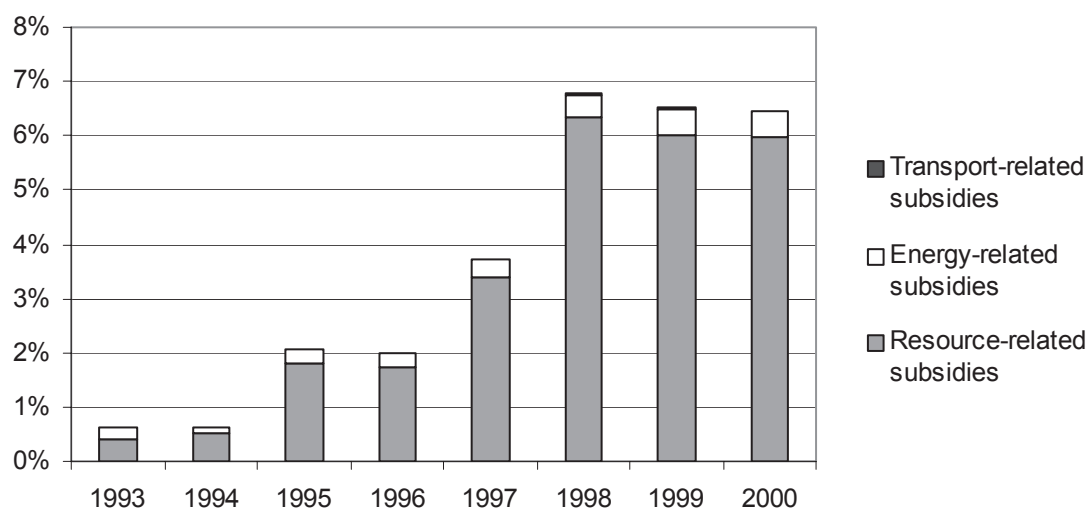
Source: The national accounts. The Swedish Board of Agriculture for NOLA 1993-1995, due to its absence in the national accounts.

Environmentally motivated SNA-subsidies have increased as a percentage of the total SNA-subsidies in Sweden between 1993 and 2000. The most dramatic increases occurred between 1996 and 1997, as well as between 1997 and 1998. Since 1998, environmentally motivated subsidies as a percentage of the total subsidies in Sweden have been quite constant, at around 6-7 per cent. One explanation for this development is the decrease of the total subsidies over these years, shown in *Figure 2*, together with the fact that the environmentally motivated subsidies increased rapidly between 1996 and 1998. In 2000, the total environmentally motivated subsidies came to 0.10 per cent of GDP, which is a slight decrease compared to 1999.

The table also shows that the resource-related subsidies were responsible for approximately 93 per cent and the energy-related subsidies about 7 per cent of the total environmentally motivated subsidies in Sweden in 2000. *Figure 3* illustrates how the disbursed payments from the subsidies are divided among the three different cate-

gories, as a percentage of the total subsidies in Sweden. Only 6.44 per cent of the total subsidies in Sweden had an environmental motive in 2000. However, in 1994 this percentage was only 0.62 per cent, which indicates a significant increase.

Figure 3. Environmentally motivated SNA-subsidies in Sweden 1993 to 2000. Percentage of total Swedish SNA-subsidies⁴⁹



Source: *The national accounts. The Swedish Board of Agriculture for one resource subsidy in 1993 to 1995.*

Resource-related subsidies dominated the environmentally motivated subsidies paid in 1995 to 2000, after Sweden joined the EU. In the years before entry to the EU, the majority of the subsidies paid were also resource-related subsidies. Energy-related subsidies have been relatively constant for all the years. The distinct change towards the resource-related subsidies depends on the increase of supplementary measures in the agricultural sector. Transport-related subsidies are very small compared to the resource- and energy-related subsidies and do not show in *Figure 3*.

Below, we investigate the distributed payments from the environmentally motivated subsidies further by looking at the different categories, resource, energy and transport, separately.

3.3 Resource subsidies

Table 2 illustrates the resource-related environmentally motivated subsidies in Sweden between 1993 and 2000. Resource-related subsidies are dominated by subsidies to the agricultural sector, including the following budget lines: “Landscape conservation measures”, “Supplementary measures in the agricultural sector” and “Measures for improving the environment in the agricultural sector”, which went directly to the sector. The subsidy “Nature conservation measures in the agricultural sector” also went directly to the sector when it existed. Agriculture is subsidised all over the world and Sweden is clearly not an exception⁵⁰. Other resource-related subsidies in Sweden affect the fishing sector and research. In this section, these subsidies will be

⁴⁹ Not including subsidies from local authorities and county councils. (See *section 1.4 and 3.1* for more information.)

⁵⁰ De Moor [1996] *Subsidies and sustainable development - implementing environmentally friendly economic instruments*

explained further, starting with the subsidies to agriculture. Since the grant “Supplementary measures in agriculture” contains several different subsidies, it will be presented separately.

Table 2. Resource-related SNA-subsidies in Sweden, 1993 – 2000.

Environmentally motivated resource subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
• Nature conservation measures in the agricultural sector (NOLA)	226	250	245	-	-	-	-	-
• Supplementary measures in the agricultural sector	-	-	825	890	1 410	2 446	2 188	1 786
• Landscape conservation measures	17	30	4	0	0	0	0	0
• Measures for improving the environment in the agricultural sector	5	1	1	1	8	15	5	13
• Subsidy for fish cultivation	0	2	0	3	1	4	0	0
• Research about environment and eco-cycles	0	2	6	7	4	5	4	2
• The Council for Forestry and Agricultural Research	0	11	26	38	204	209	226	223
• Subsidy for environmental work	0	0	3	8	11	15	0	4

Source: The national accounts. The Swedish Board of Agriculture for NOLA 1993-1995, due to its absence in the national accounts.

3.3.1 Nature conservation measures in the agricultural sector (NOLA)

This is the name of the direct subsidy and not of the budget line since data was missing on this support in the Swedish national accounts. These payments are taken directly from the Swedish Board of Agriculture’s reporting to the Economic Accounts for Agriculture (EEA). The data from EEA is reported for the year that the subsidies were allocated and not the year in which they were paid, which differs from the rest of the data in this report concerning the year the subsidies are paid.

The purpose with this subsidy was to conserve the farmed landscape and its valuable semi-natural pastureland and meadows, including forest grazing land. This support was introduced in 1986 and, before 1990, the subsidy was paid according to an agreement made directly with each farmer. After 1990, the agreement was instead rearranged as a compensation payment for the nature conservation service that the farmers perform.

3.3.2 Supplementary measures in the agricultural sector

The budget line “Supplementary measures in the agricultural sector” includes three different supports:

- 1) Environmental programme
- 2) Different forest measures
- 3) Plantation of energy forest

Except for the financing of environmental measures in agriculture, similar to the objective of the subsidy NOLA before 1995, the budget line is also used to finance forestry measures and for the plantation of energy forest. The main purpose with the environmental support given in this budget line is to reduce the pressure on the environment caused by agriculture.

By analysing the subsidy payments in *Table 2* above, we see that the amount has increased by 116 per cent between 1995 and 2000. Between 1996 and 1997, the increase was 58 per cent and, between 1997 and 1998, the increase was 73 per cent. The highest amount paid out from this grant was in 1998 with SEK 2 446 million.

Information is given below on the different subsidies included in this budget line. We start by briefly describing the environmental programme in Sweden for 1995 to 1999, then the support for forestry measures and finally the support for energy forest.

1) The Environmental Programme 1995-1999

Swedish entry into the European Union in 1995 meant that support to agriculture from the Swedish government was replaced by support from the European Union. In the EU, all countries design their own programmes for environmental production methods in agriculture and for the protection of biodiversity in the farmed landscape, formulated with the local environmental problems and conditions in mind. The measures are financed partly by EU's agricultural fund and partly by the Swedish state. The level of EU's co-financing depends on the measure and the area involved. The level of EU financing of environmental measures is 75% in Objective 1 areas and 50% in other areas⁵¹. For other measures, EU financing is 25%. A new programme has been in place since 2000, namely the Environmental and Rural Development Plan 2000-2006. The subsidies discussed in this report are related to those in the first environmental programme. Most of the new supports could not be applied for until 2001, and therefore the current programme is not discussed further in this report. The main difference from the former programme is a more direct focus on social support measures, complementing the former environmental supports, in the same plan.

In line with Swedish environmental objectives and EU Council Regulation No. 2078/92, the first agri-environmental programme was approved in 1995. Farmers who made environmental commitments were compensated for the production of public goods or for the loss of income. The programme contained 14 different forms of compensation for which farmers made environmental commitments for five years, except for commitments related to wetlands and ponds, where the period was 20 years. The multi-annual commitments that entered into force under this environmental programme will run until the end of the period in accordance with the provisions applicable to the EU Council regulation mentioned above.

The subsidies that farmers could apply for between 1995 and 1999 were environmental support for the following (in order of the support with the largest payments first, according to 2000):

• Conservation of an open farmed landscape

This support was given for grassland for hay, grassland for grazing and natural permanent pasture. The purpose of the support was to maintain the open fields in northern Sweden, as well as in the forest districts in southern and middle Sweden and to prevent the extensive disappearance of arable land. Another purpose with the support was to preserve a varied landscape.

⁵¹ Objective 1 areas cover the counties of *Norrbottnen*, *Västerbotten*, *Jämtland* and *Västernorrland* as well as parts of the counties *Dalarna*, *Värmland* and *Gävleborg*.

- **Conservation of biodiversity and cultural heritage values**

The purpose of this support was to conserve the managed semi-natural pastureland and mown meadows in such a way that their representative flora and fauna are conserved at the same time as cultural heritage values are protected.

- **Perennial ley farming**

The purpose of this support was to promote environmentally friendly land use by stopping the transition to cereals in favour of increased ley cultivation. Ley cultivation contributes to a reduced nutrient leakage and erosion, at the same time as a decrease in the usage of pesticides.

- **Ecological farming**

The support for ecological farming was given for crops on arable land with the purpose of increasing environmental production methods in agriculture. It could also be given for ecological cattle management. In 1999, this support was given to 11 per cent of Sweden's acreage of arable land.

