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Winning In Global Infrastructure Markets

SOLUTIONS THROUGH PARTNERSHIP

Canada

Contents



**WINNING IN GLOBAL
INFRASTRUCTURE MARKETS**

Solutions Through Partnership

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The deadline for receiving submissions is June 30, 1998. Please mention the title of this consultation paper in your submission.

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Aussi disponible en français sous le titre :
Réussir sur les marchés mondiaux de l'infrastructure :
Le partenariat est la solution



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The Purpose of This Consultation Paper

The purpose of this consultation paper is to stimulate discussion on the feasibility and means by which Canadian firms might better capitalize on opportunities in global public-private infrastructure (PPI) markets, in order to stimulate trade and investment and the growth of the Canadian economy.

The Booming Global PPI Market

Infrastructure development involving private participation and financing has been one of the most rapidly growing areas of global capital market demand. Governments throughout the world, emerging economies in particular, have been turning increasingly to private firms and investors to expand and modernize their infrastructure.

PPI projects can take a variety of forms. In all PPI projects, private sector firms assume major portions of the responsibility for developing and financing the facility, and take on much of the project risk. At the same time, governments expect to achieve significant savings in cost and time by introducing competitive, private sector practices to the implementation and management of infrastructure projects.

The most widely used form has been BOT (build-operate-transfer) projects, whereby a private consortium takes on the responsibility to finance, execute, commission, operate and maintain an infrastructure/project for a certain period, after which responsibility is transferred to the government, usually free of charge.

While the most common arrangement is BOT, projects are also carried out using BOO (build-own-operate), whereby the private consortium will keep the property over its entire life cycle, BOOT (build-own-operate-transfer), ROT (rehabilitate-operate-transfer), BLT (build-lease-transfer) and other organizational forms.

Opportunities for Profit

The booming PPI market is creating major opportunities in a number of fields of activity. For large industrial corporations or major engineering and construction firms, there is the

Since the mid-1980s, worldwide over 1 800 public-private infrastructure projects worth US\$910 billion were completed, have been put under construction or are under active consideration in 103 countries.

– RCC's Public Works Financing, *International Major Projects Survey* (Westfield, NJ: 1997)

PPI financing in developing countries has increased 13-fold from US\$2.7 billion in 1990 to US\$37.5 billion in 1995.

– International Finance Corporation, *Financing Private Infrastructure: Lessons of Experience* (Washington, DC: 1996)

"There is a large and growing global PPI market and it is here to stay."

– Canadian Service Companies and Privatized Infrastructure Projects in Non-OECD Markets, *Round Table* (Toronto: February 4, 1997)

possibility, either alone or as part of a consortium, of developing a project and continuing on as *owner-operator* over a concession period of 15 to 30 years. Alternatively, firms can serve strictly as *project developers*, taking the project from the concept stage to the point where it is a viable commercial proposition that will attract prospective investors and owner-operators. Firms can also participate in the PPI market in the traditional role as *vendors*, selling their equipment, technology and services to the new private project owner-operators.

Are Canadian Firms Missing the Boat?

While market share numbers for the worldwide PPI market are not available, firms and experts consulted by Industry Canada for this consultation paper feel that Canadian project firms have been slow to take advantage of the new opportunities. This low participation is surprising, given the level of Canadian engineering and project management skills, particularly in the energy, transport, telecommunications and environmental sectors. The low participation of Canadian firms in the PPI market suggests the need to address two central questions:

- Can Canadian firms profit from PPI projects?
- If so, how can they best compete?



What Can We Do?

This consultation paper is designed to help current and potential PPI stakeholders develop a common understanding of the main barriers facing Canadian firms and achieve agreement on the actions needed to eliminate or overcome these hurdles.

The paper is based on one-on-one consultations conducted by Industry Canada with capital project firms, public and private sector financial institutions, and domestic and international project financing experts. It also integrates comments and suggestions received from a Round Table of experts and practitioners on the subject, held in Toronto in February 1997. The detailed findings of the Round Table are summarized in the report, "Canadian Service Companies and Privatized Infrastructure Projects in Non-OECD Markets" (available on Industry Canada's web site:

http://strategis.ic.gc.ca/sc_indps/coneng/engdoc/7a.html).

Do Canadian Firms Have What It Takes to Succeed?

Can Canadian Firms Profit from PPI Projects?

The high level of investment anticipated for PPI projects suggests that there are highly promising opportunities for firms that can assemble the mix of skills and financial resources needed to satisfy the clients' demands. Overall, average returns on good BOT projects can be as high as 20 percent. Of course, this will vary from sector to sector and depend on the perceived risk. Potential returns will be higher where risks are higher. For investments in the early development stage of a project, firms may seek returns in the order of 200–400 percent. Firms need to look for these kinds of returns on PPI project development to offset the many project proposals that they will develop but not win or that are subsequently dropped by public sector clients/partners.

The potential gains from international PPI projects are illustrated by a recent study of 48 infrastructure projects with financing from the International Finance Corporation

"Private sector investors must find risks with which they feel comfortable and can still count on a reasonable return."

– Cliff Inskip, CIBC Wood Gundy Securities Inc., cited in "Common Good," Report on Business Magazine, The Globe & Mail, Toronto, November 1997

(IFC, *Financing Private Infrastructure: Lessons of Experience*, Washington, DC: The World Bank, 1996). On average, construction of IFC-financed infrastructure projects was 3 percent under budget and 5 months late. This compares with cost overruns of 10–23 percent and time overruns of 12 to 18 months for a large sample of traditional government-financed public infrastructure projects. The operational performance of the PPI projects was also found to be favourable, in many cases exceeding contractually specified targets.

What Are the Long-term Prospects?

Global PPI market opportunities have multiplied as private participation has become increasingly accepted as the preferred option for the development of much needed new infrastructure. The PPI concept is very appealing to governments under pressure to control public spending and refrain from activities involving major new debt obligations. Equally important, the PPI model can yield efficiencies and significant cost savings that government-run infrastructure projects can seldom match. In addition, governments obtain tax revenues from the new, privately owned/operated PPI companies and may share directly in revenue generated by privatized facilities.

