

Danish Environmental Expenditure Accounts 2008

by

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Preface

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The intention is to transform available information on environmental protection activities into accounts for the output of environmental protection services, the environmental protection expenditures and the financing of these. The accounts are so-called satellite accounts, which measure the extent to which national accounts aggregates and transactions are connected to environmental protection.

The sources used for this work include national accounts, public finance accounts, and newly collected environmental protection expenditure data for industries collected in relation to the Structural Business Statistics (SBS).

Included in the tables are data on actions and activities that are aimed at the prevention, reduction and elimination of pollution as well as any other degradation of the environment. Included are also data for measures taken to restore certain parts of the environment that has already been degraded due to pressure from human activity. On the other hand, only those actions and activities that has environmental protection as their primary goal is included.

The accounting for industries' environmental protection expenditures is a very difficult task because it is difficult to define precisely what environmental protection activities and expenditures includes. For instance, the experiences made by Statistics Denmark so far with regard to the collection of the SBS environmental protection expenditure data has shown that it has been very difficult for the companies to decide what they should report as environmental protection expenditures.

Many of the data presented in this report are linked with a high degree of uncertainty and a number of assumptions have been used to produce the accounts. Further, it should be noted that the accounts do not draw up a full picture of all environmental protection expenditures, since activities of, for instance, the agriculture and a number of the service industries are not covered.

Thus, while the accounts presented in this report cover an important part of the environmental protection activities, they should not be regarded as precise or well-defined accounts. Rather, they indicate some orders of magnitudes, and draws up a broad picture of the activities reflecting the available - and often very uncertain - data and the assumptions used during the processing of these data. **The data should therefore not be used or referenced as official Danish data for environmental protection expenditures.**

Parts of the text in this report have - with the necessary adjustments - been reproduced from a similar report (SERIEE for characteristic Environmental Services, Denmark 1994 by Ole Gravgård Pedersen, Statistics Denmark, October 1999). That report included information regarding environmental protection activities carried out by the general government and the activities of specialised producers that could be identified via the national accounts (specialised producers of sewerage and waste management services).

The report is authored by Chief Adviser Ole Gravgård Pedersen. Head of Section Morten Wismann Halkjær, Head of Section Mads Zahle Østergaard, and Senior Adviser Martin Ausker have all provided data and invaluable help throughout the work with the report.

Table of contents

| | |
|--|-----------|
| 1. Summary tables for Danish environmental protection activities 2008 | 7 |
| Production of Environmental Protection Services | 7 |
| Supply and use of environmental protection services by specialised producers. | 9 |
| National expenditure | 10 |
| Financing | 12 |
| 2. Specialised producers of sewerage, waste management and remediation activities | 12 |
| Output | 13 |
| Use of total output and imports from specialised producers..... | 14 |
| Use of environmental protection output and imports from specialised producers..... | 16 |
| Capital transactions of specialised producers within E37-E39 | 17 |
| 3. Non-specialised producers of environmental protection services | 17 |
| 4. Central and local government environmental protection activities | 23 |
| Output of environmental protection services from general government | 23 |
| Current transfers to specialised producers within general government..... | 26 |
| General government's capital transactions related to environmental protection | 26 |
| References | 29 |
| Annex | 30 |

1. Summary tables for Danish environmental protection activities 2008

This chapter presents - based on the detailed information included in chapters 2-4 – four overview tables for a) the production, b) the supply and use, c) the national expenditure and d) the financing of environmental protection services for Denmark 2008.

The overview tables 1, 3 and 4 correspond basically to the tables B, A and C presented in the SERIEE handbook published by Eurostat (Eurostat, 1994) and to tables I, II and III in the module for environmental protection expenditure accounts included in the draft proposal for an regulation of the European Parliament and the Council on European Environmental Economic Accounts, July 2009. Table 2 corresponds to Table B1 in the SERIEE handbook.

The accounts are presented for institutional sectors including main groups of industries and all groups of environmental protection activities. Reference is made to the following chapters for a detailed breakdown by industries (NACE A64 classification) and environmental domains (CEPA 2000 groups).

Production of Environmental Protection Services

Production - Table 1 Table 1 highlights the output of each group of specialised and non-specialised producers¹ of environmental protection services.

The components of output The upper part of the table shows how the output is made up by the use of resources in the form of intermediate consumption, compensation of employees, other taxes less subsidies on production, consumption of fixed capital and net operating surplus.

Output by producers A total output at 37 875 Million DKK is found. A large part of the output comes from the two specialised industries E37 Sewerage and E38, E39 Waste management and remediation activities with 8 065 Million DKK (21 per cent) and 18 068 Million DKK (48 per cent), respectively. General government contributed with an output at 8 436 mill DKK (22 per cent). Non-specialised producers within NACE groups B to E35 had an estimated output of environmental protection services at 3 306 Million DKK (9 per cent). As stated elsewhere the estimate for the non-specialised producers comes with a high degree of uncertainty.

Related to the above mentioned output there was an intermediate consumption and compensation of employees at 30 327 Million DKK, other taxes less subsidies on production at 107 Million DKK, a consumption of fixed capital at 6 418 Million DKK, and a net operating surplus and mixed income at 1 023 Million DKK.

Non-environmental output A minor part, 37 Million DKK, of the output of the specialised producers within non-financial corporations is characterised as non-environmental output. It consists mainly of fringe benefits for employees.

Environmental protection at 1.3 per cent of total output By excluding the non-environmental output we are left with a total environmental protection output at 37 839 Million DKK. It corresponds to 1.2 per cent of the total Danish output at 3 206 828 Million DKK in 2008.

¹ The Annex presents some of the specific terminology used for the environmental protection expenditure accounts.

Table 1. Production of environmental protection services, by producer, Denmark 2008, Million DKK

| | Specialised producers | | | | Non-specialised producers (ancillary and secondary output) | Total |
|--|-----------------------------|-----------------------------------|---|---------------------|--|---------------|
| | General Government & NPISHs | Corporations (public and private) | | | | |
| | | 37 Sew erage | 38,39 Waste-management and remediation activities | Corporations, total | | |
| I.1 Intermediate consumption (P2) | 4 235 | 3 917 | 12 194 | 16 111 | 2 247 | 30 327 |
| I.2 Compensation of employees (D1) | 3 620 | 1 302 | 2 813 | 4 115 | | |
| I.3 Taxes on production (D29) | 15 | 67 | 126 | 193 | | 107 |
| I.4 Less subsidies on production (D39) | | - 20 | - 80 | - 100 | | |
| I.5 Consumption of fixed capital (K1) | 567 | 2 327 | 2 465 | 4 792 | 1 060 | 6 418 |
| I.6 Net operating surplus (Balancing item = I.7 – I.1 – I.2 – I.3 + I.4 – I.5) | | 473 | 550 | 1 023 | | 1 023 |
| I.7 Output (basic prices or cost of production) (P1) | 8 436 | 8 065 | 18 068 | 26 133 | 3 306 | 37 875 |
| I.7.1 Non-environmental output | | 10 | 27 | 37 | | 37 |
| I.7.2 Environmental protection output | 8 436 | 8 055 | 18 041 | 26 096 | 3 306 | 37 839 |
| I.7.2.1 non-market (P13) = I.7 – I.7.1 – I.8.1 | 7 586 | | | | | 7 586 |
| I.7.2.2 market (P11) = I.8.1 | 850 | 8 055 | 18 041 | 26 096 | | 26 946 |
| I.7.2.3 ancillary (P12) | | | | | 3 306 | 3 306 |
| I.8 Current Environmental Protection resources | 2 677 | 8 055 | 18 041 | 26 096 | | 28 773 |
| I.8.1 market output (sales including partial payments) | 850 | 8 055 | 18 041 | 26 096 | | 26 946 |
| I.8.2 transfers (D3, D7) | 1 827 | | | | | 1 827 |
| I.9 Capital transactions | 1 088 | 3 714 | 1 863 | 5 577 | 915 | 7 580 |
| I.9.1 Gross fixed capital formation (P51) | 929 | 4 205 | 1 829 | 6 034 | 915 | 7 878 |
| I.9.2 Other capital uses (land) (K2) | 159 | - 490 | 34 | - 457 | | - 298 |
| I.9.3 Investment grants received (D92) | | | | | | |
| I.9.4 Other capital transfers received (D99) | | | | | | |
| I.11 Financing by producers (calculated item = I.7.2 – I.8 + I.9.1 + I.9.2 – I.9.3 – I.9.4) | 6 847 | 3 714 | 1 864 | 5 578 | 4 221 | 16 646 |

Market, non-market and ancillary output

The table also reveals a split up of the environmental protection output by market, non-market output and ancillary output. Amounting to 26 946 Million DKK the market output forms the main part of the environmental output. All of the output from the specialised producers within non-financial corporations is market output. For general government 850 Million DKK out of total environmental output is market output. Thus, the remaining 7 586 Million DKK, are non-market output. All estimated output at 3 306 Million DKK of the non-specialised producers has been entered as ancillary activities in Table 1, although some of it may in fact be secondary market output.

