THE THEORY AND PRACTICE OF RISK IN PRIVATE INFRASTRUCTURE PROJECTS:

An Analysis of the CIDA Industrial Cooperation Program's Experience To Date and Policy Recommendations for Tomorrow

by

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ABSTRACT

The world is witnessing a shift towards the private provision of infrastructure (PPI) in the transportation, power, water, sanitation, and telecommunications sectors. This thesis examines this shift from a Canadian industry perspective by focusing on efforts by the Canadian International Development Agency's Industrial Cooperation Program (INC) to assist Canadian firms attempting PPI projects in developing countries. The primary purposes of this thesis are to evaluate INC's support of PPI projects, and to recommend how INC can improve its support efforts. These purposes are achieved by reviewing the shift to PPI, creating a theory explaining why PPI projects fail, analyzing INC's database of PPI projects, and by evaluating INC's performance in support of PPI projects. The conclusions of this thesis are that INC has had little success in its early PPI support efforts, and that this lack of success is attributable to a proposal screening process which is inadequate for high risk PPI projects. Thus, this thesis recommends that INC introduce a new PPI funding mechanism, the core of which is a risk assessment template.

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The material contained in this thesis is confined to a particular time and set of circumstances. The lessons learned in doing this thesis are timeless and shall be remembered.

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INTRODUCTION

In recent years, a constellation of forces has been pushing infrastructure provision away from the domain of the public sector and into the realm of the private sector. Though a new trend for our times, this is not the first time around for such a provision mechanism. Rather, the current move in this direction mirrors methods used a century or so ago, when the canals, telephone systems, and railroads of North America were financed and built by the private sector. The provision of infrastructure has long swung back-and-forth, along a continuum of infrastructure provision options punctuated by the public sector at one end, and the private sector at the other. The present trend towards private infrastructure provision has come on gradually, and it continues to evolve. "What we see today is the product of several centuries of refinements in thinking by Humankind as to how to finance the progress of civilization."[1]

The current trend in favour of private sector involvement in infrastructure provision has been endorsed by development agencies and development banks, where it is valued as a means whereby small amounts of development funding can be used to mobilize vast quantities of private capital, and to funnel such capital into projects delivering basic needs. With recent decreases in budgetary allotments for development aid, the advent of such an infrastructure provision mechanism is particularly timely. Many development agencies have established mechanisms through which they can extend their funds to leverage private infrastructure projects. Infrastructure is one of Canada's overseas development assistance (ODA) priorities, and the Canadian International Development Agency (CIDA) has been using the private infrastructure provision route to effect development. Specifically, the Industrial Cooperation Program (INC) has been extending funds to Canadian private sector firms to undertake infrastructure projects in less developed countries (LDCs).

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[1] John May. "Project Finance - It's All Been Done Before!" p. A.

In light of this recent trend towards private provision of infrastructure (PPI), the purpose of this paper is to examine INC's record in support of PPI projects thus far, and to make suggestions as to how INC can be more effective in future efforts to support PPI projects. The process of achieving this purpose will involve detailing the theory of PPI failure and testing the INC-supported PPI projects to see whether the theory explains INC's experience, with the understanding that, if it does, the theory can provide a basis of knowledge regarding PPI success/failure, which can be a foundation from which INC can build a PPI knowledge base and from which INC can formulate PPI policy. In quest of these objectives this paper will be structured as follows,

Chapter One - Background and Overview of PPI Industry: Prior to engaging in the theoretical and analytical substance of this thesis, Chapter One will provide the reader with a brief background and overview of the PPI industry. This will include summarizing the influences which have shaped the current trend in favour of PPI, describing the composition of the global industry at present, surveying facets of the PPI delivery method which are evolving, and providing an overview of the state of the Canadian PPI industry.

Chapter Two - Theory: In this chapter a theoretical framework of the risks to which PPI projects are particularly vulnerable will be constructed. This framework will be established through a review of literature on PPI risk issues. It will consist of a theoretical discussion of the primary risk issues which impact on PPIs, and it will be complimented by practical examples and case studies. This framework will offer insight into the nature of PPI projects, and it will stand as a theoretical basis from which INC's PPI efforts will be assessed.

Chapter Three - Analysis of INC Projects: In this chapter the INC sample will be presented, the methodology and criteria for analysis will be detailed, and the analysis will be undertaken. The INC project sample will be analyzed to test the hypothesis that *INC PPI projects have been impeded by manifestations of a known and defined set of high risk PPI issues*. Or, translating the hypothesis into the interrogative form the following research question is produced to guide the research process, *what risk issues have manifested themselves in INC-supported PPI projects so as to significantly impede progress?* To this

end, the INC sample will be analyzed to determine the factors which have impeded the progress of INC PPI projects. The findings will be compared to the theoretical causes of PPI failure documented in Chapter Two to see if they support the theory.

Chapter Four - INC Policy Direction: This chapter will include discussions, recommendations, and conclusions regarding the INC findings in Chapter Three. Based on the current state of knowledge about PPI as detailed in Chapter Two, and on the INC-specific findings in Chapter Three, the primary purpose of Chapter Four will be to offer policy recommendations to CIDA regarding how INC could be more successful in its efforts to leverage PPI projects.

CHAPTER 1:

OVERVIEW AND BACKGROUND OF PPI INDUSTRY

INTRODUCTION

This chapter will provide the reader with a brief background to the PPI industry by summarizing the influences which have shaped the current trend in favour of PPI, describing the composition of the global industry at present, surveying the areas in which the PPI method is evolving, and by providing an overview of Canadian PPI efforts. Prior to embarking on these tasks, however, the grouping of projects being dealt with in this paper will be put into perspective for the reader.

There is an infinite number of ways for the private sector to become involved in infrastructure, as the very act of involving the private sector delimits the range of provision options. The ways in which the private sector can involve itself vary in terms of responsibility, commitment, and risk. The variations can be conceived of as existing along a continuum. At the most detached level, private sector involvement exists by way of technical assistance or supply contracts. Here, the private sector is responsible only for the provision of a particular input, taking no responsibility for the delivery or the quality of the end product. Remuneration at this level is not conditional on the performance of the infrastructure, revenue generation, or profitability. Further along the continuum of provision options, are projects with higher levels of private sector involvement, such as management contracts. Here the private sector's involvement is heightened as management contracts usually include performance requirements, to which compensation is linked. Further still along the continuum is a variety of infrastructure projects in which the private sector takes on significant risk, assuming responsibility for building, maintaining, operating, and financing the infrastructure unit. There is a variety of provision mechanisms constituting this group of private infrastructure projects. These projects will be referred to collectively as private provision of infrastructure (PPI) projects. It is this group of projects, and at times

the more focussed and the sub-group of build-operate-transfer (BOT)[2] projects which will be the subject of this research effort. This paper will proceed on the assumption that the reader has a solid understanding of what PPI and BOT projects are. Readers wanting further definitional clarification are encouraged to review the rigorous definition documented in *Appendix A*.

INFLUENCES SHAPING THE CURRENT PPI TREND

The trend towards PPI dates from the 1970s, when a variety of forces emerged, pushing the responsibility for infrastructure provision away from the public sector, and towards the private sector. It was not until the late-1980s, however, that PPI projects began to appear with any degree of frequency. The forces which emerged in the 1970s and 1980s to produce this trend have come from regulatory, technological, and economic changes, and from a coming to terms with the inability of the public sector as provider. In aggregate, these forces have shut doors on the public sector's provision options, while simultaneously opening doors for the private sector to step-in.

While the causes of the move to PPI are many, perhaps the most unforgivable cause has been the enduring failure of governments to supply the needed levels of infrastructure. Worldwide, 1 billion people are without access to clean drinking water; 2 billion people lack adequate sanitation facilities; while another 2 billion are without electricity.[3] The situation is most dire in the developing world. In Bangkok, for instance, only 8% of the surface area is covered by roads, compared with 20% in London or New York. Meanwhile, 500 new vehicles take to the roads daily in Bangkok, as economic growth enables more people to buy cars. Bangkok's traffic congestion has been figured to decrease GNP by 1% per annum, and to cost the average resident 40 days per year in commuting time.[4] The failings

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[2]The term BOT will be used generically throughout this paper, not exclusively applicable to build-operate-transfer projects, but rather, representing a broader range of private infrastructure provision options, to be defined in *Appendix A*.

[3] World Bank. World Development Report 1994 - Infrastructure For Development, p. 1.

[4] C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 4.

are by no means confined to the developing world, however. In the wealthiest regions of the world, too, there are glaring examples of the shortcomings of governments in infrastructure provision. Power blackouts, traffic jams, and air-travel bottlenecks represent such failings in the most wealthy regions of the globe. A study by the US Department of Transportation found that traffic jams on US highways in 1985 wasted almost 3 billion gallons of gasoline, equal to 4% of US annual gas consumption. Further, a Federal Aviation Administration study in 1996 found that air travel delays in the US resulted in $1.8 B in additional airline operating expenses.[5]

In the contexts of both LDCs and industrialized countries, infrastructure deficits are not the failings of technology, ability, or know-how; rather, they are the failings of political will, management, and planning, and they are the manifestations of bureaucratic inefficiency and incompetence. In the summary of a report on infrastructure prepared for the World Bank, the authors conclude that government supply responses to infrastructure demands have been inadequate, and that structural and systemic failings of government are to blame. Referring to government as provider, Kessides and Ingram say that,

> widespread failures to provide reliable services that users demand stem from inadequate maintenance, misallocated investment, and inefficient operation, which in turn are largely rooted in institutional factors including the following: lack of competition in infrastructure service provision; lack of managerial autonomy for service providers; pricing practices that involve heavy public subsidies; and few incentives for service provision to be responsive to the needs of users.[6]

In addition to the failings of governments, the momentum in favour of PPI also flows from the promises inherent in the principles of the private sector. The private sector brings a variety of disciplines to bear on infrastructure, not applied thereto when under public provision. Theoretically speaking, a competitive market environment will have a positive innovative impact on provision. As Smith and Walker suggest, there is no logical reason

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[5] Antonio Dias Jr. PhD thesis, p. 2.

[6] Christine Kessides and Gregory Ingram. "Infrastructure's Impact on Development: Lessons from WDR 1994," p. 16.

that Adam Smith's maxim "society gains when men compete to better their position"[7] should not hold true in regards to much of today's infrastructure needs. The current trend towards PPI, has been largely accompanied by a consensus among governments world-wide and among IFIs and development agencies, including the IMF, the WB and the UN, that there is great value in "tapping the energy and initiative of the private sector and the discipline imposed by its profit motive, to enhance the efficiency and productivity of that which has previously been considered public sector services."[8]

The growth in private infrastructure provision has also been pushed forward by enhanced supply capacity and capabilities stemming from regulatory and technological changes which have facilitated the flows of capital globally and across boarders. The deregulation efforts which began in the USA in the 1970s, have now circled the globe creating an enabling environment amenable to international business interests. The growth of capital markets and banking systems in LDCs have also provided momentum for the change, allowing for capital to be raised domestically. New and innovative mechanisms for raising capital, have allowed financing to be found where it previously did not exist.

Supply capacity has been augmented by changes to domestic legislation allowing private sector involvement in infrastructure sectors, many of which were previously protected by legislation from private participation. In this respect, early privatization and private participation efforts in Chile, New Zealand, and the United Kingdom set the pace.

In addition, technology has created new, lucrative infrastructure sectors which private interests have been quick to respond to. The most obvious example of the role of technological change in the advent of PPI is in wireless communications. Technological advances have also allowed for the unbundling of infrastructure systems, such that those segments of infrastructure systems which are amenable to competitive free-market provision can now be so provided. Today, power infrastructure, for example, can be broken

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[7]C. Walker and A.J. Smith. *Privatized Infrastructure: The BOT Approach*, Preface.

[8] Geoff Haley. "Developing BOT Variants," p. ii.

down so that generating capacity can be provided by a competitive marketplace, while the state can continue to assume responsibility for the less commercially attractive aspects, such as distribution. Many infrastructure systems have traditionally been considered natural monopolies and, thus, the services were considered best provided (or at least highly regulated) in whole by the public sector. The revolution in electronic technologies has also had an enabling effect, making previously unviable infrastructure projects logistically possible, by compressing time and space to make a growing number of projects commercially viable.

Further, changes in political and economic ideologies have added to the volume of PPI opportunities. Specifically, the downfall of communism in Eastern Europe and the Former Soviet Union, and rapid economic growth in the newly industrialized economies of Asia and Latin America have augmented the volume of potential projects worldwide.

Finally, the move to PPI has gained impetus from the constrained borrowing opportunities of LDC governments as a result of the Debt Crisis, and subsequent policies of fiscal austerity, such as structural adjustment programs. LDC governments simply do not, any longer, have access to the volumes of money needed to finance infrastructure projects. Further, because infrastructure projects are very visible and very costly, they are easily targeted by governments looking for quick budgetary adjustments. The result of these government spending constraints is an increase in the infrastructure deficit. Simultaneously, however, vast pools of capital have been left dormant. The private sector has responded to these factors by finding viable ways to access funds and to provide the needed infrastructure, specifically, through PPI schemes.

THE GLOBAL PPI INDUSTRY

Survey of PPI Activity at Globally

The World Bank has been maintaining a database on PPI projects, which tracks projects in the gas, power, telecommunications, transport, waste, and water sectors, which have been initiated since 1984. A tabular summary of the data by country, region, and sector

can be found in *Appendix B*. Although the data is not exhaustive, it provides a revealing glimpse of the state of PPI and it will provided the basis for the following discussion of the composition of the PPI industry worldwide. The data under discussion was provided on request from Alberto Amos of the World Bank.

The World Bank (WB) data illustrates that LDC/Industrializing Asia is the most active region with 163 new PPI projects registered in the database. Forty-seven of these projects were undertaken in the Philippines, 38 of which were in the power sector. Thirty-seven were undertaken in China; 24 in Malaysia; and 21 in India. Slightly more than half of the Asian PPI projects identified are in the power sector.

Latin America has also had significant PPI activity, with 127 PPI projects having been identified by the WB. Sixty-one of these have been in Mexico, of which 46 were in transport, reflective of a large toll road initiative in that country. Twenty-three projects were undertaken in Argentina; 12 in Chile; and 10 in Columbia.

Africa and the Middle East have undertaken few PPI projects todate. Only 52 projects have been identified by the WB in Africa and the Middle East, 11 of which were in South Africa.

Eastern Europe and the states of the Former Soviet Union have also had little PPI activity, with only 32 projects identified by the WB, 11 of which were telecom projects. In the industrialized world, PPI activity has been quite slow. In OECD Europe there have been only 137 projects identified by the WB since 1984, of which 49 were in the UK. Canada has implemented only 22 PPIs since 1984, while the USA has implemented 130. However, of the 130 American projects, 73 were in the power sector, reflecting legislative initiatives in that country to develop a strong private power industry. The power sector aside, the relative inactivity in PPI in the USA stands in ironic contrast to the very fundamentals and attitudes the country is premised on and stands in stark contrast to the intricate level and high degree of involvement of American firms and banks in PPI progress elsewhere in the world.

Infrastructure projects have become a significant portion of the IFC's portfolio. The IFC has agreed to support 148 PPI projects in 40 LDCs. By way of support, the IFC has committed $3.1 B to these 148 projects, which have an aggregate value of $28.6 B. The first IFC PPI approval was granted in 1967; however, the total number of projects approved prior to 1990 was small. The magnitude of the current and growing trend towards PPI is evident in that a full 75% of IFC approvals have been granted since fiscal year (FY) 1993.

Most of the projects supported by the IFC have been power generation and telecom projects, with 44 and 41 approvals respectively. Other active sectors include ports with 19 approvals; power transmission and distribution with 11 approvals; and pipelines and waste water sectors with 8 approvals each.

Latin America accounts for 43% (by dollar value) of IFC approvals, while Asia accounts for 34%. Africa, Central Asia, and the Middle East constitute only 10% of IFC approvals to date. In terms of country activity, Argentina leads the way with 29 projects receiving IFC approval, followed by India with 13 approvals, and the Philippines and Chile with 11 each.[9] The IFC has supported only 6 projects in Mexico and four in Brazil, leading Gary Bond to label the two countries the biggest disappointments for the industry.[10]

POINTS OF EVOLUTION IN PPI PROJECT DELIVERY

The WB's database reflects the constitution of the first phase of the current round of PPI projects. This first wave of projects has included a few very large PPI projects which stand as high profile disasters, and such experiences weigh heavily in the collective mind of the PPI industry. However, more weighty still is the fact that the IFC predicts that LDCs will need more than $3 T in new infrastructure during the next 10 years[11], and that the public

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[9] Source of IFC data in this section: IFC, *Financing Private Infrastructure: Lessons of Experience*, pp. 3-24.

[10] This statement was made by Gary Bond during a presentation on BOTs which he made to INC on January 30, 1997.

[11] Antonio Dias Jr., PhD thesis, p. 32.

sector will not be able to provide it. As strong forces and loud voices continue to support the move to more and more private sector involvement in the provision of infrastructure, it is evident there exists far too much political will to retreat. Subsequently, some suggest that what we are seeing is "the emergence of a multi-billion dollar patchwork of private infrastructure covering the globe, from Shanghai to Santiago."[12]

In keeping with the principles which drive capitalism, the PPI industry, as a microcosm of the greater structure, has inherent properties which evoke innovation and which find solutions. As such, the PPI concept is in transition, being pushed and pulled at many facets and in many directions. In the eternal quest for a better way to pursue infrastructure projects, there is a notable change occurring in terms of the size and location of projects being undertaken, in the specific PPI mechanisms being employed, in the structure of firms involved in PPI work, in the institutions supporting such work, and in the financing methods being employed. This paper will now look at these characteristics as these key sources of PPI evolution.

Evolution in Location of PPI Activity

The IFC has identified three groups of countries based on their levels of participation in PPI. The IFC sees 10-15 first tier, or leading countries, including Chile, Malaysia, Hungary, Argentina, Pakistan, and the Philippines. These are countries which have demonstrated political commitment to PPI, where PPI projects have been undertaken frequently, and where appropriate and credible PPI legislation has been put in place. There are 20-25 second tier, or starter countries, including India, Indonesia, Turkey, Latvia, and most of Latin America. Such countries have made efforts in the direction of PPI, though few deals have been concluded in these countries due to legal, regulatory, bureaucratic, or creditworthiness problems. The third tier of countries, also called the latecomers, includes the remainder of LDCs. These are countries facing sizeable legal, regulatory, policy, and

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[12] Richard House. "Who Will Win the New Project Finance Game?" p. 41.

credit problems, and which have demonstrated little commitment to PPI.[13] In the experience of the IFC, PPI projects which have gone ahead in the riskiest tier of countries have been projects with short payback periods (telecoms); projects generating foreign exchange (ports); and projects with strong sponsors and strong government support.

Evolution in the Size of PPI Projects Being Undertaken

In terms of *project size*, few in the industry expect PPI projects to become larger.[14] The IFC is one of those which foresees a move to "smaller more manageable projects," based on experiences like Hub River and Eurotunnel. Bombardier's Philippe Plancher also notes the significance of the recent experiences of mega-projects and their impact on the future structure of the PPI transport industry. According to Plancher "the growth of privately financed rail has suffered in 1995 following the experience of Eurotunnel as the financial markets are now extremely suspicious of this sector when it comes to project finance.[15]

It is important to recognize, however, that there are diminishing returns as projects become smaller, and that a small PPI project is not a proportionately scaled down version of a larger one. Thus, there is a limit to how small PPI projects will get. A medium sized project is considered to be one in the vicinity of $100 M. In the case of a medium sized project, development costs are typically agreed to range from 2% to 5% of total project costs[16]. Smaller projects will have higher development costs, and projects costing less than about $20 M are considered to be pushing the limits in terms of how small a project can be while still being viable.

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[13] IFC. Financing Private Infrastructure: IFC's Lessons of Experience, pp. 10-11.

[14] Richard House. "Who Will Win the New Project Finance Game?" p. 54.

[15] Privatisation International. *Infrastructure Yearbook 1996*, p. 52.

[16]Development cost estimates ranging from 2% to 5% were frequently cited in the body of literature covered in this research, and by firms and financial experts interviewed in the course of research.

Evolution in the PPI Mechanisms Being Employed

The frequency with which of the various PPI *mechanisms* are utilized is also evolving. (See *Appendix C* for definitions of the primary PPI variants). BOTs have been the most common mechanism to date, but BOOs appear to be the preferred mechanism for tomorrow. Walker and Smith anticipate the need for serious reassessment by governments of the "transfer" component of BOTs, recognizing that "the transfer of a physical asset to the public sector is not necessarily an unalloyed blessing."[17] Infrastructure which can be maintained and operated easily and at a low cost can be done on a BOT basis and transferred to the government such that the unit is of some value to the government. But, in the case of a life-expired, technologically-outdated, or an environmentally-unfriendly infrastructure unit, transfer is likely to be more of a burden for the government. The WB has been explicit about its dislike of the BOT mechanism, and about its preference for the BOO mechanism. In a recent talk at CIDA INC, Gary Bond, a senior policy analyst with the IFC, spoke of the current trend towards BOTs as simply the current stop on the PPI continuum. Bond expects to see a decline in BOTs because of the "transfer" component, and a move towards BOOs and full divestiture projects.[18]

Evolution of Primary Infrastructure Providers

In light of increased PPI opportunities, and decreased traditional infrastructure opportunities, those firms which, in the past, made it their business to provide engineering services, equipment supply, construction, and on-going operation and maintenance services to infrastructure projects, are now being required to adjust to a new way of doing business. PPI demands new skills in finance, management, risk assessment, and overall project development. Subsequently, traditional infrastructure providers have had to restructure and refocus to be competitive.

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[17] C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, p. 253.

[18] Gary Bond is a Senior Policy Analyst in the Corporate Planning Department of IFC. He spoke at CIDA on January 30, 1997.

In the past, infrastructure projects were developed primarily by governments. The firms providing services and supplies to such projects were remunerated on a cost-plus-fee basis. In PPI projects, however, a private sector firm or consortium replaces the government as developer, and the risk of infrastructure provision is downloaded from the public to the private sector. With the private sector as developer, firms providing construction services and equipment can no longer bill on a cost-plus basis, but are, instead, frequently required to provide goods or services on a fixed-price basis. Further, suppliers are no longer selling goods and services for cash remuneration. Rather, they might now have to become part of a project company, or be required to take an equity position in a project in order to secure a supply contract, or accept remuneration in part in equity. Infrastructure projects which used to be based on sovereign risk, are now based on commercial risk; and, infrastructure projects which used to be structured on transactions, are now structured on relationships.

