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## **Environmental Taxes and Subsidies in the Danish NAMEA**

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**Appendix. Environmental taxes and subsidies by industry and groups of consumption 1996**

**Literature**

## 1. Introduction<sup>1</sup>

### **NAMEA tables in Denmark**

Statistics Denmark publishes environmental accounts for Denmark every year. The environmental accounts follow the NAMEA principle (National Accounts Matrix including Environmental Accounts) and include information on the economy (input-output tables), energy balances in physical and monetary terms, natural gas and oil reserves in physical terms, emissions of eight substances to air, transboundary flows of these substances and their (weighted) potential contributions to the greenhouse effect and the Danish acidification. Danish NAMEA time series based on the classifications and definitions in the European System of Accounts (ESA 1995) exist for 1990 to 1998. Full information on the economy only exists up to 1996.

All information is broken down into 130 industries and final demand categories. To supplement the environmental accounts, input-output modelling calculations of direct and indirect effects (energy and emissions) are calculated and published every year together with the traditional input-output tables and modelling results.

### **Extending the Danish NAMEA for 1996**

In the present report the Danish NAMEA for 1996 will be expanded with information on environmental taxes and subsidies (divided into pollution, energy, transport and resource taxes and subsidies). The result is a table from which it can be seen which industries and consumption groups bear the various environmental taxes or benefit from the subsidies. Normally taxes and subsidies on production are only represented by three rows in the Danish input-output tables: Taxes on products (net, exclusive of VAT), Other taxes on production (net), and VAT.

### **Modifying the Danish supply and use system**

All the information making it possible to extend the NAMEA in the described way is implicitly incorporated within the Danish supply and use system, which forms the basis of the Danish national accounts and the input-output tables. Normally taxes and subsidies are aggregated in this system. As a consequence, the direct connection to the individual taxes and subsidies are lost. An important task in relation to this report was therefore to make it possible to trace every single tax and subsidy from the input into and throughout the balanced supply and use system.

### **Structure of the report**

Chapter 2 presents environmental taxes and subsidies in Denmark and how they are grouped. Figures for 1996 are shown and seen in relation to other taxes and subsidies and in relation to GDP. Chapter 3 describes the existing system for production taxes and subsidies in the national accounts and chapter 4 explains what has been done to extend this system to maintain the full information on every single tax and subsidy throughout the whole

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<sup>1</sup> This report and the work behind it have been carried out with financial assistance granted by the European Community.

process. Chapter 5 contains a Danish NAMEA with taxes and subsidies divided into five groups, four of which are of environmental interest.

## **2. Environmental taxes and subsidies in Denmark**

### **Definition of environmental taxes and subsidies**

The definition of environmental taxes used here is: A tax whose base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment. For subsidies a similar definition is used as they can be seen as negative taxes. In order to be an environmental subsidy it has to reduce the use of one or more physical units that has proven specific negative impacts on the environment.

In line with EUROSTAT (see for example *Environmental taxes in the EU*, Statistics in focus, Theme 2 – 20/2000, EUROSTAT) Statistics Denmark divides environmental taxes into four groups: Energy taxes, transport taxes, pollution taxes and resource taxes. Similarly, environmental subsidies are divided into: Energy subsidies, transport subsidies, pollution reducing subsidies and resource subsidies. Table 1 below shows figures for 1996. Table 1 contains all environmental taxes and subsidies, and the type of each individual tax and subsidy is shown both in relation to the classification of national accounts and in relation to the categories of environmental interest. In the input-output tables and the Danish NAMEA focus is on taxes and subsidies on production. Therefore, the transport tax, Motor vehicle weight duty, from households, which is regarded as a tax on wealth, real property, etc., is not included in the subsequent work of this report. Similarly, hunting and fishing licence duty, which are compulsory fees, are excluded.

### **Taxes and subsidies on production**

Following the European System of Accounts (ESA 1995) taxes and subsidies on production are divided into two main groups: Taxes and subsidies on products, and other taxes and subsidies on production. Taxes and subsidies on products are connected to goods or services. The distribution of these taxes and subsidies by purchasing industries and categories of final uses is made by examining how the connected goods or services are distributed by users. For the precise definitions of taxes and subsidies on production, see *European System of Accounts, ESA 1995*.

Other taxes and subsidies on production do not follow a product, but are levied on or granted to producers directly. These taxes and subsidies are therefore only distributed by industry, and not by categories of final uses.

**Table 1. Danish environmental subsidies and taxes 1996**

	DKKm	Classification in national accounts
<b>Environmental taxes, total</b>	<b>49 382</b>	
Of which taxes on products	44 370	Taxes on products
Of which other taxes on production	940	Other taxes on production
Of which taxes on wealth, etc.	4 072	Taxes on wealth, etc.
<b>Pollution taxes</b>	<b>5 542</b>	
Duty on certain retail containers	363	Taxes on products
Duty on disposable tableware	57	Taxes on products
Duty on insecticides, herbicides, etc.	209	Taxes on products
Duty on Waste	601	Taxes on products
Duty on CFC	0	Taxes on products
Duty on CO <sub>2</sub>	3 776	Taxes on products
Duty on carrier bags made of paper or plastic, etc.	157	Taxes on products
Duty on nickel/cadmium batteries	41	Taxes on products
Duty on sulphur	334	Taxes on products
Duty on chlorinated solvents	5	Taxes on products
Effluent charges	0	Taxes on products
Duty on nitrogen	0	Taxes on products
Duty on special growth stimulants	0	Taxes on products
<b>Energy taxes</b>	<b>20 334</b>	
Duty on petrol	8 250	Taxes on products
Duty on electricity	5 111	Taxes on products
Duty on certain oil products	6 230	Taxes on products
Duty on gas	55	Taxes on products
Duty on coal, etc.	671	Taxes on products
Duty on natural gas	17	Taxes on products
<b>Transport taxes</b>	<b>22 214</b>	
Motor vehicle weight duty, from households	3 978	Taxes on wealth, real property, etc.
Motor vehicle weight duty, from producers	940	Other taxes on production
Motor vehicle registration duty	15 419	Taxes on products
Aircraft registration duty, etc.	44	Taxes on products
Income from sale of numberplates	454	Taxes on products
Duty on tyres	20	Taxes on products
Duty on motor vehicle third-party liability insurance	1 099	Taxes on products
Passenger duty	261	Taxes on products
<b>Resource taxes</b>	<b>1 293</b>	
Hunting licence duty	65	Compulsory fees
Fishing licence duty	29	Compulsory fees
Duty on extraction and import of raw materials	135	Taxes on products
Duty on piped water	1 064	Taxes on products

**Table 1. (cont.) Danish environmental subsidies and taxes 1996**

	DKKm	Classification in national accounts
<b>Environmental subsidies, total</b>	<b>10 280</b>	
Of which subsidies on products	7 929	Subsidies on products
Of which other subsidies on production	2 351	Other subsidies on production
<b>Pollution reducing subsidies</b>	<b>917</b>	
Refuse disposal	195	Subsidies on products
Compulsory set-aside premium	606	Other subsidies on production
Other subsidies from EU <sup>1</sup>	75	Other subsidies on production
Other subsidies <sup>2</sup>	41	Other subsidies on production
<b>Energy subsidies</b>	<b>854</b>	
Subsidy to electricity produced by windmills	854	Subsidies on products
<b>Transport subsidies</b>	<b>8 369</b>	
Public railways	6 008	Subsidies on products
Public bus transport	733	Subsidies on products
Private railways	88	Other subsidies on production
Private bus transport	1 540	Other subsidies on production
<b>Resource subsidies</b>	<b>139</b>	
State forest	139	Subsidies on products

<sup>1</sup> Environmental arrangements in agriculture and forestry.

<sup>2</sup> Utilisation of environmental technologies and resource management in manufacturing, and cultivating of fish stocks.

Table 1 shows that environmental taxes in 1996 in Denmark came to DKK 49,382m, and that subsidies totalled DKK 10,280m. The transport area is the area most affected by environmental taxes and subsidies. 45 percent of the environmental taxes are transport taxes and 81 percent of the environmental subsidies are transport subsidies.