Current environmental protection resources

Item 1.8 of Table 1 shows the current resources i.e. the amounts which the producers of environmental protection services receive in connection with their current transactions. The total current resources include market output plus current transfers to producers. The total current environmental protection resources was 28 773 Million DKK of which market output was 26 946 Million DKK and the current transfers 1 827 Million DKK. The latter includes mainly transfers to central government specialised producers from other parts of central government, from other resident units and from non-resident units including the European Union.

Capital transactions Item 1.9 presents information about the capital transactions of the producers. The major part of the total capital transactions is gross fixed capital formation at 7 878 Million DKK. Other capital uses, net is at -298 Million DKK. These capital uses include acquisitions less disposals of land. The negative signs show that the specialised producers disposed of more land etc. than they acquired. No investment grants or other capital transfers are registered in relation to the environmental protection expenditures in 2008. The total effect of these transactions was a net expenditure in connection with capital transactions at 7 580 Million DKK.

Financing by producers Finally, item 1.11 shows how much financing the specialised producers themselves bear in connection with the production of environmental protection services. The total financing by producers is 16 646 Million DKK. This amount equals the output of environmental protection services plus the balance of capital transactions minus the current environmental protection resources.

The main part of the total financing by producers is borne by general government and by the non-specialised producers. In these cases the financing are 6 847 Million DKK and 4 221 Million DKK, respectively. The need for producer financing by general government and non-specialised producers results from the non-market and ancillary output, while the need for producer financing by the specialised producers results from the gross capital formation and other capital uses.

Supply and use of environmental protection services by specialised producers.

Purchasers' prices – Table 2 Table 2 supplements the information in Table 1 by showing how the total supply of environmental output at purchasers' prices by specialised producers appears as the sum of output at basic prices (from Table 1), imports, non-deductible value added tax and other taxes less subsidies on products.

Further, Table 2 shows how the uses of the environmental protection services valued at purchasers' prices are allocated to intermediate consumption, final consumption by government and households, capital formation, and exports.

The table heading lists the producers of the environmental services, while the leading text lists the different components of use and supply.

Use The total use of environmental protection services for intermediate consumption was 18 692 Million DKK valued at purchasers' prices. Of this amount, 1 991 Million DKK was related to intermediate consumption by specialised producers themselves, and 16 701 Million DKK to other producers.

18 913 Million DKK was the value at purchasers' prices of environmental protection services used for final consumption. 9 Million DKK was gross fixed capital formation and 48 million DKK of environmental protection services was exported.

By adding the total intermediate consumption and the final uses of environmental protection services an amount of total use at purchasers' prices at 37 662 Million DKK is obtained.

Supply This amount can also be reached from the supply side by adding up the output at basic prices at 34 532 Million DKK, the non-deductible value added taxes at 2 522

Million DKK, imports at 84 Million DKK and other taxes less subsidies at 523 Million DKK.

Table 2. Supply and use of environmental protection services by specialised producers - Denmark 2008

| | Non-market | Market | | | Total | |
|---|--------------------|--------------------|--------------|---|---------------|---------------|
| Supply by: | General Government | General Government | E37 Sewerage | E38,E39 Waste management and remediation activities | Total | |
| | Mill. DKK | | | | | |
| 1. Use of resident units (purchaser's price) | 7 586 | 850 | 8 688 | 20 490 | 30 028 | 37 614 |
| 1.1 Use for Intermediate consumption | | 850 | 2 158 | 15 684 | 18 692 | 18 692 |
| 1.1.1 of which specialised producers | | | 19 | 1 972 | 1 991 | 1 991 |
| 1.1.2 of which other producers | | 850 | 2 139 | 13 711 | 16 701 | 16 701 |
| 1.2 Use for final consumption | 7 586 | | 6 530 | 4 797 | 11 327 | 18 913 |
| 1.3 Use for gr.cap.formation (land improvement) | | | | 9 | 9 | 9 |
| 2. Use for exports | | | | 48 | 48 | 48 |
| Total uses (1+2) = total supply (3+4+5+6) | 7 586 | 850 | 8 688 | 20 538 | 30 076 | 37 662 |
| 3. Environmental protection output (basic prices) | 7 586 | 850 | 8 055 | 18 041 | 26 946 | 34 532 |
| 4. Imports | | | | 84 | 84 | 84 |
| 5. Non-deductible VAT | | | 414 | 2 108 | 2 522 | 2 522 |
| 6. Other taxes less subsidies on products | | | 218 | 304 | 523 | 523 |

National expenditure

National expenditure - Table 3 Table 3 presents the national expenditure for environmental protection services. It should be observed that the table does not include information on expenditures for so-called adapted and connected products.

Definition of national expenditure for environmental protection The national expenditure for environmental protection services is defined as the sum of (Eurostat, 1994 p. 39):

- a)** final consumption of characteristic environmental services
- b)** intermediate consumption of environmental services by resident units other than for characteristic activities. Intermediate consumption for other characteristic services are excluded in order to avoid double counting
- c)** gross capital formation (and acquisitions less disposals of non-produced non-financial assets) for characteristic activities
- d)** gross capital formation in characteristic services
- e)** specific transfers (current and capital) of resident units which are not a counterpart of previous items.
- f)** less financing by the rest of the world

Users/beneficiaries The national expenditure and its components are classified by users/beneficiaries i.e. the groups which actual use or benefit from the environmental protection expenditures. Please observe that this is not necessarily the same groups which actually pay for or bear the burden of financing the expenditures (that issue is highlighted in Table 4, instead). The users/beneficiaries are listed in the heading of Table 3.

Total national expenditure According to item II.8 in Table 3 the total national expenditure for environmental protection is 47 589 Million DKK.

The expenditure consists of consumption of environmental protection services at 38 920 Million DKK., a gross capital formation necessary for the production of environmental services at 7 580 Million DKK, specific transfers at 1 150 Million DKK. This gives a sum of uses at 47 650 Million DKK of which 61 Million DKK are financed by the rest of the world.

Final consumption Looking at the consumption of environmental protection services we find final consumption by central government, local government and households at 3 315 Million DKK, 4 271 Million DKK, and 11 327 Million DKK, respectively.

Intermediate consumption Intermediate consumption of environmental services is 20 007 Million DKK. Included is only the intermediate consumption of non-specialised producers, while the intermediate consumption by specialised producers is excluded in order to avoid double counting.

GFCF The gross capital formation for environmental protection activities is split between the general government (1 088 Million DKK), other specialised producers (5 577 Million DKK), and non-specialised producers (915 Million DKK).

Specific transfers etc. The expenditures for specific transfers amount to 1 150 Million DKK. The main part is transfers to the rest of the world (aid to developing countries). In addition some subsidies to the users of environmental protection services are accounted for as expenditure.

