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[Environmental Affairs](#)

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Publication Date - 1999-08-17

PRAIRIE ENVIRONMENT INDUSTRY PROFILE

The environment industry can be **defined** as consisting of activities which produce goods and services to measure, prevent, limit or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. Clean technologies, processes, products and services which reduce environmental risk and minimize pollution and material use are also considered part of the environmental industry, although there is currently no agreement upon a methodology to measure their contribution.. (OECD Working Group on the Environment Industry, 1996). 1

Measuring activity is a challenge. The environment industry does not directly correspond with either of Statistics Canada's Standard Industrial Classification (SIC) or North American Industrial Classification (NAICS) systems. Using the OECD definition as an international standard and drawing on data collected for a number of existing SIC categories, Statistics Canada is currently in the process of developing a more complete picture of Canada's environment industry.

[To view figure 1 click here](#)

Although estimates vary, the **global environment market** is expected to double between 1994 and 2000, reaching US\$600 billion by that time. Member countries of the OECD currently represent roughly 80% of the world market (Canada = 2.6%). Developing countries however, are becoming an increasingly important source of demand as their industrial sectors come under growing pressure to develop in a more sustainable fashion. Latin America in general offers excellent potential, as this market is expected to be worth US\$11.970 million in 2000 (CIBS-Environment, 1998-99).

It is estimated that approximately \$1.7 billion worth of environmental goods and services are **exported** from Canada annually, representing about 10% of this industry's total commercial production. Approximately 800 Canadian firms are exporters, with 80% of industry exports destined for the mature U.S. market. In comparison, countries such as Japan and Germany are much more export-orientated, exporting well over 20% of their production (Sector Competitiveness Framework, 1998).

Canadian Industry Snapshot

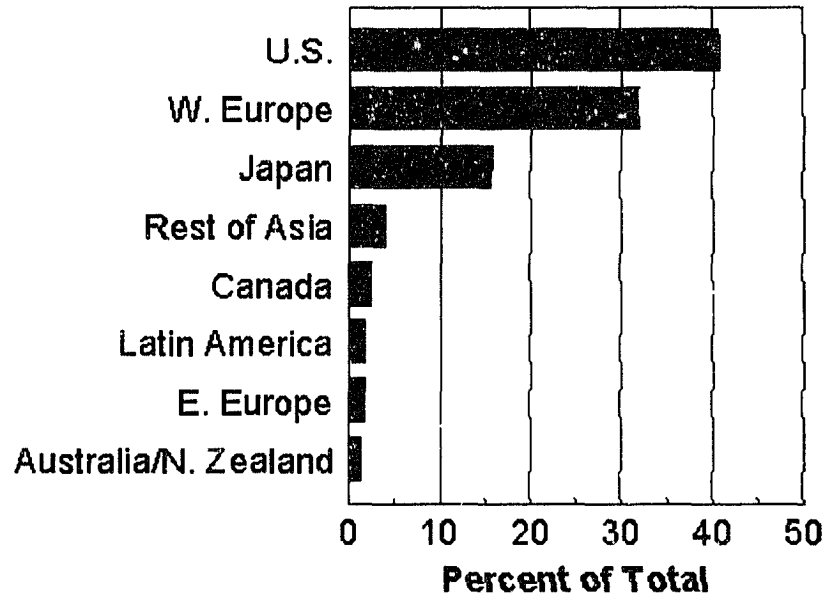
According to Statistics Canada, 123,000 workers (representing just over 1% of total Canadian employment) produced environmental goods and services valued at \$15.6 billion in 1995². Revised estimates suggest that the business sector alone accounted for production valued at \$10.2 billion, with the remaining industry activity attributable to business and government services to supply their own needs.

The Delphi Group, measuring a broader range of industry activity, estimates that the total Canadian environmental technology market reached \$24.5 billion in 1996. The Delphi Group also estimates that between 1996 and 2000, the Canadian environment market will grow by 3% annually, compared to global growth of 7% during this period. Strong growth potential exists for Canadian firms in consulting, engineering and environmental technologies, biotechnologies, site remediation and energy conservation.

Statistics Canada estimates that in 1995, Canadian firms's environmental revenues were almost evenly split between sale of **environmental goods** (\$4,223.9 million or 41% of total) and sales of **environmental services** (\$3,920.2 million or 39%), with the remainder accounted for by **environment-related construction** (\$2,049 million or 20%).