#### **New environmental taxes emerge continuously**

Table 1 only contains figures for 1996, but new environmental taxes emerged nearly every year in the nineties. In 1996 for example duty on sulphur, duty on chlorinated solvents and duty on natural gas were introduced. In 1997 effluent charges were introduced and in 1998 duty on nitrogen and duty on special growth stimulants were introduced.



Table 2 shows a comparison of environmental taxes and subsidies with total taxation and subsidisation and GDP.

**Table 2**

**Environmental taxes and subsidies compared to total taxation and subsidisation and GDP in 1996.**

	Per cent of GDP	DKKm
<b>Gross domestic product</b>	<b>100.0</b>	<b>1 060 888</b>
<b>Total taxes and duties</b>	<b>49.9</b>	<b>529 179</b>
<b>Custom duties and taxes on import</b>	<b>0.2</b>	<b>1 892</b>
<b>Taxes on production</b>	<b>17.3</b>	<b>183 543</b>
Taxes on products	15.8	167 389
<i>Of which environmental</i>	4.2	44 370
Other taxes on production	1.5	16 154
<i>Of which environmental</i>	0.1	940
<b>Current taxes on income, wealth, etc.</b>	<b>30.6</b>	<b>324 877</b>
<i>Of which environmental</i>	0.4	4 072
<b>Capital taxes</b>	<b>0.2</b>	<b>2 283</b>
<b>Social security contributions</b>	<b>1.6</b>	<b>16 584</b>
<b>Subsidies on production</b>	<b>3.5</b>	<b>36 726</b>
Subsidies on products	1.7	18 230
<i>Of which environmental</i>	0.7	7 929
Other subsidies on production	1.7	18 496
<i>Of which environmental</i>	0.2	2 351
<b>Taxes less subsidies on production</b>	<b>13.8</b>	<b>146 817</b>

**Lots of economic instruments exist**

It should be mentioned that taxes and subsidies are only a part of a wide range of economic instruments for environmental control. Examples of other instruments are user charges, product charges, marketable permits and deposit-refund systems. For a more in-depth treatment of this topic, see *Economic instruments for pollution control and natural resources in OECD countries: a survey*, OECD.

### **3. Treatment of subsidies and taxes on production in national accounts - Description of the Danish system**

**The statistical sources** For making the tax and subsidy statistics complete and at the same time detailed a lot of sources are used. First of all the tax administration system from the central government tax authorities is used. Furthermore, the accounts of municipalities, counties and government are used as sources. These and many other sources are compiled following varying principles of registration. Therefore some effort is made to harmonise the information from the various sources so that they are all in accordance with the principles of the national accounts; e.g. recorded on an accrual basis (this means that taxes should be recorded in the period when the obligation and claims arise). Not until after the harmonisation can the figures be used in the national accounts.

The first information to put into the database for taxes and subsidies is the assessed tax revenue from every single tax and the amount given as subsidy on every single type of subsidy.

Then, taxes and subsidies on products have to be distributed by products as one dimension and by user of the product as a second dimension (130 industries and 80 categories of final use). Other taxes and subsidies on production only have to be distributed by industry.

#### **3.1 Taxes and subsidies on products**

Taxes and subsidies on products are entered in the Danish supply and use system. Here, the supply and use of about 2750 products are described. Taxes and subsidies on products are, of course, only a part of this system.

#### **First an initial distribution is made**

But first an initial distribution has to be made. In most cases, the information only includes the products (but not the industry) to which a specific tax or subsidy relates. This information typically comes from reading the law concerning that specific tax. In addition to this the commodity statistics are used to estimate the revenue from every single product on which the tax is levied. In other words, the estimates are typically something like tax rate times quantities.

In some cases more information is available which makes it possible to distribute the revenue from a specific tax and a specific product by industries and categories of final use.

After having collected information on the distribution of all taxes and subsidies on products, the information is aggregated. This means that information on the individual types of taxes and subsidies is lost. Now, information exists about the total net taxes on every single product. In addition, for every single product there is a distribution by industry and categories of final use.

Finally, the aggregated data are entered in the general supply and use system. For every product there is a supply and a distribution of uses at basic values. There is also a distribution of uses at purchasers' value. In between the distribution of uses at basic values and the distribution of uses at purchasers' values are the distributions of trade margins and taxes on products, net.

**Then the distribution goes through a balancing process**

At this moment supply is seldom equal to use for any product. Hence, the supply and use system goes through a balancing process until supply equals use for each product at basic prices. In this process the distribution of taxes, net can be changed within the industry dimension. Of course, the total for individual taxes and subsidies is not changed.

The result is a balanced supply and use system with about 2750 products where it is possible to see the tax revenue, net connected to each product distributed by use, i.e. by industry and households etc. For each industry it is similarly possible to see the tax, net paid distributed by products (on which the tax, net is placed).

What this standard system does not show are the individual taxes and subsidies.

### **3.2 Other taxes and subsidies on production**

Concerning other taxes and subsidies on production the situation is slightly less complicated, because there is no product dimension to take into account. These taxes and subsidies are only distributed by industries.

Several sources are used to distribute these taxes and subsidies. As for taxes and subsidies on products, the result of the distribution system for other taxes and subsidies on production is aggregated, i.e. information on individual taxes and subsidies is lost. For every industry, however, the total tax, net paid can be seen.

## **4. Modifying the system to contain information on every single tax and subsidy**

As described in the previous chapter, the existing system for subsidies and taxes on production only implicitly contains information on the individual taxes and subsidies because of aggregation.

For the purpose of this report, it is, however, necessary to have a third dimension to distinguish between taxes and subsidies of varying environmental interest.

### **4.1 Taxes and subsidies on products**

#### **Extended record layout**

In principle, for taxes and subsidies on products the work that has to be done is to repeat the balancing process of the supply and use system without aggregating taxes and subsidies. Therefore, all information on distribution by product and, when possible, also on distribution by industry, is collected again. But now the record layout is extended to contain a code for taxes and subsidies.

Having the input data to the supply and use system in a convenient record layout, it can now be confronted with the balanced supply and use system.

The first check to be done is to compare taxes, net on every product in the input data and in the balanced supply and use system. Differences are a result of the balancing process. It is now necessary in each case to look carefully at what has been done in the balancing process and to implement these changes in the input data. After this, there is consistency in the product dimension.

As mentioned, for some taxes and subsidies complete information exists on both product and industry distribution. This information is predetermined and is normally not disturbed in the balancing process.

These predetermined taxes and subsidies are extracted from the balanced supply and use system. The input data for those taxes and subsidies not predetermined can then – after it is made consistent in the product dimension – be confronted with the similarly reduced balanced supply and use system. It is then possible in the input data to make a distribution by industry for each tax/subsidy and product combination using the distribution from the reduced balanced supply and use system concerning the product in question.

The result is the input data being adjusted in a matrix with a type of tax/subsidy dimension, a product dimension and an industry/household

dimension. This matrix is fully consistent with final national accounts figures.

#### **4.2 Other taxes and subsidies on production**

For other taxes and subsidies on production the task is easier because the input data is balanced from the beginning. All that has to be done is to make a code for taxes and subsidies in the record layout and to refrain from aggregating.

### **5. NAMEA with environmental taxes and subsidies**

#### **Environmental taxes and subsidies in NAMEA table**

The above-mentioned work results in information on the distribution of every single tax and subsidy by type of use (130 industries, 72 groups of consumption, etc.). In table 3 on the following pages the taxes and subsidies are aggregated, with focus on the four groups of environmental interest, and shown explicitly within the Danish NAMEA framework. Compared to the NAMEA normally presented row II.1 is now disaggregated into ten rows II.1.a-II.1.j. These rows are pollution taxes, pollution reducing subsidies, energy taxes and subsidies, transport taxes and subsidies, resource taxes and subsidies and, finally, two groups called other taxes and other subsidies, respectively.

