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Widening the P2 Circle:
Measuring Pollution Prevention in Canada

7th Canadian Pollution Prevention Roundtable

Calgary, Alberta

June 11 & 12, 2003

Presented by Jeff Fritzsche



Who we are and what we do

- *Environment accounts and their related indicators
(Econnections -- linking the environment and the economy)*
- *Spatial analysis*
- *Human Activity and the Environment*
- *Environmental surveys*



Environmental Surveys

- ***Survey of Environmental Protection Expenditures***
 - Demand for environmental goods and services – biennial
- ***Environment Industry Survey***
 - Supply of environmental goods and services – biennial
- ***Waste Management Industry Surveys: Business and Government***
 - Provision of waste management services - biennial
- ***Households and the Environment Survey***
 - Environmental practices and products in households – not currently conducted



Survey of Environmental Protection Expenditures

- ***Collects information on expenditures made by industry in response to environmental legislation, conventions or voluntary environmental agreements***
 - Capital and operating expenditures for:
 - Pollution prevention
 - Treatment and control of pollutants
 - Environmental monitoring
 - Environmental assessments and audits
 - Site reclamation and decommissioning
 - Protection and restoration of wildlife and habitat
 - Use of environmental processes and technologies

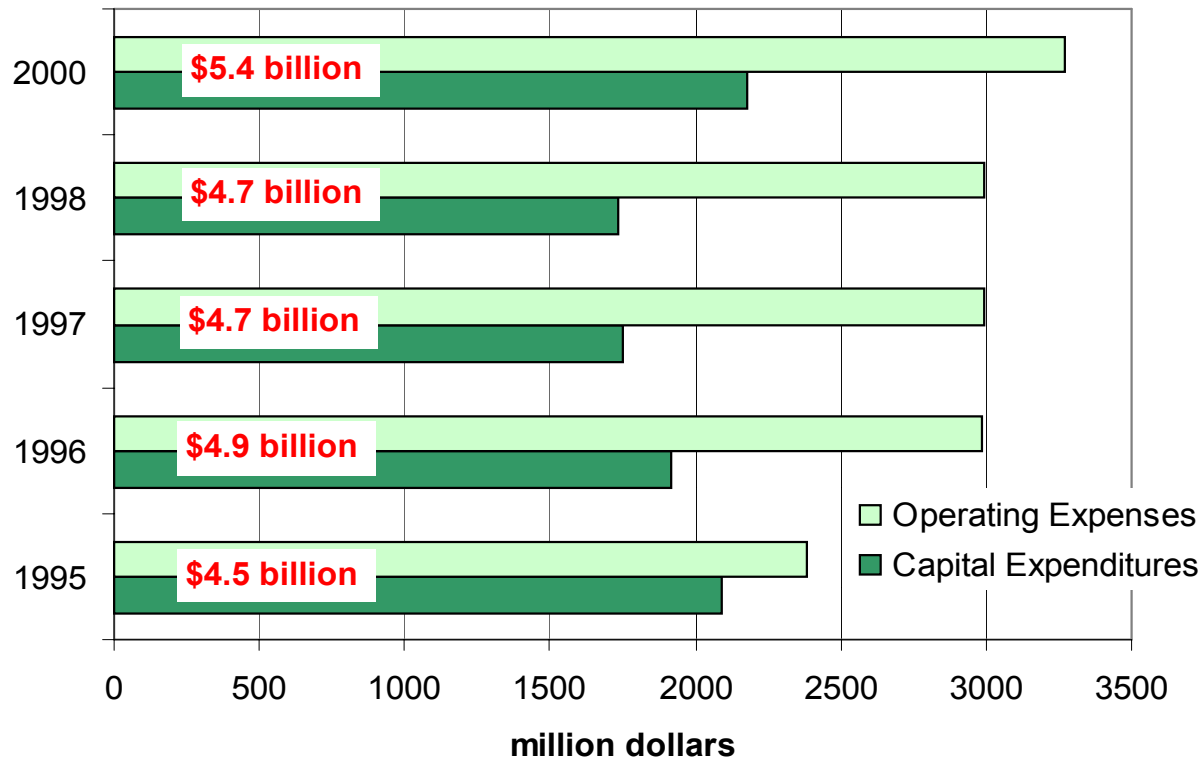
- ***Limitations of definition***

Who is surveyed:

- ***The survey is establishment-based and provides detailed information for primary and manufacturing industries***
- ***Consistently high response rate***

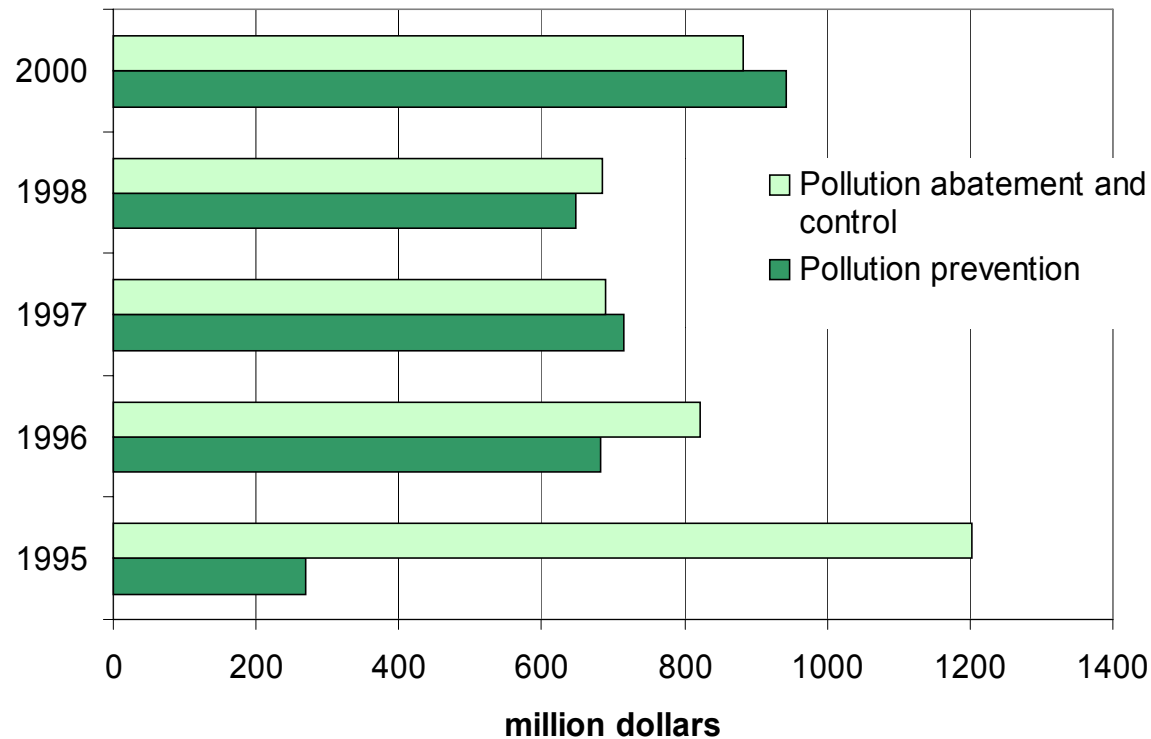


Total Environmental Protection Expenditures





Investment in Pollution Prevention and Pollution Abatement and Control





- ***The top P2 capital investors in 2000 included the following industries***
 - Transportation Equipment (\$188 million)
 - Pulp, Paper and Paperboard Mills (\$140 million)
 - Oil and Gas Extraction (\$115 million)
 - Petroleum and Coal (\$90.3 million)
 - Electric Power Generation, Transmission and Distribution (\$78 million)
 - Chemicals and Mining (\$67 million)
- ***In general, most industries have either increased or maintained their P2 investments over time***



Where does industry direct their investments?

Pollution prevention:

- Over the past several survey cycles, businesses have directed the majority of their capital expenditures at reducing air emissions

Pollution Abatement and Control (end-of-pipe):

- Big increase in investment directed at air emissions in 2000 compared to previous survey results
- Oil and Gas Extraction industry big reason for it

Why?