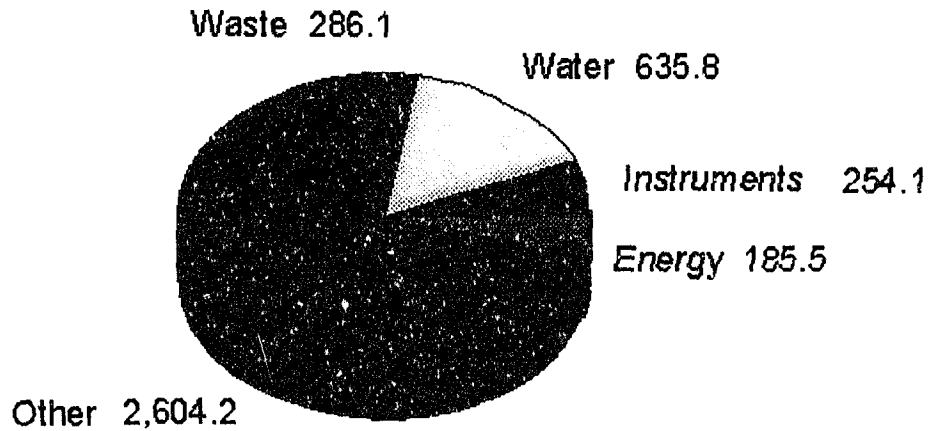
[To view figure 2 click here](#)

Figure 1
Global Environmental Market, 1994



Source: "The Global Environmental Market", *Environmental Business Journal* August 1995

Figure 2
**Revenues of Environmental Goods
Canadian Firms, 1995**
(\$ million)



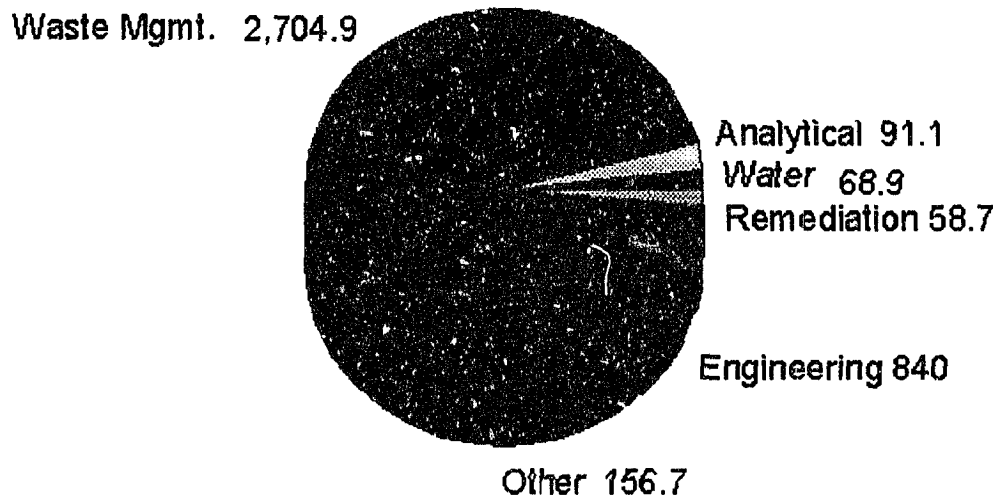
Source: Statistics Canada, Environment Industry: Business Sector, 1995

Canada:

Total Environment Revenues = \$10,193.1 million

Total Environmental Goods Revenues = \$4,223.9 million

Figure 3
**Revenues of Environmental Services
Canadian Firms, 1995**
(\$ millions)



Source: Statistics Canada, *Environment Industry: Business Sector, 1995*

Canada:

Total Environment Revenues = \$10,193.1 million

Total Environmental Services Revenues = \$3,920.2 million

[To view figure 3 click here](#)

Of environmental goods, 62% of revenues came from the "other" category, driven by the scrap metals industry. Goods used for water supply and conservation or wastewater treatment accounted for a further 15% of the total. The remaining revenues were almost evenly divided amongst the other goods categories.

Of environmental services, waste management alone accounted for 69% of total revenues. Engineering services came in second, with 21% of the total.

The majority (95%) of Canadian firms active in the environment industry employ fewer than 100 people. Collectively, these "small" firms accounted for 67% of revenues, while medium (100 to 499 employees) and large (500 and more employees) earned 23% and 10% respectively. In general, two-thirds of firms provide environmental services while the other third are manufacturers of environmental goods.