Further growth in PPI projects is to be expected as developing countries are faced with the dilemma of the economic

The world market for infrastructure projects is estimated to be about US\$3 trillion over the next ten years. The World Bank's unpublished infrastructure database indicates that, of this, some 2 300 projects worth US\$1.3 trillion will be implemented with private sector participation, the bulk of it (US\$500 billion) in Asia-Pacific.

– Jae So and Ben Shin

(<http://www.worldbank.org/html/fpd/notes/45/45So.html>)



costs of inadequate infrastructure. In East Asia, governments must add capacity to ensure infrastructure constraints do not hold back their countries' economic growth. In Latin America and eastern Europe, there is additional emphasis on developing more modern and efficient facilities that can support efforts to transform industrial firms in these countries into globally competitive enterprises.

In spite of current financial difficulties in East Asia, strong growth in PPI projects is expected to continue there. China has especially large infrastructure requirements. It has plans for 300 major PPI projects worth US\$260 billion over the next ten years and thus, on its own, will become a huge market for PPI projects in coming years. Projections suggest an annual rate of PPI investment in Asia-Pacific of US\$48 billion, which is far above current levels.

How Can Canadian Firms Compete?

The PPI project market is a highly competitive one. Furthermore, PPI projects involve significant risks, which vary by project and which tend to be lower in sectors like energy where long-term sales or off-take agreements can be negotiated and the revenue stream can commence with the commissioning of the project.

Canadian firms have sponsored a number of PPI projects in Canada and abroad (see boxes on this page and page 4). As competitors in the PPI market, Canadian firms have some important strengths, but also some serious disadvantages.

A major *strength* is the technical expertise and project experience of Canadian firms as suppliers of goods and services to those sectors that are attracting the most PPI activity — namely, energy, transportation, telecommunications and environment. The ability to offer integrated project solutions to complex engineering problems is a particular Canadian asset. The high quality of professional services, technology and technical equipment provided by suppliers is widely recognized. Canadian firms rank fourth in the world in the supply of consulting engineering services, according to *Engineering News Record*, a major U.S. industrial journal. Several of our capital project firms in engineering, geomatics, architecture, communications technology, power equipment, transportation equipment, etc. have achieved brand-name recognition and maintain a significant international presence.

Examples of Canadian Participation in PPI Projects in Canada

- **The 13 km, two-lane Northumberland Strait Toll Bridge:** a \$1-billion BOT project developed by Strait Crossing Development Inc.; opened in May 1997.
- **The 195 km, four-lane Fredericton-to-Moncton Toll Motorway:** a \$584-million design-build-operate-maintain (DBOM) project signed with the Maritime Road Development Corporation consortium; to be completed by November 2001.
- **The 69 km, four-to-six lane Highway 407 electronic toll road:** an \$830-million DBOM project for Toronto bypass being developed by Canadian Highways International Corp. (CHIC) consortium; 36 km Phase I segment opened in June 1997, and a further 11 km western extension opened in December 1997.
- **Dartmouth Wastewater Treatment Plant:** a \$40-million, 20-year, design-build-commission contract signed with TAP Water Group; construction started in June 1997.
- **Winnipeg Water Treatment Plant:** a \$205-million BOT contract for water supply and treatment facilities; design and pilot plant work under way by Winnipeg Water Consortium headed by CMZM.
- **Kingston Power Plant:** an \$80-million contract awarded to Destec Energy for construction of a 140-megawatt cogeneration plant; owner: City of Kingston, Pacific Electric Power, Applied Energy Services. Financial closure was reached in December 1995.



Examples of Canadian Participation in PPI Projects Abroad

- **Israel** – 86 km, 4-lane Cross Israel electronic toll road: a \$1.1-billion, 30-year BOT project scheduled for completion in 2002. Won by a consortium led by Derech Eretz (1977) Ltd. (30 percent owned by Canadian Highways International Corp. – CHIC). Uses the same electronic toll system and designs as on Highway 407 north of Toronto.
- **Philippines** – Six small hydro power projects, with a total installed capacity of 102 megawatts on the Upper Agno River in Benguet Province. Construction value: \$185 million. The exact form of public-private partnership is still to be determined. A joint venture agreement was signed by Axor International of Montreal with Miescor of Manila.
- **Peru** – Construction of a 680 km Socabaya “interconnector” transmission line worth \$250 million and 30-year BOT concession. The deal was announced during the 1998 Team Canada mission to Latin America.
- **Chile** – Phase II expansion of Santiago’s Merino International Airport; a 15-year, \$200-million design-build-operate concession. Vancouver Airport Services is a member of the Chilean-Spanish consortium, holding a share of 10 percent of the project. Vancouver Airport Services will be responsible for the terminal management portion.
- **Mexico** – San Luis Potosi Wastewater; two plants and associated irrigation systems; a 15-year, \$95-million BOT concession won by SNC-Lavalin in a joint venture with a Mexican firm.
- **Malaysia** – Kuala Lumpur LRT 2; a 30 km, 24-station, Light-Rail Transit line, 60-year BOT contract. Total value: \$2.2 billion. The consortium led by Bombardier and SNC-Lavalin in 1994 won the contract for \$960 million to provide equipment, systems and project management. The project will use Vancouver Sky-Train technology. The project is to be completed in time for the Commonwealth games in September 1998.

In addition, Canada has world-class professional services firms (management consultants, legal firms, public administration specialists) with much sought after experiences and skills in legal and regulatory reform, institution building, financial sector reform, governance models, labour relations, training and human resources development that can provide the complementary advice and expertise needed to enable and facilitate public-private infrastructure development in target markets.

Weaknesses associated with Canadian firms include their relatively small size and their limited capitalization. PPI projects entail high development and bidding costs, generally above those for traditional government-sponsored infrastructure projects.

