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Financing Future Exports of Canada's Electrical Power Equipment Industry

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In the 1980s, the Canadian power equipment manufacturing sector underwent a significant rationalization and restructuring, resulting in a modern, efficient industry. With longer product lines and improved labour productivity, the industry is now better positioned to face the competition of larger European, Japanese and US players, both at home and abroad.

Increasingly in recent years, however, Canadian firms have faced a new impediment to export success. The limited availability of low cost export financing is precluding Canadian firms from bidding on new power development projects. Unable to match the official concessional financing facilities of other OECD nations, Canadian firms are being closed out of these potentially valuable markets.

Provided that Canada is not at an export financing disadvantage, Canadian export expansion will result from an on-going effort to improve competitiveness by way of a variety of government and private measures that affect underlying productivity and commercial strength. In general the authors are not in

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This paper is based on a report prepared for the Canadian Power Systems Export Promotion Group (CAPSEP), a collaborative committee of the Electrical and Electronic Manufacturers Association of Canada, the Canadian Electrical Association, the Association of Consulting Engineers of Canada, and the Canadian Construction Association.

The authors would like to thank Ron Montgomery, Wido Hoville, Mario Maino, Pierre Fortin, Pierre Rodrigue, and others who made valuable contributions to this study.

favour of the indiscriminate use of tied export credits for commercial purposes. However, in a situation where there are idle resources in this (and other) Canadian manufacturing sectors, special export financing is worthy of careful consideration. Improperly used, such practices are trade-distorting and contrary to current global trends toward freer trade. The most desirable scenario is one in which there is an enforceable international agreement preventing the use of tied credits for commercial purposes. In practice, however, the current international environment is far from this situation and it is evident that those countries currently using such credits intend to provide a direct benefit to their exporters. *Clearly the playing field is not level.* As long as such practices continue, Canadian firms will be at a very real disadvantage in competing internationally and it is necessary for Canada to provide equivalent support if its industry is to survive and prosper.

This paper examines the economic impact on the Canadian power sector of continued constraints on the availability of concessional export financing.[1] The first section provides an overview of the structure of the Canadian industry. This is followed by a brief discussion of its competitiveness and performance. The next section outlines export prospects and provides separate reviews of hydroelectric and thermal power expansion. With this potential in mind, the paper addresses different export strategies, including export consortia. It then examines the fiscal costs and benefits of concessional finance and outlines the positive role to be played by competitive financing. The paper closes with an outlook for financing Canada's power equipment.

Readers wishing to see a detailed analysis of the costs and benefits of concessional financing should refer to the original CAPSEP report (CAPSEP, 1992). Also included in the original report are a more detailed discussion of competitiveness and performance, including consideration of the recent study of competitiveness by Michael Porter, *Canada at the Crossroads* (Porter, 1991), the results of an economic impact study for the Taunsa hydroelectric project in Pakistan, and a summary of the export credit facilities in selected OECD countries.

1/ The Econolynx study was hampered by the continued unavailability of the Bernier Report, a Strategic Economic Study of Canada Account Concessional Financing. This report, commissioned by External Affairs and International Trade Canada and completed in mid-1991, had not been released at the time of publication of the Econolynx study. The aim of the Bernier study was to examine the importance of concessional financing to Canadian exporters under various scenarios of relative availability of Section 31 funding. Such an analysis would have provided useful insight into the value of contracts that have been won and lost by Canadian firms, such as power systems exporters, due to a lack of concessional financing.

1. Canadian Industry Structure

Most of the products manufactured by CAPSEP members can be produced in other OECD trading nations. Canada has thrived because its superior designs and customized engineering solutions have offset other costs. Emphasis on rationalization, productivity, upgrading, and increased specialization have kept Canada competitive in supplying complex high quality equipment.

Canadian suppliers at a disadvantage when competing in international tenders for off-the-shelf equipment

When it comes to off-the-shelf mass manufactured equipment, Canadian electrical machinery is less able to compete. Requirements for medium-quality equipment to tolerant specifications do not favour Canada's supply capability. Having produced equipment for Canadian public utilities that is engineered to the highest standards and which gives the longest trouble-free performance lives (CSA Z.299 1/2/3 standards), the Canadian industry is often underbid by equipment designed to lower standards. Requirements by some developing countries — China, India, Argentina, Colombia, Mexico and Brazil, for instance — to buy locally also work against Canadian products. Great distances from Canada to Asian markets result in transport cost disadvantages relative to suppliers in Europe, Japan and South Korea. It has therefore proven difficult for Canadian suppliers to compete in International Competitive Bidding (ICB) tenders issued by the multilateral financing institutions.