The total taxes, net amount to DKK 146,817m, see row II.1 column 3. VAT is included in other taxes (row II.1.j) and is the major part of other taxes (DKK 103,320m or 75 per cent of DKK 138,233m). As it can be seen, all industries pay taxes and receive subsidies. It is important to be able to see both taxes and subsidies, as a tax, net (taxes less subsidies) equal to zero would say nothing. However, even if taxes and subsidies are netting out behaviour can be highly affected anyway. Thus, it is more informative to say that agriculture, fishing and quarrying pay DKK 315m in pollution taxes and at the same time receive DKK 711m in subsidies, than merely to say that DKK 396m are received, net. The first piece of information indicates that behaviour is potentially much more affected.

Some industries receive subsidies, net, as for example agriculture, fishing and quarrying, and others pay taxes, net, as for example public and personal services. In both cases, however, environmental taxes and subsidies do not determine whether the particular industry is a net recipient or payer.

This is because the major part of total taxes on production, net is other taxes and subsidies.

#### **Major part of environmental taxes and subsidies placed on private consumption**

In table 3 taxes and subsidies on products are not distinguished from other taxes and subsidies on production. However, such a distinction can be appropriate and is shown in table 4. Table 4 shows that the major part of environmental taxes and subsidies is on products. It can also be seen that the major part of environmental taxes and subsidies is placed on private consumption.

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**Table 3. Danish NAMEA 1996, with environmental taxes and subsidies**

		Production								Final
		1.1 Agriculture, fishing and quarrying	1.2 Manu- facturing	1.3 Energy and water supply	1.4 Con- struction	1.5 Whole- sale and retail trade; hotels and restau- rants	1.6 Trans- port, storage and commu- nication	1.7 Financial interme- diation, business activities	1.8 Public and personal services	2.1 Private con- sumption
		Current prices, DKKm								
R.1	Opening Stock	PJ								
1.1	Agriculture, fishing and quarrying	10 424	45 410	3 140	1 394	281	17	63	570	3 166
1.2	Manufacturing	7 518	76 014	625	29 430	13 433	5 497	12 070	9 312	49 572
1.3	Energy and water supply	1 078	5 472	2 128	141	2 807	705	985	3 481	17 634
1.4	Construction	1 213	1 857	2 241	1 546	1 499	2 871	14 096	5 794	5 305
1.5	Wholesale and retail trade; hotels and restaurants	4 902	27 301	286	13 365	11 253	7 200	3 567	6 815	110 800
1.6	Transport, storage and communication	1 753	12 220	247	2 546	21 762	22 275	9 073	12 922	24 269
1.7	Financial intermediation, business activities	3 525	18 869	1 237	16 293	26 596	7 279	33 616	20 175	117 110
1.8	Public and personal services	1 132	4 985	409	1 557	4 188	2 096	6 314	16 942	53 399
2.1	Private consumption									
I	Import	7 269	92 335	3 910	13 256	12 445	36 234	4 724	11 334	50 675
II.1.a	Pollution taxes	315	839	53	99	570	363	192	863	2 240
II.1.b	Pollution reducing subsidies	- 711	- 15	- 4	- 7	- 25	- 10	- 22	- 118	- 6
II.1.c	Energy taxes	382	611	37	526	1 021	1 747	488	1 578	13 943
II.1.d	Energy subsidies	- 22	- 349	- 6	- 3	- 47	- 18	- 24	- 118	- 184
II.1.e	Transport taxes	139	183	11	216	399	417	139	158	11 775
II.1.f	Transport subsidies	- 50	- 301	- 2	- 104	- 500	-2 563	- 214	-1 089	-3 547
II.1.g	Resource taxes	4	45	0	81	0	7	14	113	935
II.1.h	Resource subsidies	- 70	- 51	- 5	0	0	0	0	0	- 14
II.1.i	Other taxes	1 423	2 521	128	392	3 747	2 736	17 234	15 514	76 575
II.1.j	Other subsidies	-4 010	-4 994	- 107	- 596	-1 899	- 782	-6 633	-1 994	- 436
II.1.	Total taxes on production, net	-2 599	-1 510	105	605	3 268	1 897	11 174	14 907	101 280
II.2	Comp. of employees, gross operating surplus and mixed income	45737	156730	24404	45983	140667	74766	205589	249515	
3.	Total Current prices,DKKm	81952	439682	38731	126117	238200	160838	301272	351768	533 209
E.1	Natural gas	20	35	57		4		2	5	30
E.2	Crude oil		450							
E.3	Other fossil energy	46	119	418	14	39	87	12	36	230
E.4	Renewable energy	2	5	42					1	9
E.5	Other changes in volume									
E.6	Flaring and correction									
E.	Total use of energy	68	609	517	14	43	87	13	42	268
U.1	CO <sub>2</sub>	1000 tons								
U.2	SO <sub>2</sub>									
U.3	NO <sub>x</sub>									
U.4	CO									
U.5	NH <sub>3</sub>									
U.6	N <sub>2</sub> O									
U.7	CH <sub>4</sub>									
U.8	NMVOG									
U.	Distributed Danish emissions + 'import'									
R.2	Closing Stock	PJ								

## Taxes and subsidies on transport

In some cases the classification of environmental taxes and subsidies is somewhat artificial. Duty on petrol, for example, is an energy tax, but it could also have been argued that it should be a transport tax. However, it is evident that transport in Denmark is the area most influenced by environmental taxes and subsidies. In 1996 the proceeds from duty on petrol came to DKK 8.2bn and the proceeds from motor vehicle registration duty came to DKK 15.4bn. In both cases the major part of the proceeds comes from private consumption (DKK 7.0bn and 10.8bn, respectively). At the same time public railways are subsidised with DKK 6bn and public and private bus transport with around DKK 2.3bn.

Use					Reserves		Emissions to air								Environmental themes		
2.2	2.3	2.4	2.5	3	E.1	E.2	U.1	U.2	U.3	U.4	U.5	U.6	U.7	U.8	T.1	T.2	U.
Government consumption	Gross fixed capital formation	Exports of goods and services	Other final uses	Total	Natural gas	Crude oil	CO <sub>2</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	NH <sub>3</sub>	N <sub>2</sub> O	CH <sub>4</sub>	NMVOC	Green-house effect	Acidification	Emissions, total
					PJ		1000 tons										
					6 485	9 040											R.1
1 087	14	15 485	901	81 952			4 533	7	43	19	99	21	189	16			1.1
803	23 874	208 239	3 294	439 682			8 085	23	17	13			1	13			1.2
		4 099	202	38 731			46 369	144	123	55		1	8	2			1.3
6 440	83 236		19	126 117			996	1	10	9				3			1.4
1 899	15 746	33 286	1 780	238 200			1 409	1	8	21				4			1.5
909	4	52 182	676	160 838			5 968	12	57	24				5			1.6
3 467	6 276	6 349	40 480	301 272			377		2	7				1			1.7
256 920	118	1 311	2 395	351 768			1 044	1	6	7				1			1.8
							11 799	5	59	391	1	1	6	61			2.1
1 763	30 331	63 041	1 755	329 073		230		60	63	13							I
0	6	1	1	5 542													II.1.a
0	0	0	0	- 917													II.1.b
0	0	0	0	20 334													II.1.c
0	0	- 85	0	- 854													II.1.d
118	4 680	0	0	18 236													II.1.e
0	0	0	0	- 8 369													II.1.f
0	0	0	0	1 199													II.1.g
0	0	0	0	- 139													II.1.h
1 162	16 523	0	278	138 233													II.1.i
- 7	- 326	- 4 496	- 167	- 26 446													II.1.j
1 274	20 883	- 4 580	112	146 817													II.1.
			- 31 212	912 179													II.2
274 562	180 481	379 413	20 403	3 126 628													3.
		69	24	246	- 246												E.1
		199	13	662		- 662											E.2
		320	- 27	1 294													E.3
				59													E.4
						- 350											E.5
						7											E.6
																	E.
															80 578		U.1
															80		U.2
															108		U.3
																	U.4
															54		U.5
															24		U.6
															205		U.7
																	U.8
																	U.
																	R.2
					5 897	8 204	80 578	253	390	547	113	24	205	105			