Smaller firms must devote a proportionately greater amount of their resources to pursuing and undertaking PPI projects and they face greater risks than larger competitors. As well, because of their low capitalization, Canadian firms encounter greater difficulties in raising the debt and equity capital required to target and undertake larger projects.

Canadian firms are also handicapped by their limited experience in developing PPI projects. This is related in part to their small size. There have been fewer contract bidding opportunities open to the relatively smaller Canadian firms than to the larger, more highly capitalized, integrated multinational companies. In addition, opportunities for capital project firms to gain experience in the domestic market have been limited. *Canadian governments have lagged behind their counterparts in many other countries in applying the public-private partnership approach to developing, financing and managing infrastructure.*

As a result, most Canadian capital project firms have not acquired a significant track record at home that they can use to support their efforts to pursue opportunities in international markets. At the same time, because they have not been successful in this market, Canadian capital project firms have not put significant resources into developing the expertise needed to compete effectively for PPI projects.

These deficiencies impact certain PPI roles more than others. They are not as important to Canadian firms pursuing their traditional role as *vendors*. These firms may be able to apply the considerable success they have selling capital equipment,



engineering and other goods and services in international markets to developing effective strategies aimed at the clients found in PPI markets.

In competing as *owner-operators* and *project developers*, Canadian firms have clearly been disadvantaged by their size, their limited experience and by difficulties accessing the needed capital. While a small number of Canadian firms have been able to overcome these obstacles and compete effectively as PPI project developers, these are the exceptions.

Are the factors affecting the participation of Canadian firms in PPI projects intractable barriers or impediments that are vulnerable to a serious challenge by stakeholders? Based on consultations to date, Industry Canada believes that the latter position is closer to the truth; there is much that Canadian firms, in cooperation with other Canadian stakeholders, can do to compete more effectively in PPI markets. This issue is addressed directly in the next section of this consultation paper.

Recognizing that there is significant scope for participation by Canadian firms in PPI markets only provides a starting point. *Firms contemplating involvement in PPI must decide where they should target their efforts: What role can they play most effectively? On what sectors should they concentrate? What market in terms of project size offers the most promising prospects?*

In Short

Public-private infrastructure projects have been one of the fastest-growing areas of global demand. This strong growth is expected to continue over the foreseeable future, driven by the infrastructure requirements of emerging economies along with the increasing recognition of the advantages of PPI over the traditional model of state infrastructure development. PPI markets are competitive, but they offer promising opportunities for firms that can assemble the required package of skills and financial resources.

With their experience and international reputation as suppliers of goods and services to the energy, transportation, telecommunications and environmental sectors, many Canadian firms are already well positioned to serve as *vendors* in infrastructure markets, including PPI markets. However, Canadian firms should be able to do better and play a more significant role both as PPI *project developers* and

owner-operators, especially in small-scale projects worth \$100 million or less. This though is far from assured; greater Canadian participation in these areas will require effective action to address the significant obstacles currently facing Canadian capital project firms. Moreover, Canadian firms could even lose ground in their traditional role as vendors, if they do not strengthen their capacity to meet demands in the expanding PPI market. While we need to be realistic about our capabilities and strategic in our choices, lack of success in PPI markets could significantly reduce growth prospects of Canadian capital project firms in international markets.

How Do We Increase Canadian Participation?

Canadian firms must overcome the problems arising from their relatively small size, limited PPI experience and lack of critical skills and expertise. Possible approaches are suggested for addressing these structural problems as well as the equally important and related financing and marketing difficulties confronting participants and aspiring participants in PPI activities.

Getting Organized for PPI

Improving Opportunities to Learn at Home

Through involvement in domestic infrastructure projects, firms can gain the experience and credibility that is needed to compete effectively in foreign markets. Although there are some significant examples of public-private infrastructure partnerships in Canada (see box on page 3), federal, provincial and local governments have been more cautious than their counterparts in many other countries in applying PPI.

"Governments in Canada lag in infrastructure privatization relative to other countries. As a result, Canadian firms usually lack the experience of success stories at home that would allow them to market these skills abroad."

– Canadian Service Companies and Privatized Infrastructure Projects in Non-OECD Markets, Round Table (Toronto: February 4, 1997)



What Do Other Governments Do?

Private participation in the development and operation of infrastructure was first introduced by the governments of the United Kingdom, the United States, New Zealand and Chile in the 1980s. It has subsequently caught on in Australia, Japan, and most member countries of the European Union, as well as in a number of emerging economies (Argentina, Brazil, Taiwan, Colombia, Philippines, Malaysia, etc.). PPI projects were initially implemented as pilots, but governments soon discovered there were many advantages with PPI and began promoting and supporting more widespread use of PPI as a matter of policy.

The **United Kingdom** government has pursued an extensive privatization program since the early 1980s. It launched a successful Private Finance Initiative (PFI) in 1993 to accelerate and facilitate public-private infrastructure partnership. PFI makes available contributions in the form of concessionary loans, equity, transfer of assets and ancillary works or some combination of these. In 1995–96, deals worth £5 billion were concluded, many of them BOTs.

In **Australia**, the government has used tax advantaged bonds (Develop Australia Bonds) to encourage private sector infrastructure projects. From the start of this program in 1992 until September 1996, projects valued at A\$29 billion had been approved or were under review.

In the **United States**, sweeping deregulation of the electricity market in the 1980s led to the delivery of many new public-private power projects (Independent Power Projects or IPPs). The passage of the *Intermodal Surface Transportation Efficiency Act* of 1991 gave another boost to PPI by allowing states to use federal highway funds to pay up to 50 percent of the costs of building a toll road. Additional public-private financing tools are being developed in the context of the new (1995) State Infrastructure Bank (SIB) program.

In **Chile**, the telecommunications sector and most of the energy sector were already privatized successfully in the 1980s. To accelerate development of infrastructure by private investment (mainly roads and airports), Chile launched a comprehensive concession program in 1994, whereby the government assumes a share of the project risks. It guarantees, for example, a minimum revenue equivalent to 70 percent of the investment by the project sponsor. In **Mexico**, the government similarly encouraged private development of toll roads and bridges by offering guarantees to back its estimates of construction costs and traffic volume.