There are traditional goods and services supply firms which will chose to remain structured as traditional suppliers regardless of changes at hand. This is an adequate strategy as long as these firms make such a choice consciously, recognizing the industry dynamics, understanding that the industry is changing, and being cognizant of where they fit into the new industry structure. For firms wishing to be competitive within the structure of this newly emerging industry, some corporate readjustment will be necessary. Firms have little choice but to enhance their management, development, and financial capabilities. PPI development requires that firms have internal capacity to identify, assess, and monitor risk, and to co-ordinate the project from identification, to financial close, to construction, and through the operational stage. These are new and specialized skills which are absolutely necessary for firms trying to compete in the PPI industry. Yet, these are skills which the firms involved in the traditional provision of infrastructure have not had to possess in the past, and which are not inherent within them. Management, financing, and development skills will become key sources of competitive advantage in the PPI industry, as important as design, engineering, and technical skills. The biggest mistake a firm can make is to fail to recognize these skills as unique and outside of their traditional realms of expertise. They need, instead, to recognize that these skills need to be learned, understood,

internalized, and allowed to exist within firms in their own rights, and not as sidelines to someone's design or engineering talents.

As the private sector takes over the lead role in infrastructure projects, the doors have swung wide open for it to push the limits of its innovative capacity, particularly pertaining to deal and project structuring. While the transition will be painful for some, the decline in government projects marks the advent of what should be a rationalized and overall more efficient industry.

In addition to specialized skills, PPI requires that firms have healthier balance-sheets than traditional infrastructure providers, as firms must now provide financing to cover development costs, equity capital, and stand-by credit guarantees. Infrastructure is increasingly being driven by finance, and the result of the need for increasing internal resources has been, and will continue to be a tendency towards mergers and strategic alliances within and between players in the engineering, supply, and finance communities. Some traditional firms have already restructured in order to gain ready access to capital pools by way of internalizing such resources, while others have established strategic alliances for such purposes. Firms such as General Electric and Bechtel have built in-house project finance divisions with capital pools and PPI expertise. Bechtel, for instance, has established Bechtel Financial Services to put project financing together, and to provide an internal equity source for PPI. Much project finance expertise at present exists in banks and financial institutions, and, therefore, the internalization of project financing expertise has resulted in a steady flow of project finance personnel from investment banks to in-house capital divisions. Such a flow, however, is not expected to negate the need for commercial banks. According to companies such as Raytheon, Bechtel, and ABB, banks still have a valued role to play in project financing as providers of market information and as contacts to local sources of financing. Also motivating the trend to internalize financial services is the significant price of external advisors' and arrangers' fees.

The group of project developers which is emerging as leaders in the industry has come, in part, from the ranks of traditional engineers and equipment suppliers. Fluor Daniel, Black & Veatch, Bechtel, ABB, Phillip Holzman, Morrison Knudson, GE, and Rayethon are

examples of firms which have broken away from their traditional infrastructure provision roles, making conscious efforts to become project developers. Those mentioned above have made the transition to development with the intent of staying in the project at least long enough to sell their traditional goods or services into the project. There is also, however, another variety of developers emerging, a group which exists for the sole purpose of developing projects with the intent of cashing-out as early as possible, such as at financial close. Because the development phase of PPI projects is so risky, developers can demand a 200-400% return on their development phase investments, making project development a lucrative business on its own.

There are also large infrastructure conglomerates which involve themselves in PPI projects from "cradle to grave."[19] The Malaysian conglomerate Renong Bhd consists of 13 listed companies and 100 related operators. Renong considers itself a one-stop infrastructure shop, offering the "full complement of services necessary to develop an infrastructure project." Renong's involvement in PPI projects covers project conception, design, construction, materials provision, finance, ownership and operation, taking projects from development through to transfer. Such companies, however, will likely not be the overwhelming trend in the future of this industry. In fact, Smith and Walker have identified the continued loosening of the link between project sponsors and construction contractors as one of the primary areas of project structure evolution. Aside from those construction firms which have expanded into project development, it is becoming less common for construction firms to be part of the concession company. More frequently, construction is undertaken on a fixed-price, turnkey contract basis. This trend works in the interests of both parties. In contracting-out construction, project developers can protect themselves against construction risks, particularly cost overruns and technical risks. And, construction companies are, themselves, endorsing their preference for turnkey participation as this allows them to get in and out of projects quickly, rather than tying-up capital as equity investment. In line with their traditional way of doing business, they prefer to have financial assets available to generate further business.

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[19] Renong Berhad. *Renong: An Infrastructure Powerhouse*.

The WB, in its efforts to understand where firms in this industry are moving, has identified five restructuring strategies which have been adopted by PPI-oriented firms. *First*, firms such as France's Compagnie Générale des Eaux have developed a municipal focus. Such firms focus on developing relationships and a diverse network of projects, in multiple sectors, at the municipal level. The Compagnie Générale des Eaux, for instance, has expanded from waterworks "into other municipally oriented services such as hospitals, cable television, parking facilities, passenger transport, and urban property development." *Secondly*, Telefonica de Espana has taken a regional focus in its efforts to secure a significant share of the Latin American telecommunications market. Such a focus includes building business and political relationships, establishing trust and familiarity, and capitalizing on knowledge and common understanding of the culture, language, and consumer culture. Hopewell Holdings has also taken a regional approach in the Chinese market, fostering a network of connections in that country which has won it favour and secured its advantage there. *Thirdly*, some companies are focusing on the development of vertical infrastructure. Tribasa, for instance, plans to "develop inter-modal transport corridors in Mexico with ports, toll roads, and service facilities that improve logistics for manufacturing firms relying on just-in-time delivery methods." *Fourthly*, some large construction companies are developing a construction focus, rather than branching out into project financing and development. As such, they focus on projects with large construction components. *Fifthly*, companies including Enron have developed a narrow segment focus. For Enron this has meant basing its strategy around natural gas, and concentrating on gas transport and distribution, and on building gas-fired power plants.[20]

Evolution of PPI Financing Methods

The trend towards PPI has also forced change in the financial community. Whereas projects were previously sovereign risks, they are now commercial risks and banks and institutional investors are begrudgingly taking on some of this new risk. The typical breakdown of PPI financing is in the vicinity of 70-80% debt and 20-30% equity. Projects

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[20] Jae So and Ben Shin. "The Private Infrastructure Industry - Company Approaches."

with higher perceived risk will usually require higher levels of equity in order to give lenders confidence to come on-side. *Table 1.1* and *Table 1.2* below reflect the debt-equity composition of 140 IFC sponsored PPI projects, and illustrate where financing is coming from.

TABLE 1.1*: SOURCES OF DEBT IN IFC-SUPPORTED PPI PROJECTS

Debt Source	Debt (US$ B) In IFC-Supported Projects x Debt Source	Debt x Debt Source, As % Of Total Project Costs
Foreign Commercial Banks	5.6	21
Local Commercial Banks	2.7	10
Local Publicly Owned Banks	0.1	0
ECAs	2	7
Supplier Credits	1.7	7
International Bond Issue	0.5	2
IFC Loans	2.2	8
Other Multi/Bilateral	1.3	5
Total	**$16.1 B**	**61%**

*Source: IFC. *Financing Private Infrastructure: Lessons Of Experience, 1996*, p. 57.

TABLE 1.2*: SOURCES OF EQUITY IN IFC-SUPPORTED PPI PROJECTS

Equity Source	Equity (US$ B) in IFC-Supported Projects x Equity Source	Equity by Equity Source, As % Of Total Project Costs
Private Foreign Sponsors	2.6	10
Private Local Sponsors	2.8	10
IFC Equity	0.8	3
Other Multi/Bilateral	0.1	0
Internal Cash Generation	4.2	16
Total	**$10.5 B**	**39%**

*Source: IFC. *Financing Private Infrastructure: Lessons Of Experience, 1996*, p. 57.

Syndicated loans remain the debt finance mechanism of choice; however, the combined forces of deregulation, globalization, technology, and innovative thinking are pushing the parameters of financing options and are tempting firms to venture away from the traditional financing methods. PPI financing can be raised from commercial banks; project sponsors, contractors, equipment vendors, leasing firms, bond issues, public offerings, securities funds, IFIs, ECAs, and development agencies, including CIDA. Commercial banks are constrained in their eagerness to participate by the time profile of PPI projects, which often require longer loan terms than commercial bankers are willing to offer. Pension funds and insurance companies have emerged as new sources of financing, and seem to provide a good maturity match with the demands of PPI projects. The large volumes of money accessible through pension and insurance funds, along with the lengthy tenures sought make them logical partners for PPI projects. However, such funds are often legally constrained in their investment options. They typically have minimal risk appetite, and can often only be drawn on in post-construction phases. Such funds might be best served by investing in one of the hundreds of private infrastructure equity funds which have emerged in recent years. As such, the investment can be diversified over a variety of projects, and the risks reduced. Regulations for insurance funds are loosening, leaving more room for investment in global infrastructure projects. Insurance funds in the US can now invest 20% of their assets outside of North America, up from 6% in recent years.[21] The appetite for infrastructure investment is significant; as of 1995, Prudential Insurance had invested $4.5 B in 100 US power plants, most of which were non-recourse, greenfield projects. The company is now looking to invest 10-15% of its portfolio in foreign infrastructure projects.

Bond financing options are usually only viable for large projects with strong sponsors and clear government support. Public share issues have been extended infrequently, though they have been used in some high profile PPI cases, including the Eurotunnel and the North-South Expressway in Malaysia, and in some highly innovative ways, such as in the case of a sports stadium in Australia. The $678.6 M sports stadium is being constructed on a project finance basis for the 2000 Olympics in Sydney. The project company is selling

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[21]IFC. *Financing Private Infrastructure: Lessons Of Experience*, p.61.

two equity products to finance the project, each of which combines stock and seats. The gold package is priced at $A 10,000 and includes stock, seats for all events held in the stadium during the Olympics, club membership for 30 years, entry to most sporting events, preferred booking for concerts and other non-sporting events, and more. More than 34,000 gold packages were listed for sale but have been slow moving. However, all 600 units of the platinum package were snapped up instantly.[22] The platinum package includes stock, two seats per event listed above, and additional perks.

Just as there is no single right way to approach PPI work, there appears no single right way to structure financing and different project developers are taking different routes. ABB, for instance "makes full use of export credit financing for its projects," while "Enron constantly pushes the frontier in tapping capital markets."[23] Some industry analysts, however, predict that after toying with the innovative, new schemes, financing will come full circle. "In spite of the hype last year surrounding the use of capital markets to finance projects, the consensus now is that traditional sources of finance will dominate."[24]

Evolution of Institutional Participants

IFIs have responded to the PPI trend with a variety of tools to facilitate private initiatives. Some voices in the financial community, however, argue that development banks are stuck in a sovereign world and that multilaterals have had a hard time adjusting to the commercial reality that they can not act unilaterally on projects which are commercially driven and structured.

Among the development institutions with PPI products are the IBRD, which has loan and guarantee facilities for middle-income developing countries. The IBRD also has an Extended Co-Financing Option, which is essentially a sovereign guarantee it can extend

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[22] Barry Critchley. "A$10,000 Gets You Stock and Seats."

[23] Jae So and Ben Shin "The Private Infrastructure Industry Company Approaches," p. 4.

[24] Sophie Roel. "When Where, and How Much," p. 116.

to ECAs. The IDA extends credits to the poorest developing countries at highly concessional terms. The IBRD and IDA can extend loans and credits respectively to a government wanting to make an equity investment in a project, to a country wanting to provide a pool of capital to a domestic financier, or to a government to finance a guarantee. MIGA can offer political risk insurance for threats of war, civil unrest, expropriation, and for breach of contract where appropriate recourse is not available.[25]

The IFC has developed significant expertise and valuable experience in project finance, having assisted on 148 projects to date. The IFC has mechanisms to work directly with private firms, governments, and banks. The IFC can act as an advisor to the government or to the private firms involved, advising them on risk allocation, project finance structuring, or contract modelling. The IFC has the capacity to participate in financing through debt or equity, or by mobilizing commercial loans. The IFC's track record in PPI projects is exceptional, although they admit that most projects are still at very early stages, and they recognize their projects not to be average projects (ie. those firms which have the wherewithal to approach the IFC and to get through its screening, are typically very knowledgeable applicants with good projects). Thus far, only three of the IFC's PPI projects have encountered serious trouble. In two projects the concessions have been revoked, while in another project the local government has had to take over the utilities payment obligations.

ECAs have also developed new approaches and products to deal with increasing project finance demands. Between 1988 and 1995 all G-7 ECAs established project finance structures within their organizations. Most ECAs, including EDC, offer debt and equity investment in PPI, as well as political risk insurance, and financial advisory services.

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[25] Philippe Benoit. "Mitigating Project Risks - World Bank Support For Government Guarantees." pp. 39-43.

THE CANADIAN PPI INDUSTRY

Challenges Facing Canadian Firms

Canada does not enjoy a notable presence in international PPI projects. Rather the international scene is dominated by firms from Hong Kong, Britain, France, and the United States. There are many reasons given for Canada's lack of presence in this industry. Some are convincing.

Some consider Canada's lack of activity and success in PPI to stem from a lack of capacity on the part of the engineering community, while others perceive it to stem from a lack of willingness on the part of Canada's financial community to support these relatively risky projects. According to both a consultant's report prepared for Industry Canada in 1994, and the 1996 National Sector Team report on competitiveness in Canada's consulting engineering industry, Canada's financial institutions are not considered to be players in international project finance. Other evidence, however, suggests that Canada has had significant experience in project finance and is, in fact, quite active in support of such projects.[26] *First,* evidence of Canadian financing capacity exists in the numbers. *Table 1.3* below, sourced from *Project & Trade Finance*, shows that the Bank of Nova Scotia, the CIBC, and the Toronto Dominion Bank are actually among the top 20 arrangers of project finance globally. Likely, these three banks made the list on the basis of support to mining and telecom projects, rather than toll roads and waste water treatment plants. However, it does, nonetheless, illustrate capacity in this regard, and a willingness on the part of Canadian banks to work on doable project finacings.

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[26]Initially it was intended that this paper would include a listing of sources of financing available to Canadian firms doing PPI projects but it was learned during the research process that Industry Canada was compiling such a listing, thus, that facet of research was removed from the guise of this project.

TABLE 1.3 **GLOBAL PROJECT FINANCE ARRANGERS***

Position	Name	Deals	US$ M
1	ABN AMRO	47	2,975.6
2	Deutsch	29	2,785.9
3	Chase	33	2,757.7
4	HSCB	28	2,437.7
5	World Bank	45	2,420.3
6	Citicorp	36	2,375.0
7	Dresdner	30	2,280.7
8	E/B	13	2,219.8
9	NatWest	20	2,187.2
10	UBS	17	1,369.5
11	Sumitomo	48	1,332.9
12	Barclays	21	1,224.3
13	Nova Scotia	20	1,215.3
14	Bank of America	27	1,205.5
15	CIBC	16	1,067.9
16	CSFB	18	1,038.5
17	Toronto Dominion	13	1,006.6
18	Groupe Paribas	15	960.9
19	ING	27	934.0
20	Sakura	27	847.7

* Source: Project & Trade Finance, Jan. 1 - Dec. 31, 1996

Secondly, a 1994 article in *Institutional Investor* makes reference to the Canada's project finance expertise in referring to the Bank of Montreal's former "project finance academy."[27] According to the article, Canadian banks were at the centre of the natural-resource project finance boom of the late-1970s and early-1980s, a role which earned them respect and gained them project finance expertise. The article illustrates that geographical quirks have been what have produced these experts, as they were forced to hone their skills simply by being in the right place at the right time, specifically, being where the natural resources were, be it in Australian diamond fields, the North Sea, or Canadian oil and gas fields. The experience base this work created, however, is rarely mentioned within the context of the

[27] Richard House, "Who Will Win the New Project Finance Game?" p. 44.

current wave of project finance opportunities, though, if any remnants of it remain, they should be a good base on which to build domestic advantage today.

Aside from a perceived lack of financing options, Canadian capacity is also constrained by issues of history, experience, and by the small size of the Canadian market and the small size of most Canadian firms. The advantage enjoyed by firms from countries such as Hong Kong, Britain, France, and the U.S. can be largely attributed to the head-start afforded them by consequence of having the opportunity to hone their skills by doing PPI projects in their home countries before exporting such skills. The home country opportunities they enjoyed were due to privatization initiatives in these countries, a trend which Canada has avoided. In discussions with Canadian firms regarding Canadian capacity in PPI projects, the issue of lack of home country experience was constantly being raised as a reason that Canadians lag in this field of work. Aside from projects in the natural resource based industries, project finance opportunities in Canada have included little more than a few power generating stations, a bridge, a couple of highways, and an airport. Aside from denying Canadian firms the opportunity to develop expertise in PPI, the lack of local experience has also denied firms the chance to build projects which they can hold-up as success stories, to illustrate their capabilities when pursuing projects internationally. In short, Canadian home country policies unfavourable to PPI have acted to insulate Canadian firms, and, subsequently, to marginalize them within the context of the international PPI industry.

PPI project are not small projects, and as illustrated already, international PPI projects are being carried out by large international conglomerates with depths of expertise, experience, and financial resources which Canadian firms, for the most part, do not possess. This deficit in Canadian resources and capacity formed the basis for a recent forum held on the challenges faced by Canadian firms in small and medium sized PPI projects (defined to be projects up to $100 M). One seemingly logical extension might be for small and medium sized firms to target small and medium sized projects. However, Nabil Faltas of the IFC illustrated the paradox of such logic, stating that "while such projects are more manageable and can be brought on stream more quickly, they may be

considerably riskier and consequently difficult to finance."[28] The added risk, according to Faltas, comes from two sources. *First*, there is the fact that small and medium sized projects are usually low priorities for governments and will, thereby, enjoy less government support. *Secondly*, there is the issue of scale economies. Simply stated, small PPI projects are not scaled-down versions of large PPI projects. As PPI projects decrease in size, development costs increase as a portion of total project costs, and commercial viability decreases, making smaller projects less attractive, more difficult to finance, and less likely to be implemented.

As an alternative to Canadian firms targeting small projects, it has been put forth that Canadian firms could work to distinguish themselves on the bases of technology or technical competitive advantages.[29] Such a strategy might provide some advantage; however, it does not negate the issue that deeper pockets are needed for bigger projects. Further, while there is no question that Canadian technical expertise, particularly in sectors such as hydro, rail, and gas distribution, can rival the best in the world, Robert Tiong has proven the technical facets of PPI projects to be of minimal importance when compared with the financial aspects.[30] In 1995 Tiong tested the hypothesis that "the ability to provide an attractive financial package has a greater impact in wining the concession than the project's physical design or its technical solution." The study found that, with a few logical exceptions, financial packages were significantly more important than technical solutions in the bid selection process for BOTs. Thus, Canadian firms are not likely to get far marketing their BOTs as technical packages without significantly improving the business and financial packaging sides of their bids.

Another problem oft cited by Canadians in reaching to explain Canada's lack of visibility in PPIs is the difficulty of forming consortia and developing relationships with business and

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[28]Kilmo International. *Canadian Service Companies and Privatized Infrastructure Projects In Non-OECD Markets*, p. 5.

[29]Toronto Consultants International Limited. *The Structuring and Financing of International Capital Projects*, p. 57.

[30] Robert Tiong, "Impact of Financial Package Versus Technical Solution in a BOT Tender."

finance partners. PPI work is based on relationships, and developers tend to be very loyal to those with whom they have worked successfully. Such relationships need to exist domestically between Canadian partners establishing consortia for project development. And, such relationships need to exist on the international level for those unable to find suitable partners at home, as well as for those not aspiring to project development, but, instead, riding the coat-tails of the PPI trend as suppliers of goods and services. AXOR's Yvan Dupont has commented on the difficulty he has experienced in forming consortia. Dupont suggested that logistical barriers to such formations in Canada are compounded by the "often incompatible interests, misunderstandings, and different asset strengths" of different firms.[31] Different risk appetites and corporate cultures have also been cited as prohibitive issues in consortia building. However, since most Canadian firms simply do not have the resources to undertake BOTs on their own, there is very little choice for most Canadian firms but to continue working at building business partnerships. Thus, industry success in future years will require greater initiatives to form strategic linkages, greater success in forming consortia, and greater efforts in establishing on-going working relationships with the finance community. Such logistical coordination could be a reasonable point of entry for government to provide strategic support to Canadian firms with ambitions in this industry.

One strategic partnership which has been successfully formed for the purpose of international power projects is Canada-China Power. The joint venture was established for the purpose of managing and developing power projects in China. It was created at the suggestion of the Canadian government to address its concerns about being asked to support competing Canadian power producers in the competitive and difficult Chinese market. The joint venture company is owned by SNC-Lavalin (40%), AGRA (40%), and Acres (20%). Canadian Highways International Corporation (CHIC) is another permanent Canadian joint venture company which has established itself for the purpose of pursuing private infrastructure projects. CHIC built the recently opened Highway 407 in Ontario.

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[31]Kilmo International. *Canadian Service Companies and Privatized Infrastructure Projects In Non-OECD Markets*, p. 8.

Time and time again blame is cast on the Canadian government for not doing enough to foster this industry or on the banks for not having the appetite to finance PPI projects. In a report prepared on this topic for Industry Canada, for instance, blame for the state of Canadian performance in PPI projects was attributed to everything except the effort, and performance of the Canadian firms themselves. Their shortcomings are constantly written-off as functions of history, circumstance, and inadequate government support mechanisms. While the contingencies of time, place and circumstance have not been favourable to Canadian firms, impeding ready and easy access to this lucrative industry, in the same breath, there appears also to be a lack of entrepreneurial initiative and business savvy on the part of many firms.