In 1989, the core parts of the electrical machinery and equipment manufacturing industry in Canada shipped products worth over $5.53 billion, only to see this fall away to $4.69 billion in 1990.[2] Meanwhile, employment in this subsector stayed virtually unchanged in 1989 and 1990 at 40,600, while the number of establishments actually grew slightly from 481 to 500 units. The fall in output value coincided with some setbacks in capacity utilization, which had been 91.2% in 1988, but was down to just 79.8% by 1990. These results suggest efforts by the industry to maintain its valuable labour force in the face of sales slowdowns. Such a strategy is costly and cannot be maintained for long. The other option is to expand exports in order to use capacity. Future growth in electrical power generation in Canada will be moderate. In many developing countries huge demands for new generating capacity are expected. It is this on-going development process which will represent the most significant export oppor-

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2/ The industry sub-set discussed here includes SIC 337, 338, 3392, 3399, which are respectively Electrical Industry Equipment, Electrical Wire and Cable, and Miscellaneous Electrical Equipment. The electrical products and services consulting industry and the civil engineering industry are not included in these data.

tunities for equipment suppliers from advanced nations.

2. Competitiveness and Performance

Demand for electric power, and therefore power generating and transmission equipment, in developing countries is expanding at very high rates. In contrast, recent cyclical downturns in the industrialized countries have caused domestic industries in Europe, Japan and North America to moderate their energy requirements. There is consequently considerable over-capacity in the power equipment sectors in Europe and the US. This has led to:

- increased protection of domestic markets in Europe and the US through procurement strategies;
- intensified marketing efforts in developing countries especially for International Competitive Bidding at International Financial Institutions (IFI);
- fierce competition in overseas markets, reinforced by depreciated exchange rates; and
- implicit and overt offers of financing concessions to potential buyers as key ways of reducing the overall cost (raising the present-value) of electric power projects.

To face the increased international competition, firms in the Canadian power equipment industry have taken several key steps, including cost reduction programs, maintaining world-class abilities in areas of established strength,[3] the securing of world product mandates, the development of specialized product capabilities, and competitive financing packages.

Canadian power equipment industry is small but effective

Although the Canadian power equipment industry is relatively small by world standards it currently operates at the apex of Canada's manufacturing activities. Its skill base is high, managerial techniques advanced, equipment state-of-the-art, and its flexibility to respond well known. It is well placed to tap into the fast growing markets in Southeast Asia, China, India and Pakistan. Other valuable markets are in Mexico, elsewhere in Latin America and the Mid-East. In recent years, annual sales to the developing world have been $400 million in equipment exports, $300 million by constructors, $150 million by engineering consultants and $15 million by utilities, a record overall level that has moved Canada up to tenth place among the world's power exporters.

It is important to recognize, however, that efforts to be more competitive at the individual firm level can be partially (or completely) offset by misaligned government policies on ex-

3/ Canada currently has world-class technology in large hydro turbines, generators, transmission equipment and utility boilers.

change rates or borrowing costs and by effective subsidies in competitor countries that are not matched at home. In the form of concessionary finance programs for exports, the latter is the central issue in this discussion.

3. Export Prospects

Based on market analysis, the best overseas market opportunities are expected to be as follows: India, Pakistan, Indonesia, Malaysia, Singapore, Thailand, Vietnam (opening), Argentina, Brazil (more limited), Colombia, Guatemala, Mexico, Venezuela, Cameroon, Kenya, the Southern Africa Development Coordination Conference, Senegal, Tanzania, Algeria, Egypt, Iran, Saudi Arabia, and Turkey. The World Bank has forecast LDC markets for power expansion programs of US$745 billion in the 1990s (World Bank, 1990).

3.1 Projected Hydroelectric Capacity Expansion

Table 1 shows the expected worldwide expansion of hydroelectric generating capacity planned for the 1990s. In total, the additional capacity envisaged comes to 115,000 MW to be installed between 1991 and 2000. Using $150/kW as a rough estimate, this amounts to a global market valued at approximately $17 billion in the hydro sector alone. Of this potential market, more than one-third of the expected additions will be in closed markets, such as Russia, Switzerland, Brazil, Japan, Italy, Austria, Poland, Spain, Romania, Hungary and Czechoslovakia. In general, the former East European countries, the EC and EFTA members, Japan and Brazil have reserved their domestic power sectors for themselves or their neighbours.

A further one-third of the expected capacity growth will come in markets apparently open to international competition where no associated credits are required to win. These open markets include Canada, Iran, Venezuela, South Korea, Chile, South Africa, Taiwan, Australia, Malaysia and the US.[4] Only domestic suppliers are likely to win in South Korea or Taiwan, and in the US. Thus, including our own market, the actual open market opportunities for Canadian suppliers come down to 20,900 MW, of which 8000 MW was expected to be in Canada. Put another way, outside Canada, our electrical machinery suppliers have a clear shot at only 11.2% of all new hydro capacity planned to be installed globally in the next 10 years.