Across Canada, political leaders increasingly view public-private partnership as an idea whose time has come. "What is clear is that the old ways of doing things no longer work."

– Paul Martin, Minister of Finance, cited in "Common Good," Report on Business Magazine, *The Globe & Mail*, Toronto, November 1997

What Is Happening in Canada?

In Canada too, governments and public agencies across the country, strapped for cash and burdened by debt, in the late 1980s began searching for new and innovative ways to develop and maintain vital public services and infrastructure. In the meantime, most governments have come to accept PPI in its various forms (BOT, BOOT, ROT, BOO, service contracting, turnkey, etc.) as a sound, efficient approach for meeting infrastructure needs and are promoting its use. Implementation of PPI projects is gaining momentum. In a way, the Canadian capital projects industry's interest in obtaining domestic PPI experience coincides with increasing public policy interest in seeing new infrastructure constructed and operated in the most efficient manner possible by using competitive private sector methods.

Of course, the fact that a PPI project is to be undertaken in Canada does not necessarily mean it will be awarded to Canadian capital project firms. Given a highly open economy, to compete effectively in the domestic market, Canadian firms must be able to provide an attractive package of services at a price that compares favourably with that offered by major foreign competitors. *Should domestic firms not be more formidable competitors in their home market where they can benefit from their knowledge of specific local conditions and requirements and their well established business networks?*

An important Canadian initiative has been the creation of the Canadian Council for Public-Private Partnerships, a non-profit/non-partisan organization founded in 1993 that encourages cooperative ventures combining the strengths of the public and private sectors. Its vision is to encourage public-private partnership in delivering public services by providing information, sponsoring conferences and seminars and stimulating dialogue between decision makers. International expertise is brought in as part of its programs. *What further action might be taken to promote the benefits and the use of PPI in Canada?*



Government programs and activities can offer support to firms pursuing international PPI business opportunities, including the Canadian International Development Agency (CIDA INC), the Export Development Corporation (EDC), Trade Commissioner Services, Industry Canada sector branch services, the Program for Export Market Development (PEMD) and provincial trade assistance programs. However, given the unprecedented growth of PPI projects in the global infrastructure market, the usefulness and effectiveness of such programs could probably be significantly improved by introducing a stronger PPI focus and by better coordinating the support activities among government departments and agencies. *What other adjustments or enhancements to programs could governments make to improve their usefulness for firms pursuing PPI business?*

Partnering for Success

"By partnering with other firms, Canadian project developers can overcome many of the limitations arising from their relatively small size. Partnering allows firms to access a broader base of skills and to share the costs and risks of project development. In many cases, it is only by joining forces that Canadian firms can create the critical mass necessary to attract debt and additional equity financing."
— *Canadian Service Companies and Privatized Infrastructure Projects in Non-OECD Markets, Round Table (Toronto: February 4, 1997)*

Saying these things is easy. Doing them is considerably more difficult, for a variety of reasons. Competitors in the domestic Canadian or North American context may find it difficult, at least initially, to work together elsewhere. Where different professions and disciplines are involved, it may be harder to work with others using different jargons and conceptual approaches. Furthermore, once formed, partnerships and consortia are often difficult to manage effectively. Varying company cultures, asset strengths and appetites for risk can jeopardize project prospects at a critical stage. On the other hand, in the context of the Canadian industrial base, there is simply no other alternative but to seek to form viable project partnerships.

It can be costly and difficult to form a PPI consortia. In Canada, firms initially have to overcome problems posed by the regional dispersion and fragmentation of the industry to

locate potential partners. The parties can devote significant effort to working out an agreement on equity participation and risk sharing, and to drafting legal provisions that specify their commitments and discourage members from backing out of the agreement. Nonetheless, Canadian firms are often faced with the need to partner early in the PPI process.

Unlike some major U.S., French and German project developers, the relatively smaller Canadian capital project firms need to seek partners in the pre-construction or development phase. The initial front-end costs — associated with project conceptualization, pre-feasibility studies, proposal development, drafting and signing of contracts, and fundraising — can add up to 8–10 percent of total costs for a complex BOT project. This often exceeds the resources and the risk threshold of Canadian capital project firms.

Partnering may occur through a joint venture, the formation of a project-specific consortia, or the establishment of other suitable mechanisms for ongoing and more permanent cooperation. An important advantage of more permanent arrangements is that the group, as distinct from the individual members, can establish a track record in project development. As well, a quasi-permanent arrangement can lead to substantial savings in organization costs. Along with searching for possible domestic partners, firms need to explore the opportunities for forming partnerships with firms from third countries or joining multinational PPI consortia. Teaming up with firms that have the required infrastructure development skills in the project host country is another important option, as is broadening the partnership notion by involving project host government agencies and user groups from an early stage of project development.

Government and industry associations have attempted to facilitate the formation of PPI consortia. For example, one initiative being undertaken by Industry Canada is the development of a new database on "Canadian Capabilities in International Capital Projects." This will assist firms in identifying potential partners, and in finding possible suppliers and subsuppliers for projects. The Department of Foreign Affairs and International Trade (DFAIT), through its foreign trade missions, can help Canadian firms find partners in other countries. The Association of Consulting Engineers of Canada (ACEC) and the National Electricity Round Table provide a useful service by linking member firms across the country that might benefit from cooperative arrangements.



There is a need to explore further actions that could be taken to facilitate partnering among capital project firms. One area worth exploring further is how to encourage broader consortia formation linking partners from several industry sectors, bringing in our experienced utility operators and, where possible, including financial institutions.

Filling Gaps in Expertise

As a result of their limited PPI project exposure, most Canadian capital project firms do not have the in-house expertise and skills to develop and package persuasive and financially well-designed proposals for PPI projects. Moreover, Canada has only a small number of knowledgeable advisors with the requisite international experience in this field.