**Table 4. Environmental taxes and subsidies disaggregated 1996.**

Production	Final use
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	Agri- culture, fishing and quar- rying	Manu- factur- ing	Energy and water supply	Con- struc- tion	Whole- sale and retail trade; hotels and restau- rants	Trans- port, storage and com- muni- cation	Finan- cial inter- media- tion, busi- ness activi- ties	Public and per- sonal services	Private con- sumption	Gov- ernment con- sump- tion	Gross fixed capital forma- tion	Exports of goods and ser- vices	Other final uses	Total
	-----DKKm-----													
<b>Taxes, net</b>	<b>-2 599</b>	<b>-1 510</b>	<b>105</b>	<b>605</b>	<b>3 268</b>	<b>1 897</b>	<b>11 174</b>	<b>14 907</b>	<b>101 280</b>	<b>1 274</b>	<b>20 883</b>	<b>-4 580</b>	<b>112</b>	<b>146 817</b>
<b>Taxes on products</b>	<b>1 239</b>	<b>2 955</b>	<b>109</b>	<b>975</b>	<b>4 258</b>	<b>4 475</b>	<b>9 284</b>	<b>15 857</b>	<b>105 468</b>	<b>1 280</b>	<b>21 209</b>	<b>1</b>	<b>279</b>	<b>167 389</b>
<b>Pollution taxes</b>														
<b>Total</b>	<b>315</b>	<b>839</b>	<b>53</b>	<b>99</b>	<b>570</b>	<b>363</b>	<b>192</b>	<b>863</b>	<b>2240</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>5542</b>
Duty on certain retail containers	0	211	0	0	82	0	0	2	68	0	0	0	0	363
Duty on disposable tableware	2	29	0	0	18	0	0	3	5	0	1	0	0	57
Duty on insecticides, herbicides, etc.	118	5	0	1	6	0	1	14	62	0	0	0	0	208
Duty on waste	7	3	13	21	77	30	67	363	20	0	0	0	0	601
Duty on CFC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty on CO2	165	482	13	74	284	317	113	446	1880	0	0	1	0	3776
Duty on carrier bags made of paper or plastic, etc.	0	3	0	0	50	0	1	0	102	0	0	0	0	157
Duty on nickel/cadmium batteries	0	16	0	0	18	0	0	0	0	0	5	0	1	40
Duty on sulphur	22	87	26	4	35	15	9	33	104	0	0	0	0	334
Duty on chlorinated solvents	0	3	0	0	0	0	0	1	0	0	0	0	0	5
<b>Energy taxes</b>														
<b>Total</b>	<b>382</b>	<b>611</b>	<b>37</b>	<b>526</b>	<b>1021</b>	<b>1747</b>	<b>488</b>	<b>1578</b>	<b>13943</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20334</b>
Duty on petrol	70	175	10	153	417	118	152	113	7041	0	0	0	0	8250
Duty on electricity	2	32	0	0	43	130	200	1026	3678	0	0	0	0	5111
Duty on certain oil products	300	377	26	372	526	1491	115	342	2682	0	0	0	0	6230
Duty on gas	2	7	0	2	2	1	1	5	36	0	0	0	0	55
Duty on coal, etc.	8	19	0	0	32	6	20	89	496	0	0	0	0	671
Duty on natural gas	0	2	0	0	1	0	1	2	11	0	0	0	0	18
<b>Transport taxes</b>														
<b>Total</b>	<b>37</b>	<b>73</b>	<b>5</b>	<b>70</b>	<b>154</b>	<b>260</b>	<b>57</b>	<b>69</b>	<b>11 775</b>	<b>118</b>	<b>4 680</b>	<b>0</b>	<b>0</b>	<b>17 296</b>
Motor vehicle registration duty	0	0	0	0	0	0	0	0	10 797	115	4 507	0	0	15 419
Aircraft registration duty, etc.	0	0	0	0	0	0	0	0	0	0	44	0	0	44
Income from sale of numberplates	0	0	0	0	0	0	0	0	322	3	129	0	0	454
Duty on tyres	0	1	0	0	18	0	0	0	0	0	0	0	0	20
Duty on motor vehicle third-party liability insurance	35	42	4	57	85	185	22	32	636	0	0	0	0	1 099
Passenger duty	1	29	1	12	51	75	35	36	20	0	0	0	0	261
<b>Resource taxes</b>														
<b>Total</b>	<b>4</b>	<b>45</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>7</b>	<b>14</b>	<b>113</b>	<b>935</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1 199</b>
Duty on extraction and import of raw materials	2	45	0	81	0	0	0	0	7	0	0	0	0	135
Duty on piped water	3	0	0	0	0	7	14	113	928	0	0	0	0	1 064
<b>Other taxes on products</b>														
<b>Total</b>	<b>501</b>	<b>1 387</b>	<b>15</b>	<b>199</b>	<b>2 513</b>	<b>2 098</b>	<b>8 533</b>	<b>13 234</b>	<b>76 575</b>	<b>1 162</b>	<b>16 523</b>	<b>0</b>	<b>278</b>	<b>123 019</b>



**Table 4. (cont.) Environmental taxes and subsidies disaggregated 1996.**

	Production								Final use						
	Agri- culture, fishing and quar- rying	Manu- factur- ing	Energy and water supply	Con- struc- tion	Whole- sale and retail trade; hotels and resta- urants	Trans- port, storage and com- muni- cation	Finan- cial inter- media- tion, busi- ness activi- ties	Public and per- sonal services	Private con- sumption	Gov- ernment con- sump- tion	Gross fixed capital forma- tion	Exports of goods and ser- vices	Other final uses	Total	
-----DKKm-----															
Subsidies on products	-2 665	-2 273	- 23	- 117	- 622	-1 040	- 430	-1 793	-4 187	- 7	- 326	-4 581	- 167	-18 230	
Pollution reducing subsidies															
Total	-2	-1	-4	-7	-25	-10	-22	-118	-6	0	0	0	0	-195	
Refuse disposal	-2	-1	-4	-7	-25	-10	-22	-118	-6	0	0	0	0	-195	
Energy subsidies															
Total	-22	-349	-6	-3	-47	-18	-24	-118	-184	0	0	-85	0	-854	
Subsidy to electricity produced by windmills	-22	-349	-6	-3	-47	-18	-24	-118	-184	0	0	-85	0	-854	
Transport subsidies															
Total	-50	-301	-2	-104	-500	-935	-214	-1 089	-3 547	0	0	0	0	-6 741	
Public railways	-49	-292	-2	-103	-496	-910	-210	-1 008	-2 938	0	0	0	0	-6 008	
Public bus transport	-1	-8	0	-1	-4	-25	-3	-82	-610	0	0	0	0	-733	
Resource subsidies															
Total	-70	-51	-5	0	0	0	0	0	-14	0	0	0	0	-139	
State forest	-70	-51	-5	0	0	0	0	0	-14	0	0	0	0	-139	
Other subsidies															
Total	-2 521	-1 572	-6	-3	-51	-77	-171	-469	-436	-7	-326	-4 496	-167	-10 301	
Other taxes on production	1 024	1 245	119	340	1 479	795	8 783	2 369	0	0	0	0	0	16 154	
Transport taxes															
Total	102	111	7	147	245	157	82	89	0	0	0	0	0	940	
Motor vehicle weight duty, from producers	102	111	7	147	245	157	82	89	0	0	0	0	0	940	
Others															
Total	922	1 134	113	193	1 234	638	8 701	2 280	0	0	0	0	0	15 215	
Other subsidies on production	-2 197	-3 436	- 101	- 593	-1 848	-2 333	-6 463	-1 525	0	0	0	0	0	-18 496	
Pollution reducing subsidies															
Total	-709	-14	0	0	0	0	0	0	0	0	0	0	0	-723	
Compulsory set-aside premium	-606	0	0	0	0	0	0	0	0	0	0	0	0	-606	
Other subsidies from EU <sup>1</sup>	-75	0	0	0	0	0	0	0	0	0	0	0	0	-75	
Other subsidies <sup>2</sup>	-27	-14	0	0	0	0	0	0	0	0	0	0	0	-41	
Transport subsidies															
Total	0	0	0	0	0	-1 628	0	0	0	0	0	0	0	-1 628	
Private railways	0	0	0	0	0	-88	0	0	0	0	0	0	0	-88	
Private bus transport	0	0	0	0	0	-1 540	0	0	0	0	0	0	0	-1 540	
Others															
Total	-1 489	-3 422	-101	-593	-1 848	-705	-6 463	-1 525	0	0	0	0	0	-16 145	

<sup>1</sup> Environmental arrangements in agriculture and forestry.