- **Conventional agricultural with better resource management**

This support was introduced in 1998 to encourage reduced nutrient leaching and a reduced use of pesticides. Another purpose was to increase the competence in this area. This subsidy also included a support for the cultivation of sugar beet on the island of Gotland.

- **Environmentally sensitive areas**

For the southern and middle parts of Sweden, support was given for the management and restoration of wetlands and ponds, ley cultivation and riparian strips as well as for catch crops. The purpose was to reduce plant nutrients and erosion from arable land.

- **Re-creation of mown meadows**

Another support introduced in 1998 concerned the re-creation of mown meadows. The purpose was to resume the cultivation on land that used to be mown meadow to strengthen its original value.

- **Conservation of breeds threatened with extinction**

The purpose of this support was to conserve the genetic resources in breeds threatened with extinction.

- **Cultivation of brown beans on the island of Öland**

This measure aims to reduce the risk associated with pesticide use and nutrient leaching through encouraging environmentally friendly cultivation to conserve local varieties and maintaining the traditional cultivation of brown beans on Öland.

2) Subsidy for forest measures in agriculture

A programme for forest measures was developed in 1996 and has the purpose of promoting biodiversity and leading towards the environmental goals. A national support for setting up energy forests, according to EU regulation EEG 1765/92, is also included in these measures.

Subsidies could be given for establishing deciduous forests with domestic tree species or bushes on arable land in plain areas, as well as for the maintenance of such an

establishment for five years. A subsidy can be given covering a maximum of 80 per cent of the cost. A fixed amount is given for the maintenance over a five-year period. It can also be given for fertilising with revitalising remedies on wooded ground that has been strongly acidified. This subsidy can also be given for up to 80 per cent of the maximum cost for the fertilising procedure.

3) Subsidy to the plantation of energy forest

These subsidies were given to farmers for the plantation of specific perennial crops meant for the production of biomass. A fixed amount per hectare was given as a subsidy.

3.3.3 Other subsidies for agriculture

There are two other budget lines affecting the agricultural environment positively in this report, namely "Measures for improving the environment" and "Landscape conservation measures". A short description of each subsidy follows.

Landscape conservation measures

This support was introduced in 1990 and was managed by the Ministry of the Environment. The grant was used to protect arable land that was of interest for natural and cultural heritage reasons. The subsidies were also paid to farmers for maintaining the open landscape. This subsidy was replaced in 1995 by the environmental programme partly financed by the EU.

Measure for improving the environment in the agricultural sector

This budget line has existed all years between 1993 and 2000 and its purpose is to steer the development in the agricultural and horticultural industry towards reduced nutrient and ammonia leaching, safer and reduced use of pesticides, conservation of biodiversity and increased ecological production. Its purpose is therefore similar to the grant supplementary measures in agriculture, but not used in the environmental programme. It is primarily used to conduct experiments and for development in the area. The disbursed payments are here recorded as subsidies if they can be included in the definition of a subsidy.

The subsidies for improving the environment in the agricultural sector have increased between 1993 and 2000 and, in 1998, the highest amount was paid out as subsidies from this grant, SEK 15 million.

3.3.4 Subsidy for fish cultivation

This grant has existed in different forms during the period 1993 to 2000 but always with the same purpose, to work towards a vital and rich stock of fish in Swedish waters. In later years, the environmental purpose has become more distinct. In the long run, the purpose is to maintain the biodiversity by promoting a rich and varied stock and an optimal use of resources. The budget line is used for the creation of fish conservation areas, supervision, measures for fish conservation, such as biotope conservation, and efforts towards protecting threatened species. The amount paid as subsidies has varied over the years, probably depending on the amount of applications. Compared to the subsidies paid out in the environment programme, the payments are relatively small.

3.3.5 Research subsidies

The Swedish national accounts report subsidies according to two different budget lines, i.e. for research about environment and eco-cycles and to the Council for forestry and agricultural research. Both these budget lines have paid out more as subsidies in later years.

Research on the environment and eco-cycles

There are two budget lines supporting environmental and eco-cycle research in Sweden. The purpose is to discover and prevent new environmental threats by interdisciplinary research on, for example, waste and material flows. The research mainly takes place in universities and university colleges. Only the amount given as subsidies from this budget line is documented here.

The Council for forestry and agricultural research⁵²

The Council's purposes were to promote and support fundamental and long-term research for a sustainable use of biological resources, with a specific focus on the arable sectors and also to stimulate the communication of the results. The Council had the national responsibility for some EU programmes as well as some bilateral agreements for cooperation. Subsidies from this budget line were paid out as different forms of research subsidies and these steadily increased.

3.3.6 Subsidy for environmental work

This budget line includes means for environmental measures managed by other authorities than the Swedish Environmental Protection Agency and by other organisations in this area. It mainly concerns means to restore damage caused by air pollution and acidification, but also to support other work for the control of the environment.

3.4 Energy subsidies

Governments in both developing and developed countries intervene considerably in the energy sector⁵³. Heat and power production, in particular, have been exposed to extensive attempts for control in Sweden and the motives for this control have differed over time⁵⁴. During the 1970s and early 1980s, the key focus was identifying a substitution for oil and, shortly thereafter, the preparations for the future phasing out of nuclear power⁵⁵. Since the late 80s, intervention has gradually come to focus on environmental concerns. The subsidies in *Table 3* were paid out between 1993 and 2000 with an environmental purpose. Other subsidies related to energy, not included in the definition of a subsidy used in this report, are several different tax subsidies.

⁵² The Council for forestry and agricultural research became the Swedish Research Council for Environment, Agricultural sciences and Spatial planning (FORMAS) in 2001 and took over the research.

⁵³ De Moor 1996 *Subsidies and sustainable development - implementing environmentally friendly economic instruments*.

⁵⁴ Nutek [1995] *Styrmedel inom energiområdet* [Policy tools in the energy area]

⁵⁵ The oil compensation programme in Sweden lasted from 1984 to 1987 and aimed to replace the use of oil.

We will start by presenting the subsidies aiming to increase energy efficiency and improve energy technology. Following are subsidies for research, subsidies for heat and power in southern Sweden and in the Baltic states and eastern Europe.

Table 3. Energy-related SNA-subsidies in Sweden 1993-2000, SEK million.

Environmentally motivated energy subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
• Energy efficiency measures	23	-4*	3	5	1	13	12	6
• Energy technology support	-	-	-	-	-	-	51	27
• Introduction of new energy technologies	-	-	-	-	-	-	67	32
• Energy research	86	64	134	122	164	165	43	66
• Bio-energy research	12	11	15	14	0	0	0	0
• Measures for providing heat and power in southern Sweden	0	0	0	0	0	0	15	23
• Energy efficiency measures in the Baltic states and eastern Europe	0	0	0	0	0	0	3	0

* The negative payment for 1994 is due to a presumed repayment (Marelius, M. Swedish National Financial Management Authority. Telephone interview, June 2003)

Source: The national accounts.

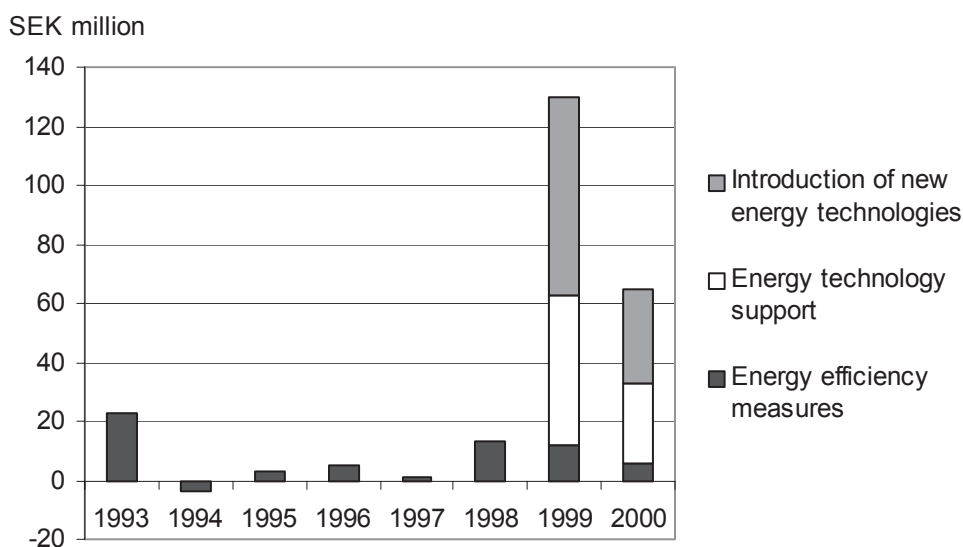
3.4.1 Subsidies aiming at more efficient use of energy

There have been several different grants focused on encouraging a more efficient use of energy, and they all have the purpose of developing new energy technology. This section will discuss three different grants, i.e.:

- 1) Energy efficiency measures
- 2) Energy technology support
- 3) Introduction of new energy technologies.

The development of these subsidies is shown in *Figure 4*. In 1999 and 2000, the amounts paid out increased drastically compared to the period from 1993 to 1998. This is due to the introduction of two new subsidies in 1998, the energy technology support and support for the introduction of new energy technologies.

Figure 4. Swedish subsidies for energy technology, 1993-2000



Source: The national accounts

Further information on the three different budget lines will be presented below, starting with the support for energy efficiency, which has existed for the whole period from 1993 to 2000.

1) Energy efficiency measures

This budget line is actually a merger of three different budget lines, all promoting a more efficient use of energy⁵⁶. One reason for the different names for the budget lines over the years was a decision taken by the Swedish parliament before the budget proposition of 1998 to continue the efforts towards a more efficient use of energy with a partly new structure, which led to a new name for the budget line. The energy policy decision of 1997 laid out the guidelines for this grant. The subsidies paid out before 1998 date from the 1991 programme on energy policy and on the adaptation and development of the energy system.

The payments have varied over the years and one plausible reason is that energy policy goals have differed. Before 1997, the main purpose of the subsidy was to bring efficient energy technologies and products onto the market. The Swedish Business Development Agency (NUTEK) managed the budget line in these years. The purpose was to introduce these energy efficient products in advance. Examples of such products were ventilation in premises and apartments and high frequency devices in fluorescent tubes. The public purchasing support was established in 1988⁵⁷ and cancelled in 1999.