Table 3. National expenditure for environmental protection, by user/beneficiary, Denmark 2008, Million DKK

| National expenditure for environmental protection: | USERS/BENEFICIARIES | | | | | | | |
|--|-----------------------|---------------|-----------------|---|-------|--------------------------------|-------------------|--------|
| | Producers | | | Consumers | | | Rest of the world | Total |
| | Specialised producers | | Other producers | General Government as collective consumer | | Households as actual consumers | | |
| | GG & NPISHs | Corpo-rations | | CG | LG | | | |
| II.1 Uses of environmental protection services | | | 20 007 | 3 315 | 4 271 | 11 327 | | 38 920 |
| II.1.1 final consumption (P3) | | | | 3 315 | 4 271 | 11 327 | | 18 913 |
| II.1.2 intermediate consumption (P2) | | | 20 007 | | | | | 20 007 |
| II.1.3 capital formation (land improvement) (P51) | | | | | | | | |
| II.4 Capital formation for environmental protection activities (and net acquisition of land) (P51) = I.9.1+I.9.2 (directly from Table I) | 1 088 | 5 577 | 915 | | | | | 7 580 |
| II.5 Specific transfers not counterpart of items II.1, II.2, II.3, II.4 | | | 62 | | | 31 | 1 057 | 1 150 |
| II.5.1 Subsidies on products (D31) and production (D39) for specific products (specific services, adapted and connected products) | | | 62 | | | 31 | | 93 |
| II.5.2 Other specific transfers | | | | | | | 1 057 | 1 057 |
| II.5.2.1 current (D7) | | | | | | | | |
| II.5.2.2 capital (D92, D99) | | | | | | | 1 057 | 1 057 |
| II.6 Total domestic use (II.1+II.2+II.3+II.4+II.5) | 1 088 | 5 577 | 20 984 | 3 315 | 4 271 | 11 358 | 1 057 | 47 650 |
| II.6.1 current | | | 20 069 | 3 315 | 4 271 | 11 358 | | 39 013 |
| II.6.2 capital | 1 088 | 5 577 | 915 | | | | 1 057 | 8 637 |
| II.7 of which financed by the rest of the world | | | | 61 | | | | 61 |
| II.7.1 current | | | | 61 | | | | 61 |
| II.7.2 capital | | | | | | | | |
| II.8 National expenditure for environmental protection (II.6-II.7) | 1 088 | 5 577 | 20 984 | 3 254 | 4 271 | 11 358 | 1 057 | 47 589 |
| II.8.1 current | | | 20 069 | 3 254 | 4 271 | 11 358 | | 38 952 |
| II.8.2 capital | 1 088 | 5 577 | 915 | | | | 1 057 | 8 637 |

European Union 61 Million DKK of subsidies is paid by the European Union to general government. The amount is entered as a subsidy to general government as collective consumer in Table 3.

Financing

Financing of national expenditure - Table 4 The purpose of Table 4 is to identify the way in which the national expenditure, as stated in Table 3, is financed by units of the various sectors of the economy. The users/beneficiaries in the heading of the table are those of table 4. The financing units are regrouped according to institutional sectors in the first column (Eurostat, 1994 p. 62).

Financing units The bottom part of Table 4 (and Table 3) shows that the national expenditure by resident units was 47 589 Million DKK. When 61 Million DKK of transfers from the European Union to central government as collective consumer is added the total uses at 47 650 Million DKK is reached. The financing of the national expenditure is carried by non-specialised producers by 20 921 Million DKK (44 per cent), households by 11 327 Million DKK (24 per cent), general government by 9 763 Million DKK (20 per cent), and specialised producers by 5 577 Million DKK (12 per cent).

Table 4. Financing of National expenditure for environmental protection, by financer, Denmark 2008, Million DKK

| | USERS/BENEFICIARIES | | | | | | | |
|------------------------------|-----------------------|--------------|-----------------|---|-------|--------------------------------|-------------------|--------|
| | Producers | | | Consumers | | | Rest of the world | Total |
| | Specialised producers | | Other producers | General Government as collective consumer | | Households as actual consumers | | |
| Financing sectors | GG & NPISHs | Corporations | | CG | LG | | | |
| General Government | 1 088 | | 62 | 3 254 | 4 271 | 31 | 1 057 | 9 763 |
| <i>Central government</i> | 674 | | 62 | 3 254 | | 31 | 1 057 | 5 078 |
| <i>Local government</i> | 414 | | | | 4 271 | | | 4 685 |
| NPISH | | | | | | | | |
| Corporations | | | | | | | | |
| <i>Specialised producers</i> | | 5 577 | | | | | | 5 577 |
| <i>Other producers</i> | | | 20 921 | | | | | 20 921 |
| Households | | | | | | 11 327 | | 11 327 |
| National expenditure | 1 088 | 5 577 | 20 984 | 3 254 | 4 271 | 11 358 | 1 057 | 47 589 |
| Rest of the world | | | | 61 | | | | 61 |
| Uses of resident units | 1 088 | 5 577 | 20 984 | 3 315 | 4 271 | 11 358 | 1 057 | 47 650 |

2. Specialised producers of sewerage, waste management and remediation activities

Two industries included Two Danish national accounts industries are included here as specialised producers. The two industries are:

E37 Sewerage removal and disposal (370000)

E38, E39 Waste management and remediation activities (383900)

The codes E37, E38 and E39 are used here to indicate the corresponding NACE Rev. 2 divisions 37, 38 and 39, which form the two Danish national accounts industries.

Output

Table 5 Table 5 shows main accounting entries from the production and generation of income accounts from the Danish national accounts for the two industries.

The account starts with the output (ESA P.1), which is then split up by intermediate consumption (at basic prices plus taxes less subsidies on products, ESA P.2+D.21-D.31), compensation of employees (ESA D.1), other taxes less other subsidies on production (D.29-D.39), and gross operating surplus and mixed income (ESA B.2g+B.3g). The latter component is further split into consumption of fixed capital (ESA K.1) on one side and net operating surplus and mixed income (ESA B.2n+B.3n) on the other side.

Table 5. Output of E37 Sewerage and E38, E39 Waste management and remediation activities, Denmark 2008, Million DKK

| ESA codes | | E37 Sewerage | E38,E39 Waste management and remediation activities | | | Total |
|---------------|--|-----------------|---|-----------------|------------|---------------|
| | | | Total | Of which S11 | S14 | |
| P.1 | Output | 8 065 | 18 068 | 17 891 | 177 | 26 133 |
| P.2+D.21-D.31 | Intermediate consumption | 3 917 | 12 194 | 12 080 | 114 | 16 111 |
| D.1 | Compensation of employees | 1 302 | 2 813 | 2 777 | 36 | 4 115 |
| D.29 | Other taxes on production | 67 | 126 | 125 | 1 | 193 |
| D.39 | Other subsidies on production | - 20 | - 80 | - 79 | - 1 | - 100 |
| | Gross operating surplus and mixed income (=P.1-P.2-D.1-D.29+D.39) | 2 799 | 3 014 | 2 989 | 26 | 5 813 |
| B.2g+B.3g | | | | | | |
| K.1 | Consumption of fixed Capital | 2 327 | 2 465 | 2 460 | 6 | 4 792 |
| B.2n+B.3n | Net operating surplus and mixed income (=B.2g+B.3g-K.1) | 472 | 549 | 529 | 20 | 1 021 |

S.11 refers to Non-financial corporations and S.14 to Households

E37 Sewerage The output of sewerage services was 8 065 Million DKK. A substantial part of this output was made up by intermediate consumption at 3 917 Million DKK. Employees were compensated by 1 302 Million DKK. Gross operating surplus and mixed income were 2 799 Million DKK. Most of the gross operating surplus is attributed to consumption of fixed capital.

E38, E39 Waste management and remediation activities Services provided by waste management and remediation activities corresponded to an output of 18 068 Million DKK. Again a substantial part, 12 194 Million DKK, is made up by the industry's intermediate consumption. Compensation of employees and gross operating surplus amounted to 2 813 and 3 014 Million DKK, respectively.

Other taxes less other subsidies on production For both industries other taxes on production made up only a minor part of the output, and in both cases they were partially set off by other subsidies on production.

