



Canada's Environment Industry

Targeting Global Opportunities with
Innovative & Competitive Technologies

Abridged from
Decade of Challenge - Canadian Environmental
Industry Competitiveness Analysis
ÆGIS Management Consulting Group, 2003



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Canadian environment companies face a challenging decade, but it is also one of opportunity where our competitive strengths, R&D capacity and ability to partner, will continue to lead to success.



MARKET DEMAND

The environment industry is a critical enabling sector for mainstream industry as it moves toward sustainability. Environmental problems and their solutions are increasingly global, and most likely to have major economic, social and cultural impacts.

The opportunities presented by the

private and public sectors in their attempts to remedy environmental issues will be with us for many decades. Industry is struggling to become cleaner; agricultural problems persist through the overuse of herbicides, fertilizers and water; transport problems continue with respect to emissions, excessive use of land for infrastructure and congestion;

tourism's high, seasonal concentrations put an environmental burden on popular vacation locations; and, energy consumption is still heavily reliant on fossil fuels.

The world market for environmental goods and services is valued at almost \$800 billion. Forecast to increase to almost \$1 trillion by 2010, this represents an annual growth of 3 percent. The global environmental industry is comparable to the pharmaceutical and aerospace industries in size.

Western Europe, Japan and North America account for 85 percent of world markets. Although large, high value markets, they are mature and exhibit low growth rates.

Environmental markets in Central and Eastern Europe (*CEE*), South East Asia, China and Latin America will see annual growth rates in the range of 6-10 percent, particularly in areas such as water and wastewater treatment, waste management, air pollution control, and environmental monitoring and



instrumentation.

Higher growth rates in developed economies are forecast in such areas as cleaner technologies and processes, renewable energy, waste management and environmental consulting services. As their economies grow, demand in developing countries will increase for similar environmental goods and services as well as for expertise and technologies in contaminated land remediation.

CASE STUDY

Iogen, a specialty chemical manufacturer, in partnership with Petro-Canada and the Government of Canada, has built the only cellulose-to-ethanol demonstration plant in the world in Ottawa, Canada.

COMPETITIVE STRENGTH

Canada has many successful, internationally recognised environmental manufacturing and service firms, such as: Ballard Power Systems, Jacques Whitford, Golder Associates, Les Industries Fournier Inc., SNC-Lavalin, Stantec, the Hatch Group, and Zenon Environmental Inc..

An analysis of global environment industry competitiveness points to clear gaps with respect to the resources management sub-sector which includes water utilities, resources recovery, and environmental energy. Most of the global players from the US, Europe and Japan, have yet to establish dominance in these sub-sectors, see **Table 1**.



COMPETITIVE ADVANTAGE

Canadian companies are well placed to benefit from this gap in supply and have demonstrated advantages:

- Leaders in solid waste management;
- First-rate consulting & engineering services;
- Extensive international experience in the analytical services sector;

CASE STUDY

Sci-Tec Instruments Inc. has developed a better way to monitor one of today's most serious environmental problems - the thinning ozone layer and has won world-wide acclaim for the instrumentation it developed to measure the earth's ozone levels.

- Innovative renewable energy initiatives demonstrate cutting edge Canadian technology development;
- Canadian research institutions and universities have strong R&D capabilities; and
- Forging partnerships and alliances to meet the diverse needs of today's customers.

Potential market opportunities for Canadian firms have been identified as:

- Process and prevention technology;
- Hazardous waste management;
- Remediation and industrial services;
- Analytical services;
- Resources recovery; and
- Environmental energy.

An analysis of Canadian industry's competitive strengths confirms that the industry is already advanced in these segments.

FUTURE OPPORTUNITY

Opportunities for Canadian firms often arise from key influences such as:

- Kyoto/Climate Change policies;
- Government budget directions and funding initiatives;
- Regulation and enforcement; and
- Health and the environment.

A recent study for Industry Canada highlights eight environmental industry sub-sectors that represent the best opportunities for Canadian

industry in the next decade:

- Water and wastewater treatment technologies;
- Engineering and management consulting services (*including geomatics*);
- Waste services (*including solid waste management, landfill management & technologies, recycling technologies, and resource recovery*);
- Renewable energy (*including wind, solar and biomass, control systems, and energy efficiencies*);
- Analytical goods and service (*GHG analysis & emission monitoring, air pollution control*);
- Fuel cell technologies;
- Remediation; and
- Natural resource management.

