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# CANADA'S EXPORT STRATEGY

## *The International Trade Business Plan*

1995/96

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***An Integrated Plan for Trade, Investment  
and Technology Development***

**The International Trade Business Plan** is made up of an **Overview** highlighting Canada's international business development priorities, and a series of **Industry Sector Strategies**, which include lists of planned international activities. The following documents are available:

- Overview
1. Advanced Manufacturing Technologies
  2. Agriculture and Food Products
  3. Aircraft and Parts
  4. Automotive
  5. Biotechnologies
  6. Business, Professional and Educational Services
  7. Chemicals, Plastics and Advanced Materials
  8. Construction Products
  9. Consumer Products
    - Apparel and Fur
    - Textiles
    - Footwear
    - Sporting Goods (including recreational watercraft)
    - Tools, Hardware and Housewares
    - Residential Furniture
    - Business and Institutional Furniture
  10. Cultural Industries
  11. Defence Products
  12. Environmental Equipment and Services
  13. Fish and Sea Products
  14. Forest Industries
  15. Information Technologies and Telecommunications
    - Sector Overview
    - Computers and Peripheral Equipment
    - Electronic Components
    - Geomatics
    - Instrumentation
    - Software Products and Computer Services
    - Telecommunications
  16. Medical and Health-Care Products and Services
    - Medical Devices
    - Pharmaceuticals
    - Health-Care Services
  17. Minerals and Metals
  18. Oil and Gas Products and Energy Equipment
  19. Power Equipment
  20. Primary/Secondary Industrial Machinery
    - Mining, Forestry, Pulp and Paper
    - Agricultural Technology, Machinery and Equipment
    - Ocean and Marine Shipboard Technology
  21. Rail and Bus Equipment
  22. Space
  23. Tourism

For information on how to receive the Overview, or additional Industry Sector Strategies, please call: **1-800-267-8376**

All monetary figures in this document are expressed in Canadian dollars unless otherwise indicated.

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## Power Equipment

The power equipment sector comprises diverse subsectors producing a wide variety of products and services, including equipment for hydro-, thermal- and nuclear-generating stations; power transmission and distribution equipment; electrical wire and cable products; power and distribution transformers; control and protection equipment; power-conversion equipment; electric motors; alternative energy, for example from solar and cogeneration; standard and advanced technology batteries; and fuel cells.

Electrical utilities and the construction, mining and manufacturing industries are the largest markets for the sector. Most electrical products are made for utilities, and it is in these products that Canada is most competitive internationally. The focus here will therefore be on utility products.

### International Environment

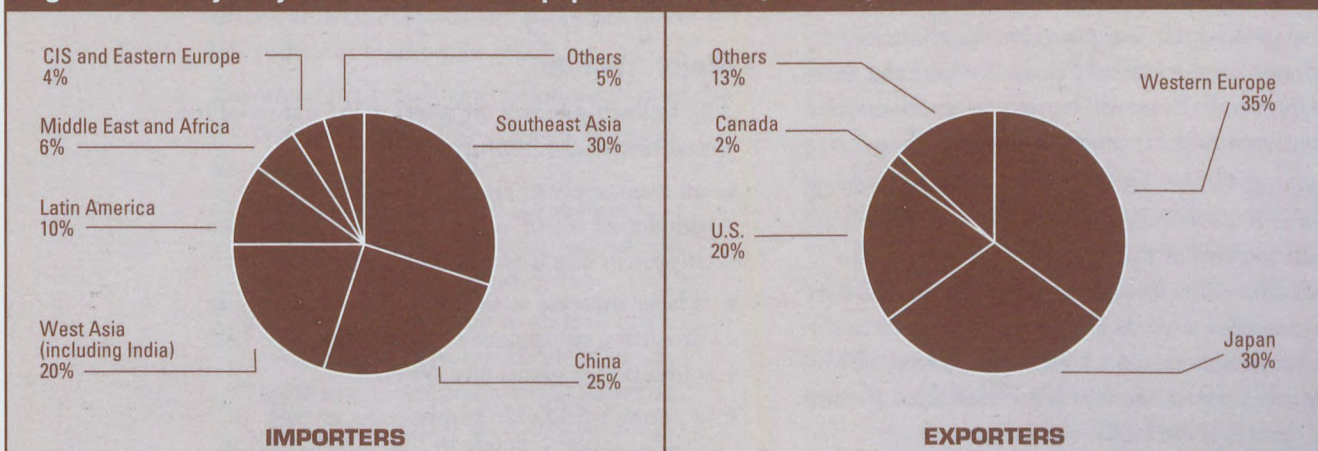
Economic expansion cannot occur without electrical power. Power supply and electrical equipment needs grow, on average, at about the same rate as economic growth.