<sup>2</sup> Utilisation of environmental technologies and resource management in manufacturing, and cultivating of fish stocks.

## Do taxes and subsidies on transport have an effect?

Interesting questions in this connection are, What is the impact of these taxes and subsidies, and is pollution reduced compared to a situation without these taxes and subsidies?

## Expensive cars

Car prices in Denmark in purchasers' values (due to the motor vehicle registration duty) are much higher than in countries normally compared to Denmark. What then are the behavioural responses to these higher prices?

Following *Behavioral responses to environmentally-related taxes*, OECD, the demand elasticity for transport in general should be rather low (smaller than 1) but on the other hand different from zero. This combined with the fact that the number of private cars per capita in Denmark is lower than in for example Sweden, Norway, Germany and the Netherlands (see *World Road Statistics*, International Road Federation, 1993-1997) probably reflects that the response to higher prices has been that fewer cars are bought.

#### **Smaller cars**

It is also a fact that cars in Denmark are smaller and cheaper models than in other countries. So taking it all together (including the subsidies to the probably more environmentally friendly public transport) there is no doubt that pollution coming from passenger traffic is lower compared to a situation with no transport taxes and subsidies. Evaluating the magnitude of this pollution reduction would, however, require further studies.

#### **Limited possibilities for analyses**

When analysing the results it should be kept in mind that it is difficult to determine the effect of taxes and subsidies on prices and the behaviour of the buyers. Concerning taxes and subsidies on products the information presented here shows which industries buy products that are subject to taxes or subsidies and the amount of the taxes or subsidies payable or receivable, respectively, as a result of purchases. There is no information on what the price would be if a given tax or subsidy did not exist.

#### **Further analyses would require more information**

For analysing price effects it is necessary to have information about the market for a given product. If a monopolist controls the market the standard result is that part of a tax is passed on to those buying the product while the monopolist maintains maximum profits. In a situation with pure competition the whole tax is passed on (see for example chapter 2 in *Microeconomic Analysis*, Hal R. Varian).

After the producers' reaction by setting the new price (or possibly keeping the old price) users of the product react to this change. Therefore, it is necessary to know the price elasticity in order to evaluate the behavioural response. In other words, two additional analyses have to be made in order to evaluate the effects of the environmental taxes and subsidies: How do producers react in setting a new price? And how do users react to this price? The second reaction affects the first. For more information on reactions on changing prices, see *Behavioral responses to environmentally-related taxes*, OECD. That paper has a survey of empirical estimates of price elasticity.

#### **Further disaggregated data in appendix**

In the appendix, a table shows the grey area in table 3 disaggregated into 130 industries and categories of final use. Here it can be seen that, for example agriculture pays DKK 221m in pollution taxes, DKK 215m in energy taxes and DKK 100m in transport taxes. On the other hand, agriculture receives DKK 673m from pollution reducing subsidies and DKK 17m from energy subsidies. On that basis, it might be tempting to conclude that agriculture taken as a whole (concerning environmental taxes and subsidies) is fully compensated by the subsidies. However, there is no data on how prices are influenced. So evaluating effects on industries of taxes and subsidies is similar to evaluating effects on the environment; further information on market reactions is needed.

## **6. Conclusion**

It has been shown that the major part of environmental taxes and subsidies are taxes and subsidies on products, and that they relate mainly to transport. It has also been shown that the largest amounts are paid and received by private consumers.

It is indicated that taxes and subsidies related to transport actually have a favourable effect on the environment. But in general, as the example from the transport area shows, to evaluate the precise magnitude of the effect of environmental taxes and subsidies requires further studies. First, it should be investigated how prices are affected by these taxes and subsidies, and second the users' reaction to prices changes should be analysed.

## Appendix

### Environmental taxes and subsidies by industries and groups of consumption. 1996

		Pollution taxes	Energy taxes	Transport taxes	Resource taxes	Other taxes	Total taxes
-----DKKm-----							
	<b>Agriculture, fishing and quarrying</b>	<b>315</b>	<b>382</b>	<b>139</b>	<b>4</b>	<b>1 423</b>	<b>2 263</b>
011009	Agriculture	221	215	100	0	799	1 336
011209	Horticulture, orchards etc.	52	30	8	1	21	112
014000	Agricultural services; landscape gardeners etc.	20	77	18	3	99	216
020000	Forestry	3	12	5	0	82	103
050000	Fishing	12	39	6	0	10	67
110000	Extr. of crude petroleum, natural gas etc.	0	0	1	0	396	397
140009	Extr. of gravel, clay, stone and salt etc.	6	8	2	1	15	32
	<b>Manufacturing</b>	<b>839</b>	<b>611</b>	<b>183</b>	<b>45</b>	<b>2 521</b>	<b>4 199</b>
151000	Production etc. of meat and meat products	46	23	4	0	119	191
152000	Processing etc. of fish and fish products	12	8	2	0	31	52
153000	Processing etc. of fruit and vegetables	12	6	1	0	64	83
154000	Mfr. of vegetable and animal oils and fats	5	2	0	0	12	20
155000	Mfr. of dairy products	43	27	6	0	144	220
156009	Mfr. of starch, chocolate and sugar products	30	16	4	0	182	232
158109	Mfr. of bread, cakes and biscuits	10	12	3	0	74	99
158120	Bakers' shops	9	13	4	0	35	61
158300	Manufacture of sugar	4	4	1	0	204	213
159000	Mfr. of beverages	201	27	5	0	83	317
160000	Manufacture of tobacco products	2	1	0	0	15	18
170000	Mfr. of textiles and textile products	16	14	4	0	39	73
180000	Mfr. of wearing apparel; dressing etc. of fur	3	10	4	0	27	44
190000	Mfr. of leather and leather products	1	2	1	0	7	12
200000	Mfr. of wood and wood products	19	17	5	0	50	92
210000	Mfr. of pulp, paper and paper products	16	9	3	2	42	72
221200	Publishing of newspapers	4	7	2	0	71	83
221309	Publishing activities, excluding newspapers	5	8	4	0	37	54
222009	Printing activities etc.	12	19	8	0	51	91
230000	Mfr. of refined petroleum products etc.	6	3	1	0	22	31
241109	Mfr. of industrial gases and inorganic basic chemicals	5	5	1	0	5	15
241209	Mfr. of dyes, pigments and organic basic chemicals	9	3	0	0	28	40
241500	Manufacture of fertilizers etc.	4	1	0	0	6	11
241617	Mfr. of plastics and synthetic rubber	1	2	0	0	4	7
242000	Manufacture of pesticides and oth..agro-chemical products	1	1	0	0	3	5
243000	Mfr. of paints, printing ink and mastics	6	4	2	0	18	29
244000	Mfr. of pharmaceuticals etc.	19	10	9	0	136	174
245070	Mfr. of detergents and other chemical products	20	10	2	0	34	66
251122	Mfr. of rubber products and plastic packing goods etc.	30	12	4	0	49	94
252300	Mfr. of builders' ware of plastic	2	3	1	0	9	14
252400	Manufacture of other plastic products n.e.c.	13	8	2	0	29	53
261126	Mfr. of glass and ceramic goods etc.	10	7	2	0	25	45
263053	Mfr. of cement, bricks, tiles, flags etc.	13	10	1	9	15	48
266080	Mfr. of concrete, cement, asphalt and rockwool products	27	45	8	33	58	173
271000	Mfr. of basic ferrous metals	8	1	0	0	11	20
272030	First processing of iron and steel	4	4	1	0	14	24
274000	Mfr. of basic non-ferrous metals	3	2	1	0	9	15
275000	Casting of metal products	1	0	0	0	2	3
281009	Mfr. of construct. materials of metal etc.	24	58	20	0	79	180
286009	Mfr. of hand tools, metal packaging etc.	25	26	6	0	63	121
291000	Mfr. of marine engines, compressors etc.	21	12	4	0	78	116
292000	Mfr. of other general purpose machinery	16	28	9	0	73	125
293000	Mfr. of agricultural and forestry machinery	6	12	5	0	24	47
294009	Mfr. of machinery for industries etc.	10	21	8	0	70	109
297000	Mfr. of domestic appliances n.e.c.	5	4	1	0	22	33
300000	Mfr. of office machinery and computers	1	2	1	0	14	18