In accordance with the decision taken in 1997, the purpose was to support technology purchasing, information, training, testing, marking and certifying to stimulate the development and introduction of energy efficient technology. The subsidies paid from the grant are principally managed by the Swedish Energy Agency (STEM) and a company can be subsidised for up to 50 per cent of the costs for specific allowed activities⁵⁸.

2) Energy technology support

The energy technology support was not available before 1999. The support aims to encourage the development of new energy technology in companies and industries, the users of the new technology. If specific reasons exist, it can also be given to manufacturers of systems and equipment for energy transformation. The payment can be given either as a loan or a subsidy. It can amount to up to 50 per cent of the investment cost or research collaboration. It can be combined with the energy research subsidy (*below*) and is managed by the Swedish Energy Agency.

3) Introduction of new energy technologies

This support was also introduced in 1999 and is also managed by the Swedish Energy Agency. Subsidies are given in order to promote the development of technology based on renewable energy as well as an efficient use of energy in industrial processes. This support is similar to the energy technology support, but the purpose is more specific for promoting technology based on renewable energy. The subsidy can constitute a maximum of 50 per cent of the cost for industrial research and a

⁵⁶ These three grants are: "Measures for a more efficient use of energy" replaced with "Measures for an efficient energy use" in 1999. The third budget line is "Some measures for a more efficient use of energy", with subsidies paid out all years between 1993 and 2000.

⁵⁷ Prop. 1987/88:90, bet. 1987/88:NU40, rskr. 1987/88:375

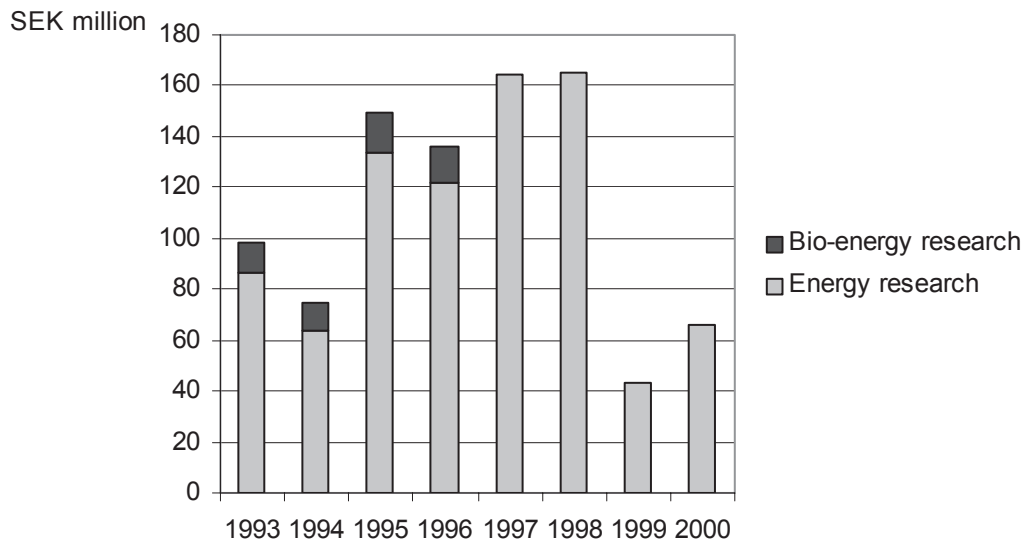
⁵⁸ For more information: SFS 1999:344

maximum of 25 per cent, if the purpose is developing a goods item before it is introduced on the market (up to 30 per cent for small- or medium-sized companies).

3.4.2 Energy research subsidies

Two budget lines exist which are connected to energy research in Sweden, energy research and bio-energy research. *Figure 5* illustrates the disbursed payments from these two research subsidies. Energy research is by far the larger subsidy, with disbursed payments as large as SEK 165 million in 1998, which is 93 per cent of the total energy-related subsidies in this year. In 2000, the amount paid had decreased to SEK 66 million, 43 per cent of the total energy related subsidies. The subsidy for bio-energy research was paid out between 1993 and 1996.

Figure 5. Swedish subsidies for energy research, 1993-2000



Source: *The national accounts*

Support to energy research

The support to energy research shall contribute to ecologically and economically sustainable development. The government pays out subsidies to both fundamental and applied energy research. The objective of the programme of energy research is to create scientific and technical knowledge in the universities and industrial life.

Support to bio-energy research

Research on bio-energy is an essential part of the energy research programme and, from this budget line, subsidies were paid for research and development in bio-energy. At the beginning of the 1990s, several programmes for bio-energy were running, for example, wood-derived and alternative fuels and their environmental effects.

3.4.3 Measures for providing heat and power in southern Sweden

The budget line for providing heat and power in southern Sweden existed between 1998 and 2000. The main purpose of this support was to strengthen the provision of heat and power in southern Sweden to compensate for the disappearance of power from the two reactors at the Barsebäck nuclear power station. This includes measures such as a more efficient use of energy, conversion as well as economising with and supplying electricity from other sources, primarily renewable energy. For this

purpose, support is given for the development of new energy technology, in certain cases, as well as for measures that aim to make energy use more efficient or favour the use of renewable energy. Support for research can be given for the total cost but, for industrial research, a maximum of 50 per cent can be given. For environmental improvements, the subsidy can be given for a maximum of 30 per cent of the total cost.

3.4.4 Energy efficiency measures in the Baltic States and eastern Europe

This budget line has led to relatively small payments as subsidies, according to the definition of the national accounts, with only payments of SEK 3 million in 1999. The purpose is to increase the energy efficiency in the Baltic States and in eastern Europe. Support is given to measures promoting this purpose and for the introduction of renewable sources of energy. Payments can also be given as a loan to the receiving countries for these purposes, while only a smaller part of the grant can be given as a subsidy.

3.5 Transport subsidies

The use of policy tools in the transport sector has changed during the recent years in Sweden⁵⁹. Informative and administrative tools dominated in the 1970s but, since then, the use of economic tools has increased. The primary economic tools used are taxes rather than environmentally motivated subsidies, according to the formulated definition used in this chapter. Only one budget line was environmentally motivated between 1993 and 2000. *Table 4* illustrates this subsidy.

Table 4. Transport-related SNA-subsidy in Sweden 1993-2000

Environmentally motivated transport subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
• Research subsidy for electrical and hybrid vehicles	0	0	14	2	3	3	14	0

Source: *The national accounts*

Since the definition of an environmentally motivated subsidy focuses on its motive and not its effects, the large amount of subsidies for the purchase of rail transport in Sweden, the investment in railways or public transportation are not included. The main motives for these subsidies are regional, and not environmental, according to the budget proposals. However, there are environmental reasons that have been made clearer in recent years, so some of these subsidies may be included in the future. These subsidies will be included in chapter four, when Sweden and Denmark are compared, since Denmark uses a definition of an environmental subsidy according to the environmental effect.

3.5.1 Research subsidy for electrical and hybrid vehicles

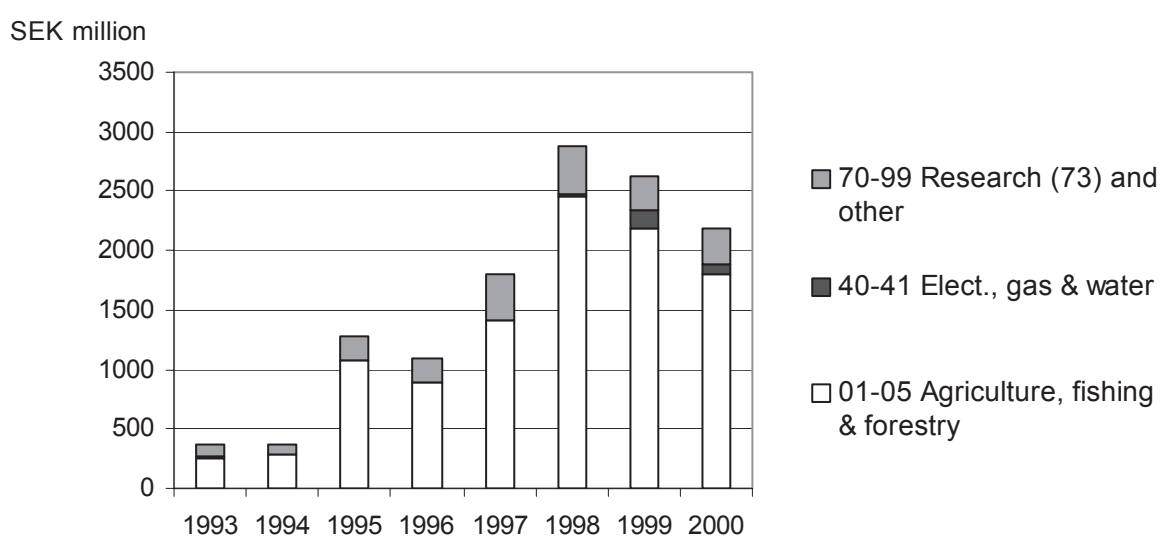
This transport-related subsidy is a research subsidy for electrical and hybrid vehicles. It is paid out as part of a research, development and demonstration programme initiated in 1993, concerning the use of electric and hybrid vehicles. The amount paid out as a subsidy has differed from year to year, the maximum was SEK 14 million given in 1995 and in 1999.

⁵⁹ NUTEK [1995] *Styrmedel inom energiområdet* (Policy tools in the energy area)

3.6 The impact on the economy

So far in this chapter, the different production SNA-subsidies classified as environmentally motivated have been presented individually. We shall now sum them up for each industry in order to obtain a picture of how the environmentally motivated SNA-subsidies are distributed throughout the economy. *Figure 6* shows the distribution of the environmentally motivated SNA-subsidies among different industries. (For a listing of NACE categories, see *Appendix 1*) In the national accounts, all information on SNA-subsidies are broken down into industries, which makes it possible to show the impact on the economy.