The global electrical equipment industry will continue operating in two distinct international growth environments:

- the slow-growth developed world has indigenous, mature electrical manufacturing industries that will continue operating in surplus capacity in the 1990s;
- the developing world, lacking sufficient developed industries to meet growth demands, will continue to import electrical equipment from the developed world. Engineered equipment and systems such as large generation and high-voltage transmission equipment will be particularly needed, especially in high-growth Asia (see Figure 1).

Current electric generating capacity in the world totals nearly 2800 gigawatts (or 2800 billion watts). Nearly 40 percent of that capacity is in Eastern and Western Europe. The United States and Canada account for about 26 percent. The remaining one third is spread through Asia, Africa

Figure 1 — Key Players in the Power Equipment Market, 1993 (Estimated % of Total Market)



Source: Industry Canada

and Latin America. Highly developed and heavily electrified Western Europe and North America will grow slowly in electricity needs. By contrast, the existing relatively low electrical capacity in the developing world will be substantially expanded.

For the balance of the decade, a growth of about 800 gigawatts, an increase of over 30 percent, is expected worldwide. This will require about US\$3 trillion in electrical equipment.

The largest potential new market lies in Asia, which will experience a third of the world's total increase in capacity by the end of the decade.

There, the addition of 250 gigawatts will increase present capacity by about 50 percent. The largest expansion in electrical systems will probably be in China, growing at about 9.5 percent per year, or 18 000 MW. Strong growth is also expected in other Asian countries, especially India, Viet Nam, Cambodia, Korea, Taiwan, and the Southeast Asian nations.

Africa, Latin America and the Middle East, in the earlier stages of economic and industrial development, also have a great need to add electric power, but the combined capacity growth rate (about 4.2 percent) will be much lower than in Asia.

In the United States, the emphasis will be on refurbishing and upgrading existing power plants and transmission systems. The U.S. utilities are trying to hold down major investments in new plants and equipment. As a result, only a 2-percent annual growth rate is expected for the balance of the decade in the United States. Despite the slow growth overall, there will be strong new demand for certain equipment needed for upgrading.

Almost two thirds of all U.S. utility-generating facilities is 20 years old, and nearly one third is at or near the end of their originally expected economic life. Since the mid-1970s, U.S. authorities have cancelled nuclear construction projects and no new nuclear reactors have been ordered. This places even greater demands on fossil-fired plants, even though these facilities face increasingly stringent environmental restrictions. There will also be a heavy emphasis on combined cycle and

gas turbines, especially with the availability of reasonably priced natural gas.

Market growth will also be low in Europe, about 1.8 percent per year, for a total increase of about 200 gigawatts by the end of the century. While this will be a relatively small percentage increase for Europe, in absolute terms it represents about a quarter of the total growth worldwide. The greatest market potential will likely be in Eastern Europe, which desperately needs electrical power to support economic expansion. It also needs to upgrade and replace many old and inefficient power plants.

The developed world will be concentrating on improving overall efficiency in generation, transmission and distribution, utilizing exciting new technologies.

Near- to mid-term opportunities for Candu nuclear reactor sales exist in Turkey, China, Korea and other markets. Strategic alliances will be necessary to win these orders; partners with the ability to bring competitive export project financing will have a major advantage.

By far the largest power equipment market is electricity transmission and distribution equipment (about half of total demand). The remaining half of world demand is for boilers (15 percent), steam turbines (12 percent), hydroturbines (5 percent), nuclear reactors (5 percent), and emission control equipment (4 percent).