Corresponding CEPA groups Activities of E37 Sewerage fall in CEPA group 2 Waste water management, while the activities of E38, E39 waste management and remediation activities falls partly in CEPA group 3 Waste management, partly in CEPA group 4 Protection and remediation of soil, ground water and surface water. However, the latter CEPA

group take up only a very small part, 23 Million DKK, out of the total output at 18 068 Million DKK.

| | |
|---|---|
| <i>Industries and institutional sectors</i> | The Sewerage industry, E37, includes only activities which belong to institutional sector S.11 Non-financial corporations. In contrast, the industry for waste management and remediation activities, E38, E39, includes activities carried out by S.11 Non-financial corporations as well as S.14 Households, although the activities by households are negligible. |
| <i>CFC</i> | The total consumption of fixed capital (CoFC) at 4 792 Million DKK is known from the Danish national accounts while the split into industries and institutional sectors is based on data from the public finance accounts and assumptions. |
| <i>Market output</i> | All output from the two specialised industries is market output. sold to other units. |
| <i>Non-environmental output</i> | The greater part of the output from these industries/institutional sectors is characterised as environmental protection services, i.e. the purpose is to protect the environment. However, the output also includes small amounts of non-environmental output including mainly fringe benefits provided by the industries to their employees. For E37 these non-environmental protection outputs were 10 Million DKK, and for E38, E39 they amounted to 27 Million DKK. |

Use of total output and imports from specialised producers

| | |
|----------------------------------|--|
| <i>Input-output tables</i> | From the input-output table integrated with the Danish national accounts it is possible to establish information about the use of the above mentioned output. The input-output tables show, among other things, intermediate consumption and final use of the output from each of the industries in the Danish national accounts, including the two industries in focus in the present context. |
| <i>Table 6</i> | Table 6 shows information from the input-output table on the use of the sum of the domestic output and the imports from similar industries abroad. |
| <i>Use equals supply</i> | For E37 it is seen that the total use at 8 065 Million DKK corresponds to the output stated in Table 5. It indicates (as also seen in Table 2) that there is no imports of sewerage services. In contrast, 91 Million DKK of imported services, including 84 Million DKK of environmental protection services was imported from foreign waste management companies. The imports together with the Danish output at 18 068 Million DKK, resulted in a total use of waste management and remediation activities at 18 159 Million DKK. |
| <i>Households and industries</i> | Households (private consumption) used the main part, 6 000 Million DKK of output from E37 Sewerage. In addition, C10-12 Manufacturing of food, beverages and tobacco, I hotels and restaurants, and some of the other service industries (G, P, Q) were main users. |

Waste management and remediation activities is to a larger extent, 14 304 Million DKK out of 18 159 Million DKK, used by the industries as intermediate consumption, while the final use includes households, 3 793 Million DKK, capital formation, 15 Million DKK, and exports 48 Million DKK.

Among the industries, especially C25 Manufacturing of fabricated metals has a relatively high input. This may include some activities related to recycling, which basically should not be included as environmental protection output. However, no attempt has been done to exclude this potential source of error in the statement of the environmental protection expenditures.

Table 6 Use of output from E37 Sewerage and E38,E39 Waste management and remediation activities, etc., including imports, Denmark 2008, Million DKK

| | | E37 Sewerage | E38_E39 Waste management and remediation services | | | E37 Sewerage | E38_E39 Waste management and remediation services |
|--|---|-----------------|--|---------|---|-----------------|--|
| Total use | | 8 065 | 18 159 | | | | |
| of which Environmental Protection output | | 8 055 | 18 132 | | | | |
| Non-environmental protection output | | 10 | 27 | | | | |
| Total industries | | 2 065 | 14 304 | | | | |
| A01 | Agriculture and horticulture | 90 | 45 | H53 | Postal and courier activities | 2 | 73 |
| A02 | Forestry and logging | 2 | 12 | I | Hotels and restaurants | 110 | 172 |
| A03 | Fishing and aquaculture | 2 | 1 | J58 | Publishing activities | 4 | 74 |
| B | Mining and quarrying | 2 | 9 | J59_J60 | Tv and radio, motion picture ect. | 3 | 68 |
| C10-C12 | Mfr. of food, beverages and tobacco | 356 | 218 | J61 | Telecommunications | 6 | 297 |
| C13-C15 | Mfr. of textile and leather | 23 | 12 | J62_J63 | IT and information service | 7 | 318 |
| C16 | Manufacture of wood etc. | 7 | 21 | K64 | Financial service activities | 8 | 187 |
| C17 | Manufacture of paper etc. | 13 | 270 | K65 | Insurance and pension funding | 2 | 7 |
| C18 | Printing etc. | 3 | 11 | K66 | Other financial activities | 1 | 39 |
| C19 | Oil refinery etc. | 1 | 5 | L | Real estate activities | 39 | 211 |
| C20 | Mfr. of chemicals and chemical products | 79 | 68 | M69_M70 | Legal and accounting activities | 11 | 229 |
| C21 | Pharmaceuticals | 85 | 56 | M71 | Architecture and engineering activities | 9 | 561 |
| C22 | Manufacture of rubber etc. | 12 | 575 | M72 | Scientific research and development | 10 | 124 |
| C23 | Mfr. of other non-metallic mineral products | 25 | 255 | M73 | Advertising and market research | 2 | 48 |
| C24 | Manufacture of basic metals | 4 | 142 | M74_M75 | Other professional, veterinary activities | 5 | 119 |
| C25 | Manufact. of fabricated metal | 21 | 1 922 | N77 | Rental and leasing activities | 4 | 104 |
| C26 | Manufact. of computers, etc. | 10 | 40 | N78 | Employment activities | 2 | 46 |
| C27 | Manufacture of electrical equipment | 4 | 13 | N79 | Travel agent activities | 7 | 8 |
| C28 | Mfr. of machinery and equipment n.e.c. | 26 | 122 | N80-N82 | Security and investigation ect. | 22 | 128 |
| C29 | Manuf. of motor vehicles etc. | 4 | 12 | O | Public administration and defence | 54 | 622 |
| C30 | Mf. of ships, transport equip. | 4 | 15 | P | Education | 278 | 553 |
| C31_C32 | Mfr. of furniture; other manufacturing | 7 | 43 | Q86 | Human health activities | 95 | 1 362 |
| C33 | Repair, install of machinery etc | 6 | 17 | Q87_Q88 | Social work activities | 160 | 1 662 |
| D | Electricity, gas and steam | 48 | 112 | R90-R92 | Creative, arts and entertainment activities | 25 | 137 |
| E36 | Water collection, treatment and supply | 1 | 58 | R93 | Sports activities | 22 | 94 |
| E37 | Sewerage | 7 | 20 | S94 | Activities of membership organisations | 5 | 85 |
| E38_E39 | Waste | 12 | 1 584 | S95 | Repair of personal goods | 2 | 33 |
| F | Construction | 18 | 71 | S96 | Other personal service activities | 33 | 35 |
| G45 | Sale and repair of motor vehicles | 18 | 44 | T | Households as employers | | |
| G46 | Wholesale trade, exc. of motor vehicles | 106 | 608 | | | | |
| G47 | Retail trade, exc. of motor vehicles | 79 | 313 | | | | |
| H49 | Land transport | 19 | 87 | | Total Final use | 6 000 | 3 856 |
| H50 | Water transport | 10 | 50 | | Private Consumption | 6 000 | 3 793 |
| H51 | Air transport | 1 | 2 | | Government Consumption | | |
| H52 | Support activities for transport | 32 | 73 | | Capital formation | | 15 |
| | | | | | Exports | | 48 |

Use of environmental protection output and imports from specialised producers

Environmental output In order to use the information from Table 6 for the environmental protection expenditure accounts it is necessary to clear the information of the use of non-environmental output (fringe benefits, etc.). This clearing is based on the detailed supply and use tables of the Danish national accounts.

Table 7 at basic prices Table 7 summarises the use of the environmental protection output from the specialised producers within E37-E39. The table identifies, among other items, the parts, 25 Million DKK and 1 590 Million DKK, of the environmental protection services which are used by the specialised producers themselves.

Table 8 at purchasers' prices Table 8 presents the same information, but given at purchasers prices, i.e. including non-deductible VAT, and taxes less subsidies on products.

