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The environment industry in Sweden 1999

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THE ENVIRONMENT INDUSTRY IN SWEDEN 1999

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The Environment Industry in Sweden 1999

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Preface

Statistics Sweden has developed physical environmental accounts since 1993. Initially, the focus has been on developing environmental accounts for energy and certain emissions. This is the second report of results on the developmental work aimed at incorporating descriptions of the environment industry into the Swedish environmental accounts.

The previous report included an assessment of the total environment industry in terms of employment and turnover, mainly focusing on the core environment industry. The report also made a first attempt to compile a list of environment enterprises outside the core environment industry.

This second report is based on the work described in the previous report. The continued work, however, places greater emphasis on improving the Environment Industry Database and identifying more enterprises and establishments outside the core environment industry. The result is a more accurate Environment Industry Database, making it possible to analyse the environment industry according to environment segments as defined by OECD/Eurostat.

The report has been prepared on commission from Eurostat, which supports and co-ordinates development of environmental statistics in the EU member states. The European Commission (DGXI) has contributed financially to the project. Lena Tängdén and Peter Svensson have contributed in preparing this report.

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1 Summary

Interest in the environment industry has grown over the last few years, with attention often focusing on the relationship between the environment, industry and employment. There is, however, a certain lack of information and this has made it important to produce basic figures about the environment industry.

Statistics Sweden began examining the environment industry in Sweden in 1998 and the first work, performed with a contribution from Eurostat DGXVI, was published as a Eurostat working paper early in 1999. The present report was produced with the help of a contribution from Eurostat DG XI and continues the previous work.

The work can be described in five steps:

1. Identifying names of enterprises/establishments with business activity under the OECD/Eurostat definition of the environment industry.

Sources in previous work: Internet searches, telephone directory, the Swedish Business Register; key words and core branches[1], the Swedish EnviroNet, the EU-report[2], manufacturing statistics and energy statistics.

Sources added in this study: Databases (Business Calendar, Företagsfakta, PAR/Bizbook), business organisations (KRAV, Demeter, The Swedish Windpower Organization, Solar Energy Association of Sweden, Eco-Tourism), enterprises participating in the Swedish fair for environment technology (Eco-Tec 99), Statistics Sweden´s survey of waste management, advertisments and articles in the press and on television.

2. Dividing the identified enterprises/establishments into environment business activity and status[3] or part of the enterprise that comes under the definition.

3. Matching the list of identified enterprises/establishments with the Swedish Business Register in order to obtain an enterprise/establishment number.

4. The result is a database with two parts, one for enterprises and one for establishments.

The two parts are basically, but not wholly compatible/identical, due to the fact that some enterprises have many establishments dealing in different business activities. Important examples are municipalities (equivalent to

[1] The core industries are considered to contain 100% environmental industry, mainly waste treatment, wastewater and recycling. NACE codes 25.12, 37, 51.57 and 90.
[2]Ecotec, BIPE and IFO (1996). The Swedish Eco-Industry: Country Summary
[3] See chapter 4.2

enterprises), which can have establishments dealing in a lot of different activities, such as schools or nursing (which are not included here), and wastewater plants, which are included. In these cases the establishment part of the database is more substantial then the enterprise part.

5. Linking the enterprise/establishment numbers with other registers, the Register for value added tax (VAT) in order to produce data about turnover and export-import figures, and a database with data on education among the employees (LOUISE database).

Besides linking register data in order to describe and analyse the different segments/environment activities, the Environment Industry Database can also be used as a sample frame in future surveys.

The results were in brief:

- 8 330 enterprises were identified and found in the Swedish Business Register. 6 727 of these were active enterprises (i.e. they do not have any closure date)

- Over 60 per cent of the identified enterprises and establishments were classified as primary environmental industry. The others were classified as secondary, producing multi-purpose products or not finally defined.

- 4 462 of the 6 727 enterprises were found in the VAT Register. Total turnover, exports and imports were collected for the enterprises in the VAT Register.

- Total turnover for the identified enterprises in the VAT Register was SEK 163 billion (1998). This was four per cent of the total turnover in the VAT Register, and eight times the estimate in Ecotec, BIPE and IFO (1996).

- Total exports were nearly SEK 28 billion. SEK 14,4 billion were exports to the EU, and the remainder exports to countries outside the EU (1998).

- EU imports to the identified enterprises were just over SEK 7 billion in 1998. This makes the identified enterprises net exporters.

- 10 571 establishments were identified and found in the Swedish Business Register. Data about number of employees, geographical distribution and level of education were produced on establishment level.

- Nearly 95 000 persons were employed at establishments identified as environment industry**.** This equals between two and three per cent of all employees on the labour market as a whole.

2 Introduction and background

Interest in the Environment Industry has grown in recent years, with attention often focusing on the relationship between the environment, industry and employment. There are hopes that the development of the environment industry will make it possible both to reduce environmental pressures and at the same time to increase employment and exports.

In Sweden, implementation of the government policy of building a sustainable society has resulted in action plans involving all policy fields. There are also policies explicitly directed towards the environment sector, such as government grants for the creation of greenjobs[4], suggestions to support the internationalisation of environment-driven enterprises[5] and quite newly established authorities such as, for instance, the Swedish Delegation for Sustainable Technology.

Eurostat and OECD have worked on developing harmonised definitions and a theoretical framework for the environment industry. Several countries are now working on or have already done pilot work in the area; Sweden is one of these countries, working with the OECD/Eurostat definition as its point of departure.

The first pilot work "The Environment Industry in Sweden" was finished at the end of 1998 and concentrated mainly on investigating the core industries[6], though it also made a first attempt to cover non-core branches. This report summarises the continuation of this line of work done by Statistics Sweden on assessing the environment industry.

In the previous report, the theoretical framework on definitions and classifications produced by OECD/Eurostat was examined. For more details, the previous report is recommended.

The general definition given by OECD/Eurostat is as follows:
"The environmental goods and services industry consists of activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air, and soil as well as problems related to waste, noise and eco-systems. This includes cleaner technologies, products and services which reduce environmental risk and minimise pollution and resource use."[7]

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[4] Ministry of the Environment (1998).

[5] Ministry of Industry and Trade (1998).

[6] The core industries are considered to contain 100 % environmental industry, mainly waste treatment, wastewater and recycling. The core industries are NACE code headings 25.12, 37, 51.57, and 90. Where possible we use an even more detailed level of these headings, which is the Swedish SNI-code. The SNI-code is the same as NACE, but with a last digit added.

[7] OECD/Eurostat (1999). The environmental goods & services industry, page 9.

Like the previous study, this study contains both enterprises and establishments. The reason for using both enterprises and establishments is the possibility of producing data. Since the establishment is a smaller and therefore more specific unit than the enterprise, the establishment is used where possible. Data about employees and geographical location can be given for establishments. Economic data, such as turnover, exports and imports are only available for enterprises.

Below there follows a short summary of the previous report to facilitate an understanding of the connections between the two reports, as this report is a continuation of the report published in early 1999[8].

In the previous report a first attempt was made to estimate the size of the environment industry, both inside and outside the core industries. The result was a list compiled from the core branches and a selection of enterprises in the Business Register with "environment" or "ecology" in the enterprise name, environmental headings in the telephone directory, searches on the Internet, a list of environmental consultants[9], enterprises in the EU report[10], enterprises with product codes considered to be 100 per cent environmental[11] and energy producers using more than 50 per cent renewable energy according to the energy statistics.

The work has now continued with the first list of enterprises/establishments as the point of departure.

2.1 Results from the previous report

The previous report estimated that the core industries had in total over 9 000 employees at enterprises covered by the relevant NACE codes, but if all establishments in the core industries were included the number of employees was 13 500 (according to the Swedish Business Register). The number of employees in branches outside the core industries was nearly 30 000. The largest shares were found in the branch Electricity, gas and water supply (NACE 40). Many employees were also found in enterprises producing environment consultantcy services, environmental testing and analysis, industrial cleaning and producers of equipment for wastewater treatment and waste treatment. The environmental industry had nearly 39 000 employees in total, or one per cent of the Swedish labour force, distributed between nearly 3 500 enterprises.

In the core industries, about 60 per cent of the employees worked in the private sector and the level of educational attainment was rather low. The

[8] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

[9] The Swedish Environmental Protection Agency (1998).

[10] Ecotec, BIPE and IFO (1996). The Swedish Eco-Industry: Country Summary

[11] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

share of employees with a maximum of 9-year compulsory school came to 43 per cent in the core industries and only 5 percent had university (tertiary, post-secondary) education.

The turnover for the environment industry (based on enterprises) totalled about SEK 90 billion in 1997, of which the turnover in the core industries was about SEK 16 billion.

Estimation of the total environmental industry, core industries and other branches 1997

SNI-code	*Enterprises in the Business register*	*Enterprises in the VAT register*	*Number of employees in the Business register 1996*	*Share of employees at environmental establishments, %*	*Total turnover from the VAT register, Million SEK*
Core industries	1 910	1 494	9 228	100	16 203
Non core industries					
NACE 21	7	10	3 330	7	5 991
26	10	11	1 214	7	2 198
29	43	52	3 943	4	7 195
40	31	37	6 363	25	41 711
74	547	549	4 928	2	4 351
80	15	16	4 058	3	1 372
Other SNI	919	904	5 605	0-2	10 657
Total excl. core industries	1 572	1 579	29 441	1	73 476
Total incl. core industries	3 482	3 073	38 669	1	89 679

Source: Eurostat 2/1999/B/3 (1999). The Environmental Industry in Sweden

2.2 Objectives

The objective of this report is to continue and improve the work described above and to produce a database of enterprises and establishments that come under the OECD/Eurostat definition of environment industry. This means identifying more environment producers - enterprises and establishments - in order to give better coverage of the environment industry. The enterprises are also classified according to environment segment (according to the manual[12]).

The previous report supplied a good basis for this report's purpose of producing a more regular data production system on the green sector, where all the identified enterprises are divided according to NACE, environmental activity or segment and status or part of the enterprise that comes under the definition.

The Environment Industry Database opens up many possibilities. The main objective of this study is to produce data and describe the environment industry according to the number of enterprises and establishments, turnover, export and import and employees, all divided by NACE codes and environment segments. A further objective is to make a first attempt to

[12] OECD/Eurostat (1999). The environmental goods & services industry.

produce data about the level and field of education for the whole environment industry, including establishments outside the core branches.