Slightly less than one-third of all proposed additions to power

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4/ Venezuela, Chile and Malaysia are satisfied with OECD-DAC consensus rate financing.

Table 1: Projected Markets for Hydroelectric Development (1991-2000)

Country	Projected Construction (MW)[1]	Market Characteristics	Comments
India	10,200	Mixed credits[2]	
China	10,000	Mixed credits	
US	9,000	Open market[3]	
USSR	8,000	Closed market[4]	
Canada	8,000	Open market	Financing unnecessary
Brazil	5,300	Closed market	
Iran	4,700	Open market	Financing unnecessary
Pakistan	3,200	Mixed credits	
Japan	3,000	Closed market	
Italy	3,000	Closed market	
Venezuela	3,000	Open market	Consensus financing
Mexico	2,900	Mixed credits	M-C not always nec.
Colombia	2,900	Mixed credits	M-C not always nec.
South Korea	2,400	Open market	Financing unnecessary
Austria	2,000	Closed market	
Chile	1,900	Open market	Consensus financing
Poland	1,700	Closed market	
Indonesia	1,518	Mixed credits	
Spain	1,500	Closed market	
Romania	1,500	Closed market	
Hungary	1,300	Closed market	
South Africa	1,240	Open market	Financing unnecessary
Switzerland	1,200	Closed market	
Taiwan	1,200	Open market	Financing unnecessary
Australia	1,060	Open market	Financing unnecessary
Norway	1,000	Closed market	
Czechoslovakia	1,000	Closed market	
Thailand	1,000	Mixed credits	M-C not always nec.
Malaysia	1,000	Open market	Consensus financing

1/ Total projected expansion: 115,000 MW
2/ Mixed Credits—mixed credits required
3/ Open Market—international competition, mixed credits unnecessary
4/ Closed Market—protected domestic manufacturers
Sources: Neyrpic, France, 1991 and survey by Econolynx International.

generating capacity is planned to be built in the so-called *spoiled markets*. These are markets where the buyers have a history of re-

quiring and receiving concessional financing to ease the cost of their infrastructure development, especially in the electricity producing sector. Among the major markets of this type are India, China, Pakistan, and Indonesia. These four large Asian countries between them intend to add 25,000 MW of new capacity in this decade, but *all* will require imports and project funding to be financed on concessional terms, well below OECD-DAC (Development Assistance Committee) consensus rates. These are Canada's most attractive export markets for electrical machinery in the 1990s — all of which will require mixtures of funding from the Export Development Corporation (EDC) and/or the Canadian International Development Agency (CIDA).

US preferences for domestic suppliers

The US is planning to add 9000 MW of domestic generating capacity during the 1990s. In theory, this should offer Canadian suppliers their best export opportunities of the decade, especially under the improved market access granted by the *Canada-US Free Trade Agreement (FTA)*. While the FTA has definitely increased sales potential and reduced risk for Canadians in the US market, it has yet to have a significant impact on entrenched US buying procedures which offer substantial preference to domestic suppliers. This preference — which amounts to 30% in some instances — works more effectively than any tariff reductions can offset. Coupled with the large-scale production capabilities of US-based multinationals, the regulatory framework in the US has kept Canadian suppliers at arms length from this prosperous market. There are few signs that Canadian negotiators can reach agreements which will reduce the *Buy American* preferences for electrical generating equipment in the US.

3.2 Export Markets for Thermal Power Generation

WORLD THERMAL POWER EXPANSION

Between 1989 and 1999 there are expansion proposals in the major thermal power markets that amount to an additional 195,000 MW of capacity. Of this, over 110,000 MW are predicted for China and India. The US and Mexico together account for a further 26,000 MW. Other Asian markets are projecting an expansion of thermal capacity of 30,000 MW in this decade, while in Latin America (beyond Mexico) there are new projects and retrofits amounting to about 5000 MW. Turkey, Yugoslavia, Spain, Greece and Israel together offer a further market between 1989 and 1999 of some 14,000 MW. The details of specific country market projections are set out in Table 2. Here again the importance of mixed credits is evident in the five largest developing country markets.

Table 2: Projected Thermal Capacity Expansion for Selected Markets (1989-99)

Country	Projected Construction (MW)[1]	Market Characteristics	Comments
China	64,350	Mixed credits[2]	
India	52,400	Mixed credits	
Mexico	15,130	Mixed credits	M-C not always nec.
US	10,500	Open Market[3]	
South Korea	8,800	Open market	Financing unnecessary
Indonesia	6,330	Mixed credits	
Pakistan	6,060	Mixed credits	
Turkey	5,560		
Yugoslavia	5,100		
Thailand	4,235	Mixed credits	M-C not always nec.
Algeria	3,936	Open Market	
Taiwan	3,000	Open Market	Financing unnecessary
Egypt	1,909	Mixed credits	M-C not always nec.
Brazil	1,800	Closed Market[4]	
Argentina	1,355	Mixed credits	M-C not always nec.
Spain	1,350	Closed Market	
Greece	1,200		
Philippines	1,200	Mixed credits	M-C not always nec.
Israel	1,100		
Colombia	600	Mixed credits	

1/ Total projected expansion: 195,000 MW
2/ Mixed Credits—mixed credits required
3/ Open Market—international competition, mixed credits unnecessary
4/ Closed Market—protected domestic manufacturers
Sources: Neyrpic, France, 1991 and survey by Econolynx International.