The industry is largely an **enabling** industry, providing expertise, technologies and services to meet the environmental needs of traditional industrial sectors, such as mining and pulp and paper. Typically environmental firms will locate in close proximity to the industry which they serve. For example, the majority of Canada's firms dealing with the remediation of hydrocarbon-contaminated soils are located in western Canada, close to petroleum-producing facilities.

Environmental regulations and standards have traditionally set the broad framework for demand for environmental goods and services. Recently however, growth in the environment industry has been driven by technologies which have both a strong economic and environmental basis (i.e. eco-efficiency) and give greater flexibility in achieving environmentally-satisfactory solutions. This has been coupled with a surge in the development of clean technologies and products.

[To view figure 4 click here](#)

Regional Distribution and Structure

In 1995, 15,000 workers were employed in the environment industry in the **Prairies**, representing 12% of total Canadian industry employment.

The table below highlights environment business sector activity by province. Roughly 42% of industry revenues are generated by firms located in Ontario, 26% by firms in Quebec, 14% in the **Prairies**, 12% in British Columbia and 5% in the Atlantic region.

1995 Data	Companies	Total Revenues	Environmental Goods	Environmental Services	Environment-related Construction	Total Environment Revenues
Province	Number	Million Dollars				
Atlantic Provinces	503	804.4	142.3	208.2	175.8	526.1
Quebec	1,240	4,443.3	1,236.0	930.6	487.8	2,654.4
Ontario	1,515	8,926.7	2,082.6	1,660.1	555.9	4,298.6
Manitoba	152	536.6	97.3	176.6	42.3	256.2
Saskatchewan	187	237.8	68.7	40.8	48.8	158.3
Alberta	424	1,921.0	195.0	442.5	411.7	1,049.1
British Columbia	634	2,511.3	401.8	511.3	314.9	1,228.0
Yukon/NWT	18	27.4	0.3	10.3	11.9	22.5
Canada	4,673	19,409.1	4,223.9	3,920.2	2,049.0	10,193.1

Source: Statistics Canada, Environment Industry: Business Sector, 1995

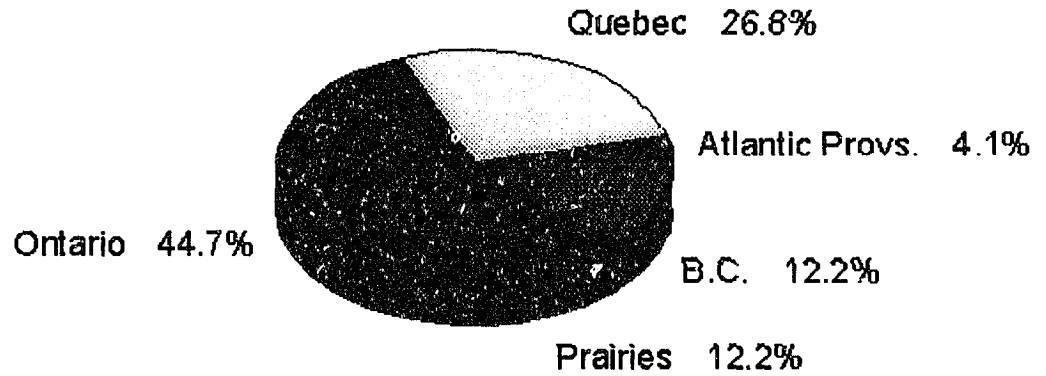
Manitoba

According to Statistics Canada, 152 firms have indicated that they are involved in some aspect of the environment industry sector. This involvement represents total firm employment of 4,700³ and annual environment business activities revenues of \$256 million. Services account for nearly 46% of environment industry activity, goods production 38% and construction activities nearly 17%. The industry is dominated by a variety of small firms employing less than 10 people.