## Major Trends

The following trends are altering the nature of the global electrical equipment market:

- an oversupply of electricity in much of the developed world, and a corresponding under-supply in much of the developing world;
- a large increase in the requirement for higher efficiency equipment to replace and refurbish older power plants and systems;
- a strong worldwide emphasis on energy conservation, which will continue to reduce utilities' new construction needs. Although the conservation ethic is strongest in the developed

world, it has also been adopted in the developing world (especially Thailand, the Philippines, China and Mexico) to help alleviate their need for high energy growth;

- increased emphasis on equipment and systems for improving electrical system efficiencies, resulting in more sophisticated high-technology equipment, especially electrical control equipment;
- increased training needs to adapt to the more sophisticated high-technology equipment;
- a substantially increased demand for alternative energy equipment and systems, especially in the areas of cogeneration, solar power and wind systems. (Some analysts predict the production of significant numbers of electric automobiles within the next decade);
- competitive financing, which will remain a major factor in project competitiveness, while concessional financing by governments will play an increasingly less important role. Financial expertise, especially risk assessment and risk dispersment, will be more important in the future, and private power projects (PPP) and the build, operate and transfer (BOT) technique will become increasingly important in capital equipment export projects;
- increased manufacturing capabilities in the developing countries, of which many, including China, India and Brazil, are projected to be self-sufficient by the year 2020;
- continued manufacturing rationalization with increasing efficiencies on a global basis, including:
  - a major restructuring of the industry, particularly within the European Union (EU) and North America,
  - production continuing to shift to quality, low-cost producers, especially for more labour-intensive equipment production,
  - larger multinational manufacturers that produce most of the industry's output continuing to downsize in terms of employment,

- some plant closings perhaps occurring in Europe and North America as production continues to be relocated to Asia;
- changes in legal and business practices such as privatization which are attracting Western participation in many developing countries such as Malaysia, Pakistan and India;
- an increasing trend to transnational alliances and partnerships as a means of maintaining international competitiveness;
- a gradual harmonization of electrical standards worldwide, reducing these non-tariff barriers to trade; and
- global competition, always fierce in the past, has become even more so with slow growth in Western countries.

## Canadian Position

The electrical equipment manufacturing industry in Canada employs approximately 80 000 people and ships about \$9 billion in products annually, \$2 billion of which are exports. While shipments have declined since the beginning of the recession, a recovery is under way with output in 1993 showing a marginal increase over 1992. The industry's productivity and international competitiveness continues to increase substantially, as do exports.

Manufacturers can be divided into two categories: small- and medium-sized, Canadian-owned firms producing specialized products for niche markets; and large, foreign-owned multinational companies. Successful exporting subsidiaries have world product mandates. In some cases, exporting by the subsidiary is limited to Canadian-financed or co-financed projects.

The Canadian domestic market has suffered in recent years with the cancellation of large power projects, the strong trend to conservation and slow economic growth in general. As a result, exports have become increasingly important for the survival of the industry.

## Strengths

Canada has developed an international reputation and image as a reliable supplier of high-quality products with the most advanced technologies. Canada is most competitive in custom-made and specialty electrical products, especially larger generation and transmission equipment, including:

- hydro generators and turbines;
- gas and steam turbines;
- power plant ancillary equipment;
- custom specialty electrical products and systems;
- replacement and retrofit equipment;
- industrial and utility boilers;
- nuclear reactors and associated equipment for nuclear plants;
- medium- and large-power transformers;
- capacitors;
- circuit breakers;
- support insulators;
- disconnect switches;
- power shunt reactors;
- specialty wire and cable;
- control and protection equipment;
- stationary- and mobile-engineered substations;
- hydro power station control and supervisory equipment;
- supervisory control and data acquisition (SCADA) equipment.

Research and development (R&D) activities have allowed many Canadian firms to become competitive in these areas. R&D activities in the provincial electrical utilities have been especially productive in developing competitive, state-of-the-art equipment. The utilities of Ontario, Quebec and British Columbia have large well-equipped R&D divisions with world-class testing facilities, and the industry works closely with these provincial utilities for R&D in electrical products. Atomic Energy of Canada Limited (AECL)

operates two large research facilities in Ontario and Manitoba.