Figure 6. The total environmentally motivated SNA-subsidies in 1993-2000, by industry



Source: *The national accounts*

As is evident from *Figure 6*, the largest subsidies are given to *agricultural, fishing and forestry* (NACE 01-05). This is due to the large resource subsidies, which are given in the agricultural environmental programme, amounting to SEK 1 786 million in 2000. The second largest sector receiving payments is *other* (NACE 70-99) and this includes all the subsidies given for research. The third largest industry given environmentally motivated subsidies is *electricity, gas and water* (NACE 40-41).

There are several industries not receiving any payments from environmentally motivated subsidies. These are mining and quarrying (NACE 10-14), manufacturing (NACE 15-37), construction (NACE 45), wholesale and retail trade (NACE 50-55), transport and communication (NACE 60-64) and financial intermediation (NACE 65-67). *Table 5* illustrates a slightly finer distribution onto industries than *figure 6*.

Table 5. The total SNA-subsidies divided on industries. SEK million

Environmentally motivated SNA-subsidies, by NACE/industry	1993	1994	1995	1996	1997	1998	1999	2000
01 Agriculture	248	281	1 075	891	1 418	2 461	2 193	1 799
02 Fishing	0	2	0	3	1	4	0	0
40-41 Electricity, gas and water	23	-4	3	5	1	13	148	88
73 Research	98	88	195	183	375	382	287	291
Other (not divided)	0	0	3	8	11	15	0	4

Source: *The national accounts*

In contrast to the Danish national accounts, Sweden does not break down each subsidy on the different industries receiving the specific subsidy. Each subsidy in Sweden, as illustrated by the name of the budget line, can only be seen as allocated to one industry. In many cases, the receiver is only one industry, for example the agricultural supports.

3.7 Investment subsidies and other supports in Sweden

The definition of a subsidy in the system of national accounts does not include investment subsidies or support given to households. The long-term intention of the environmental accounts at Statistics Sweden is to compile statistics on all major payments from the government to producers, households and others. Therefore, this section will discuss some of the investment subsidies in Sweden between 1993 and 2000. Some of these were given directly to households. The intention is not to account for all investment subsidies in Sweden during these years. Instead we will account for a selection of subsidies for which data has been found, both from the Swedish National Financial Management Authority (ESV) who deliver the data on subsidies to the national accounts⁶⁰, and from other responsible authorities.

Table 6 illustrates a selection of investment subsidies introduced with an environmental motive as well as one other subsidy not included previously. Two additional supports are discussed in the text but not included in *Table 6*, i.e. the support for nature reserves and for the sanitation and restoration of polluted areas.

Some of these subsidies are recorded by their originating budget lines, as with the subsidies in the previous section based on the national accounts, while others are given with the name of the specific subsidy. This is due to different sources of information.

⁶⁰ The Swedish National Financial Management Authority (ESV) delivers data on subsidies to the national accounts as transfers for consumption. These are transfers for means used in the operation. Transfers for investments, on the other hand, are transfers of means that create new assets. The latter have been taken as environmentally motivated investment subsidies.

Table 6. Environmentally motivated investment subsidies in Sweden 1993 – 2000, SEK million

Environmentally motivated investment subsidies (SEK million)	1993	1994	1995	1996	1997	1998	1999	2000
Resource-related investment subsidies:	0	0	39	70	64	2 438	1 519	1 595
Support for local investment programmes	-	-	-	-	-	2 320	1 433	1 487
Investment subsidy for an ecological restructuring	-	-	-	-	13	27	47	26
LIFE environmental fund	-	-	39	70	51	91	39	82
Energy-related investment subsidies	178	288	321	303	160	281	451	220
Investment subsidy for renewable energy	178	227	232*	232*	98	89	172	174
Investment subsidy to reduce the use of energy in houses and for conversion	-	-	-	-	-	100	119	25
Subsidy for solar heat establishments in houses, apartments and premises	-	-	-	-	-	-	-	2
Investment for extension of district heating	**	1	25	0	5	0	0	0
Investments in energy technology	**	52	49	50	47	84	144	15
Energy efficiency measures	**	2	13	19	10	6	8	3
Energy research	**	0	0	0	0	2	3	1
Bio-energy research	**	6	2	2	0	0	0	0
Measures for providing heat and power in southern Sweden	**	-	-	-	0	0	5	0
Additional environmentally motivated subsidies of interest:								
Resource-related subsidies	148	156	190	172	145	184	170	183
Liming of lakes and watersheds	148	156	190	172	145	184	170	183
Total environmentally motivated investment subsidies	326	444	550	545	369	2 903	2 140	1 998
<i>Resource SNA-subsidies</i>	<i>248</i>	<i>296</i>	<i>1 110</i>	<i>947</i>	<i>1 638</i>	<i>2 694</i>	<i>2 423</i>	<i>2 028</i>
<i>Energy SNA-subsidies</i>	<i>121</i>	<i>71</i>	<i>152</i>	<i>141</i>	<i>165</i>	<i>178</i>	<i>191</i>	<i>154</i>
<i>Transport SNA-subsidies</i>	<i>0</i>	<i>0</i>	<i>14</i>	<i>2</i>	<i>3</i>	<i>3</i>	<i>14</i>	<i>0</i>
Total environmental subsidies in the report	695	811	1 826	1 635	2 175	5 778	4 768	4 180
<i>Total environmental subsidies as per cent of GDP in Sweden***</i>	<i>0,04</i>	<i>0,05</i>	<i>0,10</i>	<i>0,09</i>	<i>0,12</i>	<i>0,29</i>	<i>0,23</i>	<i>0,19</i>

* The original payment of SEK 464 million for 1995 has been divided between 1995 and 1996 in this table. 1996 does not exist in the state administrative records due to a transition to the calendar year, which made 1995 longer. There are no corrections for the earlier years in table 5, when the year was between July to June (Hugard, Å. Swedish Energy Agency. Mail correspondence June 2003.)

** Payments from these budget lines have not been received for year 1993 from the Swedish National Financial Management Authority (ESV).

*** Investment subsidies are not included in the definition of a subsidy used in ESA (1995) but they can be seen as included in the item "investments" used for calculating the GDP. Included in this item are investments, not excluding the subsidies given from the government (Liwendahl, C. The national Accounts, Sweden. Telephone and mail correspondence, 2003)

Source: Swedish EPA, Swedish Energy Agency, National Board of Housing, Building and Planning and The Swedish National Financial Management Authority (ESV, all marked with **).

Additional information is given below on new budget lines and specific subsidies. The first subsidies presented are categorised as resource investment subsidies and information then follows on energy investment subsidies. Finally, three more subsidies are included: "Liming of lakes and watersheds", where we have information on state support, and "Support for national reserves" and "Sanitation of land", where we do not have exact amounts but an approximation.

3.7.1 Resource-related investment subsidies

The resource investment subsidies consist of three different supports.

Support for local investment programmes (LIP)

This support was administrated by the Ministry of the Environment between 1997 and 2001 but since 2002 it is administered by the Swedish Environmental Protection Agency. The support for LIP has one major purpose, which is to significantly speed up Sweden's transition to an ecologically sustainable society. A secondary purpose is to help raise employment levels. This support is given to municipalities working together with local companies and organisations for investments that increase ecological sustainability.

An investment programme consists of a single project or a combination of several projects aimed at increasing ecological sustainability. In addition to reducing the environmental impact, these programmes are intended to stimulate employment, to make more efficient use of energy and other resources, to make use of renewable raw materials, to extend the reuse and recycling of waste materials, to strengthen biological diversity, to conserve cultural heritage assets and to improve the cycling of plant nutrients through an eco-cycle. The amounts paid, illustrated in *Table 6*, have been considerable, with payments of SEK 2 300 million in 1998 and slightly less in 1999 and 2000.

Investment subsidy for an ecological restructuring

The National Board of Housing, Building and Planning is responsible for the payment of this subsidy. In an employment proposition in 1995/96 the Swedish parliament assigned money to this grant for a five-year programme giving out investment subsidies for ecological restructuring⁶¹. The original grant consisted of SEK 1 000 million. However, the whole intended amount was not paid out since the programme did not continue for the planned five years. While this programme was still in operation, it worked in parallel with the local investment programmes.

One purpose of the programme was to create employment by an eco-cycle adaptation of buildings and technological infrastructure and, at the same time, push the development of technology forward. Another purpose was to bring about improvements in the environment. Measures included in the programme were focused on the development of technology, for example in the waste, water and construction area. The support was to be given for investments that would otherwise not occur and subsidies were given of between 15 and 30 per cent of the total investment cost.

LIFE environmental fund

The LIFE fund is entirely financed by the EU and was introduced in 1992. The Swedish EPA is the national authority for LIFE (Financial Instrument for the Environment), and the work is coordinated by the LIFE Unit at the European Commission⁶². LIFE is the only instrument that specifically supports the development and implementation of EU environment policy. LIFE comprises three major areas of action: Environment, Nature and Third countries. While all three areas aim to improve the environment, each has its specific priorities. The support given for Environment and Nature are included in *Table 6*.

⁶¹ Riksdagsskrivelse 1995/96:307 (Written communication from the Government)

⁶² <http://europa.eu.int/comm/environment/life/home.htm>

The actions supported in LIFE Nature focus on the conservation of natural habitats and the wild fauna of interest in European Union. Actions supported in LIFE Environment aim to implement the Community policy and legislation on the environment in the EU and candidate countries. Examples are the demonstration and development of new methods for environmental protection.

3.7.2 Energy-related investment subsidies

There are several other investment subsidies related to energy, discussed below.

Investment subsidy for renewable energy

There have been two different energy programmes, including investment subsidies for renewable power production, in the period from 1993 to 2000.

As part of the energy decision in 1991, support was given for investments in wind power and bio-fuel fired combined heat and power production for five years. To stimulate a continuous extension of ecologically sustainable electricity production, a new five-year programme was decided on in 1997. The data used in *Table 6* is taken from the Swedish Energy Agency, which is responsible for paying the investment subsidies. The payments have been between SEK 89 and 464 million. An extraordinarily large payment was made in 1996, due to a transition in the state administration to calendar years, which made 1995 longer than one actual year.

Investment subsidy to reduce the use of energy in houses and for conversion

These two subsidies derive from a budget line named "Subsidies to reduce the use of electricity". The data is taken directly from the National Board of Housing, Building and Planning, which administers the subsidies.