3 Method and sources

In this chapter the method and sources used in this report are described in detail. The procedure is summarised below:

1. Identifying names of enterprises/establishments with business activity under the OECD/Eurostat definition of the environment industry.

Sources in former work: Internet searches, telephone directory, the Swedish Business Register; key words and core branches, the Swedish EnviroNet, the EU-report, manufacturing statistics and energy statistics.

Sources added in this study: Databases (Business Calendar, Företagsfakta, PAR/Bizbook), Business organisations (KRAV, Demeter, The Swedish Windpower Organization, Solar Energy Association of Sweden, ECO-Tourism), enterprises participating in the Swedish fair for environment technology (Eco-Tec 99), Statistics Sweden's survey of waste management, advertisments and articles in the press and on television.

2. Dividing the identified enterprises/establishments into environment business activity and status or part of the enterprise that comes under the definition.

3. Matching the list of identified enterprises/establishments with the Swedish Business Register in order to obtain an enterprise/establishment number.

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The two parts are basically, but not wholly compatible/identical, due to the fact that some enterprises have many establishments dealing in different business activities. Important examples are municipalities (equivalent to enterprises), which can have establishments dealing in a lot of different activities, such as schools or nursing (which are not included here), and wastewater plants, which are included. In these cases the establishment part of the database is more substantial then the enterprise part.

5. Linking the enterprise/establishment numbers with other registers, the Register for value added tax (VAT) in order to produce data about turnover and export-import figures, and a database with data on education among the employees (LOUISE database).

Besides linking register data in order to describe and analyse the different segments/environment activities, the Environment Industry Database can also be used as a sample frame in future surveys.

3.1 Results of identifying enterprises and establishments in the environment industry

Using the different sources described below, a list identifying a total of 8 330 enterprises or establishments was produced. Of these, 6 727 enterprises were included as active enterprises in the Swedish Business Register and 1 219 were classed as establishments. The degree of identification differed between the sources and many enterprises/establishments were found in more then one source.

Source	Initial list	Identified in Swedish Business Register	Identification degree between main list and Swedish Business Register	Identified enterprises in per cent of total identified enterprises
Other sources (1910 from the last report and 82 new)	1992	1784	90	21
Telephone directory	950	768	81	9
Business Calendar	270	179	66	2
"FöretagsFakta"	2259	1445	64	17
PAR	2019	1356	67	16
Bizbook	1038	943	91	11
The Swedish EnviroNet	255	160	63	2
Eco-Tech exhibition 99	224	148	66	2
Survey of waste management (Statistics Sweden)	477	383	80	5
Ecotourism	10	6	60	0
SEAS	71	57	80	1
KRAV	2881	1045	36	13
DEMETER	131	43	33	1

3.2 Earlier work ”The Environment Industry in Sweden” [13]

The work of collecting enterprises to create the database for the environment industry was based on the previous report Statistics Sweden did in this area, namely, *The Environment Industry in Sweden* (1999). In that study, six different sources were used in identifying and describing the core industry and other identified environmental enterprises.

The main sources were;

- The Statistics Sweden Business Register, through the key words ”eco” and ”environment”
- The Swedish EnviroNet
- The EU-report[14]
- Manufacturing statistics[15]
- The telephone directory
- Energy statistics

[13] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

[14] Ecotec, BIPE and IFO (1996). The Swedish Eco-Industry: Country Summary

[15] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

A total of 1 910 enterprises in the core branches and 1 572 other environment enterprises were identified and listed in that study. This was the base which has been extended and improved in this project.

3.3 The Internet databases ”Business Calendar” and ”Företagsfakta”

One way of identifying enterprises outside the core branches was by using these two databases available on the Internet. They were used to identify enterprises by means of keywords connected to the description of the activity of each enterprise given in the database. The description of the activity has also been used to divide the enterprises according to status and environmental activity. This has been done not only for the enterprises identified in this study, but also for the enterprises which were identified in the previous study.

Both databases are maintained by companies that deal in selling addresses, mainly for commercial purposes. The databases include some basic data about the enterprise and, which is important for this line of work, a description of their business activity. Sometimes this description includes which labels and brands they deal with, more often it is a description of the services they can supply, depending on what the enterprise itself has chosen to emphasise.

The Business Calendar contains about 30 000 enterprises and Företagsfakta contains about 180 000 enterprises. To put this in perspective the Swedish Business Register, maintained by Statistics Sweden, contains data about all registered enterprises in Sweden, over 800 000 enterprises. This register, however, does not include any description of activities apart from the NACE code. The NACE code is not specific enough to identify environment enterprises outside the core branches.

The key words used in this study were:

Aluminium
Bio-gas
Compost
Ecology
Electric cars
Energy forest
Environ
Environment
Ethyl alcohol
Ethyl alcohol driven busses
Green
Low energy
Nature
Purification
Rape
Recycling
Salix (sort of energy forest crop)
Second hand
Solar energy
Solar panel
Wind power

These keywords were selected because they are commonly used in describing the environment area. Some words were chosen because they focus on activities that were not very well covered in the previous study of the environment industry in Sweden

The described activity of each individual enterprise was judged according to the definition given by OECD/Eurostat. Some enterprises were found not to fit under the definition. These were ignored. The enterprises that were found to fit under the definition were selected and their name and description was copied along with some other data such as address. This procedure was also used for the other Internet databases.

2 529 enterprises/establishments were identified from these sources, 2 259 in ”Företagsfakta” and 270 in the Business Calendar. Of this total, 1 445 from ”Företagsfakta” and 179 from the Business Calendar could be found in the Swedish Business Register. Only enterprises found in the Swedish Business Register are included in the Environment Industry Database. The reason is the need for a proper identification that can be linked with other data sources.

3.4 The Internet databases PAR/Bizbook

Another way to classify enterprises from the former study, and to identify new enterprises in this study, was through other databases. Two were used for identification and classification, by means of the principal industry information for the enterprises; these were PAR and Bizbook, owned by the Bonniergroup. The principal industry information in these databases is described not only by NACE code, but also by a more detailed code with an extra digit added to the NACE code.

The PAR database contains 680 000 enterprises and 1 300 000 decision makers within these enterprises. It operates within three fields of activities:
1. Addresses
2. Campaign management
3. System information

Bizbook is a free service PAR offers on the Internet. It is a digital catalogue that functions as a guide to Swedish economic life. It contains information about 672 000 enterprises, their principal industry and 1 000 000 decision makers in those enterprises. In these registers, 3 057 enterprises/establishments were identified (2 019 from PAR and 1 038 from Bizbook) and of these, 2 299 were found in the Swedish Business Register (1 356 from PAR and 943 from Bizbook).

3.5 The Swedish EnviroNet

The Swedish EnviroNet is located on the Internet. It is financed via the budget of the Swedish Environmental Protection Agency and is governed by a board consisting of representatives of different important user groups.

On the Swedish EnviroNet, data and information on the Swedish environment and environmental work in Swedish governmental agencies, companies and non-governmental organisations (NGOs) are collected. The Swedish EnviroNet is catalogued in groups. In the Environmental Catalogue it is possible to find links to web documents and members' sites. In the E-mail catalogue (English version pending), addresses of persons dealing with environmental issues are listed. The Swedish version contains one facility not available in the English version, namely the Internet version of ”Who Does What in Environmental Sweden” - a complete directory of governmental agencies, organisations and consultants dealing with environmental issues.

The report ”Who does what in Environmental Sweden?” was used to find NGOs and consultants dealing with the environment, and their field of activity. 255 enterprises were identified, but only 160 were found in the Swedish Business Register.

3.6 Eco-Tech exhibition and Ecology 99

The tenth Eco-Tech trade fair, ”Eco-Tech 99”, together with the Ecology Conference, was held on September 7-10, 1999 at the Swedish Exhibition and Congress Centre in Gothenburg. This is the only trade fair in Scandinavia dedicated to the entire environmental sector and the Ecology Conference is Scandinavia’s largest environmental conference, which attracts speakers who are leading in their fields.

At Eco-Tech 99, groups, companies, organisations, authorities, municipalities and public companies has the opportunity to display the work they are doing for the environment. The trade fair also offered companies the chance to meet customers and people interested in their work in a more direct and personal way.

About 250 exhibitors participated in the Eco-Tech 99 fair. Some of these exhibitors did not fit into the definition for environment industry, but 224 of them did. Of these exhibitors 148 enterprises were found in the Swedish Business Register.

3.7 Survey of waste management (Statistics Sweden)

During 1999, Statistics Sweden has been working on a survey of solid waste management commissioned by The Swedish Environmental Protection Agency. The purpose is to make an inventory of solid waste management in Sweden. The solid waste survey found 477 treatment establishments and/or enterprises which were categorised as establishments/enterprises dealing with solid waste management. 383 of these were found in the Swedish Business Register and integrated into the Environment Industry Database.

3.8 Ecotourism

In Sweden there is an organisation called The Swedish Ecotourism Association. It was established in 1996 to support ecotourism in Sweden internationally and to support increased environmental in travel thinking. The Swedish Ecotourism Association has provided information on the individual members that might fit the US Ecotourism Society's definition of ecotourism[16]. The last study on the environment industry identified ecotourism enterprises found in the telephone directory. In this study findings from the telephone directory and the Swedish Ecotourism Association's members were combined and ten enterprises did fit the definition. Of these ten, six were found in the Swedish Business Register.

3.9 The Swedish Windpower Organization

Today most of Sweden's energy production comes from hydroelectric and nuclear power. However, energy resources such as wind energy are growing.

Sweden is rather well suited for windpower utilisation with its sparsely populated, windy coasts and mountain regions. In April 1999 there were 434 windpower units in Sweden. However, the development of windpower stations has been marginal . Only 0,2 per cent of Sweden´s electricity came from wind energy in 1998. However, the Swedish Commission for Windpower has, concluded (SOU 1999:75), that Sweden needs to add to its windpower stations for energy production. The windpower investigation suggests an enlargement of windpower energy production to 10 TWh per year, from today's 0,4 TWh per year, an increase of 2400 per cent.[17]

The Swedish Windpower Organization (SVIF) is a non-profit and politically non-committed organisation and a member of the Swedish Energy-Organisations' National Association, SERO.

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[16] The Swedish Ecotourism Association (1998), page 19.