Alternative energy sources such as solar, cogeneration and fuel cells, are also drawing renewed interest. Those subsectors involved in energy savings and improved system efficiencies are growing rapidly.

A number of world-competitive products have been developed in Canada, where subsidiaries have been granted world product mandates. The products include gas turbines, hydro turbines and generators, and high-voltage cold-climate SF-6 switchgear. Canadian subsidiaries have also benefited from access to state-of-the-art technology developed in large U.S. and European R&D facilities. Smaller, independent manufacturers have been able to acquire and then develop their own technologies through international licensing arrangements and other types of alliances.

Product quality is also a major strength of Canadian companies and has been a key in competing against Japanese and European manufacturers in Third World power-sector markets. The Canadian Standards Association's (CSA) stringent requirements for Canadian manufacturers and the quality standards required to cope with Canada's severe operating conditions are recognized worldwide by electrical equipment buyers.

## Challenges to Exporting

Even with the many competitive strengths that Canada enjoys, Canadian firms face many challenges in adapting to the trends and global changes affecting the industry:

- Canadian firms must adopt more BOT and build, operate, own and transfer (BOOT) techniques rapidly being employed worldwide for power projects;
- funds available from international financial institutions (IFIs) such as the World Bank and the Asia Development Bank are not sufficiently utilized by Canadian firms. As Canada is a significant financial contributor to these banks,

Canadian firms are eligible to bid on procurement opportunities arising from more than US\$40 billion loaned annually to developing countries. IFI bidding processes are designed to ensure fairness between countries, and provide companies with a convenient and cautious entry to unfamiliar markets;

- the industry continues to work with government and trade unions on the difficult challenge of developing the skilled trades people and technologists that the industry needs to remain competitive internationally;
- there is a need to increase the exposure of many small- and medium-sized enterprises (SMEs), which make up most of the sector, to innovative techniques and export strategies;
- many firms are small, undercapitalized and still carry heavy debt loads incurred during the 1980s. Consequently, they often lack the resources to carry out extensive research and promotional programs;
- "Buy America" policies remain a non-tariff barrier to the U.S. utility market and have resulted in some companies establishing U.S. subsidiaries to ensure that they remain eligible to sell in that country. In addition, many U.S. states have employment or procurement legislation giving their manufacturers preference over out-of-state suppliers;
- Western European and Japanese markets remain largely closed to Canada due to local competition and non-tariff barriers;
- competitive project financing is a constraint to exporting, especially where foreign governments support their firms with mixed credits and/or concessional financing;
- Canadian firms entering developing country markets must:
  - be prepared to compete aggressively against stiff European, Japanese and U.S. competition,

- take the long-term strategic approach and devote the resources necessary for a sustained marketing effort over a period of years,
- consider a local agent as essential in dealing with local buyers,
- work with other Canadian and foreign suppliers to create competitive packages,
- be prepared to enter joint ventures to establish local manufacturing facilities and service support;
- new exporters of electrical equipment, accustomed to North American business practices, will need to adapt to different and unfamiliar business practices in foreign markets.

### Geographic Priorities

The greatest potential new markets for Canadian electrical equipment are the burgeoning power sectors of the developing countries in Asia, South America and the Middle East, in particular:

Asia: Pakistan, India, Thailand, China, Sri Lanka, Nepal, Bangladesh, Republic of Korea (mainly nuclear reactor islands), Taiwan, Malaysia, Indonesia, the Philippines, New Zealand, Viet Nam, Laos and Cambodia;

Latin America: Mexico, Colombia, Chile, Brazil, Argentina and Venezuela;

Africa and Middle East: Israel, Gaza, Iran, Saudi Arabia, Turkey, Egypt, Algeria and Cameroon.

The Canadian industry must export to survive, especially with the slower-growth domestic market of the 1990s. Canadian suppliers should be in a position to capture about \$22 billion, or about 1 percent of the total world market during the 1994-2000 period. The implementation of the North American Free Trade Agreement (NAFTA) on January 1, 1994, has opened up new markets in the growing Mexican power sector, and will continue to expand Canadian exports to the United States. While the U.S. is our largest existing market, most of the future expansion will take



place in developing countries, particularly in the Pacific Rim, where Canadian firms are experiencing success. The demand for electrical power equipment in these countries will directly depend on their continued economic growth.