THE ASIAN MARKET

Total generating capacity for the Asian region will nearly double by the turn of the century to reach almost 850,000 MW. Total coal-fired capacity is forecast to rise from 127,000 MW in 1987 (30% of total) to 328,000 MW by the year 2000 (40% of total)(Hay *et al.*, 1991, pp.178-83). The planned increased of 200,000 MW in thermal power generation involves some extraordinary increases

in key countries, including (Econolynx, 1991a):

- China — forecast energy growth of 7% per annum will result in a more than doubling of output during the 1990s. To meet its target forecast of an additional 130GW, China will seek to install about 70GW of extra thermal capacity.
- India — expects to have added an extra 38GW of capacity between 1987 and 1995, 25GW of which will consist of coal-fired plants. A further 15GW would be installed by the end of the century. The Central Electricity Authority is concentrating on building seven "super" coal-fired plants close to large mines.
- Indonesia — expects increases in energy demand of 13 to 14% annually through the 1990s, particularly in Java (70% of total energy demand). While much energy is derived from gas and oil sources, Indonesia is attempting to diversify. Expectations are that Indonesia will have to add 2000 MW annually throughout the decade to meet burgeoning power demands, of which one quarter will be thermal.
- Thailand — rapid industrial growth, running at 15% in 1988-89, pushed Thailand's electrical capacity to the limit, and demand for industrial power is expected to continue to grow at 10% annually through the 1990s, with consumer requirements adding further demand. Up to 2002, Thailand hopes to add 8300 MW of capacity through 24 new projects, of which half would be thermal.

About 52% of all power generating capacity in developing Asia was coal-fired in 1990 with the expectation that this ratio will climb to 55% by the year 2000 (Econolynx, 1991b). It is estimated that the cost for the planned capacity expansions of *all* forms of power generation in developing Asia to the year 2000 will amount to over US$300 billion (1990 $).

3.3 Key Market Examples

POWER DEVELOPMENT IN CHINA

Massive expansion in China

Capacity additions in China will account for a sizable proportion of global expansion and are therefore of great importance to foreign power equipment suppliers. China hopes to quadruple its 1980 power capacity by the year 2000, reaching 240,000 MW, implying a compound annual growth rate of 7% (Canadian Embassy, 1991). Of the 170,000 MW to be installed between 1989 and 2000, 105,000 MW will be hydroelectric, 5000 MW nuclear power, and the rest thermal. But even this additional capacity will not overcome the current chronic shortfall of 15% of in-

dustrial electricity requirements. This gap is due to recurring failures of the railways to deliver coal in required quantities. Relieving these bottlenecks will remove a barrier to sustained Chinese growth in both manufacturing and services sectors. Even if the 240,000 MW goal is achieved by 2000, China's per capita energy consumption will be only 60% of the world average in 1900. Thus Chinese generating capacity will continue to require expansion.

China's hydroelectric power potential rates among the world's greatest (380,000 MW) of which only some 10% has been developed. Currently less than one-third of all power comes from hydro. New stations are planned for the upper reaches of the Yellow River, the main stream and the tributaries of the upper and middle Yangtze, and the middle and lower reaches of the Hongshui and Lancang rivers. Other hydro sources in the north and east of China will be tapped over the next 20 years.

China also intends to build a series of large thermal power plants in 12 coastal provinces, cities and railroad sites to meet the needs of industrial and coastal cities, including Beijing, Shanghai, and Guangzhou. These new thermal plants will use advanced boiler sets of a type available from Canadian suppliers.

Of 29 power projects underway in China from 1978 to 1988, Canada has supplied only one (based on official development assistance), the Geheyan Hubei Hydropower station. The rest are being developed by our competitors (*China Market*, 1989, p.22).

POWER DEVELOPMENT IN MEXICO

Patterns in Mexican power development are similar to those found elsewhere in the developing world. Recent electric power projects by the Comision Federal de Electricidad (CFE) have drawn offers of mixed credit financing by competitors from outside the Americas. According to CFE authorities, France, Japan, Spain, UK and Italy made offers in 1992 that featured a mix of consensus and concessional financing (amounting to a 40% grant element) for the $100 million Temascal Hydroelectric Power project.