[17]http://www.regeringen.se/galactica/service=irnews/owner=sys/action=obj_show?c_obj_id=29754

The aims of SVIF are to: spread general information about windpower, work actively locally, initiate or co-operate in projects, and look after windpower plant owners' interests, locally as well as on the national level.

From SVIF, 33 enterprises and organisations were identified, 20 of which were found in the Swedish Business Register. Five of these enterprises are producers of energy and the other 15 are producers of powerplants, or parts of powerplants.

3.10 Solar Energy Association of Sweden - SEAS

Radiation from the sun produces 15 000-20 000 times more energy than the global worldwide population consumes, energy that, to some extent, can be utilised. There are two ways of utilising solar energy: transformation through solar cells to produce electricity or through solar collectors for heating.

The Solar Energy Association of Sweden represents the Swedish solar industry, as well as Swedish research institutes working with solar energy, and is a member of the European Solar Industry Federation (ESIF). The organisation has produced a member matrix for 1999. Out of a total of 71 enterprises in this matrix, 40 were found in the Swedish Business Register. Ten of the enterprises deal with energy production. The others are producers of solar cells, solar collectors or other products for this type of industry.

3.11 Newspaper articles, Internet and television

While work on the report was in progress, a continuous search for enterprises was made in newspapers, on television and the Internet and this also resulted in the identification of some enterprises that could be found in the Swedish Business Register and included in the Environment Industry Database.

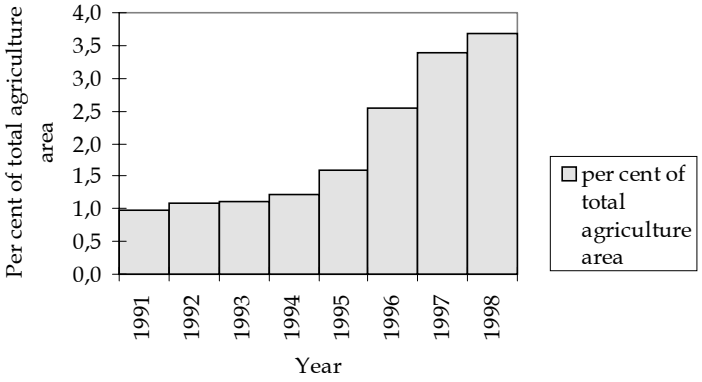
3.12 Sustainable agriculture and forestry

Agriculture
In order to sell products as ecological, production must be approved and controlled by an authorised organisation. In Sweden this is done by KRAV and Demeter.

The KRAV logo is an eco-labelling system handled by KRAV, an active member of the International Federation of Organic Agriculture Movements (IFOAM). IFOAM is an umbrella organisation which brings together organisations for farmers, scientists, educationalists and certifiers from almost every country in the world who meet the IFOAM Basic Standards and also the EEC regulation for organic production.

KRAV is a key player in the organic market in Sweden, organised as an incorporated association with three tasks: to set standards for organic agriculture, to issue certification according to the standards, and to spread information about production and the KRAV label. The KRAV-certified area has increased rapidly in recent years.[18]

Percentage KRAV-certified area



Source: http://www.krav.se

The other eco-label is Demeter, which is handled by the Swedish Demeter Association. The association was established in 1957 and has (at the moment) the most rigorous rules for organic production. It has been a source of inspiration for the development of and co-operation with KRAV.

Both KRAV and Demeter are authorised by the Swedish National Board of Agriculture and the Swedish National Food Administration to carry out inspection of organic production in Sweden.

The latest information on certified agriculture in Sweden is from 1998. In 1998, 102 554 hectares, or 3,7 per cent of the total agricultural area, was KRAV-certified in Sweden. This area was divided between 2 571 approved farmers. In an effort to include the latest information, we contacted KRAV and Demeter, and found that in July 1999 a total of 2 935 enterprises were KRAV or Demeter certified (2 804 KRAV, 54 Demeter and 77 with both certifications).

The 2 935 KRAV and/or Demeter certified enterprises were linked with the Swedish Business Register. Only 1 059 were found, 1 016 being KRAV-certified, 14 Demeter and 29 both.

This means that only about 36 per cent of the certified enterprises could be included in the Environment Industry Database. One reason for this is that many farms are run as estates of deceased persons and not under the name of the person who actually runs the farm (normally the heirs). KRAV and/or

[18] http://www.krav.se/pl/sprak/english.htm

Demeter certification, on the other hand, is often issued in the name of the heirs.

Acreage support for ecological agriculture
Since 1995 there is also yearly acreage support for ecological agriculture within the EUs environment program. This support is administrated by the Swedish National Board of Agriculture and the County Administrative Boards. The support is only given for ecologically cultivated area and not for grazing land. The principle is formulated as a payment for a certain environment service and not for production of ecologically grown products.

In 1998, 8,6 per cent of the total area under cultivation was given acreage support for ecological agriculture. This also includes some of the area that was KRAV and/or Demeter certified. The enterprises given acreage support are not included in this study since they were not considered to fall under the OECD/Eurostat definition of environment industry.

Forestry
The forestry industry in Sweden is in charge of 22 621 000 hectares of productive woodland (i.e. where timber production is at least 1 m^3 per hectare and year)[19]. This is about half of the surface area of the country.

There are two kinds of forestry certification in Sweden, the Swedish FSC certification (managed by Skogssällskapet[20]) and the Swedish PEFC certification (managed by the Swedish Forest Owners' Association[21]).

The reason why there are two different kinds of certification systems is that the Swedish Forest Owners' Association considered the FSC to be more appropriate for larger scale industrial forestry (which accounts for about 40 per cent of total timber production) and not for non-industrial private ownership. Therefore the Swedish Forest Owners' Association started the Swedish PEFC certification system, which is based on the European PEFC system.

In total, there are 9 602 463 hectares of certified forest in Sweden today (1999), with either FSC certification (95,7per cent of the certified forest) or the Swedish PEFC system (4,3 per cent). This means that almost 43 per cent of the total forest area (22 621 000 hectare) is certified. Of this certified area 9 large enterprises own 9 023 300 hectares, i.e. 94 per cent. The rest is owned by 3 449 non-industrial owners.

[19] http://www.svo.se/
[20] http://www.skogssallskapet.se/
[21] http://www.skogsagarna.se/

Problems with incorporation of forestry enterprises
Certification of wooded area is relatively new in Sweden and it is therefore rather difficult to incorporate forestry enterprises in the Environment Industry Database. With regard to the nine industrial forestry enterprises, these have almost 100 per cent certified forests. Where the 3 449 non-industrial owners are concerned it is more difficult to estimate the certified part of the total forested area owned by these enterprises. One reason is the group certifications these enterprises can be part of. For this reason, none of the forestry enterprises are incorporated in the Environment Industry Database at this time.

The Forest Stewardship Council (FSC)
The Forest Stewardship Council[22] is an international non-profit organisation founded in 1993 to support environmentally appropriate, socially beneficial and economically viable management of the world's forests. FSC also supports the development of national and local standards that implement the international Principles and Criteria of Forest Stewardship at the local level. These standards are developed by national and regional working groups which work to achieve consensus amongst the wide range of people and organisations involved in forest management and conservation in each part of the world.

The FSC accreditation system is based on the relevant ISO guides, which cover the environmental goals for forestry within the framework of the environmental management system and are therefore fully compatible with ISO and EMAS.

The FSC certificate for forestry is voluntary, but is undergoing tremendous development. In December 1998, 5 651 300 hectares of productive forest was certified in Sweden. In June 1999 there were 9 194 300 hectares, an increase of 62,7 per cent in 6 months. All the land owners are listed and available on FSC Sweden's web site.

The Pan European Forest Certification (PEFC)[23]
Since July 1998, forest owners and forest industry organisations in a number of European countries (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Latvia, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland and Great Britain) have been preparing a Pan-European certification framework. In these countries the forest area under non-industrial private ownership covers approximately 100 million hectares (or approximately 75 per cent of the total) and a total annual cutting volume of about 270 million m^3.

[22] http://www.fsc-sweden.org
[23] http://www.faf.de/paneuro_e.htm

In October 1998, the PEFC Scheme was presented. By developing a European certification standard, the European forestry industry groups hope to create an international alternative to the already established FSC.

PEFC offers a framework for the establishment of comparable national certification systems and their mutual recognition. It contributes to the promotion of economically viable, environmentally appropriate and socially beneficial management of forests. A major target is to establish an internationally credible forest certification scheme for forest certification initiatives in progress in different countries and for their mutual recognition.

3.13 Environmental certification systems

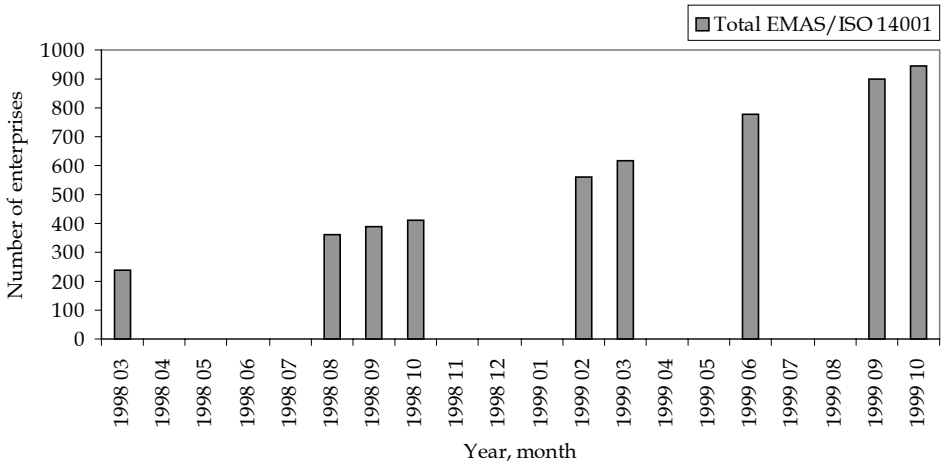
Today, there are two different kinds of environmental certification systems for enterprises in Sweden:

- EMAS
- ISO 14 001

There are also two special certification systems for forestry (FSC Sweden and PEFC Sweden) and agriculture (KRAV and Demeter).

As mentioned in the previous report, the number of environmentally certified enterprises has increased rapidly over the last few years. During the period from March 1998 to October 1999, 709 ISO 14 001 and/or EMAS certified enterprises have been registered. This is an increase of almost 400 per cent over a period of twenty months.