Figure 4

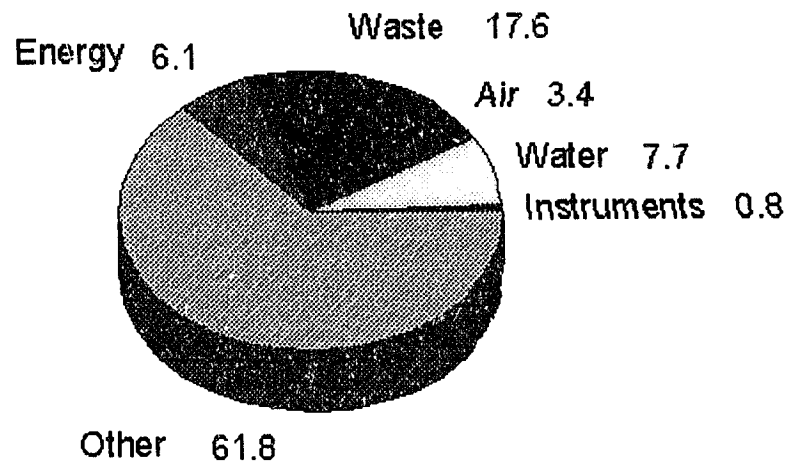
Environmental Industry Employment by Province, 1995

Environmental Industry
Employment (Canada) =
123,000



Source: Industry Canada

Figure 5
Revenues of Environmental Goods
Manitoba, 1995
(\$ million)



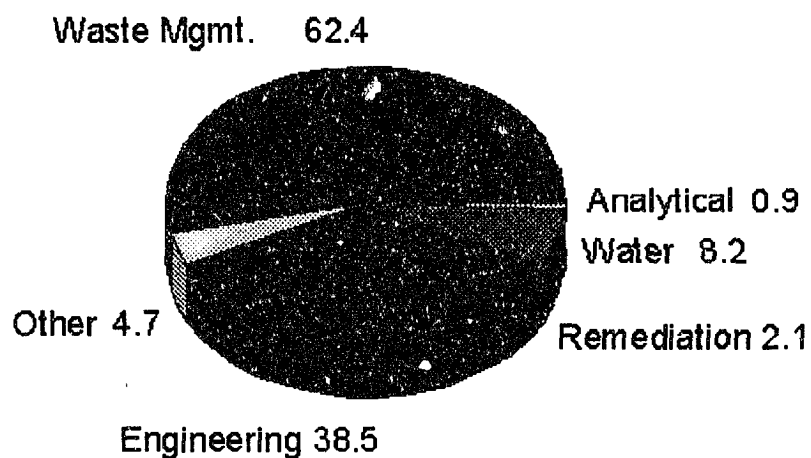
Source: Statistics Canada, *Environment Industry: Business Sector, 1995*

Manitoba:

Total Environment Revenues = \$256.2 million

Total Environmental Goods Revenues = \$97.3 million

Figure 6
Revenues of Environmental Services
Manitoba, 1995
(\$ millions)



Source: Statistics Canada, Environment Industry: Business Sector, 1995

Manitoba:

Total Environment Revenues = \$256.2 million

Total Environmental Services Revenues = \$116.6 million

[To view figure 5 click here](#)

[To view figure 6 click here](#)

The Manitoba environment industry has developed in response to local demands, particularly in the areas of agriculture and agri-food processing, health care, transportation, aerospace and agricultural equipment. Many firms fulfill a niche need for specific services, such as manure management for the hog industry, the development of alternative fuel dispensing systems (compressed natural gas/propane) for transportation, particularly bus manufacturing, and the manufacture of waste water systems.

Due to the limited size of the local market, many Manitoba firms have become export-orientated. This is particularly true of consulting/engineering firms which have developed expertise in quality management processes, waste and water management systems⁴.

Two promising emerging areas include bio-remediation and alternate fuel systems technology. Bio-remediation, like the environment industry in general, is difficult to define and track. Most firms in this area find themselves classified as either bio-agriculture or bio-pharmaceutical. Alternate fuel systems technology is growing rapidly, given the strength of the transportation sector in Manitoba, and the demands world-wide for cleaner fuels.

Alberta

According to Statistics Canada, 424 Alberta firms are involved in the environment industry, representing a total employment of 16,800 persons and accounting for environment-related revenues of \$1,0491 million. Services account for the bulk of provincial environment revenues (42%), followed by environment-related construction (39%) and goods production (19%).

[To view figure 7 click here](#)

[To view figure 8 click here](#)

The industry's development has been closely tied to activity in the oil and gas industry. Further, Alberta has the only hazardous waste treatment facility in western Canada (Swan Hills), which has encouraged related spinoff activity. In addition to hazardous waste management, Alberta companies are generally strong in recycling, solid waste management and on-site treatment, natural resource management and professional services.