The investment subsidy for reducing the use of energy was given until 2000 for several measures, such as the installation of effect guards, complementary sources of energy and equipment for heat accumulation. The grant for the conversion of heating systems, which still exists, is given for the conversion of electrically heated residential buildings to district heating or to another form of heating. The purpose for both subsidies was to stimulate measures in areas where it is not economically rational to connect to district heating.

Subsidy for solar heat establishments

Subsidies for solar heat establishments in houses, apartments and premises were introduced in 2000, and the size of the subsidy is decided on the basis of the calculated yearly production of the solar collector, or as a maximum of 25 per cent of the investment cost.

Investment for extension of district heating

This subsidy is derived from the budget line "Subsidies to reduce the use of electricity", in the same way as the subsidies for conversion above. It was administered by the Swedish Business Development Agency until 1998, when the new Swedish Energy Agency took over the responsibility. The subsidies are given for investments for reconstruction and connection of buildings heated by electricity into district heating.

Investments in energy technology and energy efficiency measures

There are three different budget lines with the purpose of giving out investment subsidies for energy technology, namely "Energy technology support", "Introduction of new energy technologies" and "Subsidy to the energy technology fund". The first two grants were discussed in *section 3.4* and payments in the form of investment subsidies have taken place between 1998 and 2000. The grant "Energy efficiency measures" was also discussed in *section 3.4*. It has promoted more efficient use of energy by bringing efficient energy technology onto the market. Investment subsidies have been paid between 1994 and 2000.

The budget line "Subsidy to the energy technology fund" was introduced in 1988 as a response to the need for coordination of state support for the development of new environmentally friendly technology. Subsidies from this fund were given for projects with the purpose of developing or preparing commercial introduction of new energy technology. They could also be given to support research as a complement to the energy research programme. Support from the fund can amount to a maximum of 50 per cent of the total cost.

Energy and bio-energy research and measures for providing heat and power to southern Sweden

These three budget lines were discussed in chapter three and the payments paid as investment subsidies are recorded in *Table 6*.

3.7.3 Additional environmentally motivated subsidies

There are several subsidies in Sweden paid from central government to local municipalities and county administrative boards. The subsidies are therefore not accounted for as a direct subsidy in the national accounts. The local municipalities and the county administrative boards pay subsidies, for example, with the purpose of liming lakes, for the creation of nature reserves or for the sanitation and restoration of polluted areas. These three examples are described below.

However, the local municipalities and county administrative boards do not always record these payments as subsidies to the Swedish National Financial Management Authority, which is why the information below is taken directly from the Environmental Protection Agency⁶³. Depending on the definition of a subsidy it can be further debated if these payments are subsidies or not.

Liming of lakes and watercourses

Fine-ground limestone is distributed in Swedish lakes and watercourses or in their watersheds, with the aim of restoring biological diversity and the possibilities of fishing in acidified waters. Sweden's liming programme is the most comprehensive in the world with SEK 183 million distributed in 2000, generally to local authorities. Financial support has been paid out since 1977. The amounts have been fairly constant over the period from 1993 to 2000 and subsidies generally cover 85 per cent of the expenditure involved.

⁶³ Marelius, M. Swedish National Financial Management Authority. Telephone and mail correspondence, June 2003.

Nature reserves

There are also grants given for nature reserves in Sweden, originating from the budget line "Measures to maintain the biodiversity". The Environmental Protection Agency administers this support, which is given for the creation and maintenance of the reserves. This support has amounted to approximately SEK 65 to 100 million each year between 1993 and 2000⁶⁴. It is not included in *Table 6*, due to the lack of exact payment data.

Sanitation and restoration of polluted areas

Support for the sanitation and restoration of polluted areas is paid from the Environmental Protection Agency. The municipalities applies for this support by its respective county administrative board. This support has been paid out by approximately SEK 15 and 62 million each year between 1993 and 2000⁶⁵. The largest payment, SEK 62 million, in 2000. This support has increased after 2000 and in 2001 SEK 123 million was paid and in 2002, SEK 413 million. These data are not included in *Table 6*, due to the lack of exact payment data.

⁶⁴ Bergquist, B. The Swedish Environmental Protection Agency. Mail correspondence, June 2003.

⁶⁵ Andersson, I. The Swedish Environmental Protection Agency. Mail correspondence, October 2003.

4 Comparisons

Several comparisons can be made using the statistics presented in this report. We shall make comparisons in three different areas:

- Of international statistics on environmental subsidies
- Comparison between the different definitions of a subsidy
- Of subsidies previously classified as environmentally harmful subsidies in Sweden

The first section compares Sweden's statistics on environmental subsidies to the statistics in Denmark and tries to make the data comparable, resulting in several subsidies being added. For this purpose, Swedish payments to railways and public transportation are included and described. Secondly, the different definitions used in this report are compared. Finally, a comparison is made with some subsidies previously defined as harmful subsidies, using the agricultural sector as an example.

4.1 Comparable statistics on environmental subsidies

Denmark and the Netherlands are the only countries in Europe that compile statistics on environmental subsidies on regular basis in their environmental accounts. The Netherlands compile statistics on industrial investments for the protection of the environment, costs of own environmental activities and net environmental costs⁶⁶. These results are presented annually. Most of the subsidies are related to a reduced tax on "green investments". Statistics Netherlands calculates the amounts of subsidies from data taken from the central agency responsible for the "green investments". Denmark has compiled statistics on environmental subsidies since 2000 and these are most similar to the Swedish statistics presented in this report.

As mentioned in the section on definitions (*section 1.3*), Statistics Denmark uses a different definition of an environmental subsidy than the one applied by Statistics Sweden and the OECD. Denmark uses a definition focusing on the environmental effect of the subsidy rather than the original motive, including, for example, the support to buses and railways since these are assumed to have a positive effect on the environment. Therefore, the statistics are not comparable between the countries as presented for Sweden in chapter three. Denmark also highlights the need for further studies in the area to evaluate the magnitude of the effect of environmental subsidies⁶⁷.

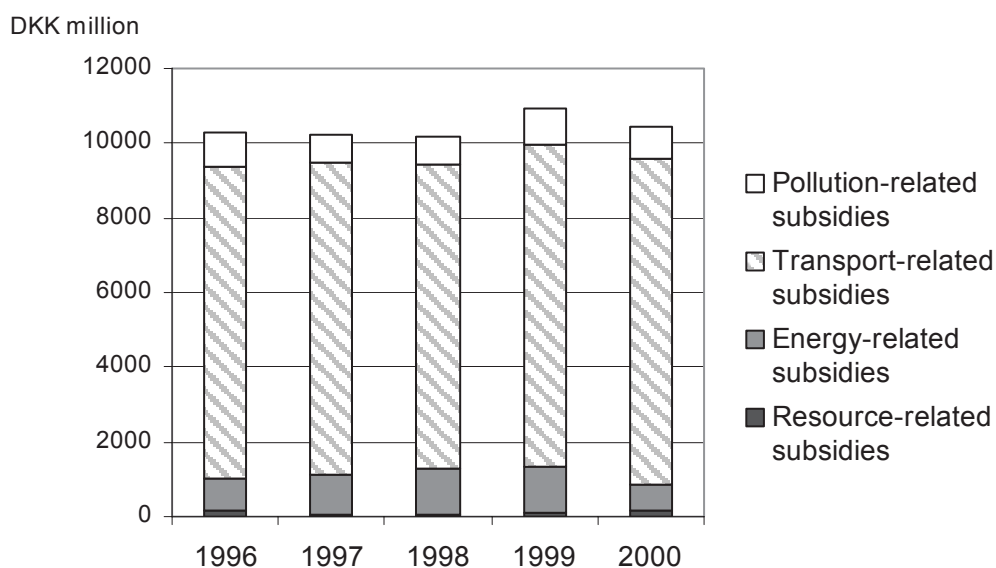
4.1.1 Denmark

The total environmental subsidies in Denmark, divided into pollution-, transport-, energy- and resource-related subsidies are shown in *figure 7*.

⁶⁶ Net environmental costs consist of costs of own environmental activities, paid taxes and payments for environmental activities contracted out, minus received environmental subsidies. Scheinau, S, mail correspondence, November 2003.

⁶⁷ Hornum [2000] *Environmental taxes and subsidies in the Danish NAMEA*

Figure 7. Denmark's environmental SNA-subsidies divided into pollution-, transport-, energy- and resource-related subsidies, DKK million



Source: *Miljø og energi [2002:5]*, Statistics Denmark.

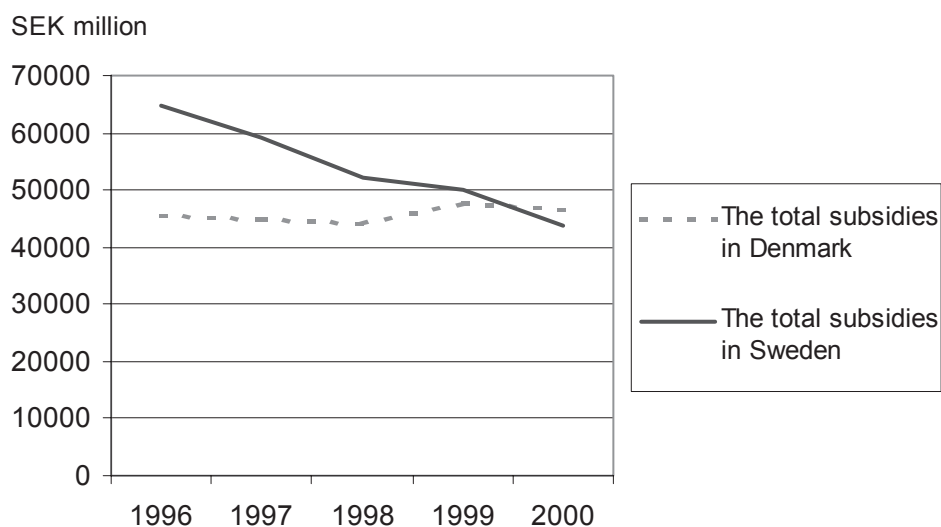
The *pollution-related subsidies* in Denmark consist of support to waste disposal, a compulsory set-aside premium⁶⁸, subsidies from the EU, including environmental arrangements in agriculture and forestry, a subsidy for fish cultivation, the use of environmental technologies and for environmental audits in companies. The *transport-related subsidies* are supports to public and private railways, as well as support to public and private bus transport. *Energy-related subsidies* consist of only one subsidy, to electricity produced by windmills. Finally, the *resource-related subsidies* include support to the state forests.