Table 7. Use of environmental protection output from specialised producers within E37-E39, including imports, Denmark 2008, Basic prices, Million DKK

| | E37 | | E38, E39 | | Total |
|--|-----------------|---------|---|-----------|---------------|
| | Sewerage | | Waste management and remediation activities | | |
| | Domestic output | Imports | Domestic output | Imports | |
| Total use | 8 055 | | 18 041 | 84 | 26 180 |
| Total industries | 2 065 | | 14 219 | 84 | 16 369 |
| E37 Sewerage | 7 | | 18 | 0 | 25 |
| E38, E39 Waste management and remediation activities | 12 | | 1 548 | 30 | 1 590 |
| Other industries | 2 046 | | 12 653 | 54 | 14 753 |
| Total final use | 5 990 | | 3 821 | | 9 812 |
| Private consumption | 5 990 | | 3 765 | | 9 755 |
| Capital Formation | | | 9 | | 9 |
| Exports | | | 48 | | 48 |

Table 8. Use of environmental protection output from specialised producers within E37-E39, including imports, Denmark 2008, Purchasers' prices, Million DKK

| | E37 | | E38, E39 | | Total |
|--|-----------------|---------|---|-----------|---------------|
| | Sewerage | | Waste management and remediation activities | | |
| | Domestic output | Imports | Domestic output | Imports | |
| Total use | 8 688 | | 20 453 | 84 | 29 226 |
| Total industries | 2 158 | | 15 600 | 84 | 17 842 |
| E37 Sewerage | 7 | | 22 | 0 | 29 |
| E38, E39 Waste management and remediation activities | 12 | | 1 920 | 30 | 1 962 |
| Other industries | 2 139 | | 13 657 | 54 | 15 851 |
| Total final use | 6 530 | | 4 854 | | 11 384 |
| Private consumption | 6 530 | | 4 797 | | 11 327 |
| Capital Formation | | | 9 | | 9 |
| Exports | | | 48 | | 48 |

Capital transactions of specialised producers within E37-E39

Table 9 Table 9 shows capital transactions related to the production of environmental protection services by the specialised producers within E37-E39. The capital transactions include gross fixed capital formation and acquisitions less disposals of non-produced, non-financial assets (land). No investment grants or other capital transfers are registered.

Gross fixed capital formation and disposal of land, etc. We find that the largest gross fixed capital formation (GFCF) was related to E37 Sewerage. 4 205 Million DKK was allocated to that, while 1 829 Million DKK was invested by E38, E39 Waste management and remediation activities. E37 Sewerage had a net disposal of non-produced, non- financial assets (land) at 490 Million DKK.

Table 9. Capital transactions related to specialised producers' environmental protection activities, Denmark 2008, Million DKK

| | E37 Sewerage | E38, E39 Waste management and remediation activities | Total |
|--|-----------------|--|-------|
| P.51 Gross fixed capital formation | 4 205 | 1 829 | 6 034 |
| K.2 Acquisitions less disposals of non-produced, non-financial assets, net | - 490 | 34 | - 457 |
| D.92+D99 Investments grants and other capital transfers received | | | |

3. Non-specialised producers of environmental protection services

Structural Business Statistics In relation to the reporting of Structural Business Statistics (SBS) Statistics Denmark has for the year 2009 collected data on environmental protection expenditures by Danish industries within NACE rev. 2 sections B, C and D and division E36.

Company survey The data collection was based on a survey of all companies with more than 50 employees. The companies were asked to report on their gross fixed capital formation (for both end-of pipe and cleaner technologies) and current expenditures for environmental protection. In total 1008 companies were included in the survey and responses were obtained from 993 companies.

Based on the responses from the companies with more than 50 employees Statistics Denmark made a statistical scaling of the data in order to get a picture of the total expenditures of all companies.

Allocation by CEPA groups The survey did not include specific questions which made it possible directly to allocate the expenses to all 9 CEPA groups, since only four main groups of environmental domains were identified in the survey. However by going through all the questionnaires, and using the detailed information included therein, it has been possible for the purpose of this report to make an approximate allocation on CEPA groups. It should be noted, however, that the allocation is quite uncertain, and that Group 9 Other environmental services, include some expenditures, which in fact should be allocated to one of the eight other groups.

Allocation by NACE In addition to the allocation by CEPA groups all data were allocated by the NACE rev. 2 divisions within the relevant sections.

From 2009 to 2008

Since all other information in this report relates to the year 2008, the data from the survey of 2009 were taken back to 2008 by using the development in the total output of the corresponding industries.

| | |
|---|---|
| <i>Comparison with national accounts data</i> | For CEPA group 2 (Waste water management) and 3 (Waste management) the expenditures by industries was compared with the information in the national accounts about the deliveries from E37 Sewerage and E38, E39 Waste management and remediation activities. It seems reasonable to assume that the expenditures within the two CEPA groups should be at least as big as the expenditures indicated by the national accounts data for deliveries from the two industries. However, for a number of industries this was not the case. |
| <i>Mismatch</i> | One reason for this mismatch may be that the survey of the industries' expenditures did not catch all environmental protection expenditures within the two CEPA groups. Actually, this is in line with the fact that a lot of companies reported that they found it difficult to decide what to include in the reporting of the expenditures. In many cases, it seems that the companies did not regard (all) expenditures for sewerage and waste as environmental protection expenditures. |
| <i>Adjustment of survey data</i> | In order to correct the mismatch between the data obtained by the survey and the national accounts data, some of the survey data have for the purpose of this report been overruled by the national accounts data. Thus, in cases where the survey showed expenditures smaller than what was indicated by the national accounts, the national accounts data are used. In cases where the survey data were larger than the national accounts data, the survey data are used. |
| | Table 10 and 11 presents the adjusted survey data for the non-specialised producers of environmental protection services. Table 10 presents the current expenditures and table 11 the expenditures for fixed capital formation. |
| <i>Current expenditures – Table 10</i> | Total current expenditures for 2008 has been estimated at 6 983 Million DKK. The main part of these expenditures was related to waste water management, 905 Million DKK, and waste management, 5476 Million DKK. |
| | C10-C12 Manufacturing of food, beverages, and tobacco, and C25 Manufacturing of fabricated metals are the industries with the highest expenditures. As explained above the expenditures by the latter industry may include some recycling activities, which should in fact not be included as environmental protection expenditures. |
| | NACE section D Electricity, gas, and steam accounts for a substantial part of the expenditures related to CEPA group 1 protection of ambient air and climate. |
| <i>Gross fixed capital formation – Table 11</i> | Total gross fixed capital formation for environmental protection for 2008, including both end-of-pipe and cleaner technologies have been estimated at 915 Million DKK. Almost two third of this amount was related to protection of ambient air and climate, and a substantial part of the expenditures was due to activities within NACE section D Electricity, gas and steam. Actually, more than half of the gross fixed capital formation for environmental protection by non-specialised producers is attributed to the latter industry when expenditures within all CEPA groups are taken into account. |
| <i>Consumption of fixed capital – Table 12</i> | The survey of the environmental protection expenditures did not include any information on the consumption of fixed capital, but since it seems important to include also this component when the output of environmental protection services is estimated from the cost side, estimates by CEPA groups and industries have been produced for the purpose of this report. |

The estimate has been done by using the information on gross fixed capital formation and the share between consumption of fixed capital and gross capital formation for all industries within NACE section C. Thus all the numbers in Table 11 for Gross fixed capital formation has been multiplied by 1.159, which was the proportion between CoFC and GFCF in 2008. This estimation procedure is of course very rough, and care should be taken not to use these numbers for detailed analysis or for drawing specific conclusions about the consumption of fixed capital.

The total estimate for consumption of fixed capital amounts to 1 060 Million DKK. Due to the estimation procedure the allocation by CEPA groups and NACE industries corresponds exactly to the allocation of the gross fixed capital formation.