The demand for electric power in Mexico is currently growing at 7% per annum. In response Mexico is planning to build 14 new power stations and several new hydroelectric installations, totalling in value some US$5 billion over the next five years. To secure a competitive share of this business, any supplier must be prepared to assume complete responsibility for the project, finance 100% of it — including the 40% to be spent on local works — and deliver the completed work in turn-key mode. This procedure leaves Canadian bidders with difficulties in financing all of their exports without additional help beyond EDC from the chartered banks, and having to finance the Mexican local costs at very high interest rate borrowings from

Mexican banks, thereby adding substantially to project costs.

Unless these trends can be reversed, Canadian suppliers are likely to miss out on a substantial share of the burgeoning Mexican market for thermal and hydroelectric power equipment. Thus Canada will be forced out of a market with which it has a new and special trade relationship by European and Asian competitors using predatory trade financing methods — NAFTA will benefit them and not the competitive Canadian suppliers.

4. Export Strategies

4.1 Winning Contracts in the Developing World

There are three routes available for securing major contracts in the developing world:

(i) *International Competitive Bidding* (ICB) through IFIs such as the World Bank and Asian Development Bank: This is cut-throat competition in which Canada at best ends up transferring technology by sourcing equipment in lower cost countries, e.g., China, South Korea, Turkey, Brazil, etc., with very little manufacturing done in Canada.

(ii) *Forming a consortium within an international multinational enterprise*: This is a rare occurrence because a foreign project leader who has concessional financing for his portion of the project is disinclined to link with a Canadian firm which does not have matching concessional financing for the Canadian component.

(iii) Securing a *direct negotiation* mandate on a large Asian project for a *"Team Canada" consortium*: This ensures a high level of Canadian content, job creation, technology enhancement, and substantial foreign exchange earnings, but it *must* be supported by innovative financial packaging.

All routes gain business for Canada, but the preferred option is (iii). It gains for Canadian manufacturers, sub-contractors, engineering companies and industrial consultants the high levels of value-added in Canada that can justify the very high costs of project feasibility, bid preparation, and negotiations. The transaction costs of approaches (i) and (ii) above are often too high, given the risk of failing to win, relative to the expected pay-off in increased export earnings for Canada. Route (iii) minimizes bidding risk for the same level of transactions costs and maximizes Canadian value-added, for the cost of concessional financing involved. Without such an approach, the costs of doing overseas business given the risks are simply too high for a small-scale producer, however productive, efficient and technologically advanced they are.

4.2 International Competitive Bidding (ICB)

For the last 10 years, the World Bank, Asian Development Bank and its African and Inter-American counterparts have not been financing the types of electric power generating and transmission equipment built in Canada. The IFIs have been financing civil works, but not the equipment. Thus ICB opportunities have been rare. Though price competitive, Canadian suppliers have therefore had to find alternatives to ICB. These alternatives include:

- to team up with other members of their multinational grouping, thereby losing the lead position to whichever branch can secure the best financing from its national aid and/or export financing agency, a result that can leave the Canadian member with a modest role involving more technology transfer than actual manufacturing and job maintenance in Canada; or
- to bring together a team of foreign suppliers, some in the buyer country but others from Eastern Europe, Mexico, South Korea, Turkey, China, or Brazil, who can supply equipment at subsidized prices, thereby making a tender competitive by reducing the Canadian content drastically and leaving little potential for scale economies or moving down the learning curve in Canada.

Canadian firms must match finance terms of international partners

Recently, Canadian companies in the thermal power sector have been successful in ICB, obtaining as much as $600 million of business in 1991-1992. There is now a trend towards forming international consortia. However, participation by Canadian firms requires that they be able to offer financing terms equivalent to those of other players.

4.3 Co-Financing with the Japanese

While much has been suggested about co-financing with Japanese aid agencies[5] in electrical power machinery projects in Asia, this has turned out not to be an easy option (Hay, 1990; Hay and Hawkins, 1986). The Japanese will allow the Canadians to undertake as much as 70% of the pre-feasibility study and perhaps 30% of the feasibility study, but have not suggested any role for Canadian suppliers in the execution phase of such projects. Put another way, there are opportunities for Canadian engineering consultants to be financed with Japanese aid, but at this time there is virtually no potential for Canadian suppliers of manufactured products.

5/ OECF — Overseas Economic Cooperation Fund; JICA — Japanese International Cooperation Agency

4.4 Export Consortia

In line with federal government policy and at the urging of ISTC and EAITC, the Canadian electrical machinery producers have organized export consortia since 1985. These consortia allow the Canadian industry to bid on larger and more complex projects than any one company could singly manage. While consortia members may be both subsidiaries of multinationals and domestic firms, their international rivalry has been subordinated to a *Team Canada* approach. Consortia of Canadian companies have used Canadian aid funding to undertake pre-feasibility studies in China, Vietnam, India and Pakistan. A partial list and a discussion of these can be found in CAPSEP (1992), pp. 20-22.