Environmental certification systems ISO 14 000/EMAS



Source: http://www.sis.se

The organisations responsible for these environment certificates have been contacted in this project and information on individual enterprises is available in the publication "Environment certified enterprises in Sweden 1999"[24]. Although the certified enterprises are not automatically a part of the definition of environment industry enterprises given by the OECD/Eurostat working group, it might be interesting to use these enterprises in future work, for instance to build up a database that combines different segments of the environment industry sector with "environmentdriven" enterprises.

3.14 Environmental Funds

The enterprises included in the environmental funds have not been incorporated in the Environment Industry Database. Most of these enterprises do not fit the OECD/Eurostat definition, while others are located outside Sweden. However, it is of interest for this line of work to note the growing interest in environmental investments among fund commissioners.

There are 10 funds in Sweden today that can be classified as environmental funds. They differ widely when it comes to regulations and rules on which companies the funds are allowed to contain. This makes it difficult to compare them. Roughly there are four different kinds of environmental funds:

1 Funds that invest in traditional enterprises which conduct environment analysis/accounts.
2 Funds that have no, or few, restrictions regarding investments in stock. Instead they give part of the fund capital stock to different environment organisations or scholarships.
3 Funds that invest only in companies involved in the environment sector, though the companies belonging to this group differ widely between the different funds.
4 Funds that are normally called ethical funds, i.e. funds that do not invest in companies that are involved in weapons, the carindustry, etc.

The market for environmental funds will probably increase in the near future, as awareness of environment issues among the Swedish population increases. Another area where awareness of environment issues has started to infiltrate is among insurance companies.

The following environmental funds are available in Sweden today:

"Carlson Världsnaturfonden"
A non-profit unit trust that contributes to WWF´s work saving threatened nature and species for future generations. This collaboration (since 1988) between Carlson funds and WWF results in a yearly income to WWF consisting of a 2 per cent share of the total fund capital. So far this

[24] Challennium Information (1999).

collaboration has generated over SEK 26 million for WWF´s operations. The investments are made in Swedish stock, but never in stock/enterprises which invest or are involved in activities that are in opposition to WWF´s principles.[25]

"Banco Svensk Miljöfond"
In this fund, investments are made in Swedish companies that are included in the environmental organisation "The natural step"´s that builds top list, which is a yearly long-term analysis that builds on 4 basic conditions for sustainable environmental development. The company resource-dependence and products are important, as are the company strategy when it comes to environment work and thinking. Of the yearly administration fee that the fund company charges, about one third goes back to "The natural step" as support for their work.[26]

"Banco Ideella Miljöfond"
One per cent of the fund capital goes to the "Swedish Association of Graduate Engineers" which presents a yearly environment prize. Until the middle of last year, this fund invested in all kinds of enterprises, but the sector changes and therefore this fund also started to invest in foreign eco-technique.[27]

"FöreningsSparbanken (Robur), Miljöfonden"
This fund invests in enterprises which are in a leading position when it comes to environment, in each Scandinavian industry (at least half of the enterprises must be Swedish). The companies' activity shall be based on active environment thinking according to the twenty-one environment criteria the Robur environment analyser and council have established. These criteria are divided into 5 different areas: environment leadership, environmental certification systems, openness to environmental work, environmental adjustment of products and processes and finally, continuous environment work.[28]

"The Church of Sweden, Talenten miljö"
A co-operation between the Church of Sweden and "FöreningsSparbanken". It is rather comparable with the "Robur" fund when it comes to environment questions, but it also takes ethical questions into consideration.

"LF/Wasa, Miljöteknik"
An environmental fund which makes worldwide investments in enterprises that develop environment technology, especially in water purification and recycling. Other areas where investments are made are waste management,

[25]http// www.carlsonfonder.se
[26] http//www.banco.se
[27] http//www.banco.se
[28] http//www.robur.se

renewable energy, communication technology, environment consulting and alternative products.[29]

"Salus/Ansvar, Resurs&miljö"
The fund started in 1998 and invests in stocks, stock-related financial instruments and depot certificates issued by Nordic enterprises whose business in one way or another spares the environment or the earth's resources. Salus/Ansvar collaborates with Ecobalance, a company that analyses Nordic companies on the stock exchange market from a resources and recycling perspective.[30]

"S E B Miljöfond"
This started in 1991 and consists of two different sections, Fund Miljö (fund saving) and Life Miljö (pensions saving), which are actually the same fund. The long-term strategy is based on investments in innovative environment technology companies worldwide, in branches such as recycling, waste management, water purification, environment technology, environmental R&D, cleaner/resource-efficient technologies and also renewable energy.[31] A placing committee, based on representatives from S E B and WWF, is responsible for the orientation of the fund and which companies comply with the orientation. The Bank also gives away 12 per cent of its commission as support to WWF.

"S E B Östersjöfond"
A fund that invests in different branches in countries around the Baltic Sea, as a contribution to a cleaner and better environment in the area. This is also a co-operation between S E B and WWF, but the terms are not the same. Every year, one per cent of the fund capital goes to WWF's Baltic Sea programme.[32]

"KPA (Kommunsektorns Pension AB)" [33]
A fund that is "a bit outside" the ordinary environment funds.

The four different KPA funds are mainly built on ethical criteria one of which is consideration for the environment. KPA investments in enterprises which are actively working to reduce their negative influence on the environment. This means that they have defined their most important environment goals, strategies, and ways to solve the problems. KPA is the only fund commissioner in Sweden that has ISO 14001 certification and where all funds in one way or another involve consideration of the environment. KPA uses 22 criteria, divided into five groups, to judge which enterprises the fund is allowed to contain.

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[29] http://www.lansforsakringar.se/fonder
[30] http://www.salusansvarohman.se
[31] http://swp4.vv.sebank.se/cgi-bin/pts3/pow/index.asp
[32] http://swp4.vv.sebank.se/cgi-bin/pts3/pow/index.asp
[33] http:/www.kpa.se

3.15 Recycling insurance ”Återvinningsförsäkring”

The insurance company ”Länsförsäkringar” has recently introduced a new kind of insurance ”Återvinningsförsäkring”[34]. The main idea of the insurance is to reduce producers’ risks when it comes to costs for their responsibility for what they produce and also to encourage the development of products that are more adapted to the environment. It is hard to estimate the recycling cost for products with a long life cycle and the insurance eliminates this uncertainty. The producer pays a fee for every product (the amount depends on the product) to Länsförsäkringar, who take over the responsibility for recycling the product in the future. Recycling insurance has not been included in the Environment Industry Database.

[34] http://www.lansforsakringar.se/miljo/atervinningsforsakring/atervinning.htm

4 Divisions and classifications

4.1 Dividing the environment enterprises and establishments into environmental activities

The segments of the environment industry were described in the previous report. The same schedule is reproduced below. This work is built on the former report and efforts have now been made to divide the identified enterprises and establishments into these segments.

Segments of the environment industry

Code	Environmental activities	Products, services and construction linked to for example:
A	**Pollution Management**	
A1	Air pollution control	Treatment and/or removal of exhaust gases
A2	Waste water management	Emissions to water. Collection, treatment and transport of wastewater. Wastewater reuse systems
A3	Waste management	Collection, treatment, management, storage and recovery of waste. Excludes manufacture of new products from recovered material
A4	Soil and groundwater	Emissions to soil and groundwater. Soil sanitation.
A5	Noise and vibration	Reduction of (mainly outdoor) noise
A6	Monitoring, control etc. including:	
A6a	Environmental R&D	R&D linked to development of cleaner products, processes and technologies as well as general research on the environment
A6b	Education, training, information	Environmental education, training and information by specialised institutions or as workplace activities. Excluded are activities of the general education system
A6c	Analytical services, data collection and assessment	Environmental engineering, analytical services and the like
B	**Cleaner Technologies and**	
B1	Cleaner/resource-efficient technologies	Reduced impact from production e.g.: decrease material inputs, reduce energy consumption, recover valuable by-products, reduce emissions, minimise waste disposal problems.
B2	Cleaner/resource-efficient products	Reduced impact from use of products e.g.: decrease material inputs, improve product quality, reduce energy consumption, reduce emissions, minimise waste disposal problems.
C	**Resource Management**	
C1	Indoor air pollution control	Treatment and renewal of indoor air to remove pollutants. Excludes air-conditioning
C2	Water supply	Collect, purify and distribute potable water
C3	Recycled materials	Manufacturing new materials or products from recovered waste or scrap
C4	Renewable energy plant	Generation, collection and transmission of energy from renewable sources, including biomass, solar, wind, tidal or geothermal
C5	Heat/energy saving and management	Reduce heat and energy use or minimise loss
C6	Sustainable agriculture and fisheries	Reduce environmental impact of agriculture and fishery.
C7	Sustainable forestry	Programmes and projects for reforestation and forest management on a long-term sustainable basis
C8	Natural risk management	Prevent or reduce the impact of natural disasters
C9	Eco-tourism	Tourism that involves protection of natural and cultural heritage etc.
C10	Other	Including nature conservation, habitats and biodiversity

The distribution was initially made on the basis of the description of the business activity, where this was available. Identified enterprises from sources lacking this description have been distributed according to the NACE code or the name. This is the first attempt to make this distribution and the method is by no means fully developed. However, this is an example of what can be done using only register data. In future work surveys will be necessary in order to improve the Environment Industry Database and the classification into segments of the environment industry. The division into segments has been linked to the database containing the identified enterprises. This means that other variables such as employment and turnover can be described for each segment.

Enterprises and establishments distributed by segments

Code	Environmental activities	Number of enterprises	Number of establishments
X	**No classification of Business activity (Total)**	**719**	**800**
A	**Pollution Management (Total)**	**2997**	**4925**
A1	Air pollution control	20	59
A2	Wastewater management	164	740
A3	Solid waste management	1967	2713
A4	Remediation and clean-up of soil, surface water and ground water	58	84
A5	Noise and vibration abatement	14	20
A6	Environmental monitoring, analysis and assessment;		
A6a	Environmental R&D	20	22
A6b	Education, training and information	118	254
A6c	Analytical services, data collection and assessment	636	1033
B	**Cleaner Technologies and Products (Total)**	**191**	**416**
B1	Cleaner/resource-efficient technologies and processes	123	215
B2	Cleaner/resource-efficient products	68	201
C	**Resource Management (Total)**	**2820**	**4430**
C1	Indoor air pollution control	893	1451
C2	Water supply	99	671
C3	Recycled materials	169	206
C4	Renewable energy plant	195	457
C5	Heat/enery saving and management	382	499
C6	Sustainable agriculture and fisheries	1038	1093
C7	Sustainable forestry	10	10
C9	Eco-tourism	17	17
C10	Other	17	26
Grand total		**6727**	**10571**

The largest segments in terms of number of enterprises and establishments were ″ solid waste management″ and ″sustainable agriculture and fishery″.