Many Canadian firms appear to take a haphazard approach to PPI and this is an impediment of another sort. Canadian firms involved in infrastructure projects should make conscious decisions regarding their ambitions and intentions in the context of this industry. While such conscious strategy has been enunciated by some firms, most tend to approach projects one at a time, and tend not to discriminate between PPI projects and traditional, government-led infrastructure projects. Firms need to understand the unique aspects of PPI projects and to be congnizant and up-front regarding the role they wish to play in the delivery of infrastructure as the new PPI structure of projects takes over the infrastructure market. Firms which employ haphazard approaches fail to respect PPI projects as a unique grouping of projects. As a consequence they will, over time, neglect to develop the internal expertise and skills needed to become successful players in this industry, and will limp from one failed opportunity to the next.

In finding their place, firms, first of all, need to ask themselves whether their goal is to simply sell goods and/or services to the project; whether they are interested in investing financial resources in the project; whether they are willing to supply goods and/or services in exchange (in whole or in part) for equity in the project; whether they want to take on the role of developer over the long-term; or whether they want to engage in short-term development, cashing-out at financial close. Regardless of which role a firm chooses to play, they need to be able to identify these various roles and the dynamics among them. While this might seem simple and obvious, what is, in fact, more often observed is that

firms are approaching PPI projects essentially blind to the demands of these projects, and with the attitude that PPI issues are essentially add-ons which they will deal with as they stumble upon them.

Canadian Firms With PPI Strategies

There are some firms within Canada's engineering community which have established explicit PPI strategies, including Canada's two largest engineering firms, SNC-Lavalin and AGRA Industries Both of these firms have restructured in recent years to internalize project finance expertise, and both proclaim, by way of their corporate strategies, their intentions to play the role of developer in some PPI projects, and EPC contractor in others. Interestingly both firms admit having adjusted their focuses and strategies begrudgingly and out of necessity. Each prefers the old style of cost-plus-fee projects, but each also recognizes that the method of infrastructure provision has changed fundamentally, that cost-plus-fee is no longer the norm, and that if they are to be players in the new game, they will have to evolve to suit its needs. Furthermore, Le Fonds de Solidarité des Travailleurs du Québec has also taken recent initiatives to develop PPI expertise by bringing together Quebec financial and technical specialists to find and develop project opportunities. These three initiatives will be detailed as examples of Canadians who are adapting to the new shape of the infrastructure industry.

Example 1: AGRA Industries

In AGRA's 1996 Annual Report the company states that its strategy is to become an international player in the market for total, financed projects for government and industry clients, by becoming an integrated developer of large financed infrastructure projects. More specifically, the stated strategic direction of AGRA's Engineering, Construction & Technology Sector, which brings in 75% of the company's revenues, is to "identify, structure and develop financed infrastructure projects" for customers worldwide, with a priority focus on toll highways, and power, and to a lesser extent potable water and information infrastructure. The stated methodology for achieving such a goal is through

international growth, strategic alliances, and the structuring and delivery of innovative financing.

In terms of project finance, AGRA is targeting primarily China and India, but also areas of Southeast Asia and South America. In terms of international growth, AGRA Industries has expanded its global operations over the years, and now has 155 offices in 22 countries. Geographic expansion has enhanced AGRA's ability to identify PPI projects for development; gain market intelligence; source local financing; and to develop strategic relations with global infrastructure developers with projects on which AGRA can act as EPC contractor.

AGRA's efforts to internalize project finance expertise have included building a project finance division onto the corporation's structure and forming a strategic alliance with Newcourt Credit Group, a large, non-bank financial institution. The Newcourt-AGRA alliance was driven, on both ends, by a desire to combine engineering and finance talents in order to get at the growing wealth of project finance opportunities worldwide. Although AGRA is a large company in Canadian terms, as an engineering company it is without the deep pockets and investment capital needed for project financings and is without the appetite to tie up capital in long-term development phases of projects. Newcourt will provide capital for some projects on which AGRA is acting as developer or is otherwise assuming an equity position.[32]

In terms of home country experience, AGRA was involved in two PPI toll highways. AGRA was part of the Atlantic Highways Corporation which built Nova Scotia's 104, the first private-public toll road project in Canada, and part of CHIC, which built Highway 407 in Ontario.

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[32]Unless otherwise noted, information regarding AGRA Inc. came AGRA's 1996 Annual Report or from an interview with a representative of AGRA Industries, held in Oakville on May 9, 1997.

Example 2: SNC-Lavalin

SNC-Lavalin has also restructured, refocused, and established strategic alliances with the goal of enhancing its capacity in, and its market share of project finance opportunities. In its 1996 Annual Report, SNC-Lavalin says it has repositioned itself to become truly multinational and has expanded in-house project finance capabilities in order to meet changes in engineering and construction markets. The growing trends SNC-Lavalin speaks of are "privatization of public services, higher demand for complete solutions on a fixed-price turnkey basis with financing included, and BOOT projects requiring equity investments."[33]

SNC-Lavalin has the intention of working as developer on some PPI projects and as EPC contractor on others. The company, however, is not coy about its participation in project financing, stating unabashedly that the company would prefer just to be the EPC contractor, but that it has been forced to shift focus to project development and financing out of sheer necessity. SNC-Lavalin has two new internal divisions (SNC-Lavalin Capital and SNC-Lavalin Equity) responsible for the added dimensions of the work PPI projects bring, including finance, management, and development.

The job of SNC-Lavalin Capital is to arrange and structure project financing from ECAs, IFIs, and commercial banks. The division is also responsible for securing development phase money, such as that from CIDA INC, and for evaluating the economic and financial feasibility of projects which are being considered for development by the company's various engineering divisions. The Capital division does not invest money in projects; rather, that role is played by the recently implemented SNC-Lavalin Equity division.

The equity division was created in recognition of the growing trend towards PPI projects, the added competitive pressures it has brought to bear on the industry, and the increased need for financing services which are now required alongside engineering expertise. The

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[33]SNC-Lavalin. *Annual Report* 1996, p. 7.

SNC-Lavalin Equity division invests in select PPI projects meeting four basic criteria. Equity investments must generate business for the engineering and construction units; provide a good return on investment; meet stringent risk criteria; and contain a safe exit strategy which allows the company to recover all capital invested in the project if it pulls out prematurely. The equity division's first investment was in the Raiwind diesel power project in Pakistan. SNC-Lavalin took control of the $168 M project through a share purchase in which it acquired International Power Corporation, which owns 60% of the Pakistani project. International Power Corporation was set up by BC Hydro for its short lived participation in the Raiwind project.[34]

Aside from Raiwind, SNC-Lavalin currently has interests in a few mini-hydro BOO projects in Quebec and the United States. They also worked on the Ankra Metro system and a Canada Post facility, both of which were supposed to be project finance based but did not end up that way. Further, the BOT concession for the Bangkok rapid transit system was initially awarded to SNC-Lavalin, though political turmoil and a change of government robbed the company of its opportunity ever to carry out the work.[35]

Example 3: Le Fonds de Solidarité des Travailleurs du Québec

On the project development side, a recent effort has been initiated by the Le Fonds de Solidarité des Travailleurs du Québec (FTQ) to develop PPI projects for the purpose of creating jobs in Quebec and work for Quebec companies. The specific strategy was devised based on a recognition that project opportunities at home had dried up and that there was a need to establish a critical mass of technical expertise, and an adequate financial base to implement large international infrastructure projects.

The FTQ has taken the lead in establishing a number of what it calls development "locomotives" whose job it is to develop PPI project opportunities. Locomotives are

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[34]John Schreiner. "SNC Lavalin Buys B.C. Hydro Unit."

[35]Unless otherwise noted, information regarding SNC-Lavalin came from SNC-Lavalin's 1996 Annual Report or from an interview held on May 20, 1997, in Montreal, with representatives of SNC-Lavalin.

established for strategic interests which include sector specific interests, including airports, energy, and hospitals, and country specific interests including China and the Caribbean.

Each locomotive is comprised of four or five shareholders, including the FTQ. The shareholders in the energy locomotive, for instance, are HQI, FTQ, HMCI, and Boralex. Shareholders contribute financing to the locomotive to seek out and screen projects, and to do pre-feasibility work. If a project is considered doable, the locomotive will facilitate the establishment of a project company to implement the project. The goal of the locomotive is to cash-out at financial close and channel its efforts to develop other project opportunities. The ultimate goal is that the shareholder companies, and Quebec companies in general will benefit from employment opportunities associated with the project implementation. The FTQ will benefit by acting as financial packager, for fee, in project companies formed by the locomotive to implement projects.[36]

Institutional Support For Canadian PPI Projects

One is not hard-pressed to conclude that history along with the nuances of geography, politics, and business culture in Canada have positioned Canadian firms poorly for competition in international PPI. Few firms have taken the initiative to transcend the inconvenient structural underpinnings of the Canadian situation, and to become players in this emerging industry. Many firms seem not to have recognized the truly fundamental change in the way infrastructure is being provided, and seem to be sleepwalking their way into obsolescence. In light of such, it has been suggested by most involved in this field of work that the Canadian government should play a more direct and more strategic role in supporting the work of Canadian firms attempting to become players in this industry, as many governments elsewhere tend to do.

Governments in some European countries have strategic, targeted, and co-ordinated support structures to assist their domestic firms in international infrastructure projects.

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[36]Information in this section was obtained through a meeting on June 17, 1997, with representatives some of the Quebec based companies involved in the initiative.

Support mechanisms in these countries are both direct and indirect. Indirect support includes endorsing privatization at home in order to build domestic expertise. It also includes creating a general environment in which such firms can thrive, through favourable taxation policies, and by facilitating research, development, and innovation. Direct support can be effected via foreign aid policies, export support, government support in identifying project opportunities and marketing domestic providers abroad, and via co-ordinating domestic efforts.

It is not the mandate of this research to detail the funding policies of other countries (such information can be found in the report prepared for Industry Canada in 1994, entitled *The Structuring and Finance of International Capital Projects*); however, it is worth illustrating some foreign support policies for the purpose of understanding the range of support mechanisms others enjoy, and for the purpose of gaining insight into how Canada might be wise to reorient some or all of its support policies. Based on the Industry Canada report, France and Germany were found to have the most co-ordinated and aggressive support mechanisms for local firms engaged in international capital projects, while the Netherlands was also found to have a strong support network.

France, for example, provides support to indigenous entrepreneurs via policies including "limited taxation of corporate income from abroad, favourable tax on personal income earned abroad, relatively low enforcement of corrupt practices act, the provision of bid performance bonds and guarantees, and the relatively generous use of cost subsidies, bonuses and tax credits for foreign projects."[37] The French also co-ordinate and centralize marketing support, targeting specific countries, and providing a high level of direct political support to targeted projects. Financial support is available from the pre-feasibility stage through export credit support and project finance loans. The French use a relatively large amount of concessional funds and mixed credits in their capital project support, and are quite liberal in their interpretations of OECD guidelines. The French are also commended for being able to react quickly to project opportunities, offering firms early financing

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[37]Toronto Consultants International Limited. *The Structuring and Financing of International Capital Projects*, p. 40.

commitments, and for having the flexibility and capability to be creative in their funding provisions. French firms also benefit from the vast base of home country experience and expertise they have been able to develop in project finance, due to their long history in the industry.

The USA, UK, and Canada, tend to be much more market oriented in their initiatives, and support tends to be less aggressive, less targeted, less co-ordinated, and governments are less likely to intervene with financial assistance. The UK has made efforts to develop more coordinated support for domestic firms. In 1993, for instance, the government of the UK solidified its marketing support intentions by establishing the Overseas Project Board. The Board, staffed by business people rather than government employees, was mandated, in the words of the then Trade Minister, to "provide focus and strategy and administrative structure to back winners and stop us murdering each other to the delight of our competitors."[38]

Canadian government support is, relative to the Europeans', limited, fragmented, and uncoordinated. At the national level, windows of support for PPI efforts abroad exist primarily through DFAIT, EDC, and CIDA. Through DFAIT, the Program for Export Market Development (PEMD) offers support targeted to small and medium sized firms competing in international markets. PEMD has four major elements: Market Development Strategies, New-to-Exporting Companies, Capital Projects Bidding, and Trade Association Activities. Further, Canadian trade commissioners abroad, and Post employees play important roles in identifying and following projects, in representing Canadian interests, and in keeping Canadian names visible through lengthy project bid competition and early study stages. The work of Canada's trade commissioners was highly praised by firms interviewed in the context of this research and is considered to be a very valuable asset.

At EDC, support for project finance has long been available within the general corporate structure. A recent increase in project finance activity, however, has led EDC to dedicate

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[38]Toronto Consultants International Limited. *The Structuring and Financing of International Capital Projects*, p. 43.

an internal division exclusively to project finance work. EDC worked on a number of project finance deals through the 1970s and early 1980s, though they were primarily natural resource-based projects such as pulp & paper, mining, and oil and gas. Project financings at EDC disappeared through much of the 1980s, but reappeared again in the late-1980s and early-1990s, this time with an increased focus on infrastructure. In 1995 EDC supported 5 project finance deals. In 1996 business increased significantly with 13 projects, valued at US$ 650 M being supported. Just a few months into 1997, EDC reports having already surpassed its total 1996 project volume, and having already extended almost $1 B in project financing.[39]

The recent increase in LDC project financing at EDC was led in the late-1980s and early-1990s by project opportunities in Turkey, Chile, and Venezuela. Today, Asian opportunities are most numerous, followed by opportunities in Latin America. Sectorally, EDC's project finance portfolio is dominated by telecom projects. Other strong sectors include mining, pulp and paper, and petrochemicals. Activity in traditional infrastructure sectors other than telecoms has been minimal. Although numerous proposals and inquiries are received for EDC support in traditional infrastructure sectors, such as power, few commercially viable project opportunities present themselves. For instance, EDC receives inquiries regarding support of private power projects frequently; however, rarely does one get past the initial telephone inquiry stage.

The portfolio of services provided for project finance projects by EDC includes financial advisory services for fee, debt and equity financing, and political risk insurance. The increase in project financings, and other changes in the nature of international business opportunities has forced EDC to revisit some of its financing policies. Though not driven by project finance, EDC is revisiting its most fundamental policy -- that support is premised on the level of Canadian content in a project. Specifically, the definition of Canadian content is evolving to include research and development benefits, and, of more relevance to project financing, the reflow of dividends.

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[39]Information on EDC in this section was obtained during an interview on May 7, 1997 with a representative of EDC.

CIDA is the third window of support at the national level for PPI work in LDCs. Aid agencies are often used by countries to create new markets and to open existing markets for donor country goods and services. Canadian bilateral aid is, however, not structured in such a commercially oriented fashion. INC is the primary window at CIDA which provides support for PPI projects and funding opportunities for firms active in this sector. INC support is by way of development stage and project implementation funding. The INC program occupies an important spot within the scope of PPI support mechanisms in Canada. The program has the organizational structure, the resources, the wherewithal, and the visibility to be a hub for PPI development activity in Canada.

The purpose of the Industrial Cooperation Program is two-fold. *First*, "INC seeks to encourage Canadian firms to become involved in international development." *Secondly*, INC "seeks to ensure that projects have positive impacts on the development of host countries."[40] To carry out these objectives, INC shares in the costs firms incur in the study, development, and implementation stages of their projects.

INC is a responsive program which accepts business proposals from Canadian firms seeking funding to expand their businesses to the developing world. INC evaluates funding proposals on the basis of predetermined applicant eligibility criteria, as well as on the bases of the anticipated developmental impact of the project in the host country, and the Canadian benefits to be generated by the project. INC funding allotments are determined based on the cost-sharing of eligible expenses. INC accepts proposals under two mechanisms, *Investments* and *Professional Services*.

INC defines *Investments* as those in which Canadian firms undertake business in foreign countries through joint ventures or licensing agreements. Under the *Investment* mechanism, a qualified applicant can receive funding for a viability study, or for particular aspects of project implementation. Funding allocations are flexible and are a function of eligible costs. As a general guideline, a viability study can be supported with funding up to about $100,000. Eligible costs are varied, and can include travel, accommodation,

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[40]CIDA INC. "Preparing a Proposal for the Industrial Cooperation Program," p. 1.

wages, and the cost of hiring specialists to study the gender and environmental facets of the project. Funding at the project implementation stage is more focussed, typically covering expenses associated specifically with training, or with implementing gender or environmental programs. INC assistance for project support is usually up to about $500,000.

Professional Services projects are those involving service contract work, often financed by development agencies or banks, or by host governments. Under the *Professional Services* mechanism there are three stages for which funding can be sought, the preliminary study stage, the detailed study stage, and project implementation. Funding allocations for these three stages typically run up to $350,000; $350,000; and $500,000 respectively.

There are several eligibility criteria which firms applying to INC must meet. To cite just a few of these criteria, a firm must have had annual revenues in excess of $1 M for each of the past two years; it must be subject to corporate income tax; it must demonstrate that it has the financial capacity to do the project; and it must have a demonstrable track record in the provision of the goods or service involved in the project. INC funding contributions in excess of $100,000 are repayable if the project generates revenues of more than $5 M in the three years following the last INC payment.

CONCLUSION

The purpose of this chapter was to offer the reader some background on the PPI industry as well as an overview of the global and Canadian PPI industries both at present and as they can be expected to evolve into the future. That being done, the greater context has been set. The remainder of this paper will involve a theoretical study of risk in PPI projects in general and an analysis of CIDA INC's experience in support of PPI projects in particular.

CHAPTER 2:

THEORY

INTRODUCTION

In this chapter, the current body of literature on PPI failure will be drawn on in order to establish an over-arching theory explaining the causes of failure in PPI projects. In outlining the theory of PPI project failure, theoretical and practical examples of the types of risks which are most frequently identified as being the root causes of the failure of PPI projects will be presented. In aggregate these will stand as a theory of PPI failure. There are two reasons that it is important to establish a theory of PPI failure. *First*, it is important because the theoretical framework established in this chapter will provide the basis on which INC's PPI experience will be evaluated in Chapter Three. *Secondly*, it is important because it is this set of PPI risk issues which comprise the theoretical framework which are the defining characteristics of PPI projects and which set PPI projects apart from other investment projects. Implicit in the set of risk issues which constitute the theory of PPI failure, is an understanding of the very nature and essence of PPI work.

Prior to outlining the theory of PPI project failure, however, some thought will be given to the second point above, as this has been an issue of dispute during the research process, in that some people have challenged the claim that PPI projects are a distinct grouping of projects. It is the opinion of this author that PPI projects can be considered to be a singular grouping of projects and it is important to gain consensus on this point or else the meaning of this research will be lost, as the defined PPI parameters will otherwise seem arbitrary and without reason. In saying that PPI projects are a distinct grouping of projects, it is not being suggesting that PPI projects are special in any respect, rather it is simply being said that PPI projects are a definable group of projects, or that PPI projects share common characteristics. Specifically, the basis on which PPI projects can be defined as a singular grouping is on the basis of their shared sources of failure, stemming from their shared risk issues. While investment projects of all sorts will inevitably be subject to some or many of

the risks to which PPI projects are subject, the difference with PPI projects is that *by their very nature PPI projects will be vulnerable to severe manifestations of all of these risk factors*. Whereas many natural resource based projects, for instance, will be vulnerable to extreme levels political risk, they will not likely experience simultaneous vulnerability to extreme levels of commercial, economic, management, and *force majeure* risks. A PPI project, on the other hand, will, by definition, be subject to extreme levels of political/social *and* legal/regulatory *and* economic *and* commercial *and* management *and* technical *and* *force majeure* risks. This concept can be easily conceived of if one imagines there to exist a scale measuring the severity of risk for each of the seven risk factors. In the case of non-PPI investment projects some risk factors will generate severity of risk measures on the high end of the scale (for example political risk in the natural resource case above) while other risk factors in these projects will generate measures on the lower end of risk severity scale. In the case of PPI projects, however, each risk factor will generate a measure on the high end of the scale. Thus, the aggregate level of risk in PPI projects will always be high, making a severe risk profile a defining characteristic of this grouping of projects.

CLASSIFYING RISKS

The individual risk issues included in this discussion can be classified in numerous. It is the opinion of this writer that the method of classification most logical for general review is that which considers risks as belonging to one of the following risk categories: legal/regulatory, political/social, commercial, economic, management, technical, and *force majeure*. This system emerged as a response to a need to classify, generalize, and summarize the risks which were identified in the INC experience. Prior to detailing the theory as structured by this classification system, several other risk classification systems will be summarized in order to confirm the validity of the selected system. It is apparent that some of the systems to be presented in what follows are more comprehensive and effective than others. Some systems fail to force the user to investigate particular high-risk PPI issues because categories are too broad. Other times, the categories are very narrow and limiting in scope or they neglect entire issue areas all together. In reviewing the risk identification structures summarized below the reader is encouraged to be conscious of which risk issue areas are, and are not, being opened up to the user with each classification system.

Risk classification structures by the following authors will be presented, Carl Beidleman, Donna Fletcher, and David Veshosky (Beidleman et al.); Walker and Smith; IFC; UNIDO; Industry Canada Consultant's Report; Robert Drake; Clifford Chance; Woodward et al.; Kilmo International; and Antonio Dias Jr. and Photios G. Ioannou. A brief explanation of the risk category will be offered where deemed necessary for clarification; however, the confines of this thesis do not allow for explicit detail in this regard.

1. Beidleman et al.[41]

- development phase
- construction phase
- operational phase
- ongoing risks

As such, these authors classify risk primarily by project phase, though they also recognize risks which run through project phases which include currency fluctuations and interest rate increases.

2. Walker and Smith[42]

- financing risks
- political risks
- technical risks

Walker and Smith are also conscious of the timeliness of the onset of various risks. They note that risks will increase sharply with the start of construction, and will peak in early operational years when debt servicing is at its height. Implications of timeliness are considered quantitative in consequence, rather than qualitative, and are, thereby, imprinted overtop of the element-based risk issues outlined above. The authors do note that the variance of risks over project phases makes it possible to group risks by project stage rather than by element.

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[41]Carl R. Beidleman, Donna Fletcher, and David Veshosky. "On Allocating Risk: The Essence of Project Finance."

[42]C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, pp. 143-159.

3. IFC[43]

- construction and completion risk
- operational risk
- market risk
- non-commercial risk
- force majeure risk

Similar to Walker and Smith, the IFC also notes that risks will vary over project phases. They note that risk will increase through the construction and project start-up phases, as loan exposure increases and peaks. Risk will decline with during the operational phase as revenues are generated and debt payments are made.