To become significant participants in the PPI market, Canadian capital project firms must:

- become skilled at “financial engineering,” the use of financial and legal instruments to match different types of project risks with different types of capital
- become familiar with the sources of financing for PPI projects and skilled at effectively accessing these different sources; developers must master new responsibilities
- develop expertise in risk mitigation and management techniques
- acquire a good understanding of changed infrastructure regulation and a good feel for country risk
- develop sensitivity to environmental issues and a good grasp of the ever-growing environmental requirements.

PPI project developers must:

- learn how to recognize and take advantage of opportunities to negotiate special agreements with host governments with respect to taxation, legal and regulatory reform, repatriation of profits and revenue guarantees
- adapt their marketing to a new type of client by learning how to effectively target their goods and services toward the needs of private project sponsors.

Filling the expertise gap must, of course, go hand-in-hand with partnering activity. One idea that has been put forward is creating a network that would pool the scarce PPI project finance expertise available from Canadian capital project firms, real estate developers, individual private sector experts, financial institutions and government specialists to address specific PPI challenges and opportunities. The establishment of more specialized PPI project financing vehicles in Canada would, no doubt, also help build up significant expertise in project packaging and financial engineering.

Accessing the Financing

Access to financing has been identified as a major barrier to entry into global PPI markets. Financing problems are closely related to the structural problems discussed in the first section of this consultation paper. Firms face different financing problems depending on the stage of a project, the market segment and the geographical market.

One significant distinction relates to the different phases of a project. The life of an infrastructure project can be divided into three main phases:

- development/pre-construction
- construction
- operation.

Financing requirements will differ, depending on whether a developer is involved in the initial phase only or is also involved in infrastructure construction and operation. For a description of the three phases and related financing issues, see the box on the facing page.

Financial risks and requirements will also vary by type of project. Some significant differences among the main types of infrastructure projects are discussed in the box on page 10.

“BOT-BOOT-BTO-BOL-ROT – the ownership structure is irrelevant unless the project itself makes economic sense.”

– William Dykes, International Project-Finance Consultant, retired Head of Project Finance, Citibank, Hong Kong, Speaker at BOT Asia '95, Manila



Financing Issues in the Three Phases of a PPI Project

- Pre-construction, Pre-investment or Development Phase:** This is the most difficult and risky phase in terms of financial payback. It involves project identification, project conceptualization, pre-feasibility studies, proposal development, the bidding process, formation of the consortium for the PPI project company, drafting and signing of the various contracts, fund-raising and financial closure. The latter point is reached when the principal participants have concluded a formal agreement on the business structure of the project and terms and conditions relating to the project's financing plan.

The front-end development costs, including bid costs, must be met by the project sponsors themselves. In many cases the sponsors/investors will try to include the development costs as part of the equity stake. However, if the project never makes it to the construction stage, the majority of the financial outlay to that point will have to be assumed solely by the project initiators.

- Implementation or Construction Phase:** Once financial closure has been reached and the project secured, PPI-project implementation begins in earnest with detailed design, construction, delivery and installation of equipment and testing of the system. At the start of this phase, the project company will have become established, with

all the necessary debt, equity and mezzanine financing already finalized. Most construction debt can be financed through commercial banks, export credit agencies or other financial institutions offering conventional construction loans. The availability and cost of this interim or construction loan financing depends on the financial strength of the consortium members and the level of comfort it can provide to lenders. The construction contractor will also usually be required to procure surety bonds, which provide sponsors and lenders with a guarantee against default.

- Operating Phase:** During this phase, the project company operates and maintains the constructed PPI facility in conformity with the criteria set forth in the concession agreement.

The reliability of the revenue stream over the life of the PPI concession will have determined the debt/equity attainable with respect to the total requisite financing package. If the revenue stream is assured and predetermined by off-take contracts such as a solidly backed power purchase agreement (PPA), then the project can be highly leveraged. For transportation projects, with their typical, multi-year "ramp-up phase," it is not unusual that financial arrangements need to be financially re-engineered during the first years after opening to maintain financial viability.

While international financial markets have responded well to the increasing global demands from the PPI sector, Canadian capital project firms have encountered difficulties in raising debt and equity capital. These problems relate to the deficiencies of Canadian capital project firms; that is, their limited capitalization and the limitations in Canadian financial markets, where mechanisms for PPI funding are not as well developed or where funding sources are not as readily accessible as in many other G-7 countries.

Equity Financing

Raising the substantial equity financing required for most PPI projects poses a major challenge for Canadian firms. A substantial injection of equity is required to attract lenders to projects in non-OECD markets, which tend to involve higher than average political, legal, commercial and other risks. For projects in emerging economies, equity financing typically amounts to 30–45 percent of total costs.

Equity requirements tend to be lower for power generation and distribution projects, where long-term off-take agreements (such as a power purchase agreement) reduce project risk, and higher for projects such as toll roads, airports and telecom networks, where revenue forecasts are subject to greater uncertainty.

Debt Equity Ratios in 115 IFC-Financed PPIs

Sector	No. of Projects	Debt (%)	Equity (%)
Power	36	65	35
Pipelines	8	65	35
Telecoms	34	51	49
Transport	25	53	47
All Projects	115	58	42

Source: International Finance Corporation, *Financing Private Infrastructure: Lessons of Experience* (Washington, DC: The World Bank, 1996).



Equity may be contributed by host governments in the form of grants, direct funding or “in-kind” investments such as land grants. Pension funds, insurance firms as well as individual investors may also be interested. Nevertheless, a substantial proportion of the equity financing typically must come from a project’s sponsors. In the development stage, it is usually the project developer that provides the funding to cover the front-end costs. Initial equity requirements to cover development costs (which, as noted above, can amount to 8–10 percent of project costs) can be substantial, and can be especially burdensome for smaller firms with relatively low levels of capitalization.

Debt Financing

Sources of debt include commercial banks, investment banks, export financing institutions and non-bank financial institutions. The latter group includes pension funds, insurance companies and independent financial service companies.