Environmental subsidies accounted for close to 28 per cent of the total Danish subsidies in 2000. *Figure 8* illustrates the trend of the total subsidies in Sweden and Denmark, in SEK million. The Swedish total subsidies here include subsidies to public authorities, as well as from the government and the EU as in chapter three, to make the data comparable. The rate of exchange used is SEK 1 = (approximately) DKK 0,8⁶⁹.

⁶⁸ When land is lay fallow

⁶⁹ www.xe.com (May 2003)

Figure 8. A comparison between the total state subsidies in Denmark and Sweden in 1996 to 2000, SEK million.



Source: *The national accounts, Sweden. Miljø og energi [2002:5], Statistics Denmark.*

The result indicates that the total subsidies are larger in Denmark for 2000. The total Swedish subsidies have, however, been larger for the previous years. The total subsidies in Denmark were DKK 37 691 million in 2000 (SEK 46 598 million), to be compared to SEK 43 650 million in Sweden. The Swedish economy is larger than the Danish economy, as seen to total GDP.

Different definitions

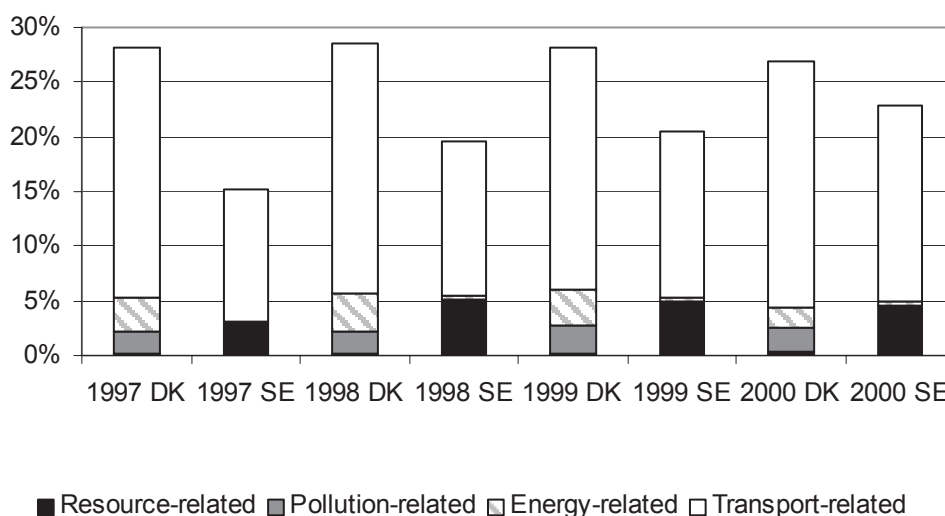
The subsidies in Denmark with a positive environmental effect are considerably larger than the estimated environmentally motivated subsidies in Sweden, as seen in chapter three. Another interesting difference is the areas subsidised in Sweden and in Denmark. The largest subsidies in Denmark are transport-related subsidies, which in Sweden is the smallest area subsidised. Denmark also has several subsidies classified as pollution-related environmental subsidies, due to different classifications of a resource-related or pollution-related subsidy. Some subsidies that Sweden classifies as resource-related, such as the agricultural subsidies, are classified as pollution subsidies in Denmark. *Figure 9* illustrates this difference clearly, comparing the Danish pollution-related subsidies to the Swedish resource-related.

In order to make a relevant comparison we need to include some more subsidies in Sweden, namely the different subsidies to the railway and subsidies for operating public transportation. In *Figure 9*, these new subsidies are illustrated as transport-related subsidies. Since the Danish national accounts follow the same definition of a subsidy (i.e. ESA 95), investment subsidies are not included in *Figure 9*.

Subsidies for railway and public transportation in Sweden were not classified as environmentally motivated in *chapter three*, due to the lack of clear environmental motives in the budget line. The definition used to compare Denmark and Sweden can therefore be said to be the Danish version, focusing on the effect the subsidy has on the environment. Increased utilisation of public transportation and railways can be seen as reducing car travel and, as a result, lowering emissions⁷⁰.

⁷⁰ Hornum [2000] *Environmental taxes and subsidies in the Danish NAMEA*

Figure 9. Environmental SNA-subsidies in Denmark (DK) and Sweden (SE), as a percentage of total SNA-subsidies in each country. Inclusive subsidies for public transportation and railway.



Source: *The national accounts, Sweden. Statistics Denmark.*

One reason for the large differences between the different groups of environmental subsidies shown in *Figure 9* may partly be found in the definition of an environmental subsidy and partly in the different transfers in the countries. It is not related to the definition of a subsidy, since both countries use the European System of Accounts (ESA 1995), but maybe in how the different transfers are given. The Danish energy-related and transport-related SNA-subsidies are much larger than the Swedish, as a percentage of the total SNA-subsidies in each country.

Denmark subsidises electricity produced by windmills with large amounts, causing part of the difference. Many of Sweden's energy-related subsidies are investment subsidies, as seen in *section 3.7*, and not subsidies according to the definition used by the national accounts. No information of Danish investment subsidies have been found.

4.1.2 Support to railways and public transportation in Sweden

Three other budget lines, including state subsidies to the railway and public transportation, are included in the transport-related subsidies in *Figure 9*, with the exception of a small subsidy to research on electrical and hybrid vehicles described in chapter three. A product subsidy to public transportation paid from the public authorities and the county councils in Sweden is also included. The different subsidies paid from the government are:

- Procurement of interregional personal transportation by train and other
- Public transport procurement, *Rikstrafiken* (National Public Transport Agency)
- Investment, operation and maintenance of public railways

And from the public authorities:

- Public transportation subsidies

“Procurement of interregional personal transportation by train and other” is a budget line given to *SJ* (the public railway company), as well as to the private sector. The subsidy to *SJ* is defined as a product subsidy in the national accounts. The budget line is also used for transportation of goods and passengers on the *Inlandsbanan* (Inland Railway Line). This is the largest subsidy of the three with SEK 515 million paid in 2000, compared to the “Public transport procurement, *Rikstrafiken*”, which received SEK 195 million and SEK 0 million for “Investment, operation and maintenance of public railways”⁷¹.

Rikstrafiken was established as an authority in 1999 with the purpose of developing interregional public transportation. It is responsible for purchasing and coordinating the traffic on the national base network. We refer here to the actions taken both before and after *Rikstrafiken* received the responsibility, even though the budget line had another name before 1999. The subsidies from this grant go to government purchasing of unprofitable traffic motivated by regional reasons.

The budget line “Investment, operation and maintenance of public railways” finances investment in railways, as well as some operational measures.

The product subsidy to public transportation is paid from the public authorities and the county councils. The largest subsidies are paid from the county councils, with between SEK 4 400 and 5 600 million paid in the period of 1997 to 2000⁷². About half of these subsidies go directly to Stockholm Transport (*SL*), responsible for public transportation in the Stockholm area, from the Stockholm county council.

4.2 Different definitions of an environmental subsidy

We have used three different definitions of an environmental subsidy in this report, based on differences in the definition of a “subsidy” as well as in the definition of an “environmental subsidy”.

In the first section of chapter three we based our data on the subsidies accounted for in the national accounts, i.e. a somewhat narrow definition of a subsidy, which does not include investment subsidies, for example. The second section in chapter three complements this definition by discussing several environmentally motivated investment subsidies as well as subsidies paid from the government to the public authorities. By comparing the Swedish statistics with the Danish, it became clear that Denmark uses a definition of an environmental subsidy different from the one used in Sweden and by the OECD. The main difference between using the motive and the environmental effect appears to concern the subsidies to railway and public transportation, included in the Danish subsidies but not in the Swedish set.

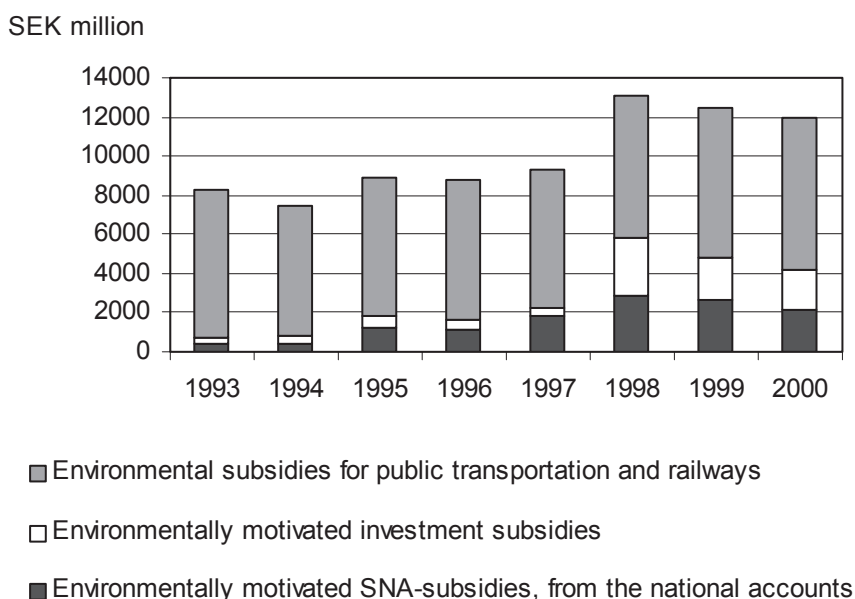
Figure 10 illustrates these three different definitions: environmentally motivated subsidies according to the definition used in the national accounts, environmentally mo-

⁷¹ The grant “Investment, operation and maintenance of public railways” recorded a subsidy only in 1998 of SEK 212 million, according to the national accounts.

⁷² Nordgren, Johan. The Swedish Public Transport Association (SLTF). Telephone and mail correspondence, June 2003.

tivated investment subsidies and subsidies to railway and public transportation according to a definition based on the environmental effect.

Figure 10. Environmental subsidies in Sweden 1993 – 2000, divided by subsidies according to the three different definitions.