4. Robert Drake[44]

- completion risk
- force majeure risk
- government action risk
- market and revenue risk
- operating risk
- technology risk
- financial risk
- political risk
- legal risk
- environmental risk
- labour risk

5. Clifford Chance[45]

- credit risk
- construction and development risk
- market and operating risk
- financial risk
- political risk
- legal risk

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[43]IFC. *Financing Private Infrastructure: Lessons Of Experience*, pp. 68-75.

[44]Robert Drake. "*Allocating Risks in BOT Projects.*"

[45]Clifford Chance. *Project Finance.*

6. Woodward et al.[46]

- global risks
- elemental risks

Woodward et al. consider elemental risks to be those specific to a project, including technical, operational, financial, and revenue risks. Global risks are those external to, but impacting on, the project such as political, legal, commercial, and environmental risks.

7. UNIDO[47]

- political risks
- country commercial risks
- country legal risks
- development risks
- construction/completion risks
- operating risks

8. Industry Canada[48]

- initial planning and evaluation phase
- promotion and development
- implementation

9. Kilmo International[49]

- construction risks
- operating risks
- supply risks
- demand risks
- currency risks
- political risks

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[46]C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, p. 161.

[47]UNIDO. *Guidelines for Infrastructure Development Through Build-Operate-Transfer (BOT) Projects*, p. 155.

[48]Toronto Consultants International Limited. *The Structuring and Financing of International Capital Projects*, pp. 72-73.

[49]Based on notes for presentation by Peter Kilburn.

10. Antonio Dias[50] and Antonio Dias and Photios G. Ioannou[51]

- country risk
- force majeure risk
- physical risks
- financial risks
- revenue risks
- promoting risks
- procurement risks
- developmental risks
- construction risks
- operating risks

Dias has built on the work of Robert Tiong in establishing a risk classification structure, and has subsequently gone on to develop a multi-attribute evaluation model (the *Desirability Model*) to try to objectively assess "whether a particular project should be privately promoted and whether the potential promoting company has the capability to do so."[52] While the model itself is beyond INC's needs for such early development stage assessment, it is, nonetheless, an excellent and comprehensive guide to understanding PPI risk issues in a given project; thus, a brief summary of the model and its benefits was considered worthy of inclusion herein and will be detailed in what follows.

The *Desirability Model* evaluates company competency by looking at internal organizational characteristics, production capability, and financial resources and constraints. The model evaluates project attractiveness in terms of its candidacy for private promotion by looking at promoting team characteristics, technical evaluation, financial assessment, principal's qualifications, and local conditions. The output of the model is two scores, one illustrating company capability and the other illustrating project feasibility. Each score reflects the aggregate of the nine country and 14 project attributes under consideration, which are outlined in *Diagram 2.1*. The model assigns a weight to each attribute, reflecting the importance of the attribute relative to the other attributes. Further,

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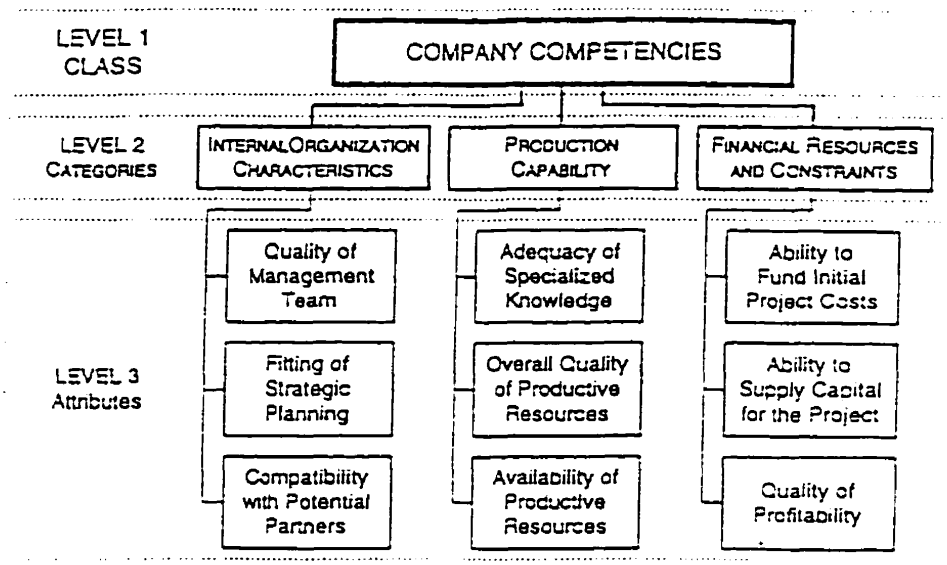
[50]Antonio Dias Jr., PhD thesis, pp. 103-113.

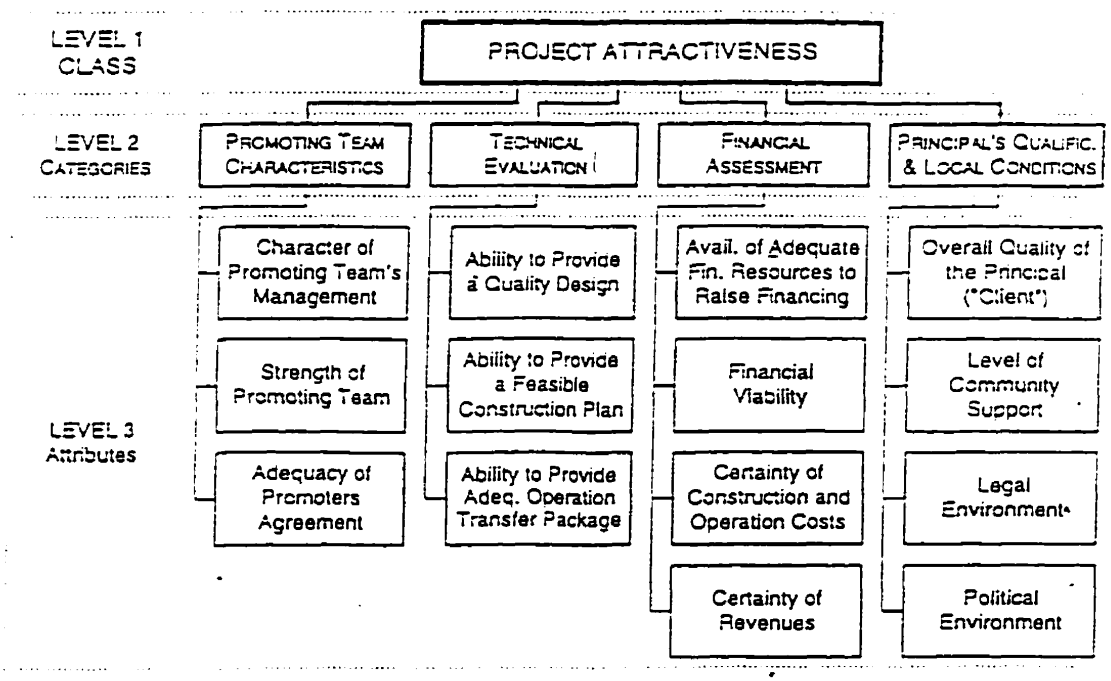
[51]Antonio Dias Jr., and Photios G. Ioannou. "Company and Project Evaluation Model for Privately Promoted Infrastructure Projects."

[52]Antonio Dias Jr., and Photios G. Ioannou. "Company and Project Evaluation Model for Privately Promoted Infrastructure Projects," p. 72.

DIAGRAM 2.1: DESIRABILITY MODEL STRUCTURE

(Source: Antonio Dias Jr. and Photios G. Ioannou. "Company and Project Evaluation Model for Privately Promoted Infrastructure Projects," p. 72).





the model assigns each attribute a worth score reflecting the "one-dimensional value of the performance level of the attribute as it exists for a specific project or company."[53]

Tests of the model have demonstrated it to be imperfect in that it is somewhat subjective, reflecting biases of the users. The model was tested on two groups of people, one representing industry insiders (consisting of individuals who would view a project from a promoter's point of view) and the other representing industry outsiders (consisting of individuals who would advise on a project without having a direct interest in it).The results revealed a bias in that industry insiders assumed a more conservative position, and tended to rate projects lower, than outsiders did. However, the model does appear to be a valuable tool in that the process of using it requires "the decision maker to structure and separate the important problem dimensions, and provides a clear representation of the underlying attribute levels and values."

Following consideration by this writer of the aforementioned risk classification system, it was concluded that the following structure was most appropriate and would be used to frame discussion of PPI risks throughout this thesis.

- legal and regulatory risk
- social and political risk
- commercial risk
- economic risk
- management risk
- technical risk
- *force majeure* risk

THEORY OF PPI FAILURE

Using this writer's preferred risk classification system, common PPI risks will now be presented and will, in sum, be considered to constitute a set of explanations as to why PPI projects fail. The following survey of risk issues in PPI projects was derived from the existing body of literature on PPI. This is not to say that all PPI projects will fail due to

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[53]Antonio Dias Jr., and Photios G. Ioannou. "Company and Project Evaluation Model for Privately Promoted Infrastructure Projects," p. 79.

these issues, but only that these will be significant sources of threat, and that appropriate risk mitigation measures need to be in place to address them. In aggregate, the following discussion of risk should be considered to constitute a risk profile for PPI projects.

Legal and Regulatory Risk

In reviewing the literature on PPI project failure legal/regulatory and political/social risks were found to be the most frequently reported causes of PPI project failure. Legal and regulatory risks manifest themselves severely in PPI projects because PPI projects require specific legal enabling environments; they involve the delivery of highly regulated services; and because PPI projects are essentially contractual networks.

Legal and regulatory risks exist at those points where obligations, expectations, and responsibilities exist, and where rights are in question. Such risks may exist in terms of specific laws, regulations, and contracts. In less tangible terms, such risks can also exist in attitudes, and within the contexts of political and legal cultures. PPI projects involve infrastructure in which the government has a significant role, stemming from recognition of the sector being naturally monopolistic; from safety or security considerations; from a desire to evoke equity in distribution, recognizing that these infrastructure units provide basic necessities; or from the multiplicity of policy issues bound up in a single infrastructure unit.

In many LDCs, legal and regulatory traditions and frameworks are immature, incomplete, and frequently are incapable of commanding the respect necessary to provide adequate security to the contractual networks comprising PPI projects. In transitional economies there is a lack of familiarity with the concepts of property and with contract law. Many LDCs have inadequate dispute settlement mechanisms, or deny equal access to foreign parties. Often, contracting parties will agree to settle disputes in a neutral territory; however, foreign judgements are not enforceable in many countries. Legal and regulatory risks are reduced where legal environments are strong, known, and effective, where there is a familiarity with contract law, and where there exist appropriate dispute settlement and enforcement mechanisms.

Legal and regulatory risks account for the downfall of many PPI projects and render many more projects unviable from the outset. Often, private sector provision of infrastructure is prohibited by a state's constitution or by other domestic legislation. Thus, there is need for legislation to create an enabling environment to permit private sector participation in infrastructure. Without the existence of legislation legitimizing private sector activity, a PPI project runs the risk of being illegal. It has been only within the past 10 years or so that countries have revised their legislative frameworks by passing BOT laws or by otherwise removing impediments to PPI investment and work. Sometimes this is done at the national level in the form of a BOT law covering a number of infrastructure sectors. Among the countries with umbrella-like BOT laws are Peru, Chile, Hungary, Turkey, and the Philippines. Sometimes an enabling environment can exist by way of a sector specific or project specific law, or as an amendment to a sectoral, national, provincial, or state law. This piecemeal approach is more common among the developed world and was used in the UK as the enabling legislation for the DBFO road program. It was also used in the Dulles Greenway project where amendments to the State of Virginia's Highway Traffic Act were enacted, allowing the Greenway to go ahead as the first private toll road in the USA in more than 100 years.[54] Enabling environment legislation is good insurance, but projects can be successful without it. For example, the Terminal Three project at Pearson Airport required only a minor change to the Air Services Fee Regulation (excluding it from federal terminal fees and charges) to enable it to go ahead.

Legal risks can not be completely eliminated through the creation of an enabling environment. What seem to be enabling laws sometimes turn out to be extra-jurisdictional, or are found to be in conflict with legislation from a jurisdictions with shared authority -- typically different ministries with over-lapping responsibilities. India and China are among those countries which have caused the greatest legal and regulatory headaches for PPI investors, and both have long been in the process of enacting BOT legislation. China is adjusting its legal framework to be accommodating of BOTs through piecemeal legislation while it awaits the umbrella BOT law. However, the results of Chinese efforts, thus far, are confusing. China's 1994 Power Investment Provision requires all power projects,

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[54]Privatisation International. *Infrastructure Yearbook* 1996, p. 38.

regardless of capacity or level of total investment, to be approved by the MOEP and the State Planning Commission. "Local authorities often saw things differently" however, "they variously denied the existence of such approval requirements, divined as an exception for smaller (under 100 MW) projects, or sought to apply to local power projects the $30 million total investment approval threshold MOFTEC applies for most FIEs in the coastal provinces."[55]

Issues pertaining to legal risk were among the problems encountered by Enron in its effort to establish a gas-fired power generating plant in Dabhol (the Dabhol project will be illustrated as a case study later in this chapter). A Supreme Court ruling in India (not related to the Dabhol project) looked at the issue of electricity, and concluded it to be "a material resource of the Indian peoples which can override a private right to ownership of the means of generation and distribution and limit profits so enjoyed."[56] Some argue that, hereby, the power purchase agreement (PPA) issued for the Dabhol project violates the Indian Constitution as it awards the "people's material resource" to foreign investors, to earn profit.

While the aforementioned enabling legal framework is necessary for PPI projects generally, the issuance of a PPI concession is usually the first legal agreement specific to an individual project which will be sought by a developer. The concession agreement can exist either by way of statute, or by way of a private contract between the government and concessionaire. The particulars of the concession agreement must be consistent with any other impinging legislation, or the concession stands the threat of being revoked. A sample concession agreement drawn up by the IFC to illustrate what one should expect to find in such an agreement can be found in the IFC publication entitled *Financing Private Infrastructure: Lessons of Experience* (pp. 112-114).

Often the parameters of what can be included in the concession agreement and the terms on which it can be granted are set in law and are, therefore, not open for negotiation. This

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[55]John E. Lang and Nicholas C. Howson. "Generating A Regulatory Framework," p. 23.

[56]Kannan Srinivasan. "Indian Law and the 'Enron Agreement'," p. 1154.

includes issues such as whether the concession will be awarded through sole-sourcing or competitive bidding. With increasing frequency, PPI projects are being put out to competitive bid. As Dabhol was India's first PPI power project, the government did not have the experience or knowledge to draft bid documents, and, subsequently, decided not to use competitive tendering. The government's decision to sole-source the Dabhol project was another of that project's problems as it left room for the project company to vastly overestimate project costs, and, thereby, increase tariffs. Much of the inflated cost estimates in the Dabhol project benefited GE and Bechtel, who got what even the WB agreed was a "sweetheart deal" in the turnkey construction contract.[57] The lack of legal and regulatory standards on which the Enron project was structured left room for interpretation and even abuse.

Other legal and regulatory risks may arise from questions of land title, particularly involving squatters or aboriginal people. As an example, the issue of native title emerged as a significant risk for PPI project developers in Australia, subsequent to the implementation in 1993 of the Native Title Act. The act established a legal basis for land claims involving full property rights or access or usage rights. The Australian legislation will primarily impact on projects on Crown Land, with the result to date being to place a cloud over infrastructure and natural resource projects in that country.[58]

Legal and regulatory risks may inhibit foreign investment opportunities if there are thresholds for foreign participation or other criteria dictating the particulars of the investment. The Vietnamese BOT law, for example, requires that the BOT company be a Vietnamese entity.[59] Legal risk may also exist by way of legislated restrictions on currency convertibility, profit repatriation, equity participation, rates of return, and taxation. External legislation such as the Helms-Burton Law also exists as legal risks, though originating in a third country.

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[57]P. Purkayasta. "The Enron Caper," p. 857.

[58]Philip Hurst. "Alternatives For Uncoverable Risks."

[59]Privatisation International. *Infrastructure Yearbook 1996*, p. 165.

Legal-environmental risk is an area of growing concern in PPI projects. There is a need for compliance with existing laws; however, in this area it is the emergence of new, unknown laws which presents even more of a risk. Environmental risks can manifest themselves as social, technical, or legal issues. The work of well organized environmental advocacy groups is contributing to risk growth in this area by spreading knowledge about environmental problems, and by bringing otherwise hidden problems into the public forum for discussion and action. In some instances, groups such as Greenpeace have taken it upon themselves to bring legal action against private infrastructure projects when the government has failed to so act. Legal-environmental risks also include issues of siting requirements, operating requirements (which include such things as obtaining authorizations for air emissions, waste water discharges, and noise levels) and environmental liability regimes.[60] In terms of liability, more and more frequently now, current operators are being required to clean-up contaminated sites which they occupy, regardless of whether or not they contributed to the contamination.

Within the concession company there is room for significant legal risk as well. Such exists both between parties to the concession company, and between the concession company and external parties to the project. Legal risk at this level is particularly critical as it is through contractual agreements that risk is allocated, and that seemingly impossible projects are being made viable. Watertight agreements are needed particularly where partnerships involve risk allocation.

Legal risks can also result from real or perceived incompetence on the part of the project developer. Complications of this sort arose in the case of Terminal Three of the Pearson Airport project. In this case, Terminal Three Development Corporation[61] was granted a 40 year concession to finance, build, and operate the new terminal building, retail shops, restaurants, a hotel, and parking facilities. Construction cost $578 M and Terminal Three opened in 1991. Although Terminal Three was described by some as "the crown jewel of

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[60]Brad Gentry. "Managing Environmental Pressures," p. 35.

[61]Huang and Danczkay, Claridge Properties, and Lockheed Air Terminals of Canada comprised the project company.

airports," passenger traffic was much lower than expected due, in part, to the combined effects of the Gulf War and a recession which led Canada to experience the first drop in international air travel in a decade.[62] Subsequently, some airport tenants demanded their leases be renegotiated, and two retailers actually filed lawsuits against the Airport Development Company on the grounds of perceived incompetence in making inaccurate passenger forecasts.[63]

Regulations pertaining to the operation of the infrastructure sector in question may constrain technological options, design specifications, supply volumes, tariffs or user rates, and maintenance options. The most frequently observed regulatory risk in PPI projects is constrained capacity to set tariff rates, and to adjust tariffs in keeping with commercial principles. This is particularly problematic in power generation projects. Infrequently are governments willing to compromise on regulations pertaining to user fees or tariff rates. There might also be regulations dictating to whom the output can and can not be sold, thus, constraining marketing options.

Legal and regulatory risks are paramount to the success of PPI projects, and are a primary reason that projects fail to proceed or fail to reach completion. Based on the immense level of risk in legal and regulatory aspects of PPI projects, there is need for exclusive, detailed consideration of the legal and regulatory frameworks within which a project must operate, including consideration of points ranging from the grander issue of a nation's constitution, to unforseeable issues such as future environmental legislation, and to project specific issues such as the flexibility of tariff rates.

Political and Social Risk

Political risk can manifest itself severely in PPI projects because the choice to go the PPI route is really a government policy choice. In this case the choice of governing instruments

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[62]C. Walker and A.H. Smith. *Privatized Infrastructure: the BOT Approach*, p. 221.

[63]In April 1997, just 5 years into the concession, the consortium decided that Terminal Three was no longer a strategic asset and sold the terminal to the non-profit, Greater Toronto Airport Authority for $719 M. Source: Alan Toolin. "Sale of Terminal Won't End Pearson Suit."

involves a highly sensitive policy area involving the provision of services of strategic importance and basic necessity, with multifaceted policy implications including being instruments of state sovereignty, security, international prestige, and domestic pride. This leaves plenty of opportunity and sufficient motive for political intervention in PPI projects.

Political risks are essentially government actions or inactions, which impact on projects. The risks are essentially functions of political will and motivation. Political risks exist at the numerous points at which the project links back to the government. Such junctures of potential vulnerability include concession agreements, licenses, permits and regulations. Alas, legal and regulatory risks can be present as political risks in that the government has a capacity to enact changes, at will, which could translate into risk and project failure. PPI projects also face unusually high levels of political risk due to systemic instability and the potential for dramatic and rapid political change, particularly in LDCs. There is also political risk in PPI projects in as much as they exist as vehicles of social, economic, and military security and policy, and as bastions of domestic and international prestige. Political risks can include boycotts by supplier countries. Political risks can also include the threats of nationalization and expropriation, be they creeping or outright. The Suez Canal, for instance, was nationalized by the Egyptian government, as was the Bangkok Second Stage Expressway by the Thai government.

The Bangkok Second Stage Expressway project was to be Thailand's first BOT project. In 1988 a 30 year concession for the road was granted to the Bangkok Expressway Company (BEC), led by Japan's Kuagai Gumi. The agreement gave BEC the right to set toll rates, (tolls were to be shared with the government, which would receive a 40% share) and BEC was also guaranteed a share of the toll revenue from the already operational First Stage Expressway. Financial close on the $1.1 B project was reached in 1989 and, by all accounts, the project was considered to have minimal political risk because the Thai government had a particularly good reputation in its dealings with international business interests. But, as construction proceeded the project fell victim to a series of politically motivated disputes, turning the project into what some have called "the worst

disappointment for Asia's project finance community,"[64] and "an object lesson in chaos."[65] Contrary to its contractual obligations, the State Expressway and Rapid Transit Authority (ETA) decided the toll rate should decrease by 33%. Next, the ETA decided that Thai law did not allow public-private shared operation of roads and refused permission for BEC to operate traffic control and rescue operations.[66] Due to the resultant delays, the guaranteed project completion date lapsed, and the 41 banks financing the project suspended their credit. Subsequently, a court order forced BEC to turn the road over to the ETA essentially nationalizing Thailand's first BOT effort.

Another example of political risk is the case a 1,200 MW power project in the Philippines. Bids were tendered for the power project and Consolidated Electric Power Asia (CEPA) was declared the winner through a competitive process. Shortly after being declared the winner, however, CEPA was disqualified because of its links to Westinghouse. Westinghouse was under boycott by the Philippines in relation to accusations of malpractice in conjunction with a nuclear project the company had worked on in that country[67] The most famous case of political risk is the case of Enron's Dabhol power project. The Enron risk issues are presented in a case study later in this chapter.