# Appendix (cont.)

## Environmental taxes and subsidies by industries and groups of consumption. 1996

Pollution reducing subsidies	Energy subsidies	Transport subsidies	Resource subsidies	Other subsidies	Total subsidies	Total taxes, net		
-----DKKm-----								
- 711	- 22	- 50	- 70	-4 010	-4 862	-2 599	<b>Agriculture, fishing and quarrying</b>	
- 673	- 17	0	0	-3 679	-4 369	-3 034	Agriculture	011009
0	- 3	- 1	0	- 189	- 193	- 81	Horticulture, orchards etc.	011209
- 1	0	- 5	0	- 27	- 33	184	Agricultural services; landscape gardeners etc.	014000
- 9	0	0	- 70	- 39	- 118	- 15	Forestry	020000
- 27	- 1	0	0	- 37	- 65	1	Fishing	050000
0	0	- 4	0	- 30	- 34	364	Extr. of crude petroleum, natural gas etc.	110000
0	- 1	- 39	0	- 10	- 50	- 18	Extr. of gravel, clay, stone and salt etc.	140009
- 15	- 349	- 301	- 51	-4 994	-5 709	-1 510	<b>Manufacturing</b>	
- 1	- 6	- 6	0	- 286	- 298	- 107	Production etc. of meat and meat products	151000
0	- 2	- 1	0	- 108	- 110	- 58	Processing etc. of fish and fish products	152000
0	- 1	- 1	0	- 222	- 223	- 140	Processing etc. of fruit and vegetables	153000
0	0	- 11	0	- 126	- 138	- 118	Mfr. of vegetable and animal oils and fats	154000
0	- 4	- 4	0	- 336	- 345	- 125	Mfr. of dairy products	155000
0	- 4	- 17	0	- 580	- 601	- 369	Mfr. of starch, chocolate and sugar products	156009
0	- 1	- 1	0	- 54	- 56	43	Mfr. of bread, cakes and biscuits	158109
0	- 1	- 2	0	- 46	- 49	12	Bakers' shops	158120
0	0	- 9	0	- 109	- 118	94	Manufacture of sugar	158300
0	- 2	- 17	0	- 198	- 216	100	Mfr. of beverages	159000
0	0	- 1	0	- 8	- 10	8	Manufacture of tobacco products	160000
0	- 2	- 2	0	- 53	- 56	17	Mfr. of textiles and textile products	170000
0	0	- 3	0	- 31	- 34	10	Mfr. of wearing apparel; dressing etc. of fur	180000
0	0	- 3	0	- 15	- 18	- 7	Mfr. of leather and leather products	190000
0	- 3	- 112	- 34	- 94	- 243	- 152	Mfr. of wood and wood products	200000
0	- 3	- 3	0	- 57	- 64	9	Mfr. of pulp, paper and paper products	210000
0	- 171	- 1	0	- 231	- 403	- 320	Publishing of newspapers	221200
- 1	- 89	- 3	0	- 130	- 221	- 168	Publishing activities, excluding newspapers	221309
0	- 2	- 2	0	- 62	- 66	25	Printing activities etc.	222009
0	- 3	- 3	0	- 19	- 25	6	Mfr. of refined petroleum products etc.	230000
0	- 1	0	0	- 16	- 17	- 2	Mfr. of industrial gases and inorganic basic chemicals	241109
0	- 2	- 1	0	- 32	- 36	4	Mfr. of dyes, pigments and organic basic chemicals	241209
0	- 1	- 5	0	- 17	- 22	- 12	Manufacture of fertilizers etc.	241500
0	0	0	0	- 15	- 16	- 8	Mfr. of plastics and synthetic rubber	241617
0	0	- 1	0	- 16	- 17	- 13	Manufacture of pesticides and oth..agro-chemical products	242000
0	0	- 1	0	- 26	- 28	2	Mfr. of paints, printing ink and mastics	243000
0	- 3	- 12	0	- 79	- 94	79	Mfr. of pharmaceuticals etc.	244000
0	- 2	- 2	0	- 41	- 45	21	Mfr. of detergents and other chemical products	245070
0	- 4	- 4	0	- 47	- 56	39	Mfr. of rubber products and plastic packing goods etc.	251122
0	0	- 1	0	- 9	- 11	3	Mfr. of builders' ware of plastic	252300
0	- 2	- 3	0	- 35	- 40	13	Manufacture of other plastic products n.e.c.	252400
0	- 2	- 2	0	- 27	- 30	14	Mfr. of glass and ceramic goods etc.	261126
0	- 3	- 1	0	- 15	- 18	30	Mfr. of cement, bricks, tiles, flags etc.	263053
0	- 3	- 2	0	- 56	- 62	111	Mfr. of concrete, cement, asphalt and rockwool products	266080
0	- 3	- 1	0	- 15	- 19	1	Mfr. of basic ferrous metals	271000
0	- 1	- 1	0	- 18	- 19	4	First processing of iron and steel	272030
0	- 1	0	0	- 12	- 13	3	Mfr. of basic non-ferrous metals	274000
0	0	0	0	- 5	- 5	- 3	Casting of metal products	275000
0	- 3	- 7	0	- 98	- 108	73	Mfr. of construct. materials of metal etc.	281009
0	- 4	- 5	0	- 73	- 82	38	Mfr. of hand tools, metal packaging etc.	286009
0	- 3	- 6	0	- 89	- 98	17	Mfr. of marine engines, compressors etc.	291000
0	- 1	- 4	0	- 111	- 117	8	Mfr. of other general purpose machinery	292000
0	- 1	- 2	0	- 56	- 59	- 12	Mfr. of agricultural and forestry machinery	293000
0	- 1	- 5	0	- 129	- 135	- 27	Mfr. of machinery for industries etc.	294009
0	- 1	0	0	- 27	- 29	4	Mfr. of domestic appliances n.e.c.	297000
0	0	- 1	0	- 11	- 12	6	Mfr. of office machinery and computers	300000