Table 10. Current environmental protection expenditures by non-specialised producers, NACE B-E36, Denmark 2008, Million DKK

| CEPA groups | | Total | Total, excl. deliveries from E37, E38,E39 | 1 Protection of ambient air and climate | 2 Waste-water management | <i>of which: delivered from E37 Sewerage</i> | 3 Waste management | <i>of which: delivered from E38 Waste management</i> | 4 Protection and remediation of soil, ground-water and surface water | 5 Noise and vibration abatement (excluding workplace protection) | 6 Protection of biodiversity and landscapes | 7 Protection against radiation (excluding external safety) | 8 Research and development | 9 Other environmental protection activities |
|-------------|---|-------|---|--|-----------------------------|--|-----------------------|--|---|---|--|---|-------------------------------|--|
| | Total (NACE B-E36) | 6 983 | 2 247 | 310 | 905 | 740 | 5 476 | 3 997 | 8 | 3 | 0 | 0 | 9 | 273 |
| B | Mining and quarrying | 19 | 8 | 4 | 5 | 2 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 1 |
| C10-C12 | Mfr. of food, beverages and tobacco | 2 069 | 1 494 | 9 | 356 | 356 | 1 666 | 218 | 3 | 1 | 0 | 0 | 0 | 33 |
| C13-C15 | Mfr. of textile and leather | 37 | 3 | 0 | 23 | 23 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 2 |
| C16 | Manufacture of wood etc. | 31 | 3 | 1 | 7 | 7 | 21 | 21 | 0 | 0 | 0 | 0 | 0 | 2 |
| C17 | Manufacture of paper etc. | 287 | 4 | 0 | 13 | 13 | 270 | 270 | 0 | 0 | 0 | 0 | 0 | 4 |
| C18 | Printing etc. | 20 | 5 | 0 | 3 | 3 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 5 |
| C19 | Oil refinery etc. | 17 | 10 | 0 | 10 | 1 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 1 |
| C20 | Mfr. of chemicals and chemical products | 330 | 184 | 10 | 232 | 79 | 68 | 68 | 0 | 0 | 0 | 0 | 0 | 21 |
| C21 | Pharmaceuticals | 280 | 139 | 15 | 85 | 85 | 86 | 56 | 5 | 0 | 0 | 0 | 0 | 90 |
| C22 | Manufacture of rubber etc. | 596 | 8 | 4 | 12 | 12 | 575 | 575 | 0 | 0 | 0 | 0 | 0 | 5 |
| C23 | Mfr. of other non-metallic mineral products | 306 | 26 | 13 | 25 | 25 | 255 | 255 | 0 | 2 | 0 | 0 | 0 | 11 |
| C24 | Manufacture of basic metals | 148 | 2 | 1 | 4 | 4 | 142 | 142 | 0 | 0 | 0 | 0 | 0 | 1 |
| C25 | Manufact. of fabricated metal | 1 957 | 14 | 5 | 21 | 21 | 1 922 | 1 922 | 0 | 0 | 0 | 0 | 1 | 8 |
| C26 | Manufact. of computers, etc. | 56 | 6 | 0 | 10 | 10 | 40 | 40 | 0 | 0 | 0 | 0 | 0 | 6 |
| C27 | Manufacture of electrical equipment | 24 | 6 | 1 | 4 | 4 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 5 |
| C28 | Mfr. of machinery and equipment n.e.c. | 177 | 29 | 5 | 26 | 26 | 122 | 122 | 0 | 0 | 0 | 0 | 6 | 18 |
| C29 | Manuf. of motor vehicles etc. | 20 | 4 | 2 | 4 | 4 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 2 |
| C30 | Mf. of ships, transport equip. | 19 | 0 | 0 | 4 | 4 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 |
| C31_C32 | Mfr. of furniture; other manufacturing | 55 | 4 | 1 | 7 | 7 | 43 | 43 | 0 | 0 | 0 | 0 | 0 | 3 |
| C33 | Repair, install of machinery etc | 27 | 4 | 1 | 6 | 6 | 17 | 17 | 0 | 0 | 0 | 0 | 0 | 3 |
| D | Electricity, gas and steam | 451 | 292 | 236 | 48 | 48 | 112 | 112 | 0 | 0 | 0 | 0 | 2 | 53 |
| E36 | Water collection, treatment and supply | 60 | 2 | 1 | 1 | 1 | 58 | 58 | 0 | 0 | 0 | 0 | 0 | 1 |

Table 11. Gross fixed capital formation for environmental protection by non-specialised producers in NACE B-E36, Denmark 2008, Million DKK

| CEPA groups | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------|---|------------|---------------------------------------|------------------------|------------------|--|--|---|--|--------------------------|---|
| | | Total | Protection of ambient air and climate | Waste-water management | Waste management | Protection and remediation of soil, ground-water and surface water | Noise and vibration abatement (excluding workplace protection) | Protection of biodiversity and landscapes | Protection against radiation (excluding external safety) | Research and development | Other environmental protection activities |
| | Total (NACE B-E36) | 915 | 570 | 168 | 38 | 25 | 8 | 0 | 0 | 2 | 102 |
| B | Mining and quarrying | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C10-C12 | Mfr. of food, beverages and tobacco | 105 | 25 | 53 | 2 | 0 | 3 | 0 | 0 | 0 | 22 |
| C13-C15 | Mfr. of textile and leather | 5 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C16 | Manufacture of wood etc. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| C17 | Manufacture of paper etc. | 8 | 0 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| C18 | Printing etc. | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| C19 | Oil refinery etc. | 14 | 12 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C20 | Mfr. of chemicals and chemical products | 18 | 6 | 8 | 0 | 2 | 1 | 0 | 0 | 0 | 1 |
| C21 | Pharmaceuticals | 88 | 23 | 18 | 20 | 0 | 0 | 0 | 0 | 0 | 26 |
| C22 | Manufacture of rubber etc. | 40 | 33 | 1 | 1 | 5 | 0 | 0 | 0 | 0 | 0 |
| C23 | Mfr. of other non-metallic mineral products | 70 | 47 | 1 | 6 | 0 | 1 | 0 | 0 | 0 | 15 |
| C24 | Manufacture of basic metals | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C25 | Manufact. of fabricated metal | 34 | 15 | 13 | 1 | 0 | 0 | 0 | 0 | 2 | 2 |
| C26 | Manufact. of computers, etc. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C27 | Manufacture of electrical equipment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C28 | Mfr. of machinery and equipment n.e.c. | 26 | 12 | 7 | 3 | 0 | 3 | 0 | 0 | 0 | 0 |
| C29 | Manuf. of motor vehicles etc. | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C30 | Mf. of ships, transport equip. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C31_C32 | Mfr. of furniture; other manufacturing | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C33 | Repair, install of machinery etc | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | Electricity, gas and steam | 485 | 383 | 55 | 0 | 17 | 0 | 0 | 0 | 0 | 30 |
| E36 | Water collection, treatment and supply | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 12. Consumption of fixed capital for environmental protection by non-specialised producers in NACE B-E36, Denmark 2008, Million DKK

| CEPA groups | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
|-------------|---|-------|---------------------------------------|------------------------|------------------|--|--|---|--|--------------------------|---|
| | | Total | Protection of ambient air and climate | Waste-water management | Waste management | Protection and remediation of soil, ground-water and surface water | Noise and vibration abatement (excluding workplace protection) | Protection of biodiversity and landscapes | Protection against radiation (excluding external safety) | Research and development | Other environmental protection activities |
| | Total (NACE B-E36) | 1 060 | 661 | 195 | 44 | 29 | 10 | 0 | 0 | 2 | 119 |
| B | Mining and quarrying | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C10-C12 | Mfr. of food, beverages and tobacco | 122 | 29 | 61 | 3 | 0 | 4 | 0 | 0 | 0 | 25 |
| C13-C15 | Mfr. of textile and leather | 6 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C16 | Manufacture of wood etc. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| C17 | Manufacture of paper etc. | 10 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| C18 | Printing etc. | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| C19 | Oil refinery etc. | 16 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C20 | Mfr. of chemicals and chemical products | 20 | 7 | 9 | 0 | 2 | 1 | 0 | 0 | 0 | 1 |
| C21 | Pharmaceuticals | 102 | 27 | 21 | 23 | 0 | 1 | 0 | 0 | 0 | 31 |
| C22 | Manufacture of rubber etc. | 46 | 38 | 1 | 1 | 6 | 0 | 0 | 0 | 0 | 0 |
| C23 | Mfr. of other non-metallic mineral products | 82 | 55 | 2 | 7 | 0 | 1 | 0 | 0 | 0 | 18 |
| C24 | Manufacture of basic metals | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C25 | Manufact. of fabricated metal | 39 | 18 | 15 | 1 | 0 | 0 | 0 | 0 | 2 | 3 |
| C26 | Manufact. of computers, etc. | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| C27 | Manufacture of electrical equipment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C28 | Mfr. of machinery and equipment n.e.c. | 30 | 14 | 8 | 4 | 0 | 3 | 0 | 0 | 0 | 1 |
| C29 | Manuf. of motor vehicles etc. | 10 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C30 | Mf. of ships, transport equip. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C31_C32 | Mfr. of furniture; other manufacturing | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| C33 | Repair, install of machinery etc | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| D | Electricity, gas and steam | 562 | 444 | 64 | 0 | 20 | 0 | 0 | 0 | 0 | 34 |
| E36 | Water collection, treatment and supply | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: Estimated from the gross capital formation by multiplying by 1.159, which is the share between CoFC and GFCF for NACE C as a whole in 2008

4. Central and local government environmental protection activities

This chapter deals with the production of environmental protection services within general government.