5. Competition for Canada

A list of Canada's principal competitors in the global hydro and thermal power sectors is available in CAPSEP (1992), pp. 23-24. In addition to the firms listed there, which are mostly in the highly industrialized countries, there is new low-cost production (involving non-economic shadow prices) appearing in Hungary, Romania, Russia and other Eastern European countries, and local champions enjoying considerable industrial and export subsidies in Mexico and Brazil.

5.1 The Japanese Approach

Japan is major competitor in Asia

To expand its market share Japan continues to tie the largest proportion of its engineering/consultancy activities to Japanese engineering firms, or consortia led by these Japanese companies. Engineering specifications for equipment procurement and project management are keyed to Japanese supply capability, especially in the Asian market.

Japan's approach to international assistance in Asia emphasizes a strong blend of trade-following-aid, and subsequent investment and technology transfer. This reflects a Japanese philosophy of "helping others help themselves" by stressing motivations for hard work, higher education and increased thrift. Given the success of this approach in Japan, South Korea, Taiwan and the city states of East Asia, Japanese aid administrators see growth and development as occurring through the application of complex solutions and advanced technologies working through the private sector. Their companies deliver these solutions and management methods and follow up with direct investment and official capital projects to promote related infrastructure. Thus Japan has rationalized its uses of low-cost financing as levers to promote a whole pyramid of related economic activities which have strong export, technology and employment spin-offs. As a result, Japan now sets the standards

for funding, delivering and implementing the majority of capital projects for infrastructure in developing Asia. Most recently Japan's aid practices have also begun to affect projects in the Americas, especially Mexico, Colombia and Brazil.

5.2 US Exim Bank Concerns

A US Export Import Bank review in 1989 of OECD and DAC case-specific listings revealed that foreign associated credit practices posed a competitive threat to many US industrial sectors, including power generating equipment (Export Import Bank, 1989). Indeed, the Exim Bank investigation showed that the power generating sector was the worst affected of all the sectors which were hurt by the use of concessional finance by its competitors (p.142). Losses of sales of turbines to developing countries were judged to be substantial, indicating a market share loss of 30% or more. They noted the high impact on their industry of these reversals because over half of the power generating equipment industries output is exported (p.140).

The impact of foreign use of concessional credits extends well beyond the loss of export sales by US and Canadian suppliers (p.144). The actual competitiveness of the industry is undermined in several indirect ways: loss of follow-up orders, particularly where compatibility with existing equipment is important; failure to maintain scale-economies in production over time; loss of marketing effort due to inability to budget for continuing unrequited fixed marketing costs; disappearance of key sub-contractors, local capabilities and critical mass in supplying parts and sub-assemblies to prime contractors; and finally, adverse decisions by multinationals not to reinvest in Canada, but to shift production to countries (e.g. Mexico, Brazil, France, Italy) with a more aggressive concessional finance posture. To summarize, "...production economies of scale made possible by exports to developing countries (which) allow companies to remain price competitive" are lost as a result of predatory financing by other countries (p.145, Table 3). The key point is that concessional financing and international competitiveness are *complementary* in the power generating equipment sector. Low cost finance is not used to make up for high pricing and a lack of competitiveness. But an erosion of sales to developing country markets because of uncompetitive financing causes a higher proportion of fixed costs (managerial, marketing, R&D) to be spread over a lower quantity of sales and pushes the firm back up its short-run average cost curve, thereby undermining its overall cost structure and international competitiveness.

5.3 Does the OECD Consensus Arrangement Help?

In November 1991, after two years of negotiations, agreement

was reached by OECD member countries on the use of tied aid in export credit. The agreement identifies three groups of importing countries and defines when concessionary aid can be used in export credits. The Least Developed Developing Countries continue to be eligible for concessionary credits with a minimum 50% grant element. In High-income Developing Countries (including Mexico, Brazil, Venezuela, etc.) the use of tied aid trade finance will be prohibited, except in the case of outright grants. The countries in this group are eligible for regular World Bank 17-20 year loans. In the Middle-income Developing Countries (China, India, etc.) tied aid credits will be denied for projects financially viable on the basis of market rates and terms. Exceptional cases will be permitted in the case of non-trade-related national interests, though it will require formal notification of the OECD Secretary General.

Both US and Canadian exporters are sceptical about the enforcement of this new agreement, feeling it leaves them vulnerable to the practices of other exporter governments. There is a feeling that the new agreement is still voluntary and that governments will continue current practices of providing tied and partially untied aid, while accepting a small slap on the wrist. See CAPSEP (1992) for more details on the current export credit policies in selected OECD countries.