Canadian firms have experienced greater difficulties mobilizing debt financing than their more highly capitalized foreign competitors. In addition, Canadian financial institutions have been very cautious about moving into the rapidly expanding field of international project finance.

The underdeveloped state of the relevant financial markets is also reflected in the limited primary and secondary market activity in Canada for infrastructure bonds and shares. Pension fund managers, for example, have indicated that they would be concerned about the difficulties they could have in liquidating their PPI investments.

While there are indications that Canadian financiers are beginning to view PPI investments more positively, Canada still lags well behind countries such as the United States and the United Kingdom, which have had extensive domestic experience with infrastructure privatization and where well-developed and active markets for infrastructure financing have evolved.

International financial institutions (IFIs) such as the IFC are an important source of debt capital for projects in developing countries, but Canadian capital project firms have had little success in accessing this funding. This problem was examined by an interdepartmental task force established in

Financing Problems Unique to Project Types

Toll roads, bridges and tunnels, while offering the prospect of strong toll revenue streams, involve significant market risks. Traffic flows are difficult to forecast. Even the best forecasts typically contain large margins of uncertainty. Consequently, lenders will often seek various loan repayment guarantees, including government financial guarantees and support. As toll revenues are usually in local currency, there is also an important foreign exchange risk.

Airport and port projects, although posing similar market risks as toll roads, usually enjoy a lower foreign exchange risk, as most of their revenue stream will be in hard currency.

Railways, including freight, passenger, light rail and mass transit, are suitable for BOT projects, but usually only with substantial government support. Passenger rail systems in particular are likely to require ongoing subsidies because of the public pressure to keep fares relatively low.

Power generation, power distribution, gas and oil pipelines and water supply projects tend to be particularly attractive because of the possibilities for negotiating long-term off-take agreements. Consequently, commercial debt is easier to raise than for projects such as toll roads, which are dependent on the response of large numbers of individual users. However, as energy and environmental projects usually yield revenues in local currency, the foreign exchange risk needs to be addressed. In addition, water projects may be subject to pricing constraints.

Telecom projects are considered to be attractive due to the potential for high returns, in the order of 30 percent, particularly in the cellular market segment. Significant growth in telecom demand in emerging economies appears assured, and there is an increasing trend toward deregulation and the introduction of market-based pricing. At the same time, however, revenue streams are difficult to forecast. Banks usually require sponsors to come up with significant levels of equity before they will provide long-term financing. In telecom PPI projects, equipment suppliers often play a key role in project financing and in providing equity, loans or innovative lease-back arrangements.



1994. Since then, measures such as more targeted co-financing, improved intelligence flow, creation of an electronic IFI project tracking system, etc., have been taken to improve the situation. Capital project firms may also turn to export financing institutions such as EDC for financial support. While EDC continues to provide considerable financial support to PPI projects, it faces practical limitations due to its traditional status as Canada's export credit agency and the various international agreements its activities must respect.

Getting the Banks on Board

Canadian banks recognize the commercial opportunities presented by PPI projects. However, in order to avoid risk, their participation has tended to be selective in pursuing best projects, usually led by foreign financial institutions, rather than necessarily championing Canadian supply and sponsorship. Some observers believe the planned legislation for allowing a greater presence of foreign banks in Canada will lead to the proliferation of new types of financial services, enhance international connectedness and possibly also create new PPI project financing capabilities.

Creating New Financing Vehicles

Initiatives must be taken to provide a climate that facilitates the establishment of financing vehicles in Canada specifically oriented to financing PPI activities by Canadian firms. Such vehicles could focus on the problems identified above, in particular, on the difficulties Canadian capital project firms and consortia face in raising core funding to provide fully underwritten financing commitments at the early stages of project development.

In considering how to respond to this challenge, it will be important to take account of the significant changes under way in Canadian financial markets and the banking sector. For example, the Task Force on the Future of the Canadian Financial Services Sector will be instrumental in resetting the rules by which Canada's financial system will be governed in the years to come. Specific initiatives undertaken by a number of Canadian financial institutions and groups over the past year to focus on opportunities in the privatized infrastructure field must also be taken into account.

"With our sophisticated banking and financial services sector, Canadians in the private sector can mobilize funding for mega-projects both here and abroad."

– **Stanley B. Stein, Osler Hoskin Harcourt, "Public-Private Partnerships and Municipal Services: A Lawyers Perspective," *The Ontario Planning Journal*, October 1997**

Many PPI-specific financing vehicles and initiatives have recently been established in Canada or are under consideration (see box on page 12). A number of the funds identified in the box target small and medium-sized projects below \$50 million, projects in many cases that would not attract the interest of major investment houses in New York, London or Hong Kong. Some of the initiatives, including INFRADEV International, SAFPIE and CIDA INC, are geared toward helping firms during the risky development phase, when project sponsors are expected to come up with the required financing.

Existing and potential project financing vehicles together begin to provide a sound basis for responding to many of the financing problems faced by Canadian capital project firms. The task for government would be to encourage and lend weight to these innovative PPI financing efforts by refocussing and coordinating its international business development programs and services in support of PPI.

Should governments facilitate the development of more dedicated infrastructure funds in Canada? If so, the focus would have to be on analyzing and clearly identifying the specific PPI financing needs, and then encourage stakeholders to work together to fill the gaps. Government recognizes that, as a rule, private financial markets are better placed in selecting commercially viable proposals that satisfy reasonable business tests.



Existing and Planned Sources of PPI Financing in Canada

INFRADEV International, a new, Quebec-based investment company/fund established by the Caisse de dépôt et placement du Québec in partnership with the Royal Bank, Manulife and Hydro-Québec, has a capitalization of \$20 million. It aims to help mid-sized companies put together pre-construction financing for international infrastructure projects in the energy, transportation, telecom and environment sectors. INFRADEV would be willing to inject equity at financial closing up to 40 percent of project development cost alongside credible investors, but with the objective of early exit.