A CETAC-West study of Innovative Environmental Technologies in Alberta (1997) found that technology development and commercialization activities were evident in all segments of the provincial environment industry. The industry segments cited in the study included monitoring and instrumentation, pollution prevention, water purification, consulting, recycling, special waste management, soil remediation and air purification. The study found that half the companies were exporting their products and services and that there was a high degree of specialization among firms due to the diverse technology requirements in different industry subsectors.

Saskatchewan

According to Statistics Canada, 187 Saskatchewan firms are involved in the environment industry, representing total firm employment of 2,300 and environment-related revenues of \$158.3 million. Firms are small in size, typically employing less than 10 workers. Goods production represents the bulk (43%) of the environment industry activity in Saskatchewan, followed by environment-related construction (31%) and environmental services (26%).

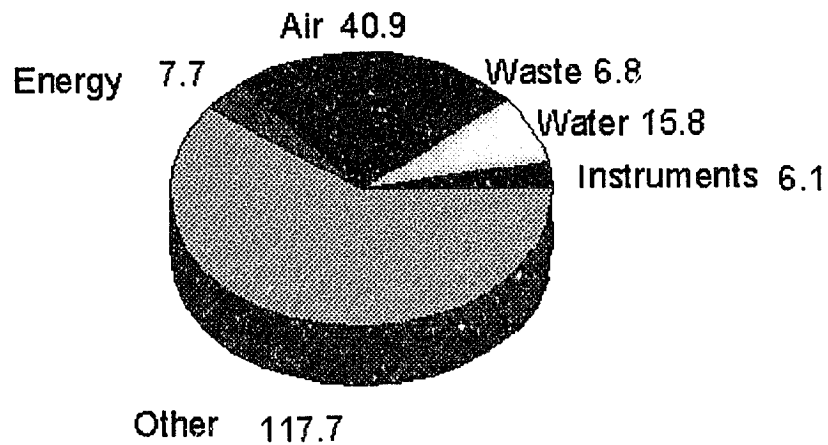
Saskatchewan firms have typically developed products and services to meet the needs of the local market. Industries served by the environment industry include: agriculture, oil and gas and mining. Saskatchewan's environment industry strengths include environmental instrumentation, hydrology, bioremediation and collection and recycling of post-consumer wastes.

[To view figure 9 click here](#)

[To view figure 10 click here](#)

For More Information on the Prairie Environment Industry Profile, please contact:

Figure 7
Revenues of Environmental Goods
Alberta, 1995
(\$ million)



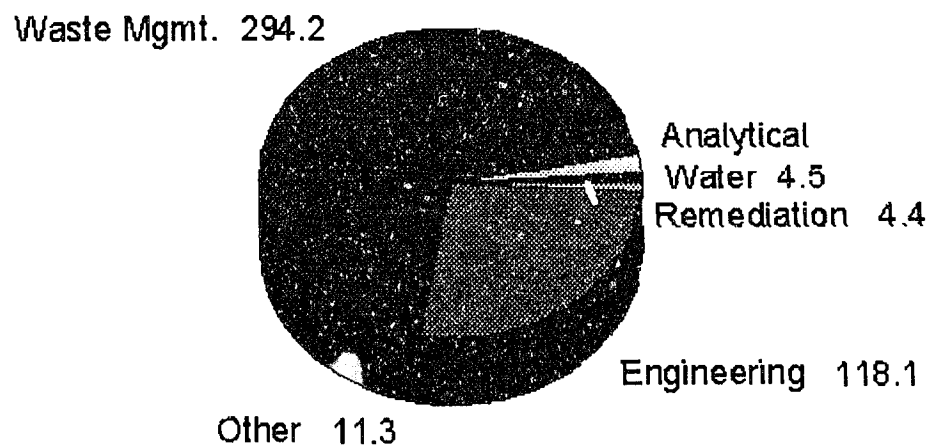
Source: Statistics Canada, Environment Industry: Business Sector, 1995

Alberta:

Total Environment Revenues = \$1,049.1 million

Total Environmental Goods Revenues = \$195 million

Figure 8
**Revenues of Environmental Services
Alberta, 1995**
(\$ millions)