6. Costs and Benefits of Concessional Finance

One argument often made against the provision of concessional financing is its high cost to the public purse. The cost may well be misunderstood and overestimated by some observers, as the true fiscal costs are far less than the actual value of the loan — they are the foregone interest earnings that are conceded. When set against the potential income gains from expanded exports and the very large tax revenues generated over time — here assumed to be four years — it becomes understandable why the French, Italians, British, and even the Germans and Japanese use low-cost finance. Providing that idle resources with no alternative uses are available, such finance is an effective policy. The high levels of leverage involved and the eventual recovery of conceded costs makes strong economic sense.

Calculations of the fiscal costs and benefits to Canada of a typical $100 million power generating project in a developing country were performed. (For further details, see CAPSEP, 1992.) It is assumed that the project requires Section 31 concessional finance — solely to overcome a financing demand by the buyer — on a fully competitive Canadian project offer. Other funding for this project is offered at OECD-DAC consensus rates under Section 29. When market rates, here assumed to be 10%, are high, even consensus rates have an element of concessionality. Both of these financing costs have been taken into account in the

calculations of the present-value of costs.

EDC will normally finance up to 85% of a given project — $85 million will be financed in the present example. Of this, 60% is financed under Section 29 (Consensus), and the remaining 40% under Section 31 (Concessional). For an eight year term, with a buydown of 5% and a market lending (discount) rate of 10%, the present cost of 30% Section 31 concessionality on $85 million financing is approximately $9.06 million. Considering similar costs of consensus financing under Section 29, the total cost becomes $14.5 million.

In estimating fiscal benefits, it is calculated that roughly $70.8 million of increased Canadian goods and services will arise from the $100 million project. This includes the 66% Canadian content and the Canadian value-added on content procured in Canada from import sources. To calculate the full economic impact of the Canadian spending, both the first round and subsequent spending rounds must be considered. With direct and indirect multiplier effects for the power equipment sector of roughly 2, and 90% of the total income generating effect realized within four years, the incremental income gains will sum to approximately $127 million.

Because exports have a very big impact on earnings, incomes and spending in the Canadian economy, there is a considerable tax recapture from such activities. When the present-value of the extra tax revenues from the $100 million project are considered, there are *net benefits* to Canada from using concessional finance.

Financing programs can bring net fiscal benefits

Indeed, for every $1.00 of present evaluated fiscal cost of Section 31 and Section 29 financing in this example, Canada regains a present-value of $3.14 in expanded tax revenues. Moreover, as market interest rates fall — as they have done in late 1991 and early 1992 — the present-value costs of financing concessions also fall, making this type of financing for Canadian exports an even better bargain for taxpayers, when the need for it is great.[6]

6/ The exact profile of the cash flow will vary from project to project, both on the disbursement and recovery sides. In general, thermal power equipment projects can be delivered in two to three years, whereas hydro power projects are more likely to take four to six years to complete. Where gas turbines (from offshore suppliers) are the key component, projects can be completed in one to two years using other components sourced from Canada. Given that the whole of the Canadian-content may be spent in Canada within 15 months for thermal equipment, the first round of direct spending and tax revenue effects kicks in very rapidly, and may extend over three years before 80% of the direct plus indirect multiplier effects have moved through the Canadian economy. For hydro projects, the equipment expenditures come later in the project cycle, but so do the project disbursements. In general, the contractors attempt to maintain a small net positive cash flow over the equipment construction period to ease working capital commitments. This again suggests that fiscal recoveries from direct and indirect multiplier spending effects work rapidly once disbursement

It should be borne in mind, however, that this analysis assumes that all expanded output is based on idle resources.

In general, official and unofficial Canadian studies show the promotion of export expansion to be a desireable method for generating income growth for Canada. (See, for example, Export Development Corporation, 1982, and Rahman, 1985.) On the other hand, many observers mistakenly suggest that the cost of concessional export finance is the whole principal value of the concessional funding provided. This is an overestimate of the costs involved. The real cost is no more than the present-value of the difference between the consensus lending rate and the concessional rate applied to the concessional portion of the loan, a proportion rarely more than 25% of total project value.[7] Moreover, as illustrated above, this cost is more than offset by the fiscal gains of the government resulting from the export activity.

In sum, there are considerable gains for Canada arising from current and potential power generating exports. Such exports are known to have a high income multiplier effect, thereby raising incomes, expanding job opportunities and maintaining a critical mass of labour skills.

7. Outlook for Financing Canada's Power Equipment Exports

Strategically important power generation projects may be lost to Canadian firms in Asia and the Americas, even though Canadian exports are fully competitive, solely because of lack of strong export financing.

Important changes in the Arrangement of Guidelines for Officially Supported Export Credits were agreed to in March 1987[8]

6/ (...continued)
begins to occur, leaving little scope for net negative fiscal cash flows. But each project and technology produces a different net fiscal cash flow profile and analysis of this kind is beyond the scope of this current report.