4.2 Status of the identified enterprises and establishments

In the previous work, the ambition was that all identified enterprises within the environment industry should have more then 50 per cent of their turnover from an activity coming under the definition of environment industry. There were problems, however, and still are, in ensuring that the identification of the enterprises are correct. In order to describe these uncertainties the enterprises have now been divided into five groups.

Status groups

Status
Primary enterprises, more than 50 % is within the definition
Enterprises where not all establishments are within the definition
Secondary, enterprises where the environment part is substantial
Enterprises producing multi-purpose products
Enterprises lacking necessary data toallow certain definition

In this report these groups are presented together unless otherwise specified. However "Primary environment industry" is the largest group with almost 62 per cent of the identified active enterprises. The other enterprises have been classified in other status groups, or have not been classified at all.

Enterprises and establishments distributed by status

Status	Number of enterprises	Number of establisments
Primary enterprises, more than 50 % is within the definition	4131	6360
Enterprises where not all establishments are within the definition	11	30
Enterprises where the environment part is substantial, secondary	560	1332
Enterprises producing multi-purpose products	914	1326
Enterprises lacking necessary data to allow certain definition	791	1133
No status classification	320	390
Total	**6727**	**10571**

The enterprises and establishments in the core branches are all maintained as "primary data". When describing the core branches, the NACE code for enterprises and the NACE code for establishments are kept separate.

4.3 Linking the identified enterprises and establishments to the Swedish Business Register, division into NACE groups

The Swedish Business Register includes all legal units or individuals who run an activity, large or small. The enterprises and establishments each have a unique identification code which is used in all registers and surveys dealing with enterprise statistics. They are also given an activity code which is divided into 60 two-digit NACE groups and in these 60 groups also into more detailed five-digit groups. This means that information on the core branches of the environment industry is already available.

The following variables from the Swedish Business Register were of interest for inclusion in the Environment Industry Database: enterprises with NACE codes, number of employees, establishments, address (for geographical analysis), identification code, status in the VAT register and starting year. In the work of identifying enterprises, most of the names were found as enterprises (8 330) and some as establishments (1 219). About 3 000 names were not found at all in the Swedish Business Register. There are different reasons why some names were not found. The enterprise be registered under one name and use another name or a different spelling when advertising. Many farmers were hard to locate in the business register because of the delayed division of an estate for tax reasons.

When a name was identified and classified according to status and environmental activity, all establishments subordinate to the identified enterprise were given the same classification. In the cases where establishments were identified, the establishment was given the classification. The core branches were an exception to this rule, as they were not classified according to any source outside the Swedish Business Register. The core branch enterprises and establishments were chosen on the basis of their first NACE code. This means that the enterprises and establishments in the core branches are in part, but not always the same. Enterprises and establishments differ, especially when it comes to municipal activities.

Of the 8 330 enterprises that were identified, 6 727 are active according to the Swedish Business Register. They do not have a closure date and therefore still exist as active enterprises. This mean that 1 603 are inactive enterprises or do not exist any longer. For the active enterprises information about enterprise identity number, number of establishments, starting year, NACE code, number of employees and status in the VAT register has been collected from the Swedish Business Register. The two largest NACE-groups according to number of enterprises are NACE 74 ”other business activities” and 45 ”construction”, including the core branches.

Enterprises and establishments distributed by NACE code

NACE-Code		Number of enterprises	Number of establishments
25120	Retreading	124	130
37	Recycling of metal waste and scrap	143	155
51570	Wholesale of waste and scrap	871	986
90	Sewage and refuse disposal, sanitation and similar activities	741	1611
Sum for Core industries		1879	2882
01	Agriculture, hunting and related service activities	678	698
02	Forestry, logging and related service activities	60	67
05	Fishing, operation of fish hatcheries and fish farms	1	6
10	Mining of coal and lignite; extraction of peat	5	6
14	Other mining and quarrying	5	37
15	Manufacture of food products and beverages	13	19
17	Manufacture of textiles	8	12
19	Tanning and dressing of leather	1	1
20	Manufacture of wood and of products of wood and cork, except furniture	33	42
21	Manufacture of pulp, paper and paper products	13	31
22	Publishing, printing and reproduction of recorded media	30	38
23	Manufacture of coke, refined petroleum products and nuclear fuel	3	4
24	Manufacture of chemicals and chemical products	24	31
25excl. 25.120	Manufacture of rubber and plastic products	31	34
26	Manufacture of other non-metallic mineral products	17	67
27	Manufacture of basic metals	2	3
28	Manufacture of fabricated metal products, except machinery and equipment	109	122
29	Manufacture of machinery and equipment n.e.c.	149	223
30	Manufacture of office machinery and computers	1	1
31	Manufacture of electrical machinery and apparatus n.e.c.	15	19
32	Manufacture of radio, television and communication equipment and apparatus	1	1
33	Manufacture of medical, precision and optical instruments, watches and clocks	14	25
34	Manufacture of motor vehicles, trailers and semi-trailers	8	9
35	Manufacture of other transport equipment	1	1
36	Manufacture of furniture; manufacturing n.e.c.	9	11
40	Electricity, gas, steam and hot water supply	53	439
41	Collection, purification and distribution of water	79	640
45	Construction	908	1299
50	Sale, maintenance and repair of motor vehicles and motorcycles	35	252
51excl. 51.570	Wholesale trade and commission trade, except of motor vehicles and motorcycles	581	832
52	Retail trade, except of motor vehicles and motorcycles	163	192
55	Hotels and restaurants	20	24
60	Land transport; transport via pipelines	88	98
61	Water transport	3	4
62	Air transport	1	3
63	Supporting auxiliary transport activities; activities of travel agencies	43	53
64	Post and telecommunications	1	1
65	Financial intermediation, except insurance and pension funding	3	4
67	Activities auxiliary to financial intermediation	4	4
70	Real estate activities	76	130
71	Renting of machinery and equipment without operator and of personal and household goods	7	9
72	Computer and related activities	37	53
73	Research and development	39	53
74	Other business activities	1043	1473
75	Public administration and defence; compulsory social security	8	61
80	Education	55	185
85	Health and social work	18	18
91	Activities of membership organizations n.e.c.	34	35
92	Recreational, cultural and sporting activities	31	31
93	Other service activities	17	17
.	No classification in NACE	270	271
Total excl. core industries		4848	7689
Total incl. core industries		**6727**	**10571**

A total of 6 727 active enterprises and 10 571 establishments were identified in the Swedish Business Register, but it is important to emphasise that not all establishments are connected to the enterprises in the Environment Industry Database. Some establishments are classified as environmental industry, and are therefore integrated into the Environment Industry Database, the though enterprises or organisations they belong to are not, and are therefore not included in the Environment Industry Database.

5 Estimation of the Environment Industry

The Environment Industry database consists of two parts. The first part is a list of enterprises and data connected with each enterprise. The second part is a list of establishments and data connected with each establishment. In the enterprise part, it is possible to see all the establishments subordinate to each enterprise. These establishments are the basis of the establishment part, but this part also contains establishments subordinate to enterprises which are not relevant for the environment industry. An important example of the latter are local government establishments. For example, wastewater plants or environment offices often come under local government. These establishments have been separated out and for inclusion in the Environment Industry Database, because it would be wrong to include the whole local government, which is equal to an enterprise in the register.

5.1 Enterprises

All enterprises in the report are classified according to NACE, environmental activity and status. The possible enable us combinations for these three classifications to see in what line of business the environment industry enterprises mainly exist. The NACE code itself does not provide this possibility.

Number of enterprises

Code	Environmental activities	Primary enterprises	Other catagories	No classification	Total
X	**No classification for Business activity (Total)**	**0**	**399**	**320**	**719**
A	**Pollution Management (Total)**	**2293**	**704**	**0**	**2997**
A1	Air pollution control	16	4	0	20
A2	Wastewater management	112	52	0	164
A3	Solid waste management	1861	106	0	1967
A4	Remediation and clean-up of soil, surface water and ground water	11	47	0	58
A5	Noise and vibration abatement	3	11	0	14
A6	Environmental monitoring, analysis and assessment:				
A6a	Environmental R&D	7	13	0	20
A6b	Education, training and information	56	62	0	118
A6c	Analytical services, data collection and assessment	227	409	0	636
B	**Cleaner Technologies and Products (Total)**	**82**	**109**	**0**	**191**
B1	Cleaner/resource-efficient technologies and processes	53	70	0	123
B2	Cleaner/resource-efficient products	29	39	0	68
C	**Resource Management (Total)**	**1756**	**1064**	**0**	**2820**
C1	Indoor air pollution control	17	876	0	893
C2	Water supply	89	10	0	99
C3	Recycled materials	140	29	0	169
C4	Renewable energy plant	127	68	0	195
C5	Heat/enery saving and management	355	27	0	382
C6	Sustainable agriculture and fisheries	1014	24	0	1038
C7	Sustainable forestry	0	10	0	10
C9	Eco-tourism	8	9	0	17
C10	Other	6	11	0	17
Grand total		**4131**	**2276**	**320**	**6727**

By dividing the enterprises both by NACE code and segment, the description can be made more specific. For example, there are many enterprises with the NACE code ”construction” combined with the environment activity ”indoor air pollution control”.