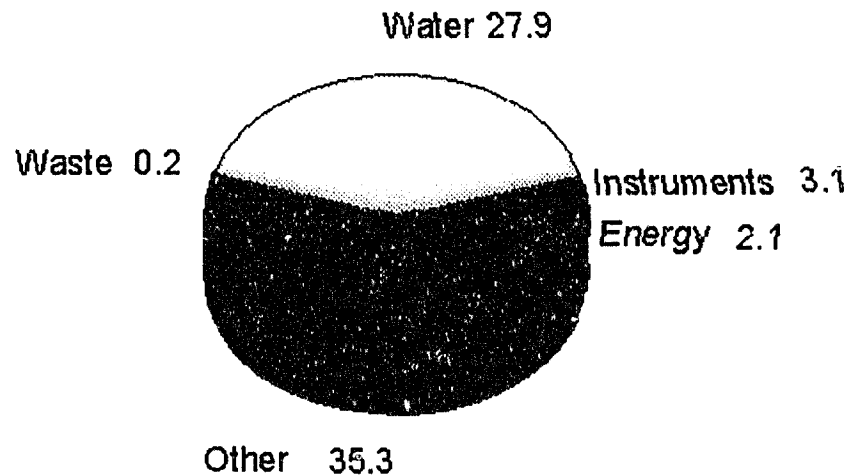
Source: Statistics Canada, *Environment Industry: Business Sector, 1995*

Alberta:

Total Environment Revenues = \$1,049.1 million

Total Environmental Services Revenues = \$442.5 million

Figure 9
Revenues of Environmental Goods
Saskatchewan, 1995
(**\$ million**)



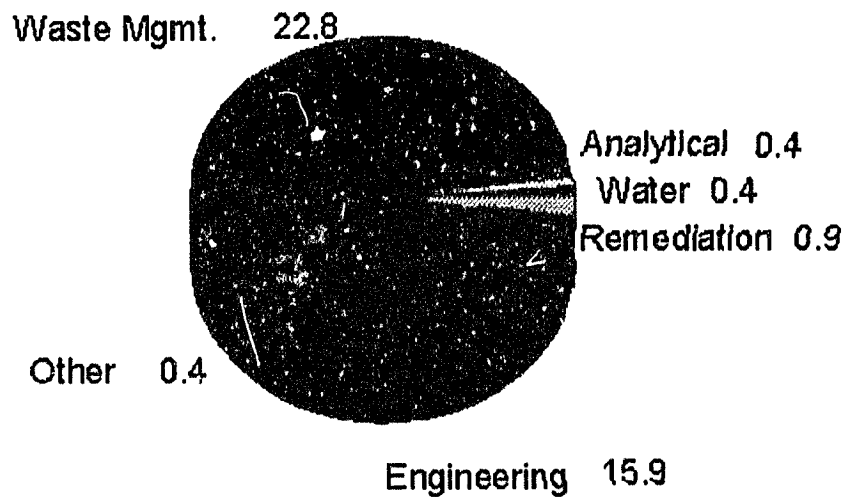
Source: Statistics Canada, Environment Industry: Business Sector, 1995

Saskatchewan:

Total Environment Revenues = \$158.3 million

Total Environmental Goods Revenues = \$68.7 million

Figure 10
**Revenues of Environmental Services
Saskatchewan, 1995**
(\$ millions)



Source: Statistics Canada, Environment Industry: Business Sector, 1995

Saskatchewan:

Total Environment Revenues = \$158.3 million

Total Environmental Services Revenues = \$40.8 million

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APPENDIX
OECD ENVIRONMENT INDUSTRY CLASSIFICATION SYSTEM (1996)

The OECD Working Group on the Environment Industry has developed a classification system for the environment industry⁵. The Organization has defined a "core" group of products and services which are typically supplied for an environmental purpose only, and which do not present significant conceptual or measurement difficulties. In contrast, non-core activities are fluid, crossing industry boundaries and resulting in difficulties in measuring these environmental goods, services and activities with any precision.