## Appendix (cont.)

### Environmental taxes and subsidies by industries and groups of consumption. 1996

		Pollution taxes	Energy taxes	Transport taxes	Resource taxes	Other taxes	Total taxes
-----DKKm-----							
310000	Mfr. of other electrical machinery and apparatus	17	18	6	0	50	91
320000	Mfr. of radio and communicat. equipm. etc.	10	5	2	0	47	65
330000	Mfr. of medical and optical instrum. etc.	8	11	4	0	53	76
340000	Manufacture of motor vehicles etc.	9	9	2	0	25	46
351000	Building and repairing of ships and boats	15	7	3	0	43	68
352050	Mfr. of transport equipment excl. ships, motor vehicles etc.	2	3	1	0	14	20
361000	Mfr. of furniture	26	30	9	0	70	135
362060	Mfr. of toys, gold and silver articles etc.	9	9	3	0	30	50
370000	Recycling of waste and scrap	1	2	1	0	3	7
	<b>Energy and water supply</b>	<b>53</b>	<b>37</b>	<b>11</b>	<b>0</b>	<b>128</b>	<b>229</b>
401000	Production and distribution of electricity	4	28	7	0	63	102
402000	Manufacture and distribution of gas	1	4	2	0	7	13
403000	Steam and hot water supply	33	3	1	0	35	73
410000	Collection and distribution of water	15	2	1	0	23	40
	<b>Construction</b>	<b>99</b>	<b>526</b>	<b>216</b>	<b>81</b>	<b>392</b>	<b>1 315</b>
450001	Construction of new buildings	34	183	73	4	130	424
450002	Repair and maintenance of buildings	47	277	109	2	139	575
450003	Civil engineering	18	66	33	62	122	302
450004	Construction materials	0	0	0	14	1	14
	<b>Wholesale and retail trade; hotels and restaurants</b>	<b>570</b>	<b>1 021</b>	<b>399</b>	<b>0</b>	<b>3 747</b>	<b>5 738</b>
501009	Sale of motor vehicles, motorcycles etc.	23	118	55	0	147	343
502000	Repair and maintenance of motor vehicles	34	71	47	0	170	321
505000	Service stations	8	13	4	0	21	46
510000	Ws. and commis. trade, exc. of m. vehicles	252	543	202	0	1 277	2 274
521090	Retail trade of food etc.	72	57	19	0	207	354
522990	Department stores	45	5	2	0	81	133
523000	Re. sale of phar. goods, cosmetic art. etc.	3	5	2	0	63	73
524190	Re. sale of clothing, footwear etc.	12	19	7	0	87	124
524490	Other retail sale, repair work	48	124	45	0	233	450
551009	Hotels etc.	22	21	4	0	269	316
553009	Restaurants etc.	52	45	13	0	1 192	1 303
	<b>Transport, storage and communication</b>	<b>363</b>	<b>1 747</b>	<b>417</b>	<b>7</b>	<b>2 736</b>	<b>5 270</b>
601000	Transport via railways	2	2	3	3	374	383
602100	Other scheduled passenger land transport	- 2	- 14	51	1	286	321
602223	Taxi operation and coach services	25	162	37	0	202	425
602409	Freight transport by road and via pipelines	219	1 279	192	0	129	1 819
610000	Water transport	9	5	20	1	119	155
620000	Air transport	3	4	2	0	231	240
631130	Cargo handling, harbours etc.; travel agencies	59	115	48	1	386	610
634000	Activities of other transport agencies	13	65	33	0	232	343
640000	Post and telecommunications	36	129	30	1	778	973
	<b>Financial intermediation, business activities</b>	<b>192</b>	<b>488</b>	<b>139</b>	<b>14</b>	<b>17 234</b>	<b>18 067</b>
651000	Monetary intermediation	26	71	4	1	2 320	2 422
652000	Other financial intermediation	6	15	2	1	795	819
660102	Life insurance and pension funding	2	5	1	1	278	286
660300	Non-life insurance	11	21	1	3	905	942
670000	Activities auxiliary to finan. intermediat.	5	6	1	1	445	458
701109	Real estate agents etc.	6	10	7	0	109	132
702009	Dwellings	9	41	7	0	9 026	9 083
702040	Letting of non-residential buildings	8	37	11	0	1 817	1 873
710000	Renting of machinery and equipment etc.	5	10	7	0	118	139
721009	Computer activities exc. software consultancy and supply	12	5	7	0	99	123
722000	Software consultancy and supply	7	16	9	0	116	148
730001	Research and development (market)	3	3	1	0	40	46
730002	Research and development (other non-market)	14	16	2	4	200	236

# Appendix (cont.)

## Environmental taxes and subsidies by industries and groups of consumption. 1996

Pollution reducing subsidies	Energy subsidies	Transport subsidies	Resource subsidies	Other subsidies	Total sub- sidies	Total taxes, net		
-----DKKm-----								
0	-2	-4	0	-69	-74	17	Mfr. of other electrical machinery and apparatus	310000
0	-1	-3	0	-48	-52	13	Mfr. of radio and communicat. equipm. etc.	320000
0	-1	-3	0	-58	-63	13	Mfr. of medical and optical instrum. etc.	330000
0	-1	-1	0	-32	-34	12	Manufacture of motor vehicles etc.	340000
-8	-1	-1	0	-786	-796	-728	Building and repairing of ships and boats	351000
0	0	-1	0	-13	-14	6	Mfr. of transport equipment excl. ships, motor vehicles etc.	352050
0	-4	-7	-16	-101	-128	7	Mfr. of furniture	361000
0	-1	-10	0	-39	-50	1	Mfr. of toys, gold and silver articles etc.	362060
0	0	-1	0	-11	-12	-5	Recycling of waste and scrap	370000
-4	-6	-2	-5	-107	-124	105	<b>Energy and water supply</b>	
0	-1	0	0	-53	-54	48	Production and distribution of electricity	401000
0	-1	0	0	-15	-16	-3	Manufacture and distribution of gas	402000
-3	-2	-1	-5	-27	-37	36	Steam and hot water supply	403000
-1	-2	-1	0	-12	-16	24	Collection and distribution of water	410000
-7	-3	-104	0	-596	-710	605	<b>Construction</b>	
-2	-1	-23	0	-175	-201	223	Construction of new buildings	450001
-2	-1	-16	0	-273	-292	283	Repair and maintenance of buildings	450002
-2	0	-65	0	-149	-217	85	Civil engineering	450003
0	0	0	0	0	0	14	Construction materials	450004
-25	-47	-500	0	-1 899	-2 470	3 268	<b>Wholesale and retail trade; hotels and restaurants</b>	
-1	-2	-30	0	-133	-166	177	Sale of motor vehicles, motorcycles etc.	501009
0	-1	-2	0	-75	-78	243	Repair and maintenance of motor vehicles	502000
0	-1	0	0	-48	-49	-3	Service stations	505000
-15	-19	-386	0	-696	-1 116	1 158	Ws. and commis. trade, exc. of m. vehicles	510000
-1	-8	-17	0	-219	-246	109	Retail trade of food etc.	521090
-1	-3	-14	0	-81	-98	36	Department stores	522990
0	0	-2	0	-95	-97	-24	Re. sale of phar. goods, cosmetic art. etc.	523000
-1	-2	-8	0	-91	-101	23	Re. sale of clothing, footwear etc.	524190
-3	-4	-37	0	-193	-237	213	Other retail sale, repair work	524490
-1	-3	-1	0	-88	-93	223	Hotels etc.	551009
-2	-4	-1	0	-181	-188	1 114	Restaurants etc.	553009
-10	-18	-2 563	0	-782	-3 373	1 897	<b>Transport, storage and communication</b>	
-1	-3	-95	0	-73	-171	212	Transport via railways	601000
0	0	-1 492	0	-51	-1 543	-1 222	Other scheduled passenger land transport	602100
0	0	-35	0	-43	-78	347	Taxi operation and coach services	602223
-2	-2	-492	0	-154	-650	1 170	Freight transport by road and via pipelines	602409
-1	-1	-54	0	-108	-164	-9	Water transport	610000
0	-2	-8	0	-48	-58	182	Air transport	620000
-2	-7	-170	0	-79	-258	352	Cargo handling, harbours etc.; travel agencies	631130
-1	-1	-99	0	-50	-151	192	Activities of other transport agencies	634000
-3	-2	-117	0	-177	-299	674	Post and telecommunications	640000
-22	-24	-214	0	-6 633	-6 893	11 174	<b>Financial intermediation, business activities</b>	
-2	-3	-3	0	-177	-184	2 238	Monetary intermediation	651000
-1	-1	-2	0	-37	-41	778	Other financial intermediation	652000
0	0	-1	0	-15	-16	270	Life insurance and pension funding	660102
-1	-1	-1	0	-55	-58	883	Non-life insurance	660300
-1	-1	-1	0	-36	-39	419	Activities auxiliary to finan. intermediat.	670000
-1	-1	-10	0	-44	-55	77	Real estate agents etc.	701109
0	0	0	0	-4 934	-4 934	4 148	Dwellings	702009
0	-2	-1	0	-65	-68	1 805	Letting of non-residential buildings	702040
-1	-1	-19	0	-45	-66	73	Renting of machinery and equipment etc.	710000
-2	-1	-33	0	-57	-94	29	Computer activities exc. software consultancy and supply	721009
-1	-1	-8	0	-69	-79	69	Software consultancy and supply	722000
0	0	-1	0	-184	-186	-139	Research and development (market)	730001
-3	-1	-14	0	-4	-21	215	Research and development (other non-market)	730002