Number of enterprises, NACE/environment activity

NACE/Environmental activities	A1	A2	A3	A4	A5	A6a	A6b	A6c	B1	B2	C1	C2	C3	C4	C5	C6	C7	C9	C10	.	Total
25120	0	0	0	0	0	0	0	0	0	0	0	0	124	0	0	0	0	0	0	0	124
37	0	0	143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143
51570	0	0	871	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	871
90	0	38	703	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	741
Sum for Core industries	0	38	1717	0	0	0	0	0	0	0	0	0	124	0	0	0	0	0	0	0	1879
01	0	3	2	0	0	0	2	6	3	0	1	1	0	6	1	624	1	1	0	27	678
02	0	0	0	0	0	0	0	4	0	1	1	0	0	6	1	35	9	0	1	2	60
05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
10	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	1	5
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	5
15	0	0	2	1	0	0	0	0	1	1	0	0	0	0	0	6	0	0	0	2	13
17	0	0	0	0	0	0	0	0	1	1	3	0	0	0	0	1	0	0	0	2	8
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
20	0	0	2	0	0	0	1	0	3	1	1	0	1	10	0	3	0	0	0	11	33
21	0	0	0	0	0	0	0	1	2	0	1	0	8	0	0	0	0	0	0	1	13
22	0	0	0	0	0	0	8	2	0	6	0	0	2	0	0	2	0	0	0	10	30
23	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3
24	0	2	1	1	0	0	0	2	10	2	0	0	2	1	0	0	0	0	0	3	24
25excl.25.120	1	0	9	0	1	0	0	0	4	0	2	0	4	1	2	0	0	0	0	7	31
26	0	0	4	0	1	0	0	0	2	1	0	0	3	0	0	1	0	0	2	3	17
27	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2
28	1	4	4	2	1	0	0	4	1	0	72	0	5	6	1	2	0	0	0	6	109
29	5	14	18	1	0	0	0	7	3	1	41	7	0	11	23	0	0	0	0	18	149
30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
31	0	0	2	0	0	0	0	2	0	0	5	0	0	3	0	1	0	0	0	2	15
32	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
33	1	2	0	0	0	0	0	4	0	1	1	0	0	0	0	1	0	0	0	4	14
34	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	8
35	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
36	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	2	0	0	0	4	9
40	0	0	6	0	0	0	0	2	0	11	0	2	0	28	4	0	0	0	0	0	53
41	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0	0	0	0	79
45	4	11	23	7	8	0	0	11	6	9	521	4	1	14	211	30	0	0	1	47	908
50	1	0	8	1	0	0	0	0	7	1	2	0	2	1	0	7	0	0	0	5	35
51excl. 51.570	3	48	53	6	2	0	2	28	38	12	107	4	7	48	67	21	0	0	0	135	581
52	0	1	0	0	0	0	3	5	17	1	7	1	7	12	35	21	0	0	0	53	163
55	0	0	2	0	0	0	1	0	1	0	1	0	0	1	0	6	0	2	0	6	20
60	0	2	39	4	0	0	0	0	0	0	1	0	1	3	0	27	0	0	1	10	88
61	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
63	0	0	10	3	0	0	0	2	1	0	0	0	0	0	0	5	0	9	1	12	43
64	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
67	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	4
70	0	1	6	1	0	0	0	3	0	1	10	0	0	1	4	27	0	0	1	21	76
71	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	7
72	0	0	1	1	0	0	1	10	1	0	2	0	1	1	0	9	0	0	0	10	37
73	1	1	1	0	0	14	2	8	0	0	1	0	0	3	0	1	0	0	1	6	39
74	2	32	43	29	1	5	42	503	14	17	102	1	1	22	23	33	0	0	4	169	1043
75	0	0	1	0	0	1	0	5	0	0	0	0	0	0	1	0	0	0	0	0	8
80	0	0	0	0	0	0	34	9	0	0	0	0	0	0	0	1	0	2	0	9	55
85	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	8	0	1	0	7	18
91	0	0	1	0	0	0	14	5	0	0	2	0	0	0	0	2	0	1	0	9	34
92	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	16	0	0	0	10	31
93	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7	0	0	0	8	17
.	0	5	4	1	0	0	3	10	3	1	3	0	0	11	8	137	0	0	0	84	270
Total excl. core industries	20	126	250	58	14	20	118	636	123	68	893	99	45	195	382	1038	10	17	17	719	4848
Total incl. core industries	20	164	1967	58	14	20	118	636	123	68	893	99	169	195	382	1038	10	17	17	719	6727

5.2 Turnover, exports and imports

The register for value added tax (VAT Register) includes all enterprises registered by the Swedish National Tax board as liable for VAT that have a turnover exceeding SEK 1 000 000.

From the VAT Register, the turnover, export and import of goods and services to foreign countries are of interest in this study.

There are differences between the Swedish Business Register and the VAT Register, as can be seen in the table below. This is due to the fact that the Register for VAT includes only enterprises liable for tax with a turnover exceeding SEK 1 000 000, whereas in the Business Register all legal units or individuals who run an activity are included.

Environment industry enterprises in the Swedish Business register and the VAT Register.

NACE-code		Number of enterprises in the Business Register	Number of enterprises in the VAT Register
25120	Retreading	124	116
37	Recycling of metal waste and scrap	143	117
51570	Wholesale of waste and scrap	871	580
90	Sewage and refuse disposal, sanitation and similar activities	741	577
Sum for Core industries		1879	1390
01	Agriculture, hunting and related service activities	678	219
02	Forestry, logging and related service activities	60	14
05	Fishing, operation of fish hatcheries and fish farms	1	1
10	Mining of coal and lignite	5	4
14	Other mining and quarrying	5	4
15	Manufacture of food products and beverages	13	9
17	Manufacture of textiles	8	6
19	Tanning and dressing of leather	1	-
20	Manufacture of wood and of products of wood and cork, except furniture	33	21
21	Manufacture of pulp, paper and paper products	13	11
22	Publishing, printing and reproduction of recorded media	30	23
23	Manufacture of coke, refined petroleum products and nuclear fuel	3	3
24	Manufacture of chemicals and chemical products	24	17
25 excl.25.120	Manufacture of rubber and plastic products	31	26
26	Manufacture of other non-metallic mineral products	17	14
27	Manufacture of basic metals	2	2
28	Manufacture of fabricated metal products, except machinery and equipment	109	99
29	Manufacture of machinery and equipment n.e.c.	149	136
30	Manufacture of office machinery and computers	1	-
31	Manufacture of electrical machinery and apparatus n.e.c.	15	13
32	Manufacture of radio, television and communication equipment and apparatus	1	-
33	Manufacture of medical, precision and optical instruments, watches and clocks	14	11
34	Manufacture of motor vehicles, trailers and semi-trailers	8	6
35	Manufacture of other transport equipment	1	1
36	Manufacture of furniture; manufacturing n.e.c.	9	7
40	Electricity, gas, steam and hot water supply	53	50
41	Collection, purification and distribution of water	79	36
45	Construction	908	763
50	Sale, maintenance and repair of motor vehicles and motorcycles	35	17
51excl. 51.570	Wholesale trade and commission trade, except of motor vehicles and motorcycles	581	436
52	Retail trade, except of motor vehicles and motorcycles	163	85
55	Hotels and restaurants	20	12
60	Land transport; transport via pipelines	88	67
61	Water transport	3	2
62	Air transport	1	1
63	Supporting auxiliary transport activities	43	28
64	Post and telecommunications	1	1
65	Financial intermediation, except insurance and pension funding	3	3
67	Activities auxiliary to financial intermediation	4	2
70	Real estate activities	76	46
71	Renting of machinery and equipment without operator and of personal and household goods	7	5
72	Computer and related activities	37	20
73	Research and development	39	34
74	Other business activities	1043	668
75	Public administration and defence	8	8
80	Education	55	43
85	Health and social work	18	10
91	Activities of membership organizations n.e.c.	34	31
92	Recreational, cultural and sporting activities	31	10
93	Other service activities	17	6
.	No classification in NACE	270	41
Total		**6727**	**4462**

The next three tables below are based on data from the 4 462 environment industry enterprises that were found in the VAT Register.

The turnover for the enterprises in the environment industry was about SEK 163 billion or almost 4 per cent of total turnover from the VAT Register in 1998. According to the consultant report "Data Collection on Eco-Industries in the EU"[35] the turnover for the Swedish environment industry was only SEK 20 billion. The turnover showed in this study is eight times higher than the estimated amount in the consultant report.

Now it is possible to group the information from the VAT Register (turnover, exports and imports) according to the NACE code and business activity, which gives two dimensions when studying the environment industry.

Turnover, exports and imports for enterprises in the environment industry.

NACE-code		Total turnover from the VAT Register, SEK milion	Total exports	Non-EU-Exports	EU-exports	EU-import
25120	Retreading	885	56	50	6	87
37	Recycling of metal waste and scrap	2627	297	113	184	36
51570	Wholesale of waste and scrap	5828	976	468	509	158
90	Sewage and refuse disposal, sanitation and similar activities	7616	164	102	62	60
Sum for Core industries		16955	1493	733	761	340
01	Agriculture, hunting and related service activities	450	4	2	1	4
02	Forestry, logging and related service activities	918	20	18	2	0
05	Fishing, operation of fish hatcheries and fish farms	0	0	0	0	0
10	Mining of coal and lignite	39	5	3	2	6
14	Other mining and quarrying	80	0	0	0	0
15	Manufacture of food products and beverages	3166	310	229	81	178
17	Manufacture of textiles	327	95	40	54	40
20	Manufacture of wood and of products of wood and cork, except furniture	1140	174	51	123	63
21	Manufacture of pulp, paper and paper products	6167	3668	672	2996	377
22	Publishing, printing and reproduction of recorded media	2651	127	58	69	122
23	Manufacture of coke, refined petroleum products and nuclear fuel	66	0	0	0	32
24	Manufacture of chemicals and chemical products	4269	1923	1093	830	781
25 excl.25.120	Manufacture of rubber and plastic products	596	98	51	47	78
26	Manufacture of other non-metallic mineral products	3544	955	336	619	439
27	Manufacture of basic metals	65	1	0	1	0
28	Manufacture of fabricated metal products, except machinery and equipment	1936	568	183	385	80
29	Manufacture of machinery and equipment n.e.c.	12995	8729	4175	4553	1392
31	Manufacture of electrical machinery and apparatus n.e.c.	257	4	2	2	16
33	Manufacture of medical, precision and optical instruments, watches and clocks	4403	2811	1584	1227	539
34	Manufacture of motor vehicles, trailers and semi-trailers	405	157	27	130	23
35	Manufacture of other transport equipment	2	0	0	0	0
36	Manufacture of furniture; manufacturing n.e.c.	6	1	0	0	0
40	Electricity, gas, steam and hot water supply	52499	3009	1604	1405	288
41	Collection, purification and distribution of water	1648	0	0	0	2
45	Construction	11641	240	214	26	108
50	Sale, maintenance and repair of motor vehicles and motorcycles	5932	6	4	2	7
51 excl.51.570	Wholesale trade and commission trade, except of motor vehicles and motorcycles	10922	1707	903	804	2107
52	Retail trade, except of motor vehicles and motorcycles	1597	13	11	2	7
55	Hotels and restaurants	8	0	0	0	0
60	Land transport; transport via pipelines	1214	4	4	0	6
61	Water transport	7	0	0	0	0
62	Air transport	105	45	44	1	4
63	Supporting auxiliary transport activities	1825	105	105	0	0
64	Post and telecommunications	0	0	0	0	0
65	Financial intermediation, except insurance and pension funding	0	0	0	0	0
67	Activities auxiliary to financial intermediation	1	0	0	0	0
70	Real estate activities	818	17	2	14	10
71	Renting of machinery and equipment without operator and of personal and household goods	87	0	0	0	0
72	Computer and related activities	325	3	3	0	0
73	Research and development	1542	505	374	131	128
74	Other business activities	10037	1021	888	133	149
75	Public administration and defence	159	0	0	0	0
80	Education	2065	6	6	0	1
85	Health and social work	10	3	1	2	0
91	Activities of membership organizations n.e.c.	46	0	0	0	0
92	Recreational, cultural and sporting activities	30	1	1	0	0
93	Other service activities	15	0	0	0	1
.	No classification in NACE	67	0	0	0	0
Total turnover incl.core industries		163041	27827	13420	14407	7331
% of total turnover from the VAT Register, SEK milion		4	3	2	4	2
Total turnover from the VAT Register, SEK milion		4320810	969249	581349	387900	392732

