

## **QUESTIONNAIRE: Environmental protection expenditure for the manufacturing industry in 2001**

The following is a rough abstract of the Danish draft questionnaire presented to the manufacturing industry during the pilot survey.

The questionnaire changed slightly during the consultation process. The form presented here equals the final draft. The layout is much simplified, in order to fit the Microsoft word format.

### **5.1.1.1 Environment Expenditure 2001**

How much money does the Danish manufacturing industry spend on reducing the environmental damage caused by their production? Do they spend more or less than they did five years ago? Which industries account for the highest investments?

Such questions are difficult to answer, since there are no valid statistical data on the subject. And still the answers have great relevance if the environmental effort is to be optimized and targeted.

The following questionnaire contains questions on the manufacturing industry's expenditure on environmental protection. That is: Expenditure on schemes that aim at reducing the different types of pressure on the environment, eg. reduction of emissions to air and water, waste treatment and -deposition, noise control etc.

In the questionnaire there is a distinction between

- A) investment, and
- B) Current expenditure

In A) investment there is a fundamental split between investment in *pollution treatment* and investment in *pollution prevention* - as sketched below:

In B) there is a fundamental split between *internal expenditure* and *purchased services*

## 1: Pollution treatment investments

The distinguishing feature of pollution treatment investments is that they do not affect the production process itself. They consist of distinct, identifiable components supplementing the equipment used in production. Their purpose is to take care of and to treat the impact on the environment caused by the activities of the enterprise, to prevent the spread of and measure the level of pollution.

### Examples in different environmental domains

#### 5.1.1.1.1 Air

Different types of filters, scrubbers, cyclones, centrifuges, etc.

Coolers and condensers to treat process gases  
Equipment for thermal and catalytic combustion of process gases and other measures involving combustion technology

Measures to restrict dust problems in connection with transport and storage  
Measurement equipment

#### 5.1.1.1.2 Water

All investments in own wastewater treatment plants  
Dams and tanks for storage of wastewater  
Oil separators, sedimentation basins, neutralisation basins, etc.  
Taking care of and treating sludge  
Costs associated with connection to municipal wastewater treatment plants  
Measurement equipment

#### Waste

Equipment for own storage and transport, e.g. special vehicles, containers, transshipment stations, sorting equipment  
Equipment for own treatment, e.g. compressors and all investments in own landfill

#### 5.1.1.1.3 Other

Noise pollution: different materials and measures to reduce noise pollution, e.g. enclosure of equipment, sound-proofing, noise barriers, etc.  
Soil and groundwater: soil decontamination and protection of soil and groundwater from pollutants, e.g. by building embankments, firming surfaces, covering over landfills, etc.  
Landscape and biodiversity: measures to protect biotopes and natural areas, e.g. wetlands, streams, stone walls, pastures and meadows. Preservation of landscape. Examples include purchasing land and burying electrical cables  
Compressors for lower energy consumption, flue gas recycling ventilation, processed air recycling

## 2: Pollution prevention investments

Pollution prevention investments affect the production process itself. They are often specific to the particular enterprise or industry but the following characteristics apply:

- they reduce emissions and discharges generated by the production process itself
- they make it possible to use production inputs that have less of an impact on the environment
- they involve completely new equipment and processes that have less of an impact on the environment.

These investments can be made for various reasons. If the main purpose of the investment is to reduce the environmental impact, you should report the whole amount invested. Often the equipment is fully integrated in the production process and/or cannot be identified as a distinct component. In this case, you should report the estimated share of the total investment that is due to the choice of more environmentally friendly technology (the "extra cost").

### Examples in different environmental domains

#### 5.1.1.1.4 Air

Closed production processes, re-circulation of process gases  
Measures involving combustion technology, control systems and optimisation of operations  
Measures involved in switching to less polluting raw materials and fuels, e.g. water-based products, substitutes for fossil fuels  
Replacement of coolants  
Encapsulation of equipment  
Control of chemical use, including use of precise amounts

#### 5.1.1.1.5 Water

Closed water systems, closed cooling systems, re-circulation of process water  
Measures involved in switching to less polluting production inputs  
Reduced discharges achieved e.g. by control equipment and programmes for reduced and more efficient water use and reduced losses of solid substances  
Maximisation of water circulation  
Countercurrent rinsing  
Multi-stage feeding of chemicals

#### 5.1.1.1.6 Waste

Increased recovery, use of recovered materials in production processes  
Reduced use of raw materials, utilisation of waste  
Switch to less polluting production inputs to make waste less hazardous

#### 5.1.1.1.7 Other

Noise pollution: low-noise machinery  
Soil and groundwater: measures involved in switching to less polluting production inputs

**A. Environmental Investments in 2001**

Larger investments are to be reported in A1 - one investment per row. Minor investments may be summed up, and reported in A2.