While political risk is a significant source of vulnerability in LDCs, some of the best examples of it being realized actually come from OECD country projects. Changes of government constituted detrimental political risks in the case of Terminals 1 and 2 at Pearson Airport, and in the case of the Eurotunnel. In Britain, political support for the Eurotunnel project was abandoned in 1975 with the Labour Party election victory. Similarly, the defeat of the Conservative government in Canada, in 1993, ended private sector ambitions to revitalize Terminals One and Two of Pearson Airport. In the Pearson Airport case, the Mulroney government had announced plans for privatized redevelopment of the

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[64]Mingay, Helen. "Life Gets More Difficult for Export Credit Agencies." *Project Finance International Yearbook 1994*, pp. 12-13.

[65]Tony Shale. "Are Asian Projects All That Enticing?" p. 93.

[66]Tony Shale. "Are Asian Projects All That Enticing?" p. 93.

[67]Privatisation International."Philippine Power Project Retenders."

two terminals in 1990. In 1992, a formal Request for Proposals was announced, and in December of that year Paxport was the concession to undertake the $700 M redevelopment scheme. The Liberal opposition in Parliament at the time opposed the plan on three grounds. *First*, in terms of demand, they saw no urgency for such a project. *Second*, they believed the project should be turned-over to a municipal authority, as had been the method of choice elsewhere in Canada (including Calgary, Montreal, and Vancouver). *Third*, they saw the selection of Paxport as partisan, based on the fact that its major shareholder, Don Matthews, was a prominent Conservative Party supporter. Regardless of the opposition, the Conservatives proceeded to sign a 37 year concession with Paxport just two weeks prior to a federal election which the government was clearly going to lose. Following the election, one of the new Liberal government's first initiatives was to suspend Paxport's contract and review the deal. The review concluded that "to leave in place an inadequate contract, arrived at with such a flawed process and under the shadow of possible political manipulations, is unacceptable," and in December 1993, Paxport's contract was cancelled.[68]

In the consultant's report prepared for Industry Canada, the authors outline methods to mitigate political risk which include identifying a high level of political will for bringing in the private sector and acquiring political champions in both the home and host countries. Walker and Smith, however, note that in developing countries there is significant "volatility of promises given under strong personal influence."[69] Thus, while political support is undoubtedly necessary, a project should be rooted in need, and built with political connections on solid economic, social, and political foundations.

Along with political risk, and actually a sub-sector of it, is social risk. Social risks include riots, strikes, civil unrest, religious turmoil, war, and terrorism. Social risks also exists where there is a perception by the public of bad faith on the part of the government or the private sector, particularly in regards to tariffs or user fees which may be perceived to be excessive or be believed to have been negotiated against the public's interest. Social risks

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[68]C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, p. 221.

[69]C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, p. 151.

can originate in the host country or in a third country. For instance, a strike or other disruption in production in a country supplying inputs to a project could delay receipt of such inputs, delaying the construction process. The impact of social unrest constituted a level of risk which effectively stalled implementation of the Guangzhou-Shenzhen-Zhuhai Superhighway. The 1989 Tiananmen Square Massacre delayed the Superhighway project by causing a two year delay in loan syndication.

Commercial Risk

A review of the PPI literature demonstrated that commercial risk tended to manifest itself severely in PPI projects because of the facts that PPI projects are limited-recourse project financings being carried out by single-purpose companies; because of the hybrid public-private principles on which they operate; because of the limited market options; and because of the very lengthy projections required for commercial viability assessments.

Commercial risks are risks which compromise the commercial viability of PPI projects by directly interrupting a project's revenue stream. Virtually all risks discussed in this chapter compromise commercial viability; however, most do so indirectly or through secondary means. While all projects (PPI or otherwise) undertaken in LDCs will be subject to similar revenue or commercial risks, these risks are magnified in the case of PPI projects due, in part, to the long life-span of such projects, and the lengthy period between the time the project begins, and the time positive revenues are realized. PPI concessions are typically in the vicinity of 30 years, a lengthy projection period for revenue streams in any environment. And, concessions much more lengthy than the 30 year average are not unheard of. The Eurotunnel, for instance, was undertaken based on a 55 year concession, and the Suez Canal involved an unusual 100 year concession.

Commercial revenue for a BOT project requires sufficient market demand both at present and over the life of the project. Although this may seem obvious enough, evidence has demonstrated there to be a need to point this out. For example, a potential hydro project in Asia, is currently on hold because, with the additional energy provided by that project, the host country will have an energy surplus. Not surprisingly, the project company is

having a difficult time securing financing. The long-term market demand will be particularly difficult to gauge if the project involves provision of a service, or use of process technology, which might become dated or obsolete. Technological change can also result in a substitute good or service making the market for the original infrastructure obsolete. For example, the advent of the automobile ended the commercial viability of concession-based railways and canals in the USA.

Commercial success will also be a function of market structure. Market demand will manifest itself differently depending on the infrastructure sector in question, the nature of the output, and what purchase arrangements are in place. Projects with complex output markets (or many buyers) such as transport projects, face greater risks in terms of demand variations than do those with simple output markets, such as power generation facilities which typically have one or few off-takers, and which usually have long-term take-and-pay or take-or-pay agreements in place. Subsequently, in the event of an economic downturn, the quantity of riders on a transport unit will decline, decreasing the revenue stream for that transport unit. The same economic effect, however, will be less apt to impact on most power projects, wherein parties to the PPA will remain locked into a binding off-take agreement. This is changing, however, as merchant power (being those without binding PPA agreements) are beginning to take the place of the more traditional and secure plants built with solid off-take agreements. Also relevant to commercial success is ensuring a creditworthy customer. One firm which was interviewed during the course of this research, listed this as the most critical risk in project finance. If there are any doubts about the creditworthiness of the off-taker, there should be credit facilities or guarantees in place to mitigate the risk.

Commercial risk can also stem from poor demand forecasting, the fate which befell Mexico's toll roads effort, the history of which is recounted later in this chapter. It is particularly difficult to estimate market demand for transport infrastructure with any degree of accuracy. Telecom projects have, theoretically, a similar susceptibility; however, with demand so strong worldwide they have, thus far, avoided such pitfalls. Commercial risk resulting from overly-optimistic demand projections were problematic for the operators of Terminal Three at Pearson Airport where revenues were well below what was anticipated

(see legal/regulatory risk section for further detail). Poor demand projections, however, do not always have negative results. The Hong Kong Cross Harbour Tunnel, for instance, benefited from poor traffic-flow forecasting. In this case, higher than anticipated traffic flows, (combined with a number of other positive occurrences such as low interest rates, and a devaluation of the pound sterling) allowed the project to be a stellar success, with debt fully repaid within five years, and positive revenue flows accruing thereafter.[70]

Regardless of how accurate initial demand forecasts are, deregulation or liberalization efforts could have equally devastating impacts, bringing unforseeable competition and compromising commercial viability. Deregulation could include such things as a decrease in import quotas or tariffs, or simply the opening of a sector to competition. In some cases developers can obtain "no second facility guarantees" as a hedge against unexpected competing infrastructure units.

Another revenue risk pertains to output pricing. In very few instances is the project company permitted to control tariffs or user fees. Fees are usually condition of the bid or of the concession agreement and can rarely be increased without government authorization. There have been a few PPI concessions in which the concessionaire was granted the right to set user fees. Three such projects have been the Eurotunnel, Terminal Three at Pearson Airport, and Canada's new Highway 407 toll road which is actually premised on the use of flexible tolls to control traffic flow. The lack of control over pricing, which is the more common experience, means the infrastructure can not respond to market signals and as such can not operate on proper commercial principles. However, control over pricing can be a mixed blessing, as it was in the case of the Eurotunnel. Price flexibility for the Eurotunnel allowed for head-on price competition with ferry traffic resulting in a price war which has driven Eurotunnel user fees down to an unsustainable and unprofitable level.

If a project company is impeded from delivering its goods or services to market, a project will not be commercially viable, regardless of demand. Physical barriers to markets can

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[70]C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, pp. 203-212.

include insufficient connecting infrastructure. Ports and airports, for instance, need efficient connecting roads or railways if customers are to use them. The Eastern Harbour Crossing (a tunnel running from Hong Kong to the Chinese mainland) was unprofitable for its first year of operation, until the associated 4 km Tate's Cairn Land Tunnel was completed the next year, making the EHC more readily accessible and, thus, commercially viable. Also, an infrastructure unit might be impeded in its construction or operational progress by a lack of necessary inputs such as water, power, or oil. In the case of India a limited number of fuel supply allocations were made by the government, and anyone intending to build a gas-fired power generating station in India in the near future will need to have a fuel allocation already assigned.

Finally, revenue risks can accrue from cost overruns in construction, bringing dire and lasting revenue consequences. Cost overruns may be the fault of the construction team, the fault of unforseeable complications, or the fault of government decisions to alter project specifications late in the project. Interestingly, IFC-assisted projects have experienced cost under-runs. Out of 48 IFC-supported PPI projects which have been completed, 80% were concluded at an average of 3% under budget (in contrast to publicly provided infrastructure which runs at 10-23% over-budget). The IFC credits the cost under-runs to the use of fixed-price, date-certain construction contracts, the use of bonuses and penalties, and a devaluation in the value of the US dollar.[71] Another cost overrun mitigation method is to require completion or performance bonds.

The IFC's database of PPI projects stands as something of an anomaly in terms of its incredible success rate in completing projects below cost. There are, in fact, many PPI projects to draw on as examples of what cost overrun can do to the commercial viability of a project. For instance, Hopewell Holdings's cost overruns on the construction of the Guangzhou-Shenzhen Superhighway nearly devastated the giant developer. Design changes and technical problems resulted in $717 M in cost overruns on the $1.2 B

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[71]IFC. *Financing Private Infrastructure: IFC's Lessons of Experience*, p. 25.

project.[72] Hopewell was responsible for the cost overruns, increasing its funding portion of the project from 17% to 45%, and subsequently forcing the developer to sell up to 30% of the Superhighway project company.[73] The Eurotunnel also experienced massive cost overruns, with final project costs doubling original cost estimates. However, construction uncertainty was expected in this case, ruling out the use of fixed-price construction, and the project company and banks were left to deal with the consequences.

Aside from the risk mitigation methods already mentioned, such as performance guarantees and turn-key construction, other revenue risk mitigation measures have also surfaced, particularly in the transport sectors. Revenue risk mitigation measures for road projects have included shadow toll systems, or gaining rights to adjacent property for the purpose of providing complementary services such as gas stations and shopping centres. Further, where there are existing revenue-producing assets, parallel or complementary to a proposed PPI project, there are instances wherein arrangements can be made to turn over the existing asset to the PPI project company, or simply to divert a portion of the existing asset's revenues to the new project company, such as was the case with the North-South Expressway project in Malaysia where sponsors were given the right to earn tolls from the existing 300 km expressway. Similarly, in the case of the Sydney Harbour Tunnel sponsors were granted the right to takeover operation and revenues of the already existing Sydney Bridge.[74] Further, regulations can be established to encourage use of the new infrastructure and assure revenue streams, such as legislating that commercial traffic must use a new toll road rather than already existing, public roads. In the case of Canada's recently complete fixed link bridge connecting PEI to Canada's mainland, ferry traffic was terminated when the bridge opened, ensuring bridge operators a monopoly on the crossing traffic.

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[72]Louise Lucas. "Hopewell's Chinese Torture."

[73]Louise Lucas. "Hopewell Faces Up To Reality."

[74]UNIDO. *Guidelines for Infrastructure Development Through Build-Operate-Transfer (BOT) Projects*, p. 62.

In all, several factors contribute to the fact that these very risky projects are being forced to assume commercial risk, but to do so without the advantage of being able to operate on a full range of commercial principles. Subsequently, they are very risky projects from a commercial perspective.

Economic Risk

Economic risks manifest themselves severely in PPI projects because of the fact that they are very large projects, the finance terms are longer than average, and because of the lengthy durations over which economic projections must be made. As such, the impact of economic risks is magnified in cases of PPI projects.

Economic risks include exchange rate devaluations, interest rate increases, and inflation, each of which can make project debt more costly to the borrower. While there is not a big difference in many of the risks facing PPI projects in LDCs, as compared with projects in the industrialized world, these economic risks are exceptional and will manifest themselves much more severely in LDCs. LDCs typically lack appropriate mechanisms and institutions through which funds can be raised locally; and loans are usually denominated in the relatively stable currencies of the industrialized world, while revenues are most often garnered in volatile LDC currencies. As such, LDC PPI projects will be highly vulnerable to inflation, interest rate increases, and devaluations. As such, toll roads, tunnels, bridges, and urban mass transport projects will likely incur more economic risk than power generation, water, waste, sewerage, port, and airport projects. This latter group of projects typically benefits from being able to sell to industrial customers where payment might be arranged in foreign currency or to governments where exchange rate guarantees or hard currency payments are some times available.

Other economic risks include currency convertibility, foreign exchange shortages, and restrictions on profit repatriation. Methods of mitigating economic risk include government guarantees that foreign exchange will be made available, and guarantees against local currency fluctuations. Efforts to limit debt exposure and the use of escrow accounts can also be of benefit to guard against economic risk. An escrow account with a six-month debt

reserve which was established for a wastewater treatment plant in Mexico proved a useful safeguard following the Peso Crisis in 1994.[75] Even more useful are off-shore, foreign-denominated escrow accounts.

Technical Risk

Technical risks manifest themselves severely in PPI projects in large part because of their intricate involvement with, and dependance on, the natural environment - a road, for instance, on the terrain; a hydro project on the water flow; or a tunnel on the ground rock.

Technical risks are at their height during the construction period; however, such risks are also implicit in operational and maintenance issues. Standard and Poors considers technological risks to be often "misinterpreted and systematically under-assessed, especially in construction, management, logistics, sub-contracting and long-term operations and management." Standard and Poors blames this on the use of financial experts on technical issues, and suggests technical risks should be assessed by independent third parties.[76]

The technical risks during construction vary depending on the nature and location of the project. Technical risks can include adverse soil, rock, or ground conditions; erroneous geological or geotechnical exploration; or inadequate hydrology. Construction of a power generation station is less risky in this regard than something like the Eurotunnel, wherein a great deal of uncertainty had to be factored into designs prior to construction, in order that safety decisions could be made as the project proceeded.

As mentioned earlier, Hopewell's superhighway from Shenzhen to Guangzou succumbed to technical problems. In this case, the Pearl River delta area proved too soft, and the road had to be elevated for an unexpected (and costly) 30 km. Also, late recognition of the predominance of bus travel necessitated that Hopewell redesign nine interchanges and

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[75]IFC. *Financing Private Infrastructure: Lessons Of Experience*, p. 71.

[76]William Chew. "Above All, Get A Good Project," p. 43.

equip them with parking, multi-storey bus stations, and build more access roads to nearby towns.

Technical risks can also pertain to equipment and technology. Equipment failure, damage, or incompatibility with existing facilities and services all constitute potential technical risks. Reliance on untried or untrue technology is also risky and was one of the problems which delayed the opening of Highway 407. Because technological risks are largely related to construction activity, and the propensity for such risk is largely concentrated in the construction phase, much technological risk can be mitigated (in the view of the developer) by passing down such responsibilities to contractors and sub-contractors, and ensuring success and compliance through completion and performance bonding requirements.

Management Risk

Management risks manifest themselves severely in PPI projects because they are carried out by consortia rather than individual firms, and because the essence of such projects is optimal risk allocation which is a function of management.

Management risks in PPI projects usually stem from not allocating risk optimally, and from not defining project participant's roles adequately. Eurotunnel has been much criticized for its decision to award construction work to a single consortium. In retrospect, popular opinion is that responsibility for electronics work should have been separated from responsibility for civil engineering, rather than allocating the whole package to TML. "TML companies are experienced at digging holes, but they don't have much experience with signalling software and telecoms, which have all been subcontracted."[77]

Poor project development and management can result in a project never being completed, or at least in poor performance, service quality, operation, or maintenance of the facility. Further, a failure to structure the project well might lead to financial weakness or bankruptcy. And, if the project company defaults on its debt payments, or if the original

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[77]Rosemary Bennet. "Morton's Folly," pp. 62-3.

investors sell-out their equity, a project which started out with seemingly appropriate management may undergo a significant and detrimental management changes at such a juncture. A final issue of management risk involves the inclusion of a supplier as an equity investor in the project company. It has been suggested by some (though others disagree) that suppliers should not be equity investors because they create a conflict of interest. A supplier is interested in selling equipment or services at the highest price possible. An equity participant, however, should be interested in getting the best price on equipment and services for the project company. Thus, a supplier as equity participant may be operating with two conflicting directives.

Force Majeure Risk

Force majeure risk manifests itself severely in PPI projects because they are implemented by single-purpose companies, and the project company's assets are highly concentrated in one physical location.

Force majeure risks are unpredictable and exceptional events outside of the control of the main parties. *Force majeure* risks can include natural disasters or political or social complications of significant magnitude. According to Antonio Dias, instances of force majeure have a small likelihood of happening but bring huge consequences with them.

Natural disasters include things like floods, fires, earthquakes, mud slides, or tornadoes. Social and political *force majeure* risks include things such as sabotage, epidemic, war, riots, or revolution. To be considered *force majeure*, rather than social risk, such events must be catastrophic in magnitude and must be out of the control of the PPI participants. *Force majeure* events of the political and social nature may occur in the host country, or may occur in a third country. For instance, a war, or revolution in a supplier country could interrupt the flow of necessary PPI project inputs.

While *force majeure* risks stand as threats to all business endeavours, the threat of natural disaster risks are more threatening to PPI projects than they are to most other projects. Because PPI projects are undertaken by single-purpose companies, assets are highly

concentrated, making the potential impact of a natural disaster that much greater. Lenders are not willing to assume *force majeure* risk. The risk burden can sometimes be insured by MIGA or transferred to the host government. In the case of the Shajiao B power plant, for instance, the government of China set aside an emergency loan facility to ensure against *force majeure*.

CASE STUDIES IN PPI RISK

To compliment the preceding theoretical discussion of risk, this thesis will now put this discussion of risk into a practical context by briefly summarize three PPI case studies, focussing, in each case, on the risk elements which were the sources of trouble. The case studies to be reviewed are Enron's Dabhol power project; the Mexican National Toll Road Program; and the Eurotunnel. This compliment of projects has been selected for profile because they offer insights a variety of risk areas, in a diversity of countries. These three case studies will be followed by the presentation of Hopewell's Shajiao B power project, a successful project which illustrates effective PPI risk management.

The Dabhol Power Project - A Study of Political & Social Risk

Enron's Dabhol Power Project is one of the most vivid illustrations of the potential magnitude of PPI risk. The Enron project will be operational one day, but until then it will stand as an educational case study in social and political risk. Details of the Enron project will follow, but, to put it concisely, as of 1995 the project was perhaps best described in the following quotation, "besides Joshi's political gymnastics, the project has been battered by bomb blasts, plagued by riots. It has been through 30 government agencies, 170 formal approvals, nine court cases, and 39 months of gruelling negotiations, and the end seems no nearer."[78]

In the early 1990s India's economy neared crisis. Not unrelated to this, the domestic power industry was plagued by inefficiency. Blackouts were commonplace; 40% of the power

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[78]Ben Edwards. "The Mugging Of Enron," p. 28.

generated was being lost in transmission; and domestic industry was operating at only 50-60% capacity, due to the power shortage.[79] To deal with the energy problem, the Indian government decided to liberalize the power sector in 1991. "Private developers, both Indian and foreign, would be permitted to finance, build, and operate independent power projects with no restrictions on foreign equity ownership."[80] The private sector response to the Indian liberalization initiative was stand-offish. Thus, Indian bureaucrats travelled about to spread word of the industry's new openness. Within months, Enron International, of Texas, had signed a Memorandum of Understanding to build a 2,015 MW, gas-fired power plant, in Maharashtra State, for an estimated cost of more than $2 B. Enron took the lead in the high-powered consortium, the Dabhol Power Corporation (DPC), formed to undertake the project. Bechtel, GE, and the Maharashtra State Electricity Board (MSEB) also came on-side as equity participants. At the time of signing, the Dabhol project was "the largest single foreign investment ever committed in India, and the biggest independent power project in the world."[81] Dabhol was to be a flagship project, symbolic of India's new openness. The oft difficult to negotiate PPA was signed with relative ease in 1993, complete with a counter-guarantee from the central government to protect Enron against the poor creditworthiness of the state electricity board. However, soon afterwards, a multifaceted sub-plot of trouble developed at the political level, rooted in the etched-in-stone social divisions in India.

The Dabhol project contained potential seeds of discontent on several levels. *First*, the Indian government had previously approached the WB to consider funding the Dabhol project. In early 1993 the WB presented its findings to the government of India. The WB study concluded that Enron's Dabhol project was not the least-cost choice for power in Maharashtra State, and that a LNG-based project was not recommended by the WB. The WB's criticisms would resurface and serve as ammunition in the political turmoil soon to follow. *Second*, power has long been subsidized in India as a tool of social engineering, and low-cost power was a key factor in the success of India's Green Revolution. Private

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[79]Ashok Mubayi. "Social Mores And The Indian Power Paradox," p. 34.

[80]Ben Edwards. "The Mugging Of Enron," p. 28.

[81]Ben Edwards. "The Mugging Of Enron," p. 29.

sector participation in power was seen as necessarily increasing power rates. Thus, the combination of high voter turn-out, typical of Indian politics, and the huge block of agricultural voters used to subsidized power rates, meant that if not played carefully, the private participation initiative could be political suicide. *Third*, the Dabhol project was potentially volatile in that it permitted FDI in a country historically averse to FDI, and it did so by bringing in the most threatening form of FDI -- the biggest and best of American capitalism -- Enron, GE, and Bechtel. Furthermore, the government's counter-guarantee represented a willingness by the Indian central government to act in favour of foreign private interests.