[35] Ecotec, BIPE and IFO (1996). The Swedish Eco-Industry: Country Summary

The largest turnover was found in NACE code 40, "Electricity, gas, steam and hot water supply". This is explained by the fact that about one third of the Swedish gross supply of energy comes from renewable energy sources. The most important renewable energy sources are hydro-electric power 247,8 PJ and wood fuels 161,4 PJ[36].

The market for environmental goods and services to foreign countries comes mainly under NACE codes "Manufacture of machinery and equipment"(29), "Manufacture of pulp, paper and paper products"(21) and "Electricity, gas, steam and hot water supply"(40).

Environment activities according to turnover, exports and imports.

Code	Environmental activities	Total turnover from the VAT Register, SEK milion	Total exports	Exports	EU-exports	EU-imports
X	**No classification for Business activity**	**11121**	**4027**	**1761**	**2266**	**1145**
A	**Pollution Management**	**53548**	**10161**	**6095**	**4065**	**2174**
A1	Air pollution control	1865	1098	647	452	217
A2	Wastewater management	6189	2881	1729	1152	742
A3	Solid waste management	28412	2652	1482	1170	461
A4	Remediation and clean-up of soil, surface water and ground water	997	5	4	1	7
A5	Noise and vibration abatement	547	258	91	167	131
A6	Environmental monitoring, analysis and assessment;					
A6a	Environmental R&D	76	11	11	0	0
A6b	Education, training and information	2456	52	49	4	5
A6c	Analytical services, data collection, analysis and assessment	13006	3203	2083	1120	610
B	**Cleaner Technologies and Products**	**8814**	**2149**	**929**	**1221**	**1030**
B1	Cleaner/resource-efficient technologies and processe	6370	1740	756	984	792
B2	Cleaner/resource-efficient products	2443	409	173	236	238
C	**Resource Management**	**89558**	**11491**	**4635**	**6856**	**2983**
C1	Indoor air pollution control	18051	3045	1280	1765	1057
C2	Water supply	2560	153	100	53	181
C3	Recycled materials	8568	3848	788	3060	588
C4	Renewable energy plant	49976	3214	1691	1523	514
C5	Heat/enery saving and management	5170	403	172	231	289
C6	Sustainable agriculture and fisheries	4346	767	549	218	298
C7	Sustainable forestry	11	0	0	0	0
C9	Eco-tourism	6	0	0	0	0
C10	Other	870	60	54	6	56
Grand total		**163041**	**27827**	**13420**	**14407**	**7331**

Looking at environment activities, the largest turnover was for code C4, "renewable energy plants". The largest environment activity according to exports is code C3, "recycled materials". The "materials" are often pulp or paper produced from recycled paper found in the NACE code "manufacture of pulp, paper and paper products". In this way the different divisions are of help when describing what the environment industry consists of.

When it comes to the EU share of total exports it is interesting to see that the environment industry (without core branches, which has a low export degree) lies over the average when it comes to EU exports. More interesting are the EU-import figures, which show that the environment industry in Sweden is a net exporter. The enterprises in the VAT Register as a whole are net importers.

[36] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

Turnover, exports and imports, environment industry enterprises/all enterprises.

	Total turnover, SEK million	Total export, SEK million	EU exports, SEK million	EU imports, SEK million
Environment industry (without core ind)	146086	26334	13647	6991
All enterprises from the VAT register	4320810	969249	387900	392732

5.3 Establishments

The establishments within the environment industry consist of all establishments subordinate to the identified enterprises and a number of establishments which were identified separately, where the enterprise is not within the Environment Industry Database/definition.

The result of this work is that the part of the Environment Industry Database containing enterprises and the part containing establishments are mainly, but not exactly identical. Since the establishment is a smaller and therefore more specific unit than the enterprise, establishment is used where possible. Data about employees and geographical location can be given for establishments.

There are 10 571 establishments in the Environment Industry Database, 2 882 of which are within the core branches. Outside the core branches there are only two NACE codes containing more than 1 000 establishments within the environment industry, ”construction” and ”other business activities”. According to environmental business activity, the largest groups are waste management, sustainable agriculture and indoor air pollution control.

More than 60 per cent of the establishments are identified as primary environment industry. The other establishments are classified as secondary, producing multi-purpose products or not definitively defined.

Status of establishments divided into segments

Code	Environmental activities	Primary establishments	Other catagories	No classification	Total
X	**No classification for Business activity**	**0**	**410**	**390**	**800**
A	**Pollution Management**	**3525**	**1400**	**0**	**4925**
A1	Air pollution control	55	4	0	59
A2	Wastewater management	676	64	0	740
A3	Solid waste management	2371	342	0	2713
A4	Remediation and clean-up of soil, surface water and ground water	12	72	0	84
A5	Noise and vibration abatement	3	17	0	20
A6	Environmental monitoring, analysis and assessment:				
A6a	Environmental R&D	6	16	0	22
A6b	Education, training and information	58	196	0	254
A6c	Analytical services, data collection, analysis and assessment	344	689	0	1033
B	**Cleaner Technologies and Products**	**233**	**183**	**0**	**416**
B1	Cleaner/resource-efficient technologies and processes	92	123	0	215
B2	Cleaner/resource-efficient products	141	60	0	201
C	**Resource Management**	**2602**	**1828**	**0**	**4430**
C1	Indoor air pollution control	19	1432	0	1451
C2	Water supply	659	12	0	671
C3	Recycled materials	150	56	0	206
C4	Renewable energy plant	262	195	0	457
C5	Heat/enery saving and management	429	70	0	499
C6	Sustainable agriculture and fisheries	1069	24	0	1093
C7	Sustainable forestry	0	10	0	10
C9	Eco-tourism	8	9	0	17
C10	Other	6	20	0	26
Grand total		**6360**	**3821**	**390**	**10571**

5.4 Employees

The employees are shown for establishments, since establishment is the most specific unit in this study. The total number of employees in 1998 at establishments in the Environment Industry Database was 94 907. This equals between 2 and 3 per cent of all employees on the labour market as a whole.

Number of employees distributed by NACE code 1998.

NACE		Number of employees
25120	Retreading	718
37	Recycling of metal waste and scrap	754
51570	Wholesale of waste and scrap	2469
90	Sewage and refuse disposal, sanitation and similar activities	9107
Total Core branches		13048
01	Agriculture, hunting and related service activities	570
02	Forestry, logging and related service activities	415
05	Fishing, operation of fish hatcheries and fish farms	34
10	Mining of coal and lignite; extraction of peat	11
14	Other mining and quarrying	121
15	Manufacture of food products and beverages	1052
17	Manufacture of textiles	530
19	Tanning and dressing of leather	0
20	Manufacture of wood and of products of wood and cork, except furniture	648
21	Manufacture of pulp, paper and paper products	3140
22	Publishing, printing and reproduction of recorded media	1476
23	Manufacture of coke, refined petroleum products and nuclear fuel	12
24	Manufacture of chemicals and chemical products	1453
25 excl 25.120	Manufacture of rubber and plastic products	639
26	Manufacture of other non-metallic mineral products	1825
27	Manufacture of basic metals	95
28	Manufacture of fabricated metal products, except machinery and equipment	2498
29	Manufacture of machinery and equipment n.e.c.	7258
30	Manufacture of office machinery and computers	0
31	Manufacture of electrical machinery and apparatus n.e.c.	121
32	Manufacture of radio, television and communication equipment and apparatus	0
33	Manufacture of medical, precision and optical instruments, watches and clocks	1801
34	Manufacture of motor vehicles, trailers and semi-trailers	386
35	Manufacture of other transport equipment	1
36	Manufacture of furniture; manufacturing n.e.c.	237
40	Electricity, gas, steam and hot water supply	6937
41	Collection, purification and distribution of water	2171
45	Construction	13546
50	Sale, maintenance and repair of motor vehicles and motorcycles	2679
51 excl 51.570	Wholesale trade and commission trade, except of motor vehicles and motorcycles	4533
52	Retail trade, except of motor vehicles and motorcycles	948
55	Hotels and restaurants	62
60	Land transport; transport via pipelines	997
61	Water transport	20
62	Air transport	37
63	Supporting auxiliary transport activities; activities of travel agencies	687
64	Post and telecommunications	45
65	Financial intermediation, except insurance and pension funding	52
67	Activities auxiliary to financial intermediation	12
70	Real estate activities	1157
71	Renting of machinery and equipment without operator and of personal and household goods	48
72	Computer and related activities	288
73	Research and development	1204
74	Other business activities	15822
75	Public administration and defence; compulsory social security	1261
80	Education	4533
85	Health and social work	191
91	Activities of membership organizations n.e.c.	160
92	Recreational, cultural and sporting activities	100
93	Other service activities	29
.	No classification in NACE	17
Total non-core branches		81859
Total (incl. core branches)		**94907**

The largest NACE code in terms of employees was "Other business activities"(74), with nearly 16 000 employees. Many of the establishments listed under this NACE code are environmental consultants. The second largest group was "construction"(45) with over 13 500 employees, which is more than all the core branches together. Other large groups were "Manufacture of machinery"(29), with over 7 000 employees, and "Electricity, gas and and hot water supply"(40), with nearly 7 000 employees.