Newcourt Capital, a unit of the Toronto-based Newcourt Credit Group, launched a US\$500-million project debt fund operated out of New York City aimed at investing in infrastructure projects in Canada, the United States and the United Kingdom. Three insurance firms (CIGNA Investments, John Hancock Mutual Life and New York Life) are partners and provide most of the funding. The Newcourt Capital Fund targets projects in the range of \$40–100 million. Newcourt underwrote the project debt for Highway 104 in Nova Scotia. Newcourt has also created an international strategic alliance with AGRA Inc.

CIBC Wood Gundy created a new £125-million equity fund in the United Kingdom, dedicated to investments in the infrastructure sector. In certain circumstances, CIBC would provide both debt and equity financing and will consider projects as small as £15 million. CIBC intends to target PPI projects in the transition economies of eastern Europe, several of which would be of interest to Canadian capital project firms. Many eastern European PPI projects tend to be particularly difficult to finance due to their relatively small size and/or high risks and the weak resources of their public sector sponsors.

Alberta's Team Exporter Partnership (ATEP) Fund, which is currently under active consideration, is a proposed \$100-million financing vehicle aimed at helping small and medium-sized construction, engineering and architectural firms or consortia win international niche projects under \$30 million. Projects will be financed individually or syndicated through either debt or equity by the financial partners in the

fund. Capital project firms are expected to provide at least 5 percent of the project cost to ensure commitment to the project. A technical review committee of private sector firms will assess proposed PPI projects. Decisions on financing will be made by the participating financial institutions, at arm's length from the work of the technical review committee.

LOM (Loewen Ondaatje McCutcheon Ltd.), a Toronto-based investment company, recently established CFMC Fund Management Corp. with a \$250-million Borealis Infrastructure Equity Fund to invest in major domestic and international projects. Since the Ontario Municipal Employees Retirement System (OMERS) holds a 40-percent interest, the CFMC Fund needs to abide by current pension fund regulations that limit foreign holdings to 20 percent of the total pension fund assets.

Fonds de solidarité des travailleurs du Québec (FTQ) has announced its intention to create a \$175–250 million Export Development Fund to support international PPI initiatives by Quebec companies. It intends to partner with IFIs, banks, other risk capital funds and institutional investors in financing projects that create jobs and economic activity in Quebec and offer a reasonable return on equity.

SAFPIE – Fond de soutien au financement de projets d'immobilisation à l'étranger (fund to support the financing of international capital projects) was created by the Quebec provincial government to assist Quebec small and medium firms during the project development phase, when firms are in negotiations with financial institutions to achieve financial closure. SAFPIE provides export assistance to Quebec firms for projects that create jobs and economic activity in the province.

CIDA INC supports Canadian firms working on certain aspects of PPI development such as feasibility studies. The program is being revised to allow more specific, timely and targeted assistance for PPI projects. CIDA INC wants to be better able to assist firms during the risky PPI development stage and is prepared to support legal and financial analysis and advice.

Capital International CDPQ, a wholly owned subsidiary of the Caisse de dépôt et placement du



Québec announced the establishment of a US\$400 million Asia Equity Infrastructure Fund. As lead sponsor it will contribute US\$200 million; the Asian Development Bank has committed another US\$20 million. The balance will be raised from other international institutional investors. It will target investment opportunities in roads, rail systems, ports, power generation and transmission, telecommunications, water supply and sewage treatment plants, initially focussed on Thailand, Philippines, Malaysia and the countries of the Mekong region.

EDC is a recognized leader among export financing institutions in providing project and structured financing. It has almost two decades of such experience in a variety of sectors. In order to enhance the PPI financing available to Canadian firms, EDC is exploring various means for partnering and leveraging risk capacity with private sector entities.

Securing Financial Know-how

The creation of a capital project network, as discussed in the following subsection, offers one possible approach to address the lack of adequate financial expertise within capital project firms as well as the shortage of independent PPI project finance advisors in Canada with the requisite international experience. It could provide capital project firms and consortia with access to a significant base of financial expertise. It could allow them to draw on the knowledge of financial institutions, independent advisors, government specialists, capital project managers, capital market experts and Canadian commercial real estate developers.

The creation of specialized funds, discussed earlier, would attract additional financial expertise. Canadian capital project firms would have access to specialists in Canada with experience in financing international projects and knowledge about different sector and country risks.

"The financial engineering required for BOOT projects is often as important as the technical design and price."

– Peter Hodgson, Barclays de Zoete Wedd Ltd., London, "Project Finance," cited in *Projects Procured by Privately Financed Concession Contracts*, Vol. 1 (Hong Kong: February 1996)

Measures taken to satisfy requirements in this area should ensure firms have access to timely financial advice at critical points in the project investment cycle. If a capital project network is established, it should be more than a loosely structured, virtual entity. It should have a *network manager* who could ensure that important information gaps are addressed and that information is available when it is required.

In addition, a *guidebook* or *roadmap* to PPI financing sources and advice could be prepared, based on the financing techniques successfully employed in global projects. *Seminars* could be used to improve understanding of risk analysis, due diligence, risk mitigation, dispute resolution and other management techniques that are important to successful PPI project sponsorship, construction and operation.

Selling to the World

Gathering Market Intelligence

Firms need information about key decision makers, selection criteria, the true financing costs of projects, hidden risks and other matters. Some of the information will be disclosed to all prospective bidders. Other information can be obtained only by following closely related public policy debate and analyzing the circumstances surrounding a government's decision to construct a new infrastructure facility with private sector participation.

There are a number of avenues by which Canadian firms can learn about PPI opportunities. Through its Trade Commissioner Service, DFAIT provides market intelligence to Canadian firms seeking business opportunities in foreign countries. A federal interdepartmental task force has implemented several measures to ensure that Canadian firms are better informed about IFI-financed infrastructure projects. Industry Canada industry sector specialists have access to PPI project intelligence through their network of industry contacts. Canadian capital project firms can also take advantage of the information disseminated by private information service firms. A New Jersey firm, RCC's Public Works Financing, for example, issues regular information on international PPI projects in its monthly publication *Public Works Financing*.