Canada's power generation (hydro, thermal and nuclear) and transmission equipment industries and services remain the only viable sources of the new power and energy needed to advance the developing Third World until viable alternative technologies are found, likely well into the next century.

## **Strategic Direction**

The following measures are intended to assist in substantially increasing exports from the Canadian electrical sector over the next few years:

- increased participation by SMEs in government export planning, through annual government-industry consultation on the International Trade Business Plan (ITBP) (Industry Canada [IC], Department of Foreign Affairs and International Trade [DFAIT]);
- continued emphasis on the gathering of market intelligence and its distribution to the industry (IC, DFAIT);
- encouragement of more collaborative, "Team Canada" approaches to facilitate competitive bids on large power projects in developing countries. Canadian competitiveness on projects will be maximized, where appropriate, by limiting Canadian financial assistance per project to one competing Canadian consortium. (IC, Export Development Corporation [EDC], Canadian International Development Agency [CIDA], DFAIT);
- encouragement of Canadian exporters to make more use of DFAIT's specialist knowledge of IFIs and to contact trade commissioners and executing agencies in the countries in which IFI projects will be undertaken (IC, DFAIT);

- use of existing initiatives such as Industry and Energy Research and Development [IERD], and Industrial Research Assistance [IRAP] programs, to support emerging electro-technologies, especially those involved with energy savings, alternative energy and improved electrical system efficiencies (IC, Natural Resources Canada [NRCan], National Research Council [NRC]);
- enhancement of the collection and dissemination to the industry of high-quality market intelligence. Increased international exposure of Canadian firms through targeted participation in trade missions, trade fairs, and international conferences (IC, DFAIT/missions);
- avoidance of duplication of federal and provincial export-promotion efforts through mutual representation at respective export planning meetings, and through use of the ITBP as the common planning vehicle for industry (IC, DFAIT, provinces);
- consideration of innovative forms of export financing such as the creation of a federal and/or provincial Export Fund, with co-funding from EDC, banks, provincial retirement and mutual funds (A report will be made to the Minister for International Trade, and the Minister of Industry by September 1995) (DFAIT);
- continued industry consultations and export seminars to:
  - assist industry associations to undertake defined objectives to improve their members' export capabilities;
  - encourage the industry to continue harmonizing electrical standards, such as ISO 9000, especially with the U.S. and Europe;
  - continue to encourage and support exporters, particularly SMEs, to think globally and proactively in considering potential new markets and forging strategic alliances;



- encourage Canadian consultants to enter into alliances with Canadian manufacturers to build export consortia when practical (for BOT and large infrastructure projects);
- encourage Canadian manufacturers, consultants and constructors to enter international export consortia to tap into the huge world market through co-financing;
- encourage Canadian consultants to specify Canadian equipment wherever possible;
- continue to encourage electrical equipment exporters to use the wide range of services and assistance provided by Canada's worldwide network of embassies and consulates (IC, DFAIT/missions).

## Contact

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Manufacturing and Resource Technologies Branch  
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## Power Equipment