The employees were also divided into segments according to environment activity. The largest segment in terms of number of employees was "Indoor air pollution control", with more than 17 500 employees. Many of the establishments in this group have the NACE code "construction". By dividing the establishments both into NACE code and segment, the description can be made more specific.

The second largest segment in terms of employees is "waste management", with 17 300 employees. Over 12 100 employees were found in the segment "Analytical services, data collection, analysis and assessment". Many of these establishments are also found under the NACE code "Other business activities"(74).

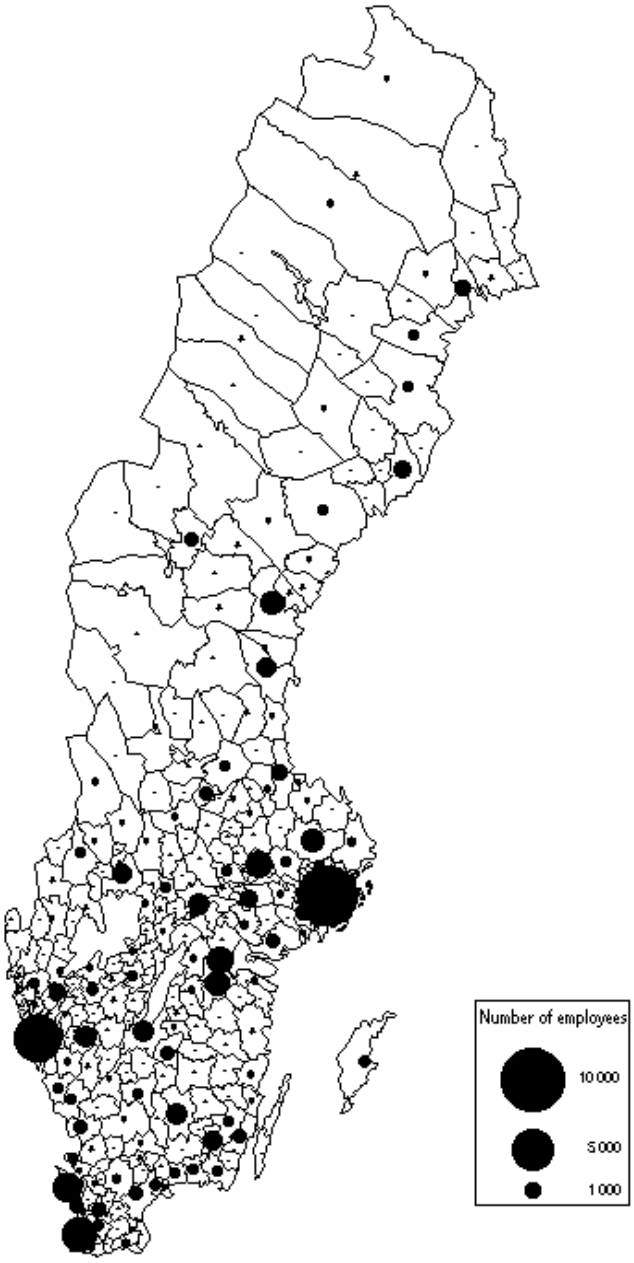
Number of employees distributed by environment activity 1998.

Code	Environmental activities	Number of employees
X	**No classification for Business activity**	**8628**
A	**Pollution Management**	**42016**
A1	Air pollution control	1285
A2	Wastewater management	5154
A3	Solid waste management	17321
A4	Remediation and clean-up of soil, surface water and ground water	891
A5	Noise and vibration abatement	221
A6	Environmental monitoring, analysis and assessment:	
A6a	Environmental R&D	164
A6b	Education, training and information	4824
A6c	Analytical services, data collection, analysis and assessment	12156
B	**Cleaner Technologies and Products**	**5451**
B1	Cleaner/resource-efficient technologies and processes	2555
B2	Cleaner/resource-efficient products	2896
C	**Resource Management**	**38812**
C1	Indoor air pollution control	17578
C2	Water supply	2564
C3	Recycled materials	4707
C4	Renewable energy plant	6981
C5	Heat/enery saving and management	4029
C6	Sustainable agriculture and fisheries	2612
C7	Sustainable forestry	8
C9	Eco-tourism	31
C10	Other	302
Grand total		**94907**

5.5 Geographical distribution

Data from the Swedish Business Register makes it possible to show the geographical distribution of the employees (in establishments) within the Environment Industry Database. The map below shows the number of employees per municipality in Sweden. There is a concentration of employees in Stockholm and other large cities. This, of course, goes for the labour market as a whole as well, but the concentration is not really so marked for the environment industry. In future work, the geographical distribution will be further analysed, for example, according to environmental activity within the environment industry.

Number of employees in the environment industry by municipality 1998



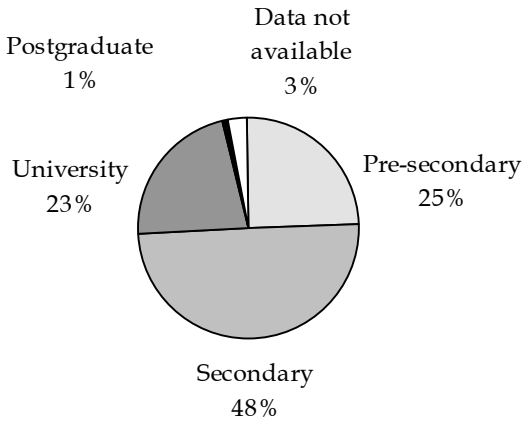
5.6 Level of education

Data about the level of education is of interest when looking at the environment industry as a source for new jobs. It has been suggested that new, low skilled jobs can be found within the environment sector. In the previous study[37] the core branches were examined according to level of education. That study showed that the level of education for the core branches was lower than on the labour market as a whole. The present study makes it possible to look at the level of education for employees at all establishments in the Environment Industry Database created in this work.

The Louise Database is produced from register data at Statistics Sweden. The purpose is to utilise existing register data combining areas of education, labour market and income. The database includes all persons over 16 years of age. It also includes data that links persons (social security number) with the establishments from which they have received an income. Using this database it is possible to describe the employees at the establishments within the environmental industry according to, for example, level of education, former unemployment and income.

The establishment part of the Environment Industry Database was linked to the Louise register through the establishment number. Then data was added about the employees in the environment industry (in 1997). Because the Environment Industry Database contains data about establishments in 1999, only 85 496 persons were found in the Louise Database. This figure can be compared with 94 907 employees in the Environment Industry Database in November 1998. About 10 per cent of the employees are missing, mainly because of the different times of measurement.

Level of education, employees within the environment industry 1997



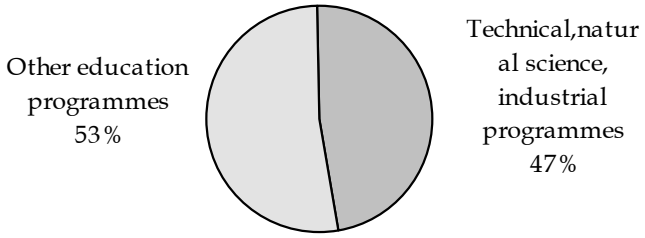
The level of education for the environment industry is about the same as for the whole labour market in Sweden.

[37] Eurostat 2/1999/B/3 (1999). The Environment Industry in Sweden

5.7 Field of education

In order to examine what skills could be required of employees in the environment industry, the field of education was divided into ”Technical, natural science and industrial programmes” and ”Other educational programmes”. The result was, not surprisingly, that the ”Technical, natural science and industrial programmes” were far more common among employees within the environment industry than on the labour market as a whole.

Field of education, employees in the environment industry 1997



More in-depth studies about level of education and field of education among employees in the environment industry are possible and will be done in a future study.

6 Future work

This study has generated an Environment Industry Database, containing environment producers' both enterprises and establishments. The Environment Industry Database contains both the producers within the environment core branches and identified environment producers outside the core branches. This line of work started with a study in 1998 and is continued in this report. However, the Environment Industry Database needs further improvement. There is also a need for further analysis of the existing data in the Environment Industry Database.

A lot of work has been done to identify enterprises and establishments that fall under the definition of environment industry. Still there are some aspects waiting to be further improved and examined, in order to make the Environment Industry Database as complete as possible. One area that needs further examination is the environment part (often secondary) in large enterprises like Volvo, ASEA and SKF. The Environment Industry Database contains only register data. In order to improve the existing information, especially about environment activity/segment and status, it would be of great interest to conduct survey studies. The information about business activity is only available in some of the sources used and there is a great need for supplementary information about this. The existing Environment Industry Database could be used as a sample frame for surveys in the environment area.

It would be very useful if the Swedish Business Register contained a description of business activity for all enterprises. If that was possible, it would open up many new possibilities for analysing the economy and labour market in new dimensions. The basic problem when examining the environment industry, or other "new" industries is that the NACE code system is not specific enough and changes much more slowly than the economy does. If these descriptions were available in the Swedish Business Register, it would be possible to find producers in any area through key words. This would make the information system much more useful, not only when examining the environment industry, but when new lines of products or production occur. Another new area of interest in Sweden which is difficult to examine via the ordinary registers involves ethical enterprises, dealing in ethical production and trade.

Another area that needs further examination is the growing market for eco-labelled products besides food, for example, cleaning products for household use. In Sweden, most of these products are eco-labelled and it would be of interest to incorporate these producers into the Environment Industry Database

In a future study, which will be conducted in 2000, the environment industry will be further analysed according to turnover, exports, education and unemployment. This will be done for different environment activities as well as for NACE codes.

The Environment Industry Database could also be used in order to make it easier for environment producers and customers to find one another. There are examples on the Internet where databases containing environment producers are published for market purposes.

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