- May be in anticipation of the requirements arising from the Kyoto Protocol
- Increasing awareness in recent years of air quality issues



What Types of Pollution Prevention Practices are used by businesses?

- | | |
|--|-----|
| – Good operating practices or P2 training | 79% |
| – Prevention of leaks and spills | 73% |
| – The “4Rs” | 67% |
| – Equipment or process modifications | 48% |
| – Improved management or purchasing techniques | 42% |
| – Materials, feedstock or solvent substitution | 34% |
| – Product design or reformulation | 24% |
- ***Overall, almost 90% of businesses indicated they used at least one type of pollution prevention process at their establishment***



Energy Conservation and Renewable Energy

- *Perhaps the biggest news is that there was no real change between 1998 and 2000 results*
- *Overall the proportion of businesses that used an energy conservation or renewable energy technology in 2000 fell*
- *The most frequently reported:*
 - use of energy efficient equipment (42%)
 - waste-to-energy systems (21%)
 - clean fuel systems (13%) and fuel substitution (12%)



Use of Renewable Energy Technologies

There was little change in the proportion of businesses that indicated they used renewable energy technologies

Biomass energy source – 8% of businesses overall (up 2% from 1998)

- Pulp, Paper and Paperboard Mills industry (48%)
- Wood Products industry (34%)

Solar power – 3% of businesses overall (no change from 1998)

- Oil and Gas Extraction industry (35%)
- Pipeline Transportation (34%)

Wind power – 1% of businesses overall (no change from 1998)

- Electric Power Generation, Transmission and Distribution (10%)



Use of Environmental Management Practices

- ***Similar results in 2000 for the use of management practices as were found for the use of energy conservation and renewable energy technologies – overall environmental management practices participation rates were down in 2000 compared to 1998***
 - Overall, 72% of businesses participated in at least one
- Most popular:
- environmental management systems (52%)
 - publish or contribute to environmental performance report (38%)
 - participation in voluntary programs (29%)



Not surprisingly, larger businesses (based on employment) are more likely to participate in the various environmental methods and practices

However, smaller businesses were more likely to use pollution prevention methods relative to their use of environmental management practices or energy conservation or renewable energy technologies