Source: The national accounts, Swedish EPA, Swedish Energy Agency, National Board of Housing, Building and Planning and Swedish National Financial Management Authority

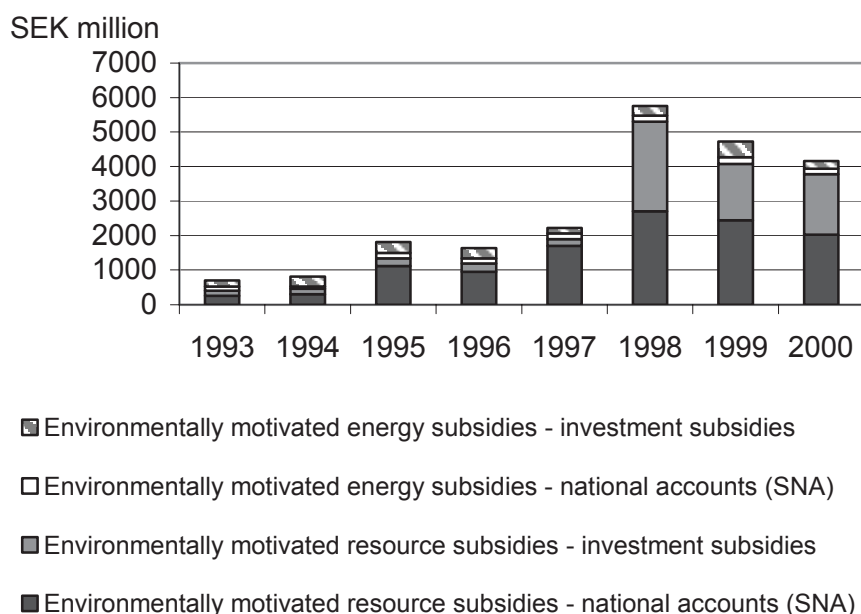
By broadening the definition of a subsidy (SNA-subsidies) to include environmentally motivated *investment* subsidies, the total environmentally *motivated* subsidies double for most of the years between 1993 and 2000. If the support for nature reserves and for the sanitation and restoration of polluted areas were to be included in *figure 10* (in the white section) it would increase further by around SEK 100 million each year.

It becomes clear that the definition used by the national accounts is narrow, since both categories of subsidies are considered to be subsidies in broad definitions used by for example, the OECD. If the subsidies to railway and public transportation are considered to be environmental subsidies they will dominate the subsidies, as seen in *figure 10*.

4.2.1 Divided on resource and energy subsidies

Figure 11 illustrates the total environmentally *motivated* subsidies, *not* including the support to the railways and public transportation, divided into the three categories used in chapter three. The transport-related subsidies are too small compared to the others and are therefore not included in the figure. No additional transport-related subsidies were found when broadening the definition of a subsidy including also investment subsidies.

Figure 11. Total environmentally motivated subsidies, divided into resource and energy subsidies



Source: The national accounts, Swedish EPA, Swedish Energy Agency, National Board of Housing, Building and Planning and Swedish National Financial Management Authority

It becomes clear that a large part of the resource-related subsidies are paid as investment subsidies, especially after 1998 when the support for local investment programmes was initiated. Furthermore, about half of the total energy-related subsidies in this report consist of investment subsidies, mainly investment subsidies for renewable energy.

4.3 Environmentally “harmful” subsidies

In 2000, Statistics Sweden published a report on environmental taxes and environmentally harmful subsidies⁷³. The report did not intend to serve as an exhaustive documentation of the harmful subsidies in Sweden; it was instead based on a report from the Swedish EPA investigating some subsidies that could be considered harmful to the environment⁷⁴.

This section will compare some chosen industries from the report by Statistics Sweden (SCB 2000:3) with some of the information given in this report. The areas that will be compared are the forestry, fishing and agricultural sector.

All the environmentally motivated subsidies included are totals, according to the programme of national accounts, in contrast to the environmentally “harmful” subsidies, which are only taken as examples from previous classifications in the report. The potentially environmentally harmful subsidies discussed in that report were transport support, agricultural support, subsidies to fishing, interest subsidies to housing construction, support to reindeer husbandry and support for forest roads.

⁷³ SCB 2000:3 *Environmental taxes and environmentally harmful subsidies*

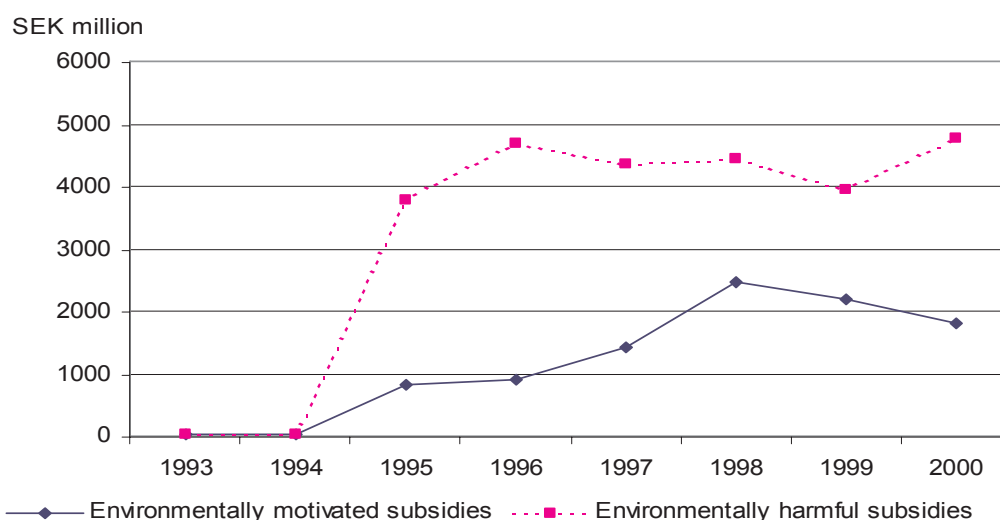
⁷⁴ Naturvårdsverket [1997] *Ett urval av statliga subventioner som kan motverka en ekologisk hållbar utveckling* (Swedish Environmental Protection Agency, Selected state subsidies that may be inconsistent with ecologically sustainable development)

4.3.1 Agricultural, forestry and fishing sector

Paid subsidies that support as well as harm the environment exist in the agricultural, forestry and fishing sector (NACE 01, 02 and 05). According to *chapter three*, Sweden has five budget lines/subsidies that pay out subsidies motivated by environmental reasons to this sector.

A report by Statistics Sweden (SCB, 2000:3) brings up three different supports in this sector that could be considered to harm the environment, namely agricultural support, subsidies to fisheries and support for reindeer husbandry.

Figure 12. Comparison between the environmentally harmful and environmentally motivated* subsidies in the agricultural, forestry and fishing sector



* Not including the NOLA subsidy given in 1993-95. Approximately SEK 240 million each year.
Source: The national accounts. The Swedish Board of Agriculture, annual report for 2000, for an addition in the acreage support in 2000

The three subsidies previously defined as potentially harmful to the environment have been considerably larger than the environmentally motivated subsidies for all years after 1994. The largest “environmental harmful” subsidies are the acreage support⁷⁵ and livestock support⁷⁶. For year 2000 about SEK 3 400 million are added to the data from the national accounts in *figure 12* due to a lack of data in the national accounts. The Swedish Board of Agriculture’s annual report for 2000 informs that the decrease in payments in the report is due to that the acreage support was paid out after the turn of the year based on a parliamentary resolution⁷⁷. The claim was however for 2000. Since the national accounts have accrual adjusted subsidies this correction is in line with the rest of the data.

In June 2003, an agreement on agricultural reform was taken in the EU. The reform includes new conditions in the European agricultural sector in the form of a decoupling of agricultural subsidies from production volumes. This implies, in the long run, that some of the subsidies classified as environmentally harmful in *figure 12* will be reduced and replaced with supports motivated by environmental reasons.

⁷⁵ Price support designed to compensate farmers for falls in the prices of crops.

⁷⁶ Price support designed to compensate meat producers for falls in the prices of meat.

⁷⁷ Jordbruksverket, *Årsredovisning för räkenskapsåret 2000* (Swedish Board of Agriculture, annual report for 2000)

5 Conclusions

This report has presented the Swedish environmentally motivated subsidies for the period of 1993 to 2000, demonstrating two different definitions of a subsidy. There is firstly the definition used by the national accounts and, secondly, a broader definition, also including investment subsidies. Environmentally motivated SNA-subsidies accounted for 6.44 per cent of the total SNA-subsidies in 2000. In 1994 this percentage was only 0.62 per cent, which indicated a significant increase. The environmentally motivated investment subsidies are about the same size as the motivated SNA-subsidies. In 2000 these were SEK 1 998 million.

It is necessary that a general definition of environmental subsidies is specified in order to make comparative studies possible. The report has illustrated two different definitions of an environmental subsidy by comparing Denmark and Sweden. When focusing on the environmental effect rather than the environmental motive, according to the Danish model, transport-related subsidies have accounted for the largest payments of subsidies. This is due to the presumed environmental effect of, in particular, railway and public transportation assumed by Statistics Denmark, even though they emphasise that to evaluate the precise magnitude of the effect of subsidies requires further studies in the area⁷⁸. The definition of an environmental subsidy primarily used in this report only focuses on the environmental motive, and there currently exists no central environmental motive for the railway and public transportation supports in Sweden. When focusing on the environmental effect rather than the environmental motive, according to the Danish model, transport-related SNA-subsidies have accounted for the largest payments of subsidies in Sweden, almost 18 per cent in 2000. The total environmental SNA-subsidies are almost 23 per cent of the total SNA-subsidies in 2000 if the subsidies for public transportation are included.

One of many economic instruments

It is important to mention that taxes and subsidies are only one of a wide range of economic instruments used to protect the environment. Examples of other well-used instruments in Sweden are charges, deposit refund schemes and tax subsidies. This insight into the Swedish environmentally motivated subsidies has made clear that the design of subsidies can be made more effective for a sustainable environment than they are today. Many subsidies, for example in the transport sector, could be elaborated with a clearer environmental purpose.