These seeds of discontent came to fruition in the 1995 election campaign as they became fault lines along which social divisions were played for political purposes. During the election campaign, the BIP/Shiv Sena alliance played-up the friendly affiliation between Enron and Sharad Pawar, an influential Congress Party member, and Dabhol supporter. Enron was portrayed as a product of American capital out to exploit the Indian people; the WB report was held up as proof. For BJP/Shiv Sena the Dabhol project became a "useful stick with which they could beat Pawar. Enron, big and American, was a soft target."[82] In a case of pure political opportunism, the BJP/Shiv Sena coalition successfully used Dabhol to nurture underlying nationalist sentiments, fears of economic liberalization, and foreign paranoia. Pawar lost the election and within days, Shiv Sena Chief Manohar Joshi set-up a project review committee. The committee's report was, of course, damning, and the new government cancelled the project promptly.

Enron's response to the cancellation was to seek arbitration in Britain, demanding compensation for costs incurred, remobilization of contracts, and interest on bank debt already disbursed. Enron was saved by a clause in the contract requiring the government to compensate DPC for delays it caused beyond a particular date. With Enron's costs running at $250,000 per day, the state faced possible bankruptcy if it delayed the power project, thus, forcing the government to allow DPC to proceed.

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[82]Ben Edwards. "The Mugging Of Enron," p. 31.

The project which gained approval in the end was a 2-stage, 2,450 MW, power plant. The revised project was bigger than that initially planned, thereby allowing for greater economies of scale, and a lower power tariff. The lower tariffs allowed the government its vindication, and allowed it a sense of accomplishment for its "efforts." Phase one of the new project involves construction of an 826 MW, $1,078 M, multi-fuel use power plant. Phase two will involve construction of a 1,624 MW LNG power plant and regasification facility, expected to cost $1.6 B.[83] Enron has an 80% interest in each phase of the project. With the newly configured project Enron has abandoned a planned Rule 144a bond issue. Financing for the new project is being sourced from more traditional sources. News reports from December 1996 indicate that the Bombay High Court has dismissed the last remaining lawsuit against DPC and "all approvals and clearances granted to the Dabhol project remain legally binding."[84] Preliminary site activities for Phase 1 are currently underway. The bombs blasts, riots, and negotiations have subsided for the time being, though the massive project has a long-run yet before it can be called a success.

Mexico's Toll Road Program - A Study of Economic Risk

In 1989, Mexican President Salinas initiated the National Highway Program, under which 53 road concessions were let. The plan was to build more than 6,000 km of roads, in what would be the largest modern, private road initiative in the world. The BOT approach was necessary in the Mexican case, as massive public debt negated the option of sovereign borrowing on the scale necessary for the initiative.

The Mexican road program has proven highly troublesome for the concessionaires and for the government. Original road construction estimates have almost doubled;[85] Mexican toll rates are among the highest in the world: and only three of 53 concessions have been

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[83]Enron. *Annual Report 1996*, p. 17.

[84]Enron. "Court Rules In Favor Of Dabhol Power Company, Dabhol Construction To Resume," Press Release, December 2, 1996.

[85]Project and Trade Finance. "Bell Tolls For Mexican Roads," p. 20.

profitable. The Mexican experience raises questions about the commercial viability of BOT altogether; making accurate revenue projections seem next to impossible.

The problems which have arisen with the Mexican toll roads were of two sorts. The *first* set of problems was regulatory in nature and arose in the early-1990s. Mexican law requires competitive bidding for concessions. Under the toll road program, the legislation dictated that the winning bid would be the one which offered the shortest concession period, while meeting all other bid guidelines. The key bid guidelines included a concession time-frame of no more than 20 years and a right to develop and operate road-side services for the duration of the concession, plus two years. Furthermore, the government guaranteed to compensate concessionaires for inflation of greater than 5%, and it reserved the right to seize or expropriate infrastructure with fair compensation.[86] The conditions of the bid and the concession agreements proved to have fundamental flaws, setting out a framework for the toll road projects which has proven non-viable in commercial terms.

The bid approach proved costly for Mexico. Most fundamentally problematic was that the winning bid was based almost exclusively on who could offer the shortest concession period. While time is an important factor, encouraging concessions to be of the shortest possible time-frames necessarily translates into higher toll rates, contrary to the general welfare benefit sought. If the government had built the roads itself, the tolls could have been factored over an extended period, possibly over the life-time of the road. The high toll rates encouraged by the Mexican mechanism were problematic on their own, but they also had secondary negative impacts such as increasing congestion, wear and tear on public roads. Also, short concession periods decrease the incentive to build quality roads or to provide adequate maintenance. The method of letting road concessions on the basis of detailed concession specifications outlined by the government is also oft criticized on the grounds that it negates much of the value of bringing in the private sector, particularly negating its capacity for innovation.

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[86]William M. Emmons. "The Mexican Toll Roads Program," pp. 285-290.

In the early-1990s it became evident that the road construction cost estimates were too low, in general. Construction cost overruns of up to 100% were experienced, and traffic volume estimates and willingness-to-pay projections proved hopelessly optimistic. The government guaranteed its traffic predictions; thus, miscalculations resulted in massive compensation by the government. In the early-1990s, virtually all concessions were renegotiated and adjustments were made to toll levels and/or concession durations. In some instances the government even increased its investment in the projects, and between 1990 and 1992 government investment in Mexico's toll roads increased from 10 to 23%. Aside from the direct costs of such compensation the cost of renegotiating concession agreements put a huge administrative burden on the state. In the end, instead of exhibiting as one time auctions, the concessions made ongoing demands on the government, requiring it to incur significant extra expenses in the form of transaction costs.

The *second* set of problems was economic in nature and surfaced with the Peso Crisis in late-1994. The Peso Crisis worked to nullify virtually any lingering successes which remained after the early problems detailed above. Following the crisis, traffic flow eased with the recession. For example, tourist transportation fell to only 41.5% of projections following the devaluation, while transport traffic fell to about 50%.[87] With decreases in ridership, toll revenues fell to average 30% below projections. Revenues from the $1 B Cuernavaca-Acapulco Highway reaped only 13% of what was necessary for debt servicing.[88] Externally denominated debt on the road projects proved prohibitively expensive to finance after the devaluation as tolls were rendered in devalued Pesos. Once again, the government of Mexico had to renegotiate each concession individually, finding remedies to make the roads commercially viable. Once again, toll rates were lowered by as much as 40%, debts were restructured, and concession terms were extended.

In light of all the adjustments made, the toll road program in Mexico has not, thus far, been able to offer benefits to the people of Mexico, the government, or the concessionaires.

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[87]Jennifer Tierney. "Mexican Privatization Fast Track," p. 46.

[88]Project and Trade Finance. "Bell Tolls For Mexican Roads," p. 20.

Today, there is little interest from the government of Mexico to embark on Phase 2 of the road initiative, and there is little interest from the private sector to participate in any capacity other than as subcontractors to the government. The regulatory framework, poor traffic projections, construction cost overruns, and economic chaos have all played parts in the floundering Mexican toll road initiative.

The Eurotunnel - A Study of Commercial, Technical, & Management Risk

Talk of building a fixed link from England to the European mainland dates back many decades. It was not until the privatization blitz of the mid-1980s, however, that a concession agreement was signed by Eurotunnel, the British government, and the French government, granting the project company a 55 year concession to build a rail tunnel under the English Channel, from Calais to Dover. The Eurotunnel is the single largest project ever undertaken by the private sector, in any field or work, at any time in history.[89] As a BOT, the Eurotunnel was to be a landmark project in private infrastructure development; in reality, however, the Eurotunnel turned out to be a landmark case in abject disaster. The Eurotunnel has fallen victim to a multitude of BOT risks including management, technical, social, and commercial risks. In retrospect it is difficult to understand how the private sector rationalized undertaking such an effort, though some suggest that underlying the project specifics was a not-so-rational "it's too big to fail" attitude.

In short, "when the Channel Tunnel Act was passed in 1985 the climate was overwhelmingly in favour of the whole project being funded by the private sector. But considering the size, as well as the geographical and political importance of the project, the lack of government assistance now looks naive."[90] And, throughout the process, Eurotunnel officials have come to realize there are limits to how much responsibility the private sector can take on, and how much responsibility the government should give up. Reflecting on Eurotunnel's problems, even Eurotunnel's CFO Graham Corbett recognizes

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[89]The Hong Kong airport project currently getting underway will surpass the Eurotunnel in $ size, if it is completed as planned.

[90]Rosemary Bennett. "Morton's Folly," p. 63.

that there are limitations to private participation in infrastructure. "Only a very few transportation links can be divorced from long term transportation policy which is the government's responsibility," said Corbett. "You cannot expect a transport policy to emerge as a result of conflicting market forces."[91]

Eurotunnel is the operator of the channel tunnel, and construction work was contracted-out to Transmanche Link (TML). Initial financing for the tunnel totalled £7.3 B. A syndicate of 220 commercial banks provided £6.8 B, while £1.3 B came from the European Investment Bank, and £200 M from the European Coal and Steel Community. There have been several major public equity offerings. Construction of the Eurotunnel began in the late-1980s and by 1990 the project had run out of money and additional financing had to be arranged. The Eurotunnel opened for operation in 1994. Unable to recover from early cost overruns, which rendered the project technically bankrupt years before, on September 14, 1995, the Eurotunnel halted interest payments on more that £8 B in outstanding junior debt.

The sad circumstances of the Eurotunnel are the result of several potential BOT risks becoming reality. Management problems accounted for many of the early setbacks. Specifically, Eurotunnel has endured much criticism for its decision to contract out construction to TML. TML is a consortium of civil engineering companies, only two of which had any experience in designing and installing sophisticated transport systems. Corbett realizes today that construction should have been split between civil engineering and electronics, with TML digging holes and someone else installing the signalling software and telecom equipment.[92]

Eurotunnel employed a fast track approach to the project in an effort to move the project along quickly and minimize interest costs. However, the idea backfired as design decisions regarding rolling stock took much longer than anticipate. More than £4.5 B had been spent

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[91]Rosemary Bennett. "Morton's Folly," p. 63.

[92]Rosemary Bennett. "Morton's Folly," pp. 62-3.

on construction before fixed equipment and rolling stock was available. Meanwhile interest on the construction debt accumulated at £1 M daily.[93]

Technical and management problems also contributed to Eurotunnel's troubles by way of massive construction cost overruns. Because of the uncertainty associated with tunnelling under the English Channel, it was not possible to contract-out construction on fixed-price terms; thus, the burden of cost overruns fell on Eurotunnel's shoulders. In the end, construction costs were almost double the anticipated costs.

Since the tunnel has become operational in May of 1994, a different set of risk issues has come to fruition, essentially hammering the nail into Eurotunnel's coffin. Though the project was technically bankrupt prior to the operational phase, it was hoped that operation would produce a revenue stream which would set the project on the road to recovery. However, such has not been the case. Operation phase troubles have come from what Eurotunnel CEO, Sir Alastair Morton has called "insane competition" from the ferries. Price competition for cross channel commuter traffic has driven Eurotunnel's user rates down to an unprofitable level. Eurotunnel has been forced to discount fares up to 50%. At this rate, even if Eurotunnel commanded 100% of channel traffic, it could not survive. The battle between Eurotunnel and the ferry operators has been likened to a fight between "boxers in a heavyweight eliminator contest" and to the battle of David and Goliath. The latest move by the ferry operators is to merge in order to cut overhead - a strategy which should be in-place for the 1997 ferry season.

Other significant operation phase risks have included an in-tunnel fire and a strike by Eurotunnel employees. Operations were interrupted during a brief walkout by employees protesting the decision by Eurotunnel to cut 657 jobs, equal to 20% of its workforce. In November 1996 operations were interrupted once more as a fire broke out in the tunnel. Passenger services have since resumed; however, freight services remain out of commission (at the time of writing), and the interruption has further delayed decisions on a debt rescheduling package.

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[93]Rod Morrison. "Nine Simple Years."

Eurotunnel's failure to generate the revenues needed to be a viable enterprise has forced the company to default on its debt payments. The company's financing has become unsustainable. Prior to September 1995, Eurotunnel was borrowing from senior lenders at Libor + 2.5%, to make interest payments on junior debt at Libor + 1.5%. As a sole-purpose company, the Eurotunnel has no other revenue stream and no internal revenues to draw on to sustain itself. The 225 strong banking consortium which is the immediate victim of the default, has declined to take control of Eurotunnel, recognizing they would have no idea what to do with it.

In sum, "the Channel Tunnel project set out to be the private sector's trail blazer infrastructure financing deal and has spent its short life limping from one crisis to the next." The net impact of the Eurotunnel experience on the project finance community has been significant, with a consensus emerging that there is no longer a market for deals of this size and nature.

Shajiao B - A Study In How To Successfully Manage PPI Risks

In 1987 construction was finished on Hopewell's Shajiao B power generation facility in Guangdong Province, bringing a successful conclusion to the development and construction phases of China's first BOT. From start to finish Shajiao B is a case study in BOT perfection. With virtually every risk covered from the outset, with strong financial backing, and with impeccable project development and management, one is strained to find any faults with this early BOT effort.

The Shajiao B project involved construction of 2 x 350 MW, coal-fired, power generating facilities in Guangdong Province. Gordon Wu of Hopewell Holdings identified and carried out the project, subsequent to construction of a hotel in the same area in 1983. When Wu became aware that his hotel required 2% of Guangdong Province's power generating capacity, he took advantage of the local contacts and the good business reputation he had already fostered to negotiate terms for his company to provide power in the province as well.

In 1985 negotiations were completed and Wu was granted a 10 year concession (excluding construction) to build the Shajiao B facility. Wu established a sole-purpose company to undertake the project on a limited-recourse basis. Construction (including equipment) was contracted-out to a powerful construction consortium which included Mitsui, Toshiba, Ishikawajima Harima Industries, and Slipform Engineers Limited. Construction which was contracted on a fixed-price, fixed-time contract, with early-completion bonuses built-in to expedite work. The physical and technological design of the plant was to mirror a plant constructed earlier in order to use tried and true design, construction, and technology. Further, all sub-contracting in the project was tendered out to ensure least-cost pricing. Construction began in 1985.

Shajiao B was a $512 M project. Hopewell contributed $17 M in equity. Debt for the project was sourced from 46 banks in 11 countries. The Shajiao B concession agreement was signed by Hopewell and by the state-owned enterprize, Shenzhen Special Economic Zone Power Development Company (SSEZ). Under the terms of the concession, the government guaranteed the coal supply, and guaranteed to purchase at least 60% of output on a take-or-pay basis, for the duration of the concession. It was agreed that payment to Hopewell would be made half in local currency, which would be used to pay for the coal supply, and half in foreign exchange, which would cover debt payments. The government also made an emergency loan facility available to be used in the event of *force majeure*. Hopewell would operate Shajiao B for 10 years, after which it would turn the facility over to the provincial government at no cost.

Hopewell managed the project on a fast track basis. Fast tracking in this case meant that construction commenced before designs were completed and before financial closure had been reached. This is illustrated in the Shajiao B project schedule below (*Table 2.1*) which demonstrates that although construction began in July of 1985, financial closure was not reached until April 1986. Early-completion bonuses functioned as incentives, and Shajiao B construction was completed several months ahead of schedule, in 1987.

The Shajiao B project illustrates what can be achieved through BOTs when doable projects are developed and managed with due attention to pertinent BOT risk issues. The project also high-lights the global nature of the BOT industry. The project combined Hong Kong

entrepreneurship, UK engineering and management, Japanese technology, Chinese resources and methods, and financial resources from 11 countries. Finally, in an act of cultural respect, the construction consortium deferred to China's *Lucky Book* for guidance on the best day and time to commence construction.[94]

TABLE 2.1: PROJECT SCHEDULE FOR SHAJIAO B POWER PLANT
(Source: D. Head. "The Design, Construction and Project Management of Shajiao B Power Station)

Description	Date	1984	1985	1986	1987	1988
Letter of Intent	04 03 84					
Signing of agreement	18 06 84					
Commencement of site investigations	28 09 84					
Signing of JV Contract. Site officially delivered to Party B Commencement of site formation	08 03 85					
Signing of Turnkey Contract between Party B and Consortium of Mitsui Toshiba / IHI / Slipform Engineering Ltd	27 05 85					
Site formation completed: construction of Power Station begins	01 07 85					
First structural concrete poured	27 10 85					
Commencement of erection of structural steelwork	31 03.86					
Project Finance Contract for HK$3333 million signed by 46 banks led by Citicorp, Bank of China and Hong Kong and Shanghai Banking Corporation	18 04 86					
Unit 1 boiler drum lift completed	30 06.86					
Turbine generator No 1 pedestal handed over	31.08.86					
Boiler No.1 hydraulic test completed	30.10.86					
First power receiving	15.12.86					
Boiler No 1 first firing	15.03.87					
First steam to set	15.04.87					
Set 1 power to grid	18.04.87					
Set 2 power to grid	30 09.87					
Civil works						
E&M works unit 1						
First synchronization	22.04 87		22 months			
E&M works unit 2						
First synchronization	22 07 87		22 months			

[94]Most facts in this section taken from one source for the sake of consistency. Source: D. Head. "The Design, Construction and Project Management of Shajiao B Power Station."

CONCLUSION

In conclusion, the risk profile of PPI projects should be considered to encompass severe manifestations of legal and regulatory, political and social, commercial, economic, technical, management, and *force majeure* risk. While all investment projects will be vulnerable to some or many of these risks, this risk profile, as a whole, is a defining characteristic of PPI projects. PPI projects will be vulnerable to all of these risks, thus, for PPI projects to be successful, risk allocation and mitigation measures are critical. In the next chapter of this thesis this risk profile will stand as a basis against which INC-supported PPI projects will be judged in an effort to better understand INC's experience in supporting PPI projects.

CHAPTER 3:

ANALYSIS OF INC PROJECTS

INTRODUCTION

The purposes of this chapter are to offer the reader an understanding of the types of PPI projects which INC has supported; to ascertain the level of success INC has, or is likely to achieve, in supporting PPI projects; to determine the nature of the constraints experienced in INC-supported projects; and to test the hypothesis that *INC supported projects have been impeded by manifestations of a known and defined set of high risk issues,* concluding whether or not the hypothesis should be accepted or rejected, and whether or not INC's experience in PPI projects reflects the PPI theory outlined in Chapter Two.

The analysis and testing in this chapter will be structured as follows. *First*, a population of projects will be defined, a sample will be drawn from the population, and the sample will be analyzed in terms of sector, country, region, and fiscal year. *Secondly*, the sample will be analyzed for overall performance by looking at the success rate amongst mature projects, and the likelihood of success amongst less mature projects. *Thirdly*, a sub-sample of the unsuccessful and least successful INC PPI projects will be extracted from the original sample and will provide the basis for ascertaining the types of risks which have appeared as constraints in INC's PPI projects. The sub-sample will be analyzed for evidence and nature of risks experienced and the findings will be presented. *Finally*, analysis of the PPI constraints which have appeared will be expanded back to the full sample, and detailed findings will be presented. In sum, these tiers of analysis will provide the base of evidence from which a determination will be made to accept or reject the hypothesis, and from which a determination can made regarding whether the theory outlined in Chapter Two is relevant to INC's experience. The value in carrying out this analysis and testing is that if the evidence is found to support the hypothesis and reflect the theory, the knowledge imparted by the theory can stand as a body of knowledge on PPI projects with a functional value. It can function as a guide to understanding the viability

of specific projects, it can function as a tool to aid in assessing merit of PPI project ideas, and specifically, it can function as a tool to aid in determining whether PPI proposals received by INC merit receipt of CIDA funding. The reader is reminded that the projects included in this analysis are part of very early trial efforts by INC to deal with a complex and difficult grouping of projects.

Prior to embarking on the analysis and testing process, however, general notes on the population, the samples, definitions, the process of data collection, and the reliability of evidence will be put forth.

NOTES ON METHODOLOGY

Notes on Population Parameters

The purpose of this section is to define the parameters of the population from which the sample was drawn. The population defined for this research is the database of PPI proposals received by INC as defined by two parameters. *First*, the population includes only projects which were *approved* for INC funding. To earn an approval, a project proposal, which is received as an application, is reviewed for comment by INC personnel; non-INC, CIDA personnel with country, sector, technical, environmental, gender, and social expertise; EDC; DFAIT; and by the Post. *Secondly*, the population has a time parameter. Specifically, proposals included in the population are those recorded as approved between 1991 and May 1997. The full database was too large to work with, thus, this recent timeframe was selected to mirror the recent advent of the PPI method. The legitimacy of the 1991 cut-off was tested by spot-checking earlier years in the database. No additional projects were found during this spot-check, lending legitimacy to the assumption that most PPI proposals were received after 1990.

Notes on Sampling Methodology

The purpose of this section is to provide general notes on points of methodology pertaining to the sample selection. More precisely, details of specific characteristics of the sample, as well as the actual sample analysis, will be reserved for later in this chapter.

The sample was initially to have been determined through consultations with INC project managers and directors, a process considered reliable because the PPI phenomenon is new and because projects are tracked for several years by INC, thus, necessitating on-going knowledge of projects by INC personnel. Towards the end of the research process, however, it became evident that reliance on obtaining information through direct requests and regular communications with project managers was not sufficient and thus, several days were spent perusing the INC database of projects approved since 1991 in an effort to identify additional PPI projects. Through this process several additional projects were identified. However, the sample can not be considered truly exhaustive. The time and scope for such detail was not sufficient, nor, was such exacting precision necessary in consideration of the intentions of this research effort, which are to identify patterns and understand general trends in the INC experience. It is the opinion of this writer that most of INC's PPI projects approved since 1991 have been identified, and that the sample to be analyzed does provide sufficient grounds on which to conduct legitimate and meaningful project analysis and on which to draw conclusions regarding INC's PPI experience to date.