Output of environmental protection services from general government

| | |
|--|---|
| <i>Cost based estimation of output</i> | The output of environmental services from general government equals per definition the sum of intermediate consumption (at purchasers' prices), compensation of employees, other taxes on production less other subsidies on production, plus consumption of fixed capital. |
| <i>Public finance Accounts- the DIOR database</i> | As the environmental part of general government output and its components (intermediate consumption, etc.) are not presented as such in the Danish national accounts it has been necessary to go behind the national accounts and extract the information from Statistics Denmark's database, called DIOR, for public finance accounts. It is from DIOR that the general government part of the national accounts is formed. |
| <i>Environmental labelling of government expenditures and revenues</i> | <p>For the purpose of this report a labelling of the public finance accounts in DIOR has been made in order to separate environmental related expenditures and revenues from other expenditures and revenues. Furthermore, within the environmental expenditures and revenues the labelling is done in a way which enables a division into environmental domains by CEPA groups.</p> <p>The labelling has been carried out by going through all the accounts of the central and local government accounts and selecting those accounts, which by definition falls under environmental protection activities. At the same time, the relevant CEPA group has been chosen. Altogether, approximately 120 individual local and government accounts were identified as related to environmental protection activities.</p> |
| <i>Shares of environmental protection activities</i> | For some institutions, e.g. the universities, whose primary activities are not related to environmental protection as such it has been necessary to estimate that part of the institutions' activities which are related to environmental protection. This has been done from detailed information in the government accounts about the specific activities, and in some cases by assumptions. |
| <i>Cost components and output - Table 13</i> | The result of the extraction of public finance data from the DIOR data base and the environmental labelling of the government accounts is presented in Table 13. |

The table shows the amounts for intermediate consumption (ESA P.2), compensation of employees (ESA D.1), consumption of fixed capital (ESA K.1) and the sum of these components which make up total output (ESA P.1).

| | |
|--|--|
| <i>Intermediate consumption</i> | The amounts for intermediate consumption include taxes less subsidies on products as well as other taxes less subsidies on production paid by general government itself. |
| <i>CFC</i> | For the present statement consumption of fixed capital has been estimated as 7.2 per cent of the sum of intermediate consumption and compensation of employees. It corresponds to the relation between consumption of fixed capital and other inputs for total general government. |
| <i>Total output</i> | The total output of environmental protection services within general government is estimated at 8 436 Million DKK of which central government produces 3 725 million DKK and local government 4 711 Million DKK. The major part, 7 586 Million DKK, of the government output is accounted for as non-marketed output, while 850 Million DKK is entered as market output. |
| <i>CEPA groups</i> | Broken down into environmental domains (CEPA classes) the output from general government of environmental protection services is split up into 332 Million DKK on protection of ambient air and climate, 675 Million DKK on protection and remediation of soil, groundwater and surface water, 2 593 Million DKK on protection of biodiversity and landscapes, 1508 Million DKK on research and development and 3 292 Million DKK on other environmental protection activities. The latter group includes e.g. general administration connected to environmental protection activities by the Ministry of Environment and by local government. Furthermore, activities which have no unambiguous connection to one of the other CEPA groups have been allocated to the group for other environmental protection activities. |
| <i>Only minor GG activities for waste water and waste management</i> | General government output for waste water management (CEPA group 2) and waste management (CEPA group 3) are negligible. This is linked to the fact that these activities are allocated to public corporations and accounted for in relation to the specialised producers within the non-financial corporations, cf. Chapter 2. |
| <i>Comparison with total general government - Table 14</i> | <p>In order to throw further light on the output of environmental protection services from general government the main totals from Table 13 are confronted in table 14 with corresponding figures for total general government, i.e. for all units and activities within general government.</p> <p>The output of environmental protection services amounts to 1.7 per cent of total output from general government. For intermediate consumption the environmental part is 2.7 per cent of the total, while 1.2 per cent of general government's compensation of employees is used for the production of environmental protection services. Thus, we can conclude that the production of environmental protection is more intensive with respect to intermediate consumption and less intensive with respect to labour than the average activities within general government.</p> |

Table 13. Central and local government's environmental protection activities by CEPA groups, Denmark 2009, Million DKK

| | ESA P.2 Intermediate consumption | ESA D.1 Compensation of employees | ESA K.1 Consumption of fixed capital ¹ | ESA P.1 Output | of which: Non- market | Market |
|---|--|---|--|-------------------|-----------------------------|------------|
| General Government | | | | | | |
| Total | 4 250 | 3 620 | 567 | 8 436 | 7 586 | 850 |
| 1 Protection of ambient air and climate | 214 | 96 | 22 | 332 | 310 | 22 |
| 2 Wastewater management | 1 | 1 | 0 | 2 | 2 | 0 |
| 3 Waste management | 8 | 5 | 1 | 14 | 13 | 0 |
| 4 Protection and remediation of soil, groundwater and surface water | 462 | 168 | 45 | 675 | 628 | 47 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | | |
| 6 Protection of biodiversity and landscapes | 1 620 | 799 | 174 | 2 593 | 2 195 | 398 |
| 7 Protection against radiation (excluding external safety) | 6 | 12 | 1 | 19 | 9 | 10 |
| 8 Research and development | 575 | 832 | 101 | 1 508 | 1 363 | 145 |
| 9 Other environmental protection activities | 1 363 | 1 708 | 221 | 3 292 | 3 065 | 228 |
| Central Government | | | | | | |
| Total | 1 739 | 1 736 | 250 | 3 725 | 3 315 | 410 |
| 1 Protection of ambient air and climate | 214 | 96 | 22 | 332 | 310 | 22 |
| 2 Wastewater management | 1 | 1 | 0 | 2 | 2 | 0 |
| 3 Waste management | 8 | 5 | 1 | 14 | 13 | 0 |
| 4 Protection and remediation of soil, groundwater and surface water | 33 | 48 | 6 | 86 | 63 | 23 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | | |
| 6 Protection of biodiversity and landscapes | 358 | 204 | 40 | 602 | 442 | 160 |
| 7 Protection against radiation (excluding external safety) | 6 | 12 | 1 | 19 | 9 | 10 |
| 8 Research and development | 575 | 832 | 101 | 1 508 | 1 363 | 145 |
| 9 Other environmental protection activities | 545 | 539 | 78 | 1 162 | 1 113 | 49 |
| Local Government | | | | | | |
| Total | 2 511 | 1 883 | 316 | 4 711 | 4 271 | 440 |
| 1 Protection of ambient air and climate | | | | | | |
| 2 Wastewater management | | | | | | |
| 3 Waste management | | | | | | |
| 4 Protection and remediation of soil, groundwater and surface water | 430 | 120 | 40 | 589 | 565 | 24 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | | |
| 6 Protection of biodiversity and landscapes | 1 263 | 595 | 134 | 1 991 | 1 754 | 238 |
| 7 Protection against radiation (excluding external safety) | | | | | | |
| 8 Research and development | | | | | | |
| 9 Other environmental protection activities | 819 | 1 169 | 143 | 2 130 | 1 952 | 178 |

1) Consumption of fixed capital is estimated as 7.2 per cent of the sum of intermediate consumption and compensation of employees. That is the general share for general government in 2008

Table 14. Environmental protection output as share of total government sector output, Denmark 2008, Million DKK and percentage 2008

| | | S.13 General Government, total | | Environmental Protection Services |
|-----------------|--------------------------------------|--------------------------------------|-------|--------------------------------------|
| ESA | | Million DKK | | Per cent of total |
| P.1 | Output (=P.2+D.2-D.3+D.1+K.1) | 488 619 | 8 436 | 1.7 |
| P.2 + D.2 - D.3 | Intermediate consumption | 156 730 | 4 250 | 2.7 |
| D.1 | Compensation of employees | 299 281 | 3 620 | 1.2 |
| K.1 | Consumption of fixed capital | 32 608 | 567 | 1.7 |

Current transfers to specialised producers within general government

Current transfers Besides the revenues from sale of services and subsidies on production the specialised producers can have receipts connected to the current activities in the form of specific current transfers (ESA D.7 Other current transfers). These are unrequited payments received by the producers with the exception of taxes, subsidies, investment grants and other capital transfers.