Activity	Date	Location	Dept.	Contact
<b>Africa and the Middle East</b>				
Saudi Elenex '95: Info Booth, Mission	01-Apr-95	Riyadh	DFAIT	613-944-5984
Power & Energy Mission (Regional)	01-Mar-96	Johannesburg	DFAIT	613-944-6590
Energy Mission	01-Mar-96	Casablanca	DFAIT	613-944-0396
<b>Asia-Pacific South</b>				
PowerGen Asia '95: Info Booth	21-Aug-95	Singapore	DFAIT	613-996-5824
Power trends 2000: Mission	14-Nov-95	Manila	DFAIT	613-995-7659
<b>Central/Eastern Europe and the Commonwealth of Independent States</b>				
Modern Electronics Fair: Info Booth	01-Oct-95	Ljubljana, Slovenia	DFAIT	613-992-1449
<b>East Asia</b>				
Hydro Power Mission to China	01-May-95	Yunan, Guizhou, Hunan, Guangxi	DFAIT	613-996-6987
Alternate Energy Mission	01-Aug-95	India	DFAIT	613-996-5903
Thermal Power Mission to Guangdong, Fujian, Hong Kong	01-Sep-95	China, Hong Kong	DFAIT	613-995-6962
Power Sector Study of Bangladesh	01-Sep-95	Dhaka	DFAIT	613-992-0952
Power Generation Equipment Mission	01-Feb-96	Malaysia, Thailand, Taiwan	IC	613-954-3251
EP CHINA '96: Info Booth	01-Oct-96	Beijing	DFAIT	613-996-6987
<b>Japan</b>				
Steel Industry Mission from Japan	01-Sep-95	Montréal, Ottawa, Edmonton, Vancouver	DFAIT	613-995-1282
<b>Latin America and the Caribbean</b>				
Power Mission from Chile	01-Jun-94	Montréal, Toronto, Edmonton, Vancouver	DFAIT	613-996-5549
Electrical & Energy Equipment: New Exporters Mission	01-Jan-95	Mexico	IC	514-496-5365
Power/Energy Mission from Venezuela, Chile	01-Jun-95	Ontario, Quebec	DFAIT	613-996-5548
Electric Power Mission from Latin America	01-Jun-95	Canada/Various	DFAIT	613-996-4199
IEEE Reunion de Verano de Potencia: National Stand	01-Jul-95	Mexico City	DFAIT	613-995-8742
Cogeneration Mission/Conference	01-Oct-95	Mexico	DFAIT	613-995-8742

Note: Dates and locations are subject to change.

Activity	Date	Location	Dept.	Contact
<b>United States</b>				
Outgoing Mission	01-Nov-95	New York	DFAIT	613-944-5149
CFC Ban: Market Opportunities Seminar	01-Nov-95	Toronto, Montréal	DFAIT	613-944-7486
Power Gen '95 (Atlanta): National Stand	01-Dec-95	Atlanta	DFAIT	613-944-5149
Solo Show: American Society of Heating/Refrigeration/AC Engineers	01-Jan-96	Houston	New Brunswick	506-453-3984
International AC/Heating/Refrigeration Expo: National Stand	19-Jan-96	Atlanta	IC	613-954-3227





## Acronyms and Initialisms Used in The International Trade Business Plan

(This list does not include sector-specific references)

ACOA	Atlantic Canada Opportunities Agency	IC	Industry Canada
AG Can	Agriculture and Agri-Food Canada	IDRC	International Development Research Centre
ASEAN	Association of Southeast Asian Nations	IFI	international financial institution
BBS	electronic bulletin board system	ISO	International Standards Organization
BOSS	Business Opportunities Sourcing System	ITBP	International Trade Business Plan
CCC	Canadian Commercial Corporation	ITC	International Trade Centre
CIDA	Canadian International Development Agency	MAPAQ	Ministry of Agriculture, Fisheries and Food of Quebec
CIS	Commonwealth of Independent States	MDB	multilateral development bank
CSA	Canadian Standards Association	NAFTA	North American Free Trade Agreement
DFAIT	Department of Foreign Affairs and International Trade	NATO	North Atlantic Treaty Organization
DFO	Department of Fisheries and Oceans	NRC	National Research Council
DND	Department of National Defence	NRCan	Natural Resources Canada
EC	Environment Canada	NRCan-CFS	Natural Resources Canada - Canadian Forest Service
EDC	Export Development Corporation	OECD	Organization for Economic Co-operation and Development
EU	European Union	PEMD	Program for Export Marketing Development
FITT	Forum for International Trade Training	R&D	research and development
FORDQ	Federal Office of Regional Development - Quebec	SMEs	small- and medium-sized enterprises
FSU	former Soviet Union	UNEP	United Nations Environmental Program
FTA	Canada-U.S. Free Trade Agreement	WED	Western Economic Diversification
GATT	General Agreement on Tariffs and Trade	WTO	World Trade Organization
GDP	gross domestic product		
GNP	gross national product		
HRDC	Human Resources Development Canada		



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