CASE STUDY

ADI Group's MEDIA G2® technology has treated hundreds of millions of gallons of arsenic contaminated water. This water treatment technology based on a natural compound is a highly efficient and cost-effective process capable of reducing arsenic levels to less than 2 ppb.

Specific sub-sector opportunities detailing the Canadian competitive advantage, source of future competition and opportunity timelines are summarized in Table 2.

Canadian companies operating in environmental product and/or service segments should look to high-end or higher technology market niches in developed countries (*North America, Western Europe and Japan*). These are mature environmental markets with increasingly sophisticated needs.

The basic needs of developing nations are for funding to put in place essential



environmental services, and the environmental framework (*regulations and enforcement*) to allow them to move forward. Canadian companies presenting innovative funding solutions, as well as innovative technologies, will be increasingly successful in global markets.

GOING GLOBAL FOR GROWTH

Canadian environment companies have demonstrated innovation, creativity and technical excellence in developing solutions for environmental problems.

Continued success and competitive advantage in the global market will be in providing integrated environmental solutions, and in developing strategic partnerships and collaborations with key

regional, national and international partners and stakeholders.

CASE STUDY

Fluidized bed reactor technology developed by **Enerkem/Kemestrie Inc.** offers an energy efficiency exceeding that of conventional combustion or pyrolysis processes by about 50 percent and reduces atmospheric emissions and the volume of waste to be buried. The technology can be applied to organic residues from many sources as well as wastes from various industries.

FOR MORE INFORMATION:

Sustainable Technologies & Service Industries Branch
Industry Canada
strategis.gc.ca/stsib

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TABLE 1: ENVIRONMENTAL INDUSTRY COMPETITIVENESS

Industry Segment	US	Germany	Japan	France Et UK	Developing Nations	Canada
Equipment						
Water equipment Et chemicals	G	G	GE	GE	MP	O
Air pollution control	G	E	E	O	MP	O
Instruments Et Information systems	E	G	G	O	P	O
Waste management equipment	G	GE	OG	O	OM	O
Process Et Prevention Technology	P	P	M	P	P	G
Services						
Solid waste management	G	OG	OM	EG	MP	GE
Hazardous waste management	G	O	O	OG	P	G
Consulting Et engineering	GE	OG	M	OG	MP	GE
Remediation / Industrial Services	G	O	M	OM	P	G
Analytical services	G	O	O	O	MP	E
Water treatment works	MP	M	MP	GE	MP	OM
Resources						
Water utilities	MP	MP	P	GE	MP	O
Resources recovery	O	OG	O	O	MP	GE
Environmental energy	OG	OG	OG	OG	P	G

(Key: E = Excellent, G = Good, O = OK, M = Mediocre, P = Poor)

Source: Environmental Business International Inc., p5, Environmental Business Journal, Volume XII, No. 9/10. Based on ratings of technology, commercial orientation, management, finance, global presence, government support Et labour. Amended by AEGIS Management Consulting Group, March 2003.

TABLE 2: ENVIRONMENTAL OPPORTUNITIES FOR CANADIAN COMPANIES

Sub-Sector	Competitive Advantage	Strongest Competition	Timeframes
Water and wastewater treatment technologies	Domestic experience, projects in developing countries, flexibility	France, UK, Spain, Japan	1-3 years
Waste services / solid waste management/ recycling technologies	Domestic experience, good research Et development	Germany, France, UK, US	1-3 years
Engineering and management consulting services - real estate assessment, liability Et risk assessment, geomatics	Internationally recognised expertise	US, Norway, Netherlands	1-3 years
Analytical goods(instrumentation) and services: GHG analysis Et emission monitoring, APC	Leading company located in Canada, excellence in research Et development	US, Germany, Switzerland, Japan	3-5 years
Oil Et gas environmental technologies; oil spill management; marine pollution technologies	Industry growth and regulatory environment in Canada has provided foundation for development of expertise	US, UK	5 years
Environmental research Et development	Centres of Excellence supported by federal and provincial programs	US	3-5 years
Fuel cell technologies	Leading edge research and development and partnership with companies in growth markets	US, Japan	8-10 years
Renewable energy: wind and hydro energy generation sites and control systems	Proven technology; research and development	Denmark, Germany, Spain, Japan	6-10 years
Environmental biotechnologies - contaminated land remediation	Canada's biotechnology focus; federal support; university centres of excellence	US, Germany	8-10 years
Natural resource management	Experience of managing domestic resources; highly developed regulatory environment	Germany, US	6-10 years

Source: AEGIS Management Consulting Group, 2003