CORE ACTIVITIES:

A. Environmental Goods

Production of equipment, technology and specific materials for:

1. Air pollution control

- 1.1 Air-handling equipment*
- 1.2 Catalytic converters*
- 1.3 Chemical recovery systems*
- 1.4 Dust collectors*
- 1.5 Precipitators*
- 1.6 Incinerators, scrubbers*
- 1.7 Odour control equipment*

2. Waste water management

- 2.1 Aeration systems*
- 2.2 Chemical recovery systems*
- 2.3 Biological recovery systems*
- 2.4 Gravity sedimentation systems*
- 2.5 Oil/water separation systems*
- 2.6 Screens/strainers*
- 2.7 Sewage treatment*
- 2.8 Wastewater reuse equipment*
- 2.9 Water handling goods and equipment*

3. Solid waste management

- 3.1 Hazardous waste storage and treatment equipment*
- 3.2 Waste collection equipment*
- 3.3 Waste disposal equipment*
- 3.4 Waste handling equipment*
- 3.5 Waste separation equipment*
- 3.6 Recycling equipment*
- 3.7 Incineration equipment*

4. Remediation/cleanup of soil and water

- 4.1 Absorbents*
- 4.2 Cleaning-up*
- 4.3 Water treatment equipment*

5. Noise/vibration control

- 5.1 Mufflers/silencers*
- 5.2 Noise deadening material*
- 5.3 Vibration control systems*

6. Environmental monitoring, analysis and assessment

- 6.1 Measuring and monitoring equipment*
- 6.2 Sampling systems*
- 6.3 Process and control equipment*
- 6.4 Data acquisition equipment*
- 6.5 Other instruments/machines*

B. Environmental Services

Provision of services for:

7. Air pollution control

8. Waste water management

- 8.1 Sewage treatment systems*
- 8.2 Wastewater reuse systems*
- 8.3 Water handling systems*

9. Solid waste management

- 9.1 Emergency response and spills cleanup*
- 9.2 Waste handling - collection, transport and disposal*
- 9.3 Operation sites*
- 9.4 Recycling*
- 9.5 Operation of recycling plants*

10. Remediation/cleanup of soil and water

- 10.1 Cleaning-up*
- 10.2 Water treatment equipment*

11. Noise/vibration control

12. Environmental contracting/engineering

- 12.1 Engineering design/specification/project management*
- 12.2 Biological and ecosystem studies*
- 12.3 Environment impact assessment, audits*
- 12.4 Water treatment*
- 12.5 Environmental planning*
- 12.6 Risk and hazard assessment*
- 12.7 Laboratory and field services*
- 12.8 Environmental economics*
- 12.9 Legal services (environmental law)*

13. Environmental research and development

- 13.1 Environmental knowledge*
- 13.2 Environmental protection aspects*
- 13.3 Environmental management*

14. Analytical services, data collection and analysis

14.1 Measuring and monitoring

14.2 Sampling

14.3 Process and control

14.4 Data acquisition

14.5 Others

15. Environmental education and training

15.1 Environmental knowledge

15.2 Environmental information searching service

15.3 Environmental data management and analysis

NON-CORE Activities

A. Environmental Goods

Production of equipment, technology for:

1. Potable water treatment

1.1 Potable water treatment

1.2 Water purification systems

2. Other recycling systems

2.1 Other recycling systems

3. Renewable energy plant

3.1 Solar

3.2 Wind

3.3 Tidal

3.4 Geothermal

3.5 Other

4. Heat/energy management

5. Cleaner/efficient processes

6. Cleaner/efficient products

7. Alternative agriculture/fisheries

8. Sustainable forestry

9. Others

B. Environmental Services

Provision of services and construction for:

10. Other recycling/recovery plant

10.1 Other recycling systems

11. Renewable energy plant

- 11.1 Solar
- 11.2 Wind
- 11.3 Tidal
- 11.4 Geothermal

12. Amenity/conservation

- 12.1 Soil and water conservation
- 12.2 Pest control
- 12.3 Potable water supply and distribution
- 12.4 Wildlife and natural habitat

13. Alternative agriculture/fisheries**14. Sustainable forestry**

- 14.1 Reforestation
- 14.2 Forest management

15. Eco-tourism**16. Other services (e.g. industry associations)**

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FOOTNOTES

1. The Appendix outlines the OECD working classification system for the industry based on this definition.
2. Statistics Canada's total domestic production figure is generally considered to be an underestimate given that this was

the first attempt at surveying the industry, and because the survey fails to include important industry segments which are difficult to measure, such as research & development, alternative energy and fuels and eco-efficiency.

3. Total firm employment is reported since Statistics Canada was unable to separate out that percentage of firm labour devoted exclusively to environmental business activities.

4. Export activity estimates for the environment industry should be available from Statistics Canada in December, 1998 and should cover the years 1996 and 1997.

5. Statistics Canada's Environment Industry, 1995 data generally conforms with this classification.

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