## Appendix (cont.)

### Environmental taxes and subsidies by industries and groups of consumption. 1996

		Pollution taxes	Energy taxes	Transport taxes	Resource taxes	Other taxes	Total taxes
		DKKm-----					
741100	Legal activities	5	18	3	0	34	61
741200	Accounting, book-keeping, auditing etc.	9	34	7	0	59	110
742009	Consulting engineers, architects etc.	27	70	24	2	396	519
744000	Advertising	6	16	9	0	65	98
747000	Industrial cleaning	12	44	15	0	36	108
748009	Other business activities	20	48	22	0	375	465
	<b>Public and personal services</b>	<b>863</b>	<b>1 578</b>	<b>158</b>	<b>113</b>	<b>15 514</b>	<b>18 225</b>
751100	General (overall) public service activities	36	66	15	9	1 055	1 181
751209	Regulation of public service activities exc. for business	34	43	7	9	839	931
751300	Regulation of and contr. to more eff. operation of business	30	47	11	16	1 096	1 199
752000	Provision of services to the community	51	137	36	10	1 867	2 101
801000	Primary education	119	262	3	13	1 105	1 502
802000	Secondary education	36	46	2	11	540	635
803000	Higher education	39	77	5	4	657	782
804001	Adult and other education (market)	2	5	2	0	114	123
804002	Adult and other education (other non-market)	18	15	6	9	335	383
851100	Hospital activities	95	150	3	17	2 014	2 279
851209	Medical, dental, veterinary activities etc.	36	89	10	2	963	1 101
853109	Social institutions etc. for children	71	83	5	0	866	1 026
853209	Social institutions etc. for adults	150	222	12	1	1 845	2 228
900010	Sewage removal and disposal	28	82	2	3	330	445
900020	Refuse collection and sanitation	9	45	8	1	145	209
900030	Refuse dumps and refuse disposal plants	9	7	1	0	18	35
910000	Activities of membership organiza. n.e.c.	16	34	5	1	508	564
920001	Recreational, cultural, sporting activities (market)	38	65	11	3	713	829
920002	Recreational, cultural, sporting activities (oth.non-market)	37	77	6	3	475	599
930009	Service activities n.e.c	10	26	8	0	29	74
950000	Private households with employed persons	0	0	0	0	0	0
	<b>Private consumption</b>	<b>2 240</b>	<b>13 943</b>	<b>11 775</b>	<b>935</b>	<b>76 575</b>	<b>105 468</b>
	Food	0	0	0	0	12 578	12 578
	Beverages and tobacco	68	0	0	0	16 662	16 730
	Clothing and footwear	0	0	0	0	5 018	5 018
	Housing	20	0	0	928	2 473	3 421
	Electricity, gas and other fuels	1 931	6 563	0	0	6 498	14 992
	Furnishing, household equipment etc.	168	0	0	0	5 315	5 483
	Medical products, health services	0	0	0	0	1 217	1 217
	Purchase of vehicles	0	0	11 119	0	3 387	14 505
	Other transport and communication	53	7 380	20	0	7 234	14 687
	Recreation and culture	0	0	0	7	8 643	8 650
	Other goods and services	0	0	636	0	7 551	8 187
	Balance of tourism, net	0	0	0	0	0	0
	<b>Government consumption</b>	<b>0</b>	<b>0</b>	<b>118</b>	<b>0</b>	<b>1 162</b>	<b>1 280</b>
	<b>Gross fixed capital formation</b>	<b>6</b>	<b>0</b>	<b>4 680</b>	<b>0</b>	<b>16 523</b>	<b>21 209</b>
	<b>Exports of goods and services</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
	<b>Other final uses</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>278</b>	<b>279</b>
	<b>Total</b>	<b>5 542</b>	<b>20 334</b>	<b>18 236</b>	<b>1 199</b>	<b>138 233</b>	<b>183 543</b>



# Appendix (cont.)

## Environmental taxes and subsidies by industries and groups of consumption. 1996

Pollution reducing subsidies	Energy subsidies	Transport subsidies	Resource subsidies	Other subsidies	Total subsidies	Total taxes, net		
-----DKKm-----								
0	0	- 1	0	- 47	- 49	12	Legal activities	741100
0	- 1	- 8	0	- 74	- 84	26	Accounting, book-keeping, auditing etc.	741200
- 4	- 4	- 55	0	- 137	- 200	319	Consulting engineers, architects etc.	742009
- 1	- 1	- 7	0	- 122	- 130	- 33	Advertising	744000
0	- 1	0	0	- 400	- 402	- 294	Industrial cleaning	747000
- 3	- 3	- 48	0	- 133	- 187	278	Other business activities	748009
- 118	- 118	- 1 089	0	- 1 994	- 3 318	14 907	<b>Public and personal services</b>	
- 5	- 3	- 58	0	- 7	- 73	1 107	General (overall) public service activities	751100
- 7	- 1	- 101	0	- 2	- 111	820	Regulation of public service activities exc. for business	751209
- 6	- 1	- 42	0	- 1	- 50	1 150	Regulation of and contr. to more eff. operation of business	751300
- 5	- 5	- 45	0	- 25	- 80	2 021	Provision of services to the community	752000
- 11	- 10	- 161	0	- 13	- 195	1 307	Primary education	801000
- 8	- 2	- 135	0	- 4	- 149	486	Secondary education	802000
- 5	- 3	- 50	0	- 4	- 62	720	Higher education	803000
0	0	- 1	0	- 38	- 40	83	Adult and other education (market)	804001
- 5	- 1	- 51	0	- 2	- 59	324	Adult and other education (other non-market)	804002
- 14	- 5	- 58	0	- 6	- 83	2 196	Hospital activities	851100
- 4	- 3	- 10	0	- 78	- 94	1 007	Medical, dental, veterinary activities etc.	851209
- 14	- 3	- 87	0	- 6	- 110	916	Social institutions etc. for children	853109
- 25	- 7	- 162	0	- 26	- 220	2 009	Social institutions etc. for adults	853209
0	- 2	- 1	0	- 27	- 31	414	Sewage removal and disposal	900010
0	- 1	- 25	0	- 35	- 61	148	Refuse collection and sanitation	900020
0	- 1	- 1	0	- 24	- 26	9	Refuse dumps and refuse disposal plants	900030
- 2	- 2	- 38	0	- 103	- 145	419	Activities of membership organiza. n.e.c.	910000
- 3	- 3	- 5	0	- 1 366	- 1 377	- 547	Recreational, cultural, sporting activities (market)	920001
- 3	- 65	- 58	0	- 90	- 215	383	Recreational, cultural, sporting activities (oth.non-market)	920002
0	- 1	- 2	0	- 135	- 138	- 64	Service activities n.e.c	930009
0	0	0	0	0	0	0	Private households with employed persons	950000
- 6	- 184	- 3 547	- 14	- 436	- 4 187	101 280	<b>Private consumption</b>	
0	0	0	0	- 118	- 118	12 460	Food	
0	0	0	0	0	0	16 730	Beverages and tobacco	
0	0	0	0	0	0	5 018	Clothing and footwear	
- 6	0	0	0	- 68	- 74	3 347	Housing	
0	- 138	0	- 14	- 132	- 284	14 708	Electricity, gas and other fuels	
0	0	0	0	0	0	5 483	Furnishing, household equipment etc.	
0	0	0	0	0	0	1 217	Medical products, health services	
0	0	0	0	0	0	14 505	Purchase of vehicles	
0	0	- 3 547	0	- 9	- 3 556	11 131	Other transport and communication	
0	- 46	0	0	- 109	- 155	8 495	Recreation and culture	
0	0	0	0	0	0	8 187	Other goods and services	
0	0	0	0	0	0	0	Balance of tourism, net	
0	0	0	0	- 7	- 7	1 274	<b>Government consumption</b>	
0	0	0	0	- 326	- 326	20 883	<b>Gross fixed capital formation</b>	
0	- 85	0	0	- 4 496	- 4 581	- 4 580	<b>Exports of goods and services</b>	
0	0	0	0	- 167	- 167	112	<b>Other final uses</b>	
- 917	- 854	- 8 369	- 139	- 26 446	- 36 726	146 817	<b>Total</b>	

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