Table 15 The current transfers to specialised producers within general government are presented in Table 15 by central and local government, by financing units and by CEPA classes. In line with the other information for general government, the information is stated on basis of the public finance accounts and the DIOR database.

Central and local government General governments receive other current transfers at 1 827 Million DKK of which central government receives 1 570 Million DKK and local government 257 Million DKK. The relative high transfers to central government (coming from other parts of central government) are related to research and development and is linked to environmental research institutions located at the universities.

619 Million DKK is transferred from other resident units to central government. This amount includes transfers from private companies to environmental research activities at universities. 61 Million DKK is received from non-resident units, mainly the European Union.

CEPA 8 Research and development receives current transfers at 1 187 Million DKK and is thereby the main environmental domain benefitting from the transfers.

General government's capital transactions related to environmental protection

Table 16 Table 16 shows the general government's gross fixed capital formation and the acquisition less disposal of non-produced non-financial assets (land etc.) related to the production of environmental protection services.

Gross fixed capital formation Of the total capital transactions at 1 088 Million DKK, the main part, 929 Million DKK, was gross fixed capital formation, of which central government and local government accounted for approximately one half each.

Land Central government had a net acquisition of non-produced, non-financial assets (i.e. land), while local government was a disposer of this kind of asset. In both cases the changes were naturally linked to CEPA group 6 protection of biodiversity and landscapes.

Table 15. Current transfers to specialised producers within general government, Denmark 2008, Million DKK

| ESA D.7 | | | | | |
|---|------------------------------------|----------------------------------|------------------------------------|---|--------------|
| | From central govern- ment | From local govern- ment | From other resident units | From non- resident units incl. the European Union | Total |
| To General Government | | | | | |
| Total | 1 146 | 1.1 | 619 | 61 | 1 827 |
| 1 Protection of ambient air and climate | 2 | | 0.4 | 0.1 | 3 |
| 2 Wastewater management | 50 | | 0.1 | 0.0 | 50 |
| 3 Waste management | 65 | | 0.2 | 0.0 | 66 |
| 4 Protection and remediation of soil, groundwater and surface water | 34 | | 1 | 0.2 | 35 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | |
| 6 Protection of biodiversity and landscapes | 96 | 1.1 | 17 | 56 | 169 |
| 7 Protection against radiation (excluding external safety) | | | | | |
| 8 Research and development | 829 | | 354 | 4 | 1 187 |
| 9 Other environmental protection activities | 69 | | 246 | 1 | 316 |
| To Central Government | | | | | |
| Total | 1 014 | 1.1 | 494 | 61 | 1 570 |
| 1 Protection of ambient air and climate | 2 | | 0.4 | 0.1 | 3 |
| 2 Wastewater management | 0.2 | | 0.1 | 0.0 | 0.2 |
| 3 Waste management | 0.6 | | 0.2 | 0.0 | 0.9 |
| 4 Protection and remediation of soil, groundwater and surface water | 34 | | 0.7 | 0.2 | 35 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | |
| 6 Protection of biodiversity and landscapes | 88 | 1.1 | 0.2 | 56 | 145 |
| 7 Protection against radiation (excluding external safety) | | | | | |
| 8 Research and development | 829 | | 354 | 4 | 1 187 |
| 9 Other environmental protection activities | 59 | | 138 | 1 | 199 |
| To Local Government | | | | | |
| Total | 132 | | 125 | | 257 |
| 1 Protection of ambient air and climate | | | | | |
| 2 Wastewater management | 50 | | | | 50 |
| 3 Waste management | 65 | | | | 65 |
| 4 Protection and remediation of soil, groundwater and surface water | | | 0.6 | | 0.6 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | | | |
| 6 Protection of biodiversity and landscapes | 8 | | 17 | | 24 |
| 7 Protection against radiation (excluding external safety) | | | | | |
| 8 Research and development | | | | | |
| 9 Other environmental protection activities | 10 | | 108 | | 117 |

Table 16. Capital transactions related to general government output of environmental protection services by CEPA Groups, Denmark 2008. Million DKK

| | P.51 | K.2 | |
|---|-------------------|--------------------------------|--------------|
| | Gross Fixed | Non-Produced, Non-Financial | |
| | Capital Formation | Assets | Total |
| General Government | | | |
| Total | 929 | 159 | 1 088 |
| 1 Protection of ambient air and climate | 24 | | 24 |
| 2 Wastewater management | - 0 | | - 0 |
| 3 Waste management | - 0 | | - 0 |
| 4 Protection and remediation of soil, groundwater and surface water | 17 | | 17 |
| 5 Noise and vibration abatement (excluding workplace protection) | 22 | | 22 |
| 6 Protection of biodiversity and landscapes | 580 | 158 | 738 |
| 7 Protection against radiation (excluding external safety) | 0 | | 0 |
| 8 Research and development | 51 | 1 | 52 |
| 9 Other environmental protection activities | 235 | - 1 | 234 |
| Central Government | | | |
| Total | 495 | 179 | 674 |
| 1 Protection of ambient air and climate | 24 | | 24 |
| 2 Wastewater management | - 0 | | - 0 |
| 3 Waste management | - 0 | | - 0 |
| 4 Protection and remediation of soil, groundwater and surface water | 3 | | 3 |
| 5 Noise and vibration abatement (excluding workplace protection) | 22 | | 22 |
| 6 Protection of biodiversity and landscapes | 277 | 177 | 454 |
| 7 Protection against radiation (excluding external safety) | 0 | | 0 |
| 8 Research and development | 51 | 1 | 52 |
| 9 Other environmental protection activities | 117 | 1 | 118 |
| Local Government | | | |
| Total | 434 | - 20 | 414 |
| 1 Protection of ambient air and climate | | | |
| 2 Wastewater management | | | |
| 3 Waste management | | | |
| 4 Protection and remediation of soil, groundwater and surface water | 14 | | 14 |
| 5 Noise and vibration abatement (excluding workplace protection) | | | |
| 6 Protection of biodiversity and landscapes | 303 | - 19 | 285 |
| 7 Protection against radiation (excluding external safety) | | | |
| 8 Research and development | | | |
| 9 Other environmental protection activities | 117 | - 2 | 115 |

References

Eurostat, 1994: SERIEE 1994 Version. Statistical Document, 8E. ECSC-EC-EAEC, Brussels - Luxembourg

Eurostat, 1996: European System of Accounts - ESA 1995, ECSC-EC-EAEC, Brussels - Luxembourg

Annex

Classification of environmental protection Expenditures

Transactions related to environmental protection expenditures are classified according to the CEPA2000 (Classification of Environmental Protection Activities and Expenditures). It includes 9 main groups:

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

Details on what each group includes are found at:

http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC

Definition of environmental expenditures

'Environmental protection expenditure' means the economic resources devoted by resident units to environmental protection. Environmental protection includes all activities and actions which have as their main purpose the prevention, reduction and elimination of pollution as well as any other degradation of the environment. This includes measures taken in order to restore the environment after it has been degraded. Activities which, while beneficial to the environment, primarily satisfy technical needs or the internal requirements for hygiene or security of an enterprise or other institution are excluded.

Source: Draft simplified Environmental Protection Expenditure module for inclusion in Regulation 691/2011 on European environmental economic accounts. Eurostat – Unit E2

Characteristic Environmental Services

Characteristic environmental services are defined as the output, which results from a characteristic environmental activity. The purpose of a characteristic environmental activity is to protect the environment, and for identification of environmental protection purposes the CEPA classification is used.

Specialised producers

In order to obtain a further delimitation of the area of environmental protection activity specialised producers are defined as producers, which undertake characteristic activities as their main activities.