The sampling method used was quota sampling. Through this process, the population is sampled and all projects not meeting the study's needs are rejected. This process goes on until a large enough sample is formed, and in this case it went on until virtually all of the population had been considered for inclusion. In the sampling process, those projects determined to meet the needs of the study were those which were found to meet all the criteria of the rigorous BOT definition which is detailed in *Appendix A* and is summarized in the nine points below. To be included in this research project the downstream project associated with a proposal had to have the following characteristics:

1) it had to involve the provision of infrastructure which was previously the state's responsibility;

2) it had to involve the provision of infrastructure which has a multiplicity of overlapping policy purposes;

3) it had to involve provision of infrastructure in the following sectors: power, transport (roads, tunnels, bridges, rapid transit, mass transit, airports, railroads), water, sewage services, waste and hazardous waste management, telecommunications, gas distribution;

4) it had to involve provision of infrastructure wherein the issues of provision and financing are of paramount concern; issues of on-going management, output pricing, and technical complexity are secondary;

5) it had to involve a greenfield or rehabilitative project, rather than an outright privatization;

6) it had to be structured on limited- or non-recourse financing;

7) it had to be undertaken by a single-purpose company without other assets or revenue streams;

8) it had to be based on a series of contracts beginning with a concession agreement and linking together the government, project company, external suppliers, and financiers;

9) it had to involve provision of output with limited market options.

Notes on Operationalization, Data Collection, and Reliabiltiy

The purpose of this section is to present a summary general methodological notes dealing with issues of definitions, the hypothesis, the research question, data collection, and the reliability of evidence. These issues will be dealt with very generally in this section, but will be dealt with more precisely and within specific contexts as they gain specific relevance throughout the various stages of analysis.

A successful project was defined for this research to be a project which had,

- *reached financial close and had proceeded (at least) to the rehabilitation/construction phase.*

It is understood that a project will not be definitively successful until it has reached profitable operation; however, the fact that most of INC's projects are quite new, combined with the fact that they have long development phases, rendered it unrealistic to use profitable operation as a measure of success. Instead, the earlier critical milestone of construction/rehabilitation was deemed more appropriate.

It was also necessary to operationalize the hypothesis in order to conduct the analysis; thus, the hypothesis was translated into the interrogative form and the following research question was produced,

- *what risks issues have manifested themselves in INC-supported PPI projects so as to significantly impede progress?*

In testing the hypothesis, what was being sought was evidence of INC-supported PPI projects being negatively impacted upon by the set of high risk issues outlined in Chapter Two. The primary sources of evidence were INC project managers and INC project files. In some cases applicant firms were also contacted to acquire evidence. Evidence was obtained from these various sources by asking questions about the constraints experienced in the efforts undertaken to date on each project. Open-ended questions (such as, what constraints have impeded the progress of the project?) were preferred as a method of analysis to closed-ended questions (such as, have you experienced legal risk in your work on this project?). Open-ended questions allow more latitude to the interviewee to provide the most accurate answer possible. Closed-ended questions were used as a follow up if adequate information was not forthcoming with the open-ended question.

The evidence which was collected via project analysis was classified, when applicable, under one of the seven risk classification headings from Chapter Two. This classification system was also used to structure the presentation of findings in this chapter. The purpose of mirroring the risk classification structure was to facilitate the process of drawing

conclusions about the findings, the hypothesis, the theory, and the relationships amongst them.

Finally, with regards to the reliability of the data collected, although the data is imprecise in some respects, it is the opinion of this writer that it is a fair representation of INC's experience in general and that it should be considered reliable. Confidence in the evidence stems from the fact that in most cases more than one source was consulted (project manager, project file, and sometimes the applicant firm as well). Further, where there were insufficient grounds on which to make claims or conclusions such was noted and projects were not included in findings regarding the question at hand.

In concluding that the data is reliable this writer is acknowledging the following constraints. *First*, applicant firms might have had a self-interest in not providing accurate and forthright information. *Second*, in some cases the feedback provided by various sources, differed significantly. For instance, in once case INC funding was terminated prematurely because a project was faltering badly. When the firm was contacted for comment, however, it declared itself to be still actively pursuing the project, with optimistic expectations for a positive result. Cases such as this illustrate the constraints to INC's knowledge, which is relative to a particular time, place, and set of circumstances. *Third*, there were cases, particularly in the oldest projects, where there was no adequate source of INC or corporate knowledge, and INC files were the only source of information on which to base project analysis. *Fourth*, there were cases where the causes of failure were not well understood. Primary examples of such cases are those for which it is stated that the project failed because funding could not be obtained. Clearly, the inability to raise funding is only a symptom of a bad project, and not the cause itself. *Fifth,* there is information which is necessary to include in INC files due to procedural considerations, regardless of the fact that such information can not always be accurately ascertained at the time of inclusion. The primary example here pertains to the procedure of closing files at INC. At the time files are closed, it is procedure that files be declared either "implemented" or "not implemented," even though such an assertion cannot always be accurately made.

This thesis will now proceed with the analysis and presentation of findings.

DESCRIPTIVE ANALYSIS

In this section, the INC sample will be described and analyzed in terms of the volume and patterns of activity by fiscal year, region, country, and sector. The purpose of analyzing the sample on these levels is to offer insights into the types of PPI projects INC has been involved with, and to reveal patterns in the nature of INC PPI activity.

Sample Description

A total of 52 PPI projects, via 60 applications, was found to meet the criteria required to be included in the sample. To recap, these projects were registered with INC in 1991 or later, were approved for INC funding, and met all nine definitional criteria (as detailed on p. 80). The difference between the number of projects and the number of applications is accounted for by the fact that several projects received funding at more than one phase of project preparation and/or implementation. Specifically, one project received four funding allotments (pipeline in Tanzania); two received three allotments (a rapid transit project in Mexico, and a pipeline project in Ghana); and one received two funding allotments (a hydro project in the Philippines). The focus of this section of the analysis will be the 52 projects which have been approved by INC, a listing and basic details of which can be found at *Appendix D*. Evidence was also collected for projects recorded in the 1996 and 1997 fiscal years (FY96 and FY97) as rejected or declined or as being in the INC pipeline. These projects were not analyzed in this project, however, interested readers can access a listing of these projects is available at *Appendix E*.

The strict criteria used to select the sample led to several projects from an earlier INC BOT study being removed from the sample for this study. The previous cursory study was carried out by this writer in May 1996. The following table contains a listing of the projects removed from the previous sample. The last column in the table "reasons removed from sample" provides evidence as to which definitional criteria the projects failed to meet. The numbers in the column correspond to the nine definitional criteria detailed on page 75 of this chapter. For instance, project K04909 was not included in the sample for this research because it was not considered to be a project previously in the domain of the state,

because it involved a sector of activity not traditionally included as a BOT sector, and because it involved provision of a project in which the issues of financing and provision were not necessarily primary.

***TABLE 3.1*: PROJECTS REMOVED FROM ORIGINAL INC SAMPLE**

K-Number	Country	Sector	Reasons Removed From Sample*
K049092	Indonesia	Marine-Enviro. Response Centre	1, 3, 4
K041019	China	Copper-Sulpher Mine	3, 7, 9
K041039	China	Kaolin Project	3, 7, 9
K044639	China	Caustic Soda Plant	3, 7, 9
K044802	China	Paper mill Construction	3, 7, 9
K048044	India	Gold Mine	3, 7, 9
K045530	Mexico	Irrigation	3
K051082 & K047386	India	Oil/Gas Extraction	3

* numbers correspond to definitional criteria on pp. 75-76 of this chapter.

Analysis of INC Sample Over Time

To begin, the sample was segregated for analysis based on the fiscal year of approval, with the outcome being evidence that the number of PPI project approvals has changed significantly over time. The peak year for approvals was in FY94 when 20 proposals were approved. Prior to FY94 a total of only 11 approvals was granted. In the years since, the frequency of approvals declined, with only 15 approvals granted in FY95 and 11 in FY96. Activity appears to be increasing again in 1997, however. Although only three approvals were recorded in the first two months of FY97, four more projects were in the circulation process at the time of writing, two were are awaiting circulation, and there were two other projects for which INC was expecting proposal submissions. Thus, the actual level of activity so far in FY97 is more significant than is revealed by the number of approvals granted.

In terms of INC dollars committed to PPI projects, there has been a total of $24,337,572 committed to these 52 approved projects. However, four approvals were cancelled before or during disbursement, and 8 projects finished disbursing without the full commitment being paid-out to the applicant (in all cases, however, the differences were insignificant amounts). Thus, after adjusting for these factors the total amount of INC funding which has been, or is still expected to be, disbursed via support of PPI projects is $20,504,277. This amount will be referred to as the "adjusted commitments." Total commitments per fiscal year are recorded in the *Table 3.2*, and a breakdown of funding commitments per approval can be found in the project listings in *Appendix D*. It is interesting to note that while the total dollar value of funding allocations remained generally constant from 1994 to 1996 the average allocation per project increased from $273,916 in 1994, to $326,307 in 1995, and to $468,791 in 1996.

TABLE 3.2 **INC PPI APPROVALS X FISCAL YEAR**

Fiscal Year	Number of INC PPI Approvals	$ Value of INC Commitments (adjusted)
1997	3	$1,188,722
1996	11	$5,156,707
1995	15	$4,894,613
1994	20	$5,478,327
1993	3	$857,040
1992	3	$726,882
1991	3	$1,135,093
Pre-1991	2	$1,066,893
TOTAL	60	$20,504,277

Analysis of Sample by Country & Region

Next, the sample was segregated based on region and country in order to gain an understanding of where INC applicants are undertaking PPI projects. In terms of region, the outcome was evidence that INC's experience mirrored the experience of the World Bank and the EDC with the most active region for PPI at INC being Asia. Twenty-seven

of the 52 projects supported by INC were in Asia, while 19 were in the Americas, and the remaining six were in Africa and the Middle East (AME).

In terms of dollars committed, Asia leads again as site of 40.8% of commitments, with an aggregate dollar value of $9,905,960. Although the Americas has had three times more projects approved than AME, large commitments on pipeline projects in Ghana and Tanzania resulted in 30.6% of funding being committed to AME and only 28.6% to the Americas. However, owing to the fact that disbursements on the Ghanaian pipeline project were terminated early due to lack of progress, AME falls back to 25.3% in terms of adjusted commitments, while the Americas moves ahead with 31%. *Table 3.3* summarizes INC activity by region in terms of dollars committed. A breakdown of INC dollars committed by country can be found in *Tables 3.4a-c* (pp. 88-90).

***TABLE 3.3*: INC APPROVALS AND COMMITMENTS x REGION**

	Number of Projects Approved	**INC Commitments**	**INC Adjusted Commitments**
Asia	27 (51.9%)	$9,905,960 (40.8%)	$8,955,336 (43.7%)
The Americas	19 (36.6%)	$6,969,051 (28.6%)	$6,363,670 (31%)
Africa & Middle East	6 (11.5%)	$7,462,561 (30.6%)	$5,185,271 (25.3%)
TOTAL	**52**	**$24,337,572**	**$20,504,277**

Looking at specific countries, segregated data illustrates that seven projects have been approved for each of China and Mexico. The next most active countries are Indonesia with five approvals, followed by Cuba, the Philippines and Vietnam with three projects 86approvals each. A summary of INC approvals by country, by fiscal year can be found in *Table 3.5* (pp. 91-92). Although the same number of projects has been approved in each of China and Mexico, funding allotments have been much larger in Mexico which ranks first in terms of the dollars committed to any single country, while China ranks fourth. Mexican projects have been supported with 13.6% of total INC commitments, for a total dollar value of $3,307,712. Tanzania is next at 13.3%, followed by Ghana at 12.6%, China

at 8.7%, and the Philippines at 8.3%. After adjustments, namely voluminous cancellations in the Philippines and Ghana, Ghana falls from 12.6% to 3.8% of commitments. Mexico remains first with 16% of adjusted commitments, followed by Tanzania, China, Indonesia, the Philippines and Vietnam.

Table 3.4 (a): INC COMMITMENTS AND ADJUSTED COMMITMENTS IN ASIA x COUNTRY

Country	Total Commitments $	Commit-ments as %	Adjustments (Cancellations and $ Not Disbursed)	Adjusted Commitments $	Adjusted Commit. as %
Indonesia	$1,545,895	6.4	-	$1,545,895	7.6
China	$2,108,486	8.7	$55,200	$2,053,286	10
Philippines	$2,011,156	8.3	$816,780	$1,194,376	5.8
Vietnam	$1,126,612	4.6	-	$1,126,612	5.5
Cambodia	$347,313	1.4	$5,043	$342,270	1.7
Laos	$476,800	2	$73,601	$403,199	2
India	$458,115	1.9	-	$458,115	2.2
Bangladesh	$372,450	1.5	-	$372,450	1.8
Pakistan	$924,200	3.8	-	$924,200	4.5
Malaysia	$292,333	1.2	-	$292,333	1.4
Nepal	$242,600	1	-	$242,600	1.2
TOTAL ASIA	**$9,905,960**	**40.8**	**$950,624**	**$8,955,336**	**43.7**

TABLE 3.4(b): INC COMMITMENTS AND ADJUSTED COMMITMENTS IN THE AMERICAS BY COUNTRY

Country	Total Commitments $	Commit-ments as %	Adjustments (Cancellations and $ Not Disbursed)	Adjusted Commitments $	Adjusted Commit. as %
Cuba	$659,615	2.7	-	$659,615	3.2
Peru	$997,785	4.1	-	$997,785	4.9
Argentina	$668,750	2.7	$263,000	$405,750	2
Mexico	$3,307,712	13.6	$26,301	$3,281,411	16
Costa Rica	$434,500	1.8	-	$434,500	2.1
Panama	$460,240	1.9	$312,179	$148,061	0.7
Guatemala	$248,400	1	-	$248,400	1.2
Venezuela	$192,049	0.8	3,901	$188,148	0.9
TOTAL AMERICAS	**$6,969,051**	**28.6**	**$605,381**	**$6,363,670**	**31**

TABLE 3.4(C): INC COMMITMENTS AND ADJUSTED COMMITMENTS IN AFRICA & THE MIDDLE EAST x COUNTRY

Country	Total Commitments $	Commit-ments as %	Adjustments (Cancellations and $ Not Disbursed)	Adjusted Commitments $	Adjusted Commit. as %
Turkey	$200,000	0.8	-	$200,000	1
Jordan	$460,000	1.9	-	$460,000	2.3
Egypt	$495,000	2	-	$495,000	2.4
Ghana	$3,064,200	12.6	$2,277,000	$787,200	3.8
Tanzania	$3,243,361	13.3	$290	$3,243,071	15.8
TOTAL AFRICA & MIDDLE EAST	**$7,462,561**	**30.6**	**$2,277,290**	**$5,185,271**	**25.3**
TOTAL	**$24,337,572**	**100**	**$3,833,295**	**$20,504,271**	**100**

TABLE 3.5: PPI APPROVALS x COUNTRY x FISCAL YEAR

	Total Projects	Total Approvals	FY97	FY96	FY95	FY94	FY93	FY92	FY91 & Earlier
Mexico	7	9	1	2	1	3	1	-	1
Cuba	3	3	-	3	-	-	-	-	-
Peru	2	2	1	1	-	-	-	-	-
Argentina	2	2	-	-	-	1	-	-	1
Costa Rica	1	1	-	-	1	-	-	-	-
Panama	1	1	-	-	-	1	-	-	-
Guatemala	1	1	-	-	1	-	-	-	-
Venezuela	2	2	-	-	-	1	1	-	-
AMERICAS	19	21	2	6	3	6	2	-	2
Tanzania	1	4	-	1	-	-	-	1	2
Egypt	1	1	-	1	-	-	-	-	-
Turkey	1	1	-	1	0	-	-	-	-
Jordan	2	2	-	-	2	-	-	-	-
Ghana	1	3	-	-	1	2	-	-	-
AFRICA/MIDDLE EAST	6	11	-	3	3	2	-	1	2

	Total Projects	Total Approvals	FY97	FY96	FY95	FY94	FY93	FY92	FY91 & Earlier
Indonesia	5	5	-	1	2	2	-	-	-
India	2	2	1	0	-	1	-	-	-
China	7	7	-	-	1	4	1	1	-
Philippines	3	4	-	-	2	1	-	1	-
Malaysia	1	1	-	-	1	-	-	-	-
Vietnam	3	3	-	-	1	1	-	-	1
Pakistan	2	2	-	-	2	-	-	-	-
Nepal	1	1	-	1	-	-	-	-	-
Cambodia	1	1	-	-	-	1	-	-	-
Bangladesh	1	1	-	-	-	1	-	-	-
Laos	1	1	-	-	-	1	-	-	-
ASIA	27	28	1	2	9	12	1	2	1
TOTAL	52	60	3	11	15	20	3	3	5

TABLE 3.6: INC PPI APPROVALS x SECTOR x FISCAL YEAR

	Total Projects	Total Approvals	FY97	FY96	FY95	FY94	FY93	FY92	FY91/ Earlier
Power Generation	21	22	2	6	4	8	1	1	-
Power Transmission	1	1	1	-	-	-	-	-	-
Power Generation & Waste Water	1	1	-	-	-	1	-	-	-
Waste Water	2	2	-	-	1	1	-	-	-
Potable Water	2	2	-	-	1	1	-	-	-
Pipelines	6	11	-	1	2	4	-	1	3
Rapid Transit	2	4	-	1	1	-	1	-	1
Railway	3	3	-	-	1	1	1	-	-
Toll Road	1	1	-	-	1	-	-	-	-
Port Terminal	2	2	-	-	1	1	-	-	-
Airports	5	5	-	1	1	1	-	1	1
Telecom	1	1	-	-	1	-	-	-	-
Waste Management	3	3	-	2	1	-	-	-	-
Hazardous Waste	2	2		-	-	2	-	-	-
TOTAL	52	60	3	11	15	20	3	3	5

TABLE 3.7: INC PPI COMMITMENTS & ADJUSTED COMMITMENTS x SECTOR

Sector	Total Commitments $	Commit-ments as %	Adjustments (Cancellations/ $ Not Disbursed)	Adjusted Commitments $	Adjusted Commit. as %
Power Gen.	$7,359,490	30.3	$82,008	$7,277,482	35.5
Power Trans.	$498,761	2.1	-	$498,761	2.4
Power Gen/WW Treatment	$300,000	1.2	-	$300,000	1.4
WW Treatment	$615,895	2.5	-	$615,895	3
Potable Water	$243,414	1	-	$243,414	1.2
Waste Mgmt.	$1,053,814	4.3	$26,301	$1,027,513	5
Hazardous Waste Mgmt.	$1,274,040	5.2	$263,000	$1,011,040	4.9
Pipeline	$7,477,884	30.7	$2,625,408	$4,852,476	23.7
Port Facilities	$548,400	2.2	$15,897	$532,503	2.6
Toll Road	$816,780	3.4	$816,780	-	0
Rapid Transit	$1,653,283	6.8	-	$1,653,283	8.1
Railroad	$267,049	1.1	$3,901	$263,148	1.3
Airport	$1,740,110	7.2	-	$1,740,110	8.5
Telecoms	$488,652	2	-	$488,652	2.4
TOTAL	**$24,337,572**	**100**	**$3,833,295**	**$20,504,277**	**100**

Analysis of Sample by Sector

The sample was also segregated by sector and the INC experience was again found to mirror the experience of the WB in that the greatest volume of activity occurred in the power sector. However, this analysis also produced evidence that INC has supported only one PPI project in the telecom sector, unlike the experience at EDC where telecoms is leading the project finance activity.

INC has supported 22 power sector projects; 13 transport sector projects; 10 water and sanitation projects; 6 gas pipeline projects; and a single telecom project. The power sector projects include 21 generation projects, and one transmission project. The transport sector projects include five airports; three railways; two each of rapid transit and port facility projects; and one toll highway. *Table 3.6* (p. 93) contains data pertaining to the number of projects INC has approved, by sector, by fiscal year. In terms of future trends, six of the eight projects in the INC pipeline are power sector projects. Five being power generation projects while the sixth is an ambitious power transmission project bringing surplus power from Siberia through Mongolia to markets in China.

The profile of dollars committed tells a different story than the sheer numbers of approvals. (A summary of sectorally segregated financial data is available in *Table 3.7,* (p. 94). There are only two PPI sectors which account for more than 8% of total funding. The seven pipeline projects approved by INC account for a full 30.7% of total commitments, with a total dollar value of $7,477,884 while 30.3% of commitments were approved for power generation projects, though to be shared amongst 21 projects. Once adjusted, power generation commitments stand at 35.5%, while pipelines falls to 23.7%. Adjusted commitments for airports and rapid transit projects are 8.5% and 8.1% respectively. Otherwise no other sector accounts for more than 5% of INC commitments.

ANALYSIS OF INC PERFORMANCE IN SUPPORT OF PPI PROJECTS

Analysis of Sample by Outcome

In order to provide the first insight into INC's level of performance in support of PPI projects, the INC sample was segregated on the basis of outcome. To accomplish this, projects were determined to be either "successful" or "not successful." Projects deemed not successful included those which were failures as well as those still in progress. Successful projects were defined as those projects having reached financial close and going on to construction/rehabilitation (as was defined in the *Notes on Methodology* section of this chapter). There were found to be only two INC projects which fulfilled the criteria required to be deemed successful. The two successes were hydro projects in the Philippines and in Costa Rica. This analysis, though basic, is also critical in that it provides a factual basis for the assumption underlying the hypothesis, being that there are, in fact, very few INC PPI successes and, therefore, that there is a problem to be researched. In regards to data reliability, the data is considered completely reliable as there is no interpretation of data required in determining which projects are successful -- other than in establishing the definition of success, which was quite straightforward. The findings of analysis for success are revealing in absolute terms but also in relative terms as compared to statistics regularly compiled by INC on the success of the projects it supports. INC's rates of success typically run between 25% and 30% depending on the sector or region in question. The sample under consideration herein, however, generates a rate of success of less than 10%, well below the INC average and confirming that INC has experienced difficulties in its early efforts to support Canadian PPI projects. A brief synopsis of each of the successes will be documented in what follow. For reasons of confidentiality the firms involved are identified as *Applicant A* and *Applicant B*.

INC Success #1 - Applicant A

In 1992, Applicant A was funded by a $228,172 CIDA INC contribution to do "a study of over 30 potential mini hydro projects to evaluate the technical and economic viability of developing a number of them."[95] The outcome of the study was that four sites were targeted, two of which appeared to be viable on project finance bases. A second tranche of INC funding ($492,075) was approved in 1994 to do further studies on particular sites, and a third request for funding in 1996 was declined by INC. At present, Applicant A is in the construction stage of a mini-hydro facility at one of the sites the applicant studied with INC assistance.