Much of the criticism against subsidies refers to the cost for the government and the risk of encouraging actors to enter the market, thereby increasing their numbers. These, and other arguments, often compare environmental taxes with environmental subsidies. This report has shown, however, that environmental subsidies and taxes tend to work in different areas. The environmentally motivated subsidies are mainly classified as resource-related compared to the taxes, which are mainly classified as energy and transport taxes. The energy-related subsidies increase when broadening the definition of a subsidy, but subsidies are still mainly used for payments in the resource area, an area that may be more difficult to impose taxes on.

⁷⁸ Hornum [2000] *Environmental Taxes and Subsidies in the Danish NAMEA*

As Kågeson (2001) points out, there may be a different use for subsidies and taxes in the environmental policy arena. Subsidies can be used where it is not possible to clearly allocate responsibility, as well as in cases where an external benefit is produced. They can also be used to encourage research and development. An example is a farmer, who maintains an open landscape and receives compensation for this. Whether this should be called a subsidy or, what it really is, compensation, could be further discussed.

The review of Swedish environmentally motivated subsidies and environmentally motivated investment subsidies in this report has shown that many are resource-related. Many are of the kind that Kågeson (2001) is in favour of, such as subsidies to wetlands, liming of lakes and watercourses, sanitation of land and for the creation of nature reserves. Many of the energy subsidies relate to technology but perhaps not completely new technology as Kågeson advocates. Subsidies, which are defined by Kågeson as inappropriate, are the supports for local investment programmes and the investment subsidies for ecological restructuring.

Different approaches for measuring subsidies

A paper published by the OECD Workshop on Environmentally Harmful Subsidies, that took place in Paris on 7-8 November 2002, discusses two different approaches used for measuring subsidies⁷⁹. One approach is comprehensive accounting systems, as characterized by the System of National Accounts (SNA) and used in this report. The other approach is sectoral subsidy accounts, i.e. accounts that relate to a specific product or industry, for example, agriculture or energy. The national accounts are said to be very useful for tracking government expenditure. The negative aspect, which according to the author gives rise to the sectoral accounts, is that the narrow definition of a subsidy used by the SNA provides less efficient analyses of the effects of subsidies on economic performance, trade and the environment. A major limitation in the sectoral analyses, according to the author, is the omission of general subsidies that may affect the allocation of resources in the economy. There may be non-targeted subsidies that may affect the environment in a good or bad way.

Another important issue is that, by starting out from total subsidies, positive (environmentally motivated) as well as negative (environmentally harmful) subsidies can be distinguished.

5.1 Future developments

Future work will focus on developing methods for the comparison of the subsidy payments with the effect they have on the economy and the environment. The environmental accounts (SEEA) are a good starting point for doing this. If subsidies are recorded in the SEEA, it will be possible to make international comparisons. As can be seen in this report, the subsidy policy instrument is often intended to influence the use of natural resources such as land, fish and energy. It may be of interest to combine the data on subsidies with the resource accounts in the SEEA. In the frameworks of land accounts, fishing accounts and energy accounts, the issue of subsidies has yet not been discussed. Green tax reforms have been on the agenda for

⁷⁹ Steenblik, R. [2002] *Subsidy measurement and classification: developing a common framework*

some time. Perhaps a new issue concerning “green subsidy” reforms, where the design of subsidies will be in focus, will be next on the agenda?

Many of the subsidies included in the broader definition, such as support for nature reserves and sanitation, lie somewhere between environmental protection expenditure and environmentally motivated subsidies. Statistics Sweden will continue to work in both these parallel areas in the future.

There is also a limitation in the European System of Accounts definition of a subsidy, since it leaves out investment subsidies, for example. There are quite a number of investment subsidies in Sweden and these also affect the environment, positively as well as negatively. By including these in future environmental accounts, a more complete picture can be given. Methods for collecting these other subsidies will also be further elaborated in the future.

Another area that needs a more general survey is the environmentally harmful subsidies. A documentation of both the environmentally motivated subsidies and the environmentally harmful subsidies would give a more complete analysis of subsidies as a policy instrument. The problem in the past has been finding a practical and approved definition of what exactly an environmentally harmful subsidy is. Hopefully the work in the OECD and other organisations and governments will soon result in a practical definition.

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Appendix 1: The industry classification

NACE (code)	Industries
01-02, 05	Forestry, Hunting, Fishing and Agriculture
10-14	Mining, quarrying
11	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying.
15-37	Manufacturing
15-16	Manufacture of food products and beverages. Manufacture of tobacco products
17-19	Manufacture of textiles, of wearing apparel; tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear.
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials.
21-22	Manufacture of pulp, paper and paper products. Publishing, printing and reproduction of recorded media.
23-24	Manufacture of coke, refined petroleum products and nuclear fuel, manufacture of chemicals and chemical products.
25	Manufacture of plastic and rubber products
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery products.
29	Manufacture of machinery and equipment
30-33	Manufacture of office machinery and computers. Manufacture of electric machinery and apparatus. Manufacture of radio, television, and communication equipment and apparatus. Manufacture of medical, precision and optical instruments, watches and clocks.
34-35	Manufacture of motor vehicles, trailers and semi-trailers. Manufacture of other transport equipment.
36	Manufacture of furniture
37	Recycling
40-41	Electricity, gas and water supply
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
45	Construction
50-52, 55	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods. Hotels and restaurants
60-64	Transport, storage and communication
60	Land transport
61	Water transport
62	Air transport
63	Supporting and auxiliary transport activities; activities for travel agencies
64	Post and telecommunications
65-67	Financial intermediation
70-99	Real estate, renting, and business activities. Public administration, and defence; compulsory social security. Education. Health and social work. Other community, social and personal service activities. Private households with employed persons.

Appendix 2: Tables

Figure 2. The total SNA-subsidies in Sweden distributed by payments from the government, the EU and local authorities and county councils. SEK million.

	1993	1994	1995	1996	1997	1998	1999	2000
Government	59833	58370	56586	48995	41958	33453	32075	25011
EU	0	0	4859	6194	7963	9212	8413	8887
Local authorities/ county councils	9137	8512	9194	9394	9079	9372	9664	9752

Figure 7. Denmark's environmental subsidies divided into pollution-, transport-, energy- and resource-related subsidies. DKK million.

	1996	1997	1998	1999	2000
Resource-related subsidies	139	51	49	91	158
Energy-related subsidies	854	1074	1252	1246	710
Transport-related subsidies	8369	8337	8131	8608	8736
Pollution-related subsidies	917	773	758	962	824

Figure 8. A comparison between the total state subsidies in Denmark and Sweden in 1996 to 2000. SEK million.

Total subsidies	1996	1997	1998	1999	2000
Denmark, in SEK million	45415	44874	44200	47766	46598
Sweden, in SEK million	64583	59000	52037	50152	43650

Not in figure 8:

<i>Total subsidies in Denmark, DKK million</i>	36727	36296	35751	38637	37691
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Figure 9. Environmental SNA-subsidies in Denmark and Sweden, as a percentage of total SNA-subsidies in each country.

	Denmark 1997	Sweden 1997	Denmark 1998	Sweden 1998	Denmark 1999	Sweden 1999	Denmark 2000	Sweden 2000
Resource-related	0,14%	2,78%	0,14%	5,18%	0,24%	4,83%	0,41%	4,65%
Pollution-related	2,13%	-	2,12%	-	2,49%	-	2,13%	-
Energy-related	2,96%	0,28%	3,50%	0,34%	3,22%	0,38%	1,84%	0,35%
Transport-related	22,97%	11,93%	22,74%	13,96%	22,28%	15,23%	22,58%	17,79%

Figure 10. Environmental subsidies in Sweden 1993 – 2000, divided by subsidies according to the three different definitions. SEK million.

	1993	1994	1995	1996	1997	1998	1999	2000
Environmentally motivated SNA-subsidies, from the national accounts	369	367	1276	1090	1806	2875	2628	2182
Environmentally motivated investment subsidies	326	444	550	545	369	2903	2140	1998
Environmental subsidies for public transportation and railways	7536	6691	7091	7181	7041	7264	7638	7766

Figure 11. Total environmentally motivated subsidies, divided into resource and energy subsidies. SEK million.

	1993	1994	1995	1996	1997	1998	1999	2000
Environmentally motivated resource subsidies – national accounts (SNA)	248	296	1110	947	1638	2694	2423	2028
Environmentally motivated resource subsidies – investment subsidies	148	156	229	242	209	2622	1689	1778
Environmentally motivated energy subsidies - national accounts (SNA)	121	71	152	141	165	178	191	154
Environmentally motivated energy subsidies – investment subsidies	178	288	321	303	160	281	451	220

Figure 12. Comparison between the environmentally harmful and environmentally motivated* subsidies in the agricultural, forestry and fishing sector. SEK million.

	1993	1994	1995	1996	1997	1998	1999	2000
Environmentally motivated subsidies	22	33	830	894	1419	2465	2193	1799
Environmentally harmful subsidies	31	30	3 790	4 676	4 362	4 443	3 936	4 765

* Not including the NOLA subsidy given in 1993-95. Approximately SEK 240 million each year 1993-95.

I serien Miljöräkenskaper har följande rapporter utkommit

		Ansvarig myndighet
1998:1	SWEEA, Swedish Economic and Environmental Accounts Svenska miljöräkenskaper, En lägesrapport från Konjunktur- institutet och Statistiska Centralbyrån 1994	KI och SCB
1998:2	SWEEA, Swedish Economic and Environmental Accounts English version 1994	KI och SCB
1998:3	Materialflöden och kretslopp i de svenska miljöräkenskaperna - en förstudie 1995	SCB
1998:4	Industrins miljöskyddskostnader 1991	SCB
1998:5	Aggregering av miljödata till miljöhot – en förstudie 1996	SCB
1998:6	Samband mellan miljö och ekonomi, en rapport om fysiska miljöräkenskaper i Sverige	SCB
1998:7	Kostnader för att minska utsläpp av kväveoxider och flyktiga organiska ämnen	NV
1998:8	Avfall 1993	SCB
1998:9	Svenska miljöräkenskaper för svavel och kväve samt Sveriges kostnader för kväveutsläpp	KI
1998:10	Miljöräkenskapsprojektet vid Konjunkturinstitutet 1992-1997 med bilagorna Gröna nationalräkenskaper Att konstruera ett miljöräkenskapssystem	KI
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