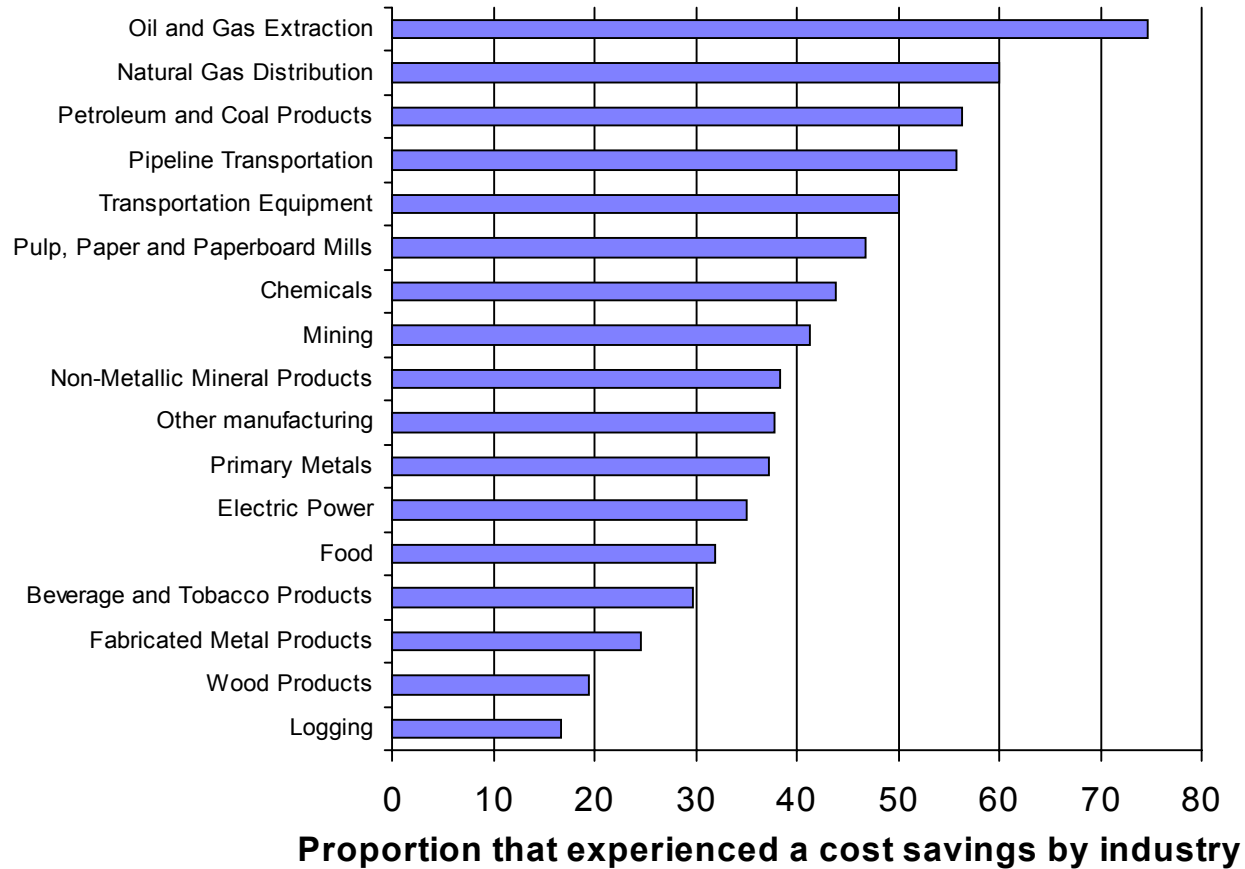


Cost Savings

- ***In 2000, for the first time, businesses were asked if they experienced cost savings due to the implementation of environmental management or pollution prevention practices***
 - The Oil and Gas Extraction industry was most likely to report cost savings (75%), while the Logging industry was least likely (17%)
 - Interestingly, larger businesses (based on employment) were more likely to report experiencing cost savings than smaller businesses
 - Why are larger businesses more likely to experience cost savings than smaller ones?



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Survey Questions on Climate Change Technologies

- **Background**

- Added questions on the production, distribution and use of climate change technologies by businesses to existing surveys
- Funding through *Action Plan 2000 on Climate Change* via Industry Canada

- **Objectives**

- **Statistical monitoring to:**

- Determine the availability and use of climate change technology solutions
- Evaluate current exports of climate change related goods and services
- Identify barriers to the growth of sales and implementation of climate change technologies
- Record innovation and research and development expenditures on climate change technologies

- **Conduct for 2002 and 2004 survey cycles**

- Funding covers period 2001-2002 to 2005-2006



Survey Questions on Climate Change Technologies

- **Approach**
 - Guided by the *Interdepartmental Working Group on Measuring Climate Change Technologies*
- **To Date**
 - Questionnaires and guides created through consultations with the Working Group
 - Questionnaires and guides were tested within several Canadian cities
 - Survey questionnaires have been mailed out for the 2002 reference year



Survey Questions on Climate Change Technologies

- *The questions*
 - **Survey of Environmental Protection Expenditures**
 - Use of systems to reduce or trap greenhouse gases being emitted
 - Use of “substitute” energy systems e.g. Small hydro, solar, wind, waste to energy
 - Capital expenditures made to reduce greenhouse gas emissions and operating expenses
 - What proportion manufactured in Canada?
 - Obstacles and drivers for initiatives to make expenditures to reduce greenhouse gas emissions
 - **Environment Industry Survey**
 - **Waste Management Industry Survey**



Further Information

- ***Go to Statistics Canada's Website to download our survey reports for free:***
 - <http://www.statcan.ca> : Our Products and Services – Browse our Internet Publications - Free - Environment
- ***My email address: jeffrey.fritzsche@statcan.ca***
- ***Our general email address: environ@statcan.ca***