The original proposal was broad in scope (studying 30 potential sites); however, the company's efforts were also appropriate in scope and strategic in kind. Applicant A is a relatively small company and was realistic in its ambitions in regard to its size. The applicant did much of the project development including acquiring the concession agreement, and then teamed-up with a strategic local partner (a utility) to implement the project. The project company is comprised of a local utility which is 73.6% owner, Applicant A which has a 16.4% interest, and a local company with a 10% interest. Applicant A's timing was intentional, deciding to initiate their efforts once "there was a political demand for energy production which was supported by existing legislation that permits private power." Applicant A participated in the mini-hydro project for fee, and its stake in the company is largely a result of converting some of its fee revenues into equity. Applicant A's goal is to be involved in the development of 20-50 MW of power in the Philippines by the year 2000.

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[95]From INC Project Management Document.

INC Success #2 - Applicant B

Applicant B's project was supported with an INC contribution of $434,500 in 1995. The commitment is still disbursing and the project is under construction. The project is a $20 M peak-load hydro facility in Costa Rica which is being built in a joint venture with a local company. Applicant B committed some equity to the project but German banks were hired to raise the majority of the financing. There is a legal framework in place in Costa Rica for private power facilities; however, power rates are unrealistically high, making solid PPA agreements of utmost importance so as to negate potential future commercial risk. Applicant B initiated the project as part of an international strategy devise as a result of surplus supply in its domestic market. According to the project manager the primary difficulties in this project have been social and managerial in nature.

Analysis of Sample for Probability of Implementation

Since many INC projects are quite new, the analysis for outcome (success) was somewhat incomplete in that it did not provide information on good projects which were likely to have successful results. It was the view of this writer that it would be worthwhile if a means could be devised by which to broaden the analysis of success so as to gain a sense of whether the lack of implemented projects to date is an anomaly or whether it is a more broadly representative trend which can be expected to continue as more projects mature. To this end it was decided that an effort would be made to compile statistical estimates as to whether the many on-going PPI projects were likely to be successful. This procedure involved establishing probability of implementation (POI) estimates for as many projects as possible. POI estimates are estimates reflecting the likelihood of the project, as originally defined, being implemented by the applicant firm.

The process of compiling POI data began with asking the project managers who were working on each project what they considered to be the likelihood that the project would

eventually be implemented. The specific question put to the project managers to garner a probability of implementation measure was the following;

- *in percentage terms, what do you consider to be the probability that this project will be implemented by the applicant firm?*

Responses by the project managers in answer to this question were the primary consideration for POI ratings. INC project managers were relied on as the primary sources for such estimates because they work closely with the projects, and because they were considered to have no interest in providing misleading information, something which would be a major concern if the firms were relied on for such measures. Further, reliance on project managers provided for consistency among measures since this meant there would be a few project managers giving many measures.

Evidence from project files and from meetings and discussions with applicant firms were also taken into consideration in some POI estimates. There were two cases, for example, where intimate knowledge of the projects by this writer provided reason to make probability estimates independent of the project managers. In cases where a project manager gave a POI estimate which did not seem consistent with other information known to this writer, a compromise estimate was arrived at with the benefit of doubt given to the project manager.

Only one significant, and very few minor changes were made to the estimates offered by project managers. In the case of the one significant change, the project manager's 60% rating was reduced to 40%. This decision was made only after spending several hour in meetings with the applicant firm, and subsequent to seeking generic advice from financing experts on the validity of the financing principles on which the project was premised. Much thought went into the decision to disagree with the project manager in this case. It is hoped that the project manager's optimism is well founded and that the project is a success in the end; however, it is the view of this writer that at the time of writing there was no basis to

believe this project should be rated at 60%, and there were many reasons to believe it would fail.

There were six project not rated for probability of implementation (these project are noted in *Appendix D*). Among these were four projects which were too new for there to be any grounds on which to make such estimates. Two other project were left out of the sample for this test because of conflicting opinions on likelihood of success. In one of these two cases a decision had been made jointly by INC and the project manager to stop INC disbursements on the project because of poor progress. The INC file was closed and the project, for INC's purposes, was labeled "not implemented." This would usually be sufficient grounds to give the project a 0% POI rating; however, when the applicant was contacted they claimed to be still pursuing the project with significant optimism about its chances for success. As such a 0% rating was considered inappropriate though no other grounds provided convincing rational to rate the project otherwise. A second project which was reconfigured subsequent to the INC study and the lead was taken over by an American company. This project was also not rated because of conflicting information. According to the project manager, the project being worked on now by the new consortium is essentially the same project INC funded. Having reviewed the project file, however, it is the opinion of this writer that the project being pursued by the new consortium is a significantly different project. Due to these conflicting opinions as to whether the same project was even being discussed, and due to the fact that the new American-led version of the project is outside of INC's jurisdiction, the decision was made that even a rough probability of implementation estimate would not be meaningful; thus, the project was removed from the sample for the purposes of this estimate.

It is recognized that the POI measure is not a scientifically sound or precise measure, but that it is, instead, informed speculation. In deciding to present the data herein, the imprecision of the findings was taken into consideration. It was decided that because of the degree of inaccuracy, individual findings would not be presented. Rather it was decided that the data would be pooled into six broad categories for presentation and

analysis. Thus, the POI findings will be presented in the six following categories, 0% 1-25%, 26-50%, 51-75%, 76-99%, 100%. Such a generalization of the data can convey the general essence of the findings and it is these generalized findings which are of importance. The generalized interpretations are believed by this writer to be a fair representation of the state of projects at a particular point in the life cycle of each project. That said, in the world of project finance it has been said that "every deal that gets done dies at least four times."[95]

In all, 46 projects were rated for probability of implementation. (These projects are noted in *Appendix D*). The 46 projects included the 52 project in the sample minus the six projects detailed above which could not be rated. In response to the POI research question the following data was collected. Twenty-three projects were given a 0% chance of being implemented, seven were given a 1-25% chance, three were given a 26-50% chance, seven were given a 51-75% chance, four were given a 76-99% chance, and the two successful projects detailed above were rated at 100%.

Because some projects are much more mature than others, much more is known about these projects, and, thus, the reliability of the POI estimates for the mature projects can be considered more accurate. Therefore, a decision was made to segregate the POI data by project stage. INC projects fall into one of three project phases, closed, follow-up, or disbursing. The term *disbursing* means that the INC funding allocated to the project is still available to the applicant to be drawn on. *Follow-up* means that all funds have been extended to the project, and that it has now entered the three to five year period subsequent to disbursement during which it is monitored by the INC follow-up team to ascertain an outcome. The label *closed* is given to those projects for which disbursements have finished and the follow-up tracking period has expired. No further regular course of action is taken by INC on closed projects. In all, the INC sub-sample analyzed for POI included 12 closed projects; 16 projects at the follow-up stage; and 24 disbursing projects.

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[95]Richard House. "Who Will Win the New Project Finance Game." p. 49.

As mentioned previously, six projects were not rated for POI. *Table 3.8* illustrates the distribution of the 46 projects rated for POI, by project stage.

TABLE 3.8: **INC APPROVALS x CURRENT PROJECT STATUS**

Project Status	Number of Projects Approved	Number of Projects Included in POI Test
Closed	12	11
Follow Up	16	15
Disbursing	24	20
TOTAL	**52**	**46**

Looking at POI estimates as they vary over the three project phases, there is a clear trend illustrating that the more mature a project is (the more that is known), the less likely it is to be implemented. When proposals are newly approved there is (necessarily or they wouldn't be approved) a reasonably high expectation that the project will be a success. This is evident in the data where, for the most part, once work on the project actually begins, the estimated probability of success in PPI projects drops off rapidly. *Table 3.9* illustrates this clear trend, as it maps out the probability of implementation of the 46 INC projects, as they vary across project stages.

TABLE 3.9: **PROBABILITY OF IMPLEMENTATION OF INC-SUPPORTED PPI PROJECTS x PROJECT STAGE**

	0%	1-25%	26-50%	51-75%	76-99%	100%
Closed	11	0	0	0	0	0
Follow Up	9	3	0	1	1	1
Disbursing	3	4	3	6	3	1
TOTAL	23	7	3	7	4	2

Of all the projects which have reached the closed stage, none have been successful and none are expected to be successful. And, 80% of the projects at the follow-up stage are

considered to have little or no (less than 25%) probability of being successfully implemented.

One of the most distressing trends in the data is that there are three projects which are considered to have no probability of being implemented, yet for which funds continue to be disbursed. Further, there are four more projects which are disbursing but which are considered to have less than a 25% probability of being implemented. This leads one to question how such projects get approved. Specifically, this brings into direct question the effectiveness of the INC screening process and its suitability to PPI projects. Furthermore, such evidence raises questions as to why funds continue to be made available to applicants chasing fruitless prospects. Another useful way to look at this data is in terms of how many of the projects at each stage have a less than 50% probability of being implemented. In all, 50% of projects which are currently disbursing are considered to have less than a 50% chance of being implemented. This figure drops to 20% for projects at the follow-up stage, and to 0% for closed projects. As the disbursing projects mature they will move to one side of the ledger or the other. If past patterns continue, one can expect to see most end up in the top, lefthand corner of the above table -- closed and not implemented.

In the previous two sections of this thesis (*Analysis for Outcome* and *Analysis for POI*) evidence was produced illustrating that few INC PPI projects have been successful, and that few more are likely to succeed. This is evidence that INC-supported PPI projects have been experiencing serious impediments and this assertion is a significant step in the process of testing the hypothesis. Having determined that INC PPI projects have been significantly impeded in their progress, the remainder of this chapter will be dedicated to ascertaining the nature of the constraints which have impeded them, and determining whether the constraints coincide with what the theoretical predictions assert the constraints will be. As such, the hypothesis can be ultimately either rejected or accepted.

ANALYSIS OF TYPES OF RISKS EXPERIENCED IN INC PPI PROJECTS

The purpose of this final analytical section is to determine the nature of the impediments which have manifested themselves in the early INC-supported PPI projects included in the sample under analysis herein. In perusing the remainder of this chapter, the reader should be conscious to note the frequency and accuracy with which the reported risks reflect the predicted risks detailed in the review of theory in Chapter Two. If the INC experience is seen by the reader to be reflective of the theory, the hypothesis can be concluded to have been supported by the evidence.

Selection of Sub-Sample

In this section of the project analysis, the hypothesis will be tested directly by analyzing the INC sample to ascertain frequency and types of risk issues being experienced. As such, the findings will provide evidence regarding both the absolute and relative frequencies of PPI (as opposed to non-PPI) risk issues, as well as evidence of the kinds of PPI risk issues being experienced. This evidence will allow the reader to draw a conclusion as to whether *INC PPI projects have been impeded by manifestations of a known and defined set of PPI high risk issues* -- specifically that set of issues outlined in Chapter Two.

It was decided that because there were many projects early in their life cycles, a sub-sample would be utilized to test for frequency of PPI risks. The sub-sample which will provide evidence of the frequencies with which PPI risk issues manifest themselves in INC-supported projects was defined for use herein as including,

- *all projects which have reached the closed stage, and,*
- *all other projects rated as having a 25% or less probability of being implemented.*

These parameters were decided on because it is unlikely that projects with a POI greater than 25% could have produced evidence of significant PPI risk issues having manifested themselves; otherwise, by definition, they would not likely have a 25% or greater probability of being implemented. Furthermore, as one can see in *Table 3.9,* most projects with POI ratings of greater than 25% are relatively new projects. Since the evidence pertaining to these projects would be only part of the whole story, it was decided that inclusion of such data would negate the relative relevance of the findings; thus, they were not included. In all, once the sample was narrowed to exclude projects with a greater than 25% POI, or not otherwise closed, there were 31 projects which fit the criteria. The sub-sample, thus includes 23 projects rated at 0%, seven at 1-25%, and one project which was not rated for POI. In three of the 31 projects in the sub-sample, insufficient evidence was collected during the research process and these projects were not analyzed for risk (these three projects are noted in *Appendix D*). Subsequently, 28 projects remained for the final risk manifestation analysis (these 28 projects are noted in *Appendix D*) which is the object of this section of the thesis.

Process of Sub-Sample Risk Analysis

The process of assessing which risk issues manifested themselves in the 28 projects of the sub-sample required recovering evidence from many sources. As some of these sources were animate, and others inanimate, it was not possible to employ a rigidly structured approach in this part of the analysis process. In an ideal situation, one series of questions would be put to a representative of each project in the sample. The reality of this research process, however, was very messy, chaotic, and difficult due to the vast quantity of documents which had to be analyzed, due to the fact that many sources were inanimate, due to the fact that answers were not always straight forward but were often buried in highly technical documents, and due to the fact that evidence often had to be inferred.

The process of collecting evidence included the following three steps. *First*, in the case of each project in the sub-sample, this writer interrogated the INC project file with the following question,

- *what constraints have been realized in the work done to date on this project?*

As much evidence as possible was extracted from the project files pertaining to this question. Project files contain regular reports which firms are required to provide to INC informing of their progress, and they contain final reports as well. The regular and final reports are substantial, technical, and very detailed. INC files also contain information specifically regarding the status, outcome, and the general problems being experienced in each project. This information is documented in the *Long Summary* portion of the file and it is collected by INC's follow-up team through regular contact with the applicant firms for 3-5 years after the last INC-payment is made. INC files also contain other substantial documented evidence of the progress of projects including press releases, press reports, and notes from interviews, meetings and telephone conversations with the firms involved in the project as well as with financiers, relevant host country government and non-government entities, and Canadian government representatives abroad who have dealings with the projects. In all, the evidence in the project files is substantial and significant.

As a *second* step in collecting evidence, this writer approached project managers with the same question -- *what constraints have been realized thus far in the work done on this project?* As in the POI rating process, evidence from INC project managers was considered of value because of their close work with the projects and because they were assumed to have no reason to provide misleading information. There were only three projects for which there was no direct corporate memory at INC regarding the project. None of these projects was removed from the project sample on this basis because evidence was readily available elsewhere.

The *third* step in collecting evidence about constraints involved contacting some firms directly. After a few firms were contacted, however, it was concluded that this source of evidence was relatively unproductive and would be used only when needed of for the purpose of clarifying particular issues. This route proved to be least productive because the firms most often defaulted to reports already filed with INC and already reviewed in this analysis process; thus, little new information was found to be generated. Further, this process proved to be very difficult logistically as often those who had knowledge about the project were not always still with the firm, or they were in the field working on other projects and were, thus, unavailable.

After asking of each source which constraints had been realized, the evidence generated had to be categorized and filtered in recognition that some reported constraints might be less significant than others. Subsequently, criteria were employed to judge which constraints were worthy of inclusion in the data compiled and presented here. To this end, it was decided that in order to be included as a manifestation of risk, a constraint had to have manifested itself (or had to be threatening to manifest itself) so as to have a significant negative impact on the project. The measure of significance is unquantifiable; instead the measure came from an understanding of the project as a whole and the dynamics of the project and of the risk issue. The impact of a significant manifestation of risk ranged from projects being halted altogether, to project parameters having to be significantly reconfigured. Such a judgement is a subjective assessment and the resultant measure is, therefore, general, however, once again, the precision in this research is not the ultimate goal; rather, it is the general findings and trends regarding what is happening are of foremost importance.

Findings - Frequencies of Risks Reported

This section will outline the evidence revealed pertaining to risks experienced in the 28 PPI projects included in the sub-sample based on the risk analysis project detailed above. As risks were recorded they were slotted into one of the seven risk categories outlined in

Chapter Two as being the primary sources of PPI risk. They will be presented here within the same structure to allow the reader to draw parallels between theory and INC reality, and to draw conclusions as to whether the impediments experienced by INC projects mirror those experienced by PPI projects in general.

In 26 projects there was at least one manifestation, or serious threat of manifestation of typical PPI risk issues. Two projects did not show evidence of PPI risk, and two projects showed evidence of both PPI and non-PPI risks having impeded progress. The fact that only a few projects were registered in most countries and sectors made it impossible to do a statistically relevant breakdown of the frequency of risk issues across sectors or countries.

The most frequently cited risk issues were political and social risks, reported 21 times in 18 of the 28 cases in the sub-sample. There was one instance where political risk manifested itself in two distinct and different issues in the course of one project; thus, it was recorded as two occurrences. Further there were two cases where both political and social risks were reported. Legal/regulatory risks were cited with the second most frequency, being reported 13 times in 12 of the 28 projects. Again, there was one instance wherein two distinct and separate issues were reported in one project, thus, being recorded as two occurrences of legal/regulatory risk. Commercial risk was the next most frequently reported issue, with 11 reported instances in 11 projects, while six cases of economic risk were reported in six different projects. *Table 3.10* outlines the full range of risks reported.

TABLE 3.10: **FREQUENCY OF RISK ISSUES REPORTED IN INC PPI PROJECTS***

Risk Issue Reported	Number of Occurrences
Political & Social	21
Legal/Regulatory	13
Commercial	11
Economic	6
Technical	2
Force Majeure	2
Management	3
TOTAL	**59**
Projects Reporting Non-PPI Risks Only	2
Projects Reporting Non-PPI Risks & PPI Risks	2

*Includes sub-sample of closed projects and other projects with POI less than or equal to 25%, as denoted in *Appendix D.*

In terms of the frequency of risks reported per project, five projects reported four different PPI-related risk issues presenting as deterrents, while six projects reported three risk issues, six more project reported two risk issues, 10 projects reported one issue, and two projects reported none. It is this writer's opinion that the sheer frequency of PPI risks recorded here in absolute and relative terms (relative to non-PPI issues) makes it evident there is evidence of a preponderance of PPI issues hampering the progress of INC-supported PPI projects.

Findings - Types of Risks Reported

Thus far, the evidence presented has illustrated that INC-supported PPI projects have been impeded with great frequency and that, largely, they have been impeded by risk factors which fit into the seven broad risk categories. The purpose of this section is to detail the precise issues which have arisen as impediments. This will serve as the final step in testing the hypothesis.

The risks to be included in this presentation will be primarily the the 59 PPI risk issues in the sub-sample of 28 projects; however, evidence of instances of potential risks from projects within the greater population, the sample of 52 projects, will also be documented. The reader is encouraged to recall the discussion of PPI risk issues in Chapter Two and to look for parallels between the Chapter Two risks and the risks presented in the following discussion. If the risks presented in this analysis can be concluded to reflect the risks outlined in Chapter Two, it can be concluded that INC's PPI projects have been impeded by manifestations of the set of high risk issues known to PPI projects. Such a finding, combined with the frequency already illustrated of such risk manifestations, should then allow the reader to accept or reject the hypothesis. It is the opinion of this writer that the evidence should lead the reader to comfortably conclude that the hypothesis has been affirmed and that INC's experience can be explained by the theoretical explanation as to why PPI projects fail, as documented in Chapter Two.

Political and Social Risk

Political and social risks were reported 21 times in the INC-supported projects analyzed for risk, and they were also evident in projects comprising the broader population of the original sample of 52 projects. Political and social risks included disruptions due to electoral proceedings; foreign aid competition; political favouritism; changes in the basic make-up of the political environment in question, or its ideology; and the relocation of communities. The following examples of political and social risk in INC-supported projects reflect the political and social risk issues outlined in the discussion of theory in Chapter Two. It is the opinion of this writer that the kind and frequency of these examples constitutes sufficient evidence to conclude that, in terms of political and social risk, INC's experience reflects the theoretical base of knowledge regarding impediments to PPI project success. The purpose of presenting the following examples is to provide evidence that significant manifestations of legal and regulatory risks have impeded INC-supported PPI projects.

Often, the championing of a particular project rests with a specific branch of government or even a specific person. Subsequently, a change of government personnel can bring a project idea to a swift end. This is particularly important in PPI projects because some level of enduring government involvement or interest is always inevitable. A change of government was the decisive factor in the failure of an INC-supported hazardous waste facility project in Argentina. Following a national election a new director found his way to the portfolio relevant to the project and declined to support the project.

The worst case of political interference was the case of Applicant C in the Philippines. The project was the $400 M Metro Manilla Skyway, a toll road for which the applicant had signed a Memorandum of Understanding in 1994. The problem which arose was that the adjoining section of road had been committed to a local company owned by the daughter of President Suharto of Indonesia. Applicant C spent more than $1 M in development costs on the project before it became apparent that the local company was using political muscle to gain the right to develop the share of the road which the applicant was working on. The project manager met with Philippine authorities and reported it was uncertain that the local firm could handle the job, and it was uncertain that the local firm's agreement was even legally binding. Regardless, unable to gain assurances of first right of refusal on the desired section of the road, and given the political environment and the local firm's political connections, Applicant C decided to suspend its efforts to secure the Skyway project.

Two Mexican projects also endured the realization of direct political risks when the government decided to appropriate the projects and develop them locally. In one case, a project was impeded first by an election call, then by the Peso crisis, and finally it was appropriated by the government as part of an initiative to garner local political support by creating work for locals. In the second case, it was reported by the firm and recorded in the *Long Summary* portion of the INC file that "les authorité Mexicanes ont decidé de modifer considerablement le project en l'integrant au projet de relocalisation de l'aéroport de Mexico prés de Pachuca. L'intention des authorités de l'état d'Hidalgo est de réaliser eux-même le projet."

There were two instances of political interference with project parameters in Indonesia and China which, thereby, compromised project viability. In the Chinese case the government was the partner in a planned combined waste water treatment/power generation project. Preliminary studies proved the project to be more expensive than the government had anticipated; thus, the government scaled back the project to a degree which made it commercially unviable. In the Indonesian case a water treatment project was approved by local authorities, but when the Minister of Finance found out about the project he declared it to be within his jurisdiction and decided to reduce the project to one-sixth its original size. In both of these projects political interference compromised the commercial bases on which the projects were originally premised. The projects being supported by INC in Cuba should also be considered prime candidates for direct government interference. Although three Cuban power BOTs have been approved for funding by INC the project manager has acknowledged that "it is questionable if Cuba is politically ready for a BOT, especially the ownership component."

The Malaysian pipeline project also suffered from political risk issues. First, the project was delayed when an election was called because the local partner, a government entity, had to put the project off to deal with election related issues. It was further delayed by three separate government decisions to change landing site. Each change required that design and costing specifications be recalculated.

In two projects, one in each of Ghana and Vietnam, government inaction resulted in companies easing off BOT efforts. In the Vietnamese case the applicant firm and its partners signed a joint venture agreement with the Vietnamese Ministry of