7/ S.S. Rahman (1985), p.50, correctly pointed out the three components of export finance costs: (i) incidental fees paid by the exporter and the borrower; (ii) the implicit risk premium subsidy arising from the export credit agency borrowing funds on behalf of the borrowing (importing) country; and (iii) the direct financial costs borne by the export credit agency — here we are only considering this third element in costs terms of an "interest rate buydown" to concessional levels by the EDC, since factors (i) and (ii) are involved in all official export finance — concessional or consensus.

8/ This agreement reached in Spring 1987 as a compromise with an earlier proposal to increase the minimum grant element to 50%. The 35% minimum was put into effect over two years, but appears to have had little or no impact in slowing concessions by Japan and Europe.

and fully implemented in July 1988. These changes increased the minimum grant element of a tied-aid credit from 25 to 50% for Least Developed Countries and to 35% for other Less Developed Countries. This change made tied-aid offers more expensive, but did *not* reduce the volume of occurrences of offers of tied aid credits. "Spoiling" of markets in telecoms, power equipment, transport and construction equipment in fact worsened in many Asian countries after 1988, as suppliers aggressively enlarged markets by offering even more attractive financing packages featuring the new enlarged grant elements in tied-aid. This result was exactly the opposite of what had been hoped for by American and Canadian adherents to the Consensus Agreement. It effectively made it more costly and more necessary for the US and Canada to offer concessional financing. The new terms and conditions in fact acted to "shoot the North Americans in the foot" in international project finance. The move from a 25 to 35% grant element, strongly promoted by Canada in 1986, made concessional financing more costly for Canada, effectively back-firing upon our own ability to offer soft-financing.

In response to these changed circumstances, the US Exim Bank explicitly targeted the use of its 'war chest' concessional funds during 1990 and 1991 to achieve sales results in Indonesia (9 projects) and Thailand (11 projects), using some US$250 million. A further $130 million of US concessional funding has been allocated to two electric power projects. Exim Bank argued that these projects should open opportunities for follow-on sales without future concessional loan support.[9] The very existence of a war chest acts as a constraint or deterrent to other OECD countries who may consider offering concessional financing. While the threat of the US war chest achieves some restraint by others, the recent public posture of Canada of not having funding for concessional finance invites foreign competitors to use it to drive Canadian firms from the marketplace. Until an enforceable multilateral agreement to abandon concessional finance is in place, Canada should use the threat of "big stick retaliation" to maintain market shares and financing discipline. Canada must demonstrate a willingness to counter the practices of others with a visible program of its own. To do otherwise is to capitulate in markets where Canada is otherwise competitive and give up potential exports.

In principle, global markets would be better off if provision of concessional financing by governments were to be completely suspended. This would remove a major trade distortion that has

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9/ Export-Import Bank of the United States, Washington D.C., US; letter from Chairman J.D. Malcomber to Vice-President Dan Quayle, October 25, 1991 and *Report to the Congress*, June 1991 and October 1991.

impeded Canadian export sales. In November 1991, the OECD-DAC Committee agreed to move away from tied-aid credits towards an increase in aid resources for the world's poorest nations. The termination of tied-aid credits by the OECD countries would be favourable to the North American economies. However, this outcome is unlikely to be acceptable to some of the major buying countries. China has already made it clear that it is not interested in extended payment term approaches. How much less likely is it that China will accept the mandated end of official *credit mixte*? The more likely outcome is a whole series of derogations and under-the-table special financial deals by predatory sellers. *Meanwhile, Canada may be an innocent party to an unenforceable agreement on financial morality.*

Export trade increasingly based on aid-trade-technology-investment packages

Whether Canadians admit it or not, economic interactions between developing countries in Asia and the Americas and developed countries are increasingly based on packages consisting of aid, trade, technology, and investment flows. Emphasis on fast-disbursing traditional forms of overseas development aid is still relevant in the Caribbean, the Africas and parts of South Asia. But elsewhere, capital project and technical assistance programs, backed up by human resources development will form the primary aid disbursement mechanism. This is already the dominant pattern of Canada's (and other OECD members) involvement with China, India, Pakistan, ASEAN,[10] Mexico, and Colombia. Their requirements for infrastructure — power generation, telecommunications, public transport, and the like — require that Canada propose development packages of new equipment, advanced technologies, capital investment and skills development.

Finally, it is sometimes argued that concessional export financing is inflationary in full-employment circumstances. However, when there is at least 10% excess capacity in the Canadian manufacturing sector — as in early 1992 — the potential to expand power generating equipment output without any increase in costs or supply-push price effects is clear. Export financing can kick-start export-oriented manufacturing without activating inflationary pressures, especially since Canadian-content requirements insure that there will be minimal effects of higher foreign-content costs due to a lower Canadian dollar. Canada needs industrial recovery and at low cost. This can be achieved by assisting and stimulating producers of power generating equipment to expand their exports.

10/ ASEAN, the Association of Southeast Asian Nations, includes the following states: Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand.

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