If the main purpose with the investment was to reduce the impact on the environment, please report the total amount invested in 2001. If the main purpose wasn't to reduce the impact on the environment, please report the calculated/estimated extra cost connected to the choice of a more environmentally friendly solution.

Mark the investment type with a cross, as *either* preventive *or* treatment - and mark the most important environmental domains. Give a short description of the investment (important!). Definition and examples on investment in 1: prevention versus 2: treatment is given above.

Has the company made any environmental investments in 2001.

- No -----> go to B. Total Current expenditure
- Yes -----> fill in table A1 and table A2 below

**A1 larger environmental investments in 2001**

- List the large investments. One per row.
- If the main purpose with the investment was to reduce the impact on the environment, please report the total amount invested in 2001.
- If the main purpose wasn't to reduce the impact on the environment, please report the calculated/estimated extra cost connected to the choice of a more environmentally friendly technology.

amount invested in 2002 - in 1000 DKK	Investment type. ONLY cross one type		Cross out the environmental domains, the investment primarily benefits				Give a short description of the investment, eg. term, purpose, cause...
	1: Treatment	2: Prevention	Air	Water	Waste	Other	

**A2 Minor environmental investments (not reported in A1) in 2001**

- Minor investments may be summed and reported in one line for each investment type.
- Give a short description of the investment.

Investment type.	Amount invested in 2001	Cross out the environmental domains, the investment primarily benefits				Give a short description of the investment, eg. term, purpose, cause...
		Air	Water	Waste	Other	
1: Treatment						
2: Prevention						

**B. Total current expenditure in 2001**

Here you should report all costs for environmental protection that are not investments. These may be related to existing equipment but they can also be more general. Examples include payments for transport of waste and landfill, operation of purification plants, environmental management and certification, costs for personnel with environmental responsibilities, etc.

For each type of expenditure you should state separately the costs for work by your own enterprise (in-house or internal expenditure) versus payments for purchased services. Please note that personnel costs should also be reported separately.

**Capital costs (depreciation), and payments of general environmental taxes should not be reported.**

Has the company made any environmentally related current expenditure in 2001.

- No -----> go to C. Evaluation
- Yes -----> fill in table B below

**B Current expenditure in 2001**  
- all amounts in 1000 DKK

	payments for purchased services. Eg. cost for wastetransport and landfill, payment to env. consultants.	Total internal expenditure. Eg. staff, material, cost of energy used in environment techn.	--- of which à	"of which" 5: Personel Costs (ONLY internal expenditure)								
1: Operation, maintenance, inspection and control			--- of which à	<table border="1"> <thead> <tr> <th>Air</th> <th>Water</th> <th>Waste</th> <th>Other</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Air	Water	Waste	Other				
Air	Water	Waste	Other									
2: General env. administration, education, information etc.												
3: Research and development												
4: Other												

**Instructions:**

1: Operation, maintenance, inspection and control

Costs for personnel, materials, energy used in operations and maintenance of existing plant and general environmental supervision. Inspection fees paid to public authorities should be given under purchased services.

2: General env. administration, education, information etc.

State here costs for general information, investigation, education and training of own personnel, environmental management and certification, etc. This includes costs for environmental departments, environmental coordinators, etc., that are not specifically related to operations and maintenance or research. Purchased services here can refer to environmental education and training, environmental certification or environmental studies conducted by external agents.

3: Research and development

Total costs for R&D, tests, etc., aimed at reducing the impact of the enterprises operations on the environment. Purchased services here can refer to financing of activities at other enterprises in the group.

4: Other

Report here all other current costs for environmental protection, including estimated extra cost of purchasing less polluting, more expensive production inputs and fuels. Soil decontamination included!

5: Personel Costs

The costs for the enterprises own work on environmental protection reported above include personnel costs. This question asks for a separate statement of these personnel costs, incl. social insurance payments and other peripheral costs.

**C. Evaluation**

How long time did you approximately use for gathering the information and filling in the tables?

\_\_\_\_\_ hours and \_\_\_\_\_ minutes.

Would you like to receive an electronic version of the statistical document that is to be produced on the basis of these data, then please specify the appropriate e-mail address here: \_\_\_\_\_