Canadian capital project firms could greatly benefit from an improved flow of information on PPI opportunities, especially about opportunities in emerging economies, on which it is often difficult to obtain timely and reliable information.

Building Contacts and Visibility

There are a variety of formal and informal mechanisms through which firms establish international contacts. Foreign suppliers, foreign professional associations, employees with foreign experience, international consultants and investment banks can all help establish leads in foreign markets.

The visibility of Canadian firms is enhanced through Canadian participation in professional meetings, trade shows, international conferences and various other international fora. There is a need to explore how these and alternative vehicles can be used effectively to promote increased recognition of the capabilities of Canadian firms as PPI project developers, as suppliers of goods and services to PPI projects and, ultimately, as PPI project owner/operators.

Your Turn

Industry Canada would like your help in addressing the ideas and questions posed throughout this consultation paper. They are restated below.

Global public-private infrastructure is a large and growing market, particularly in emerging economies. It potentially offers good business growth opportunities for Canadian firms. However, we do not seem to be as competitive as we should be. Canadian firms have recognized infrastructure project expertise and experience supplying goods and services to the energy, transport, telecommunications and environmental sectors, but Canadian firms must also develop the capabilities that will allow them to serve as project sponsors, owner/operators, general contractors and subcontractors on PPI projects. In many instances, this means being capable of attracting and packaging the required project financing. We must, therefore, ask ourselves some fundamental questions:

- Can Canadian firms profit from PPI projects?
- If so, how can they compete?

The main challenge is to capitalize on strengths and overcome weaknesses. A realistic approach for many Canadian capital project firms may be to target smaller international projects of \$100 million or less. Larger firms, with the support of dedicated funding sources, may succeed in the market for larger projects. Effective consortia building will be required for success in all cases.

Viable solutions require the commitment of all stakeholders — including capital project firms, vendors, financial institutions, industry associations and governments — to be successful.

Can Canadian firms succeed in the rapidly growing global PPI markets and enlarge their share of business?

- Will more firms decide to pursue the opportunities if the environment for their participation is improved in the way discussed in this paper?
- Of the various roles discussed above, what kind of role do you believe your firm could best play in these markets?

Domestic infrastructure projects are important because they provide Canadian firms with the experience and credibility they need to compete internationally.

- What can industry do to ensure that the many benefits flowing from implementing more PPI projects at home are better understood and more widely appreciated and that the PPI model will be more effectively used by governments?
- What additional initiatives can governments take to help the Canadian capital projects industry demonstrate the advantages of PPI to potential clients?

By creating partnerships and forming consortia, firms can overcome many of the disadvantages of small size.

- Are there existing sectoral or regional infrastructure partnering vehicles that could be further developed and more widely utilized?
- How could a more proactive approach to creating partnership arrangements among capital project stakeholders be achieved?
 - Would a service that sought to locate potential partners and identify potential synergies among Canadian participants in PPI markets be useful?



- Is there more that should be done by industry associations and governments to promote networking and formation of coalitions, and encourage consortia development?
- For partnering with firms from host countries and third countries, including joining a multinational project consortium, what partnering processes and contractual structures work best? What are some of the risks? What assistance can government provide to facilitate successful international partnering?

There is always a need to enhance skills of capital project firms.

- How can Canadian firms fill gaps in PPI development experience and expertise?
- How can a support network be established that would facilitate information sharing among Canadian capital project firms, financial institutions, governments, specialized advisors and other stakeholders?

Canadian financial institutions have not generally been involved as lead financiers of international PPI projects pursued by Canadian firms.

- What are the prospects for Canadian-based financial institutions to play a more active role in financing PPI initiatives by Canadian firms?
- Are there initiatives that would encourage Canadian financial institutions to take a more active role in the financing of Canadian-sponsored PPI projects?

Canadian capital project firms have difficulty in accessing debt and equity capital.

- How can the liquidity of potential financial instruments be improved?
- How can the creation of additional equity or debt funds in Canada that are specifically dedicated to meeting the PPI financing needs of Canadian firms be accomplished? What sorts of dedicated sectoral/country/regional funds would make sense, given Canadian project preferences, technical capabilities and regional market opportunities?
- How can we develop new types of financing vehicles that more closely match the needs of Canadian firms interested in international PPI projects? Is there a way to create

new financing vehicles by combining the efforts of banks, investment houses and export development agencies?

- What can existing government export support programs and services do to help? What adjustments and enhancements would be desirable? Where could coordination of government activity be improved and achieve more effective targeting of PPI opportunities?

Financial engineering skills of Canadian capital project firms need to be honed to master the new PPI environment.

- What mechanisms are needed to help capital project firms acquire information on financing sources and/or obtain international "best practice" advice with respect to various aspects of risk management and financial engineering?

Timely market intelligence is required to direct the efforts of Canadian capital project expertise.

- What activities should national industry associations such as ACEC, the Canadian Construction Association (CCA), the Canadian Bankers Association (CBA) and their provincial affiliates take to strengthen Canadian firms' international links?
- What specific activities should be undertaken by governments to improve access to PPI market intelligence and to help showcase the capabilities of Canadian project developers and vendors in foreign markets?
- Are there promotional activities and other initiatives that could be jointly undertaken by industry, the financial sector and government to increase the profile of Canadian firms in those emerging economies that have been the source of most PPI activity?

Given the need of Canadian firms to improve their foreign contacts and increase their international visibility:

- What new activities could be undertaken by national industry associations such as ACEC, CCA, the Alliance of Canadian Manufacturers and Exporters (ACME) and CBA to strengthen Canadian firms' international connectedness and visibility?
- Are there new activities government could undertake to showcase the capabilities of Canadian project developers and vendors in foreign countries?



- Are there new promotional activities that industry, financial institutions and government could jointly undertake to increase the profile of Canadian firms in those developing countries that are the source of most PPI activity?

Industry Canada welcomes your participation in this process. Please send your ideas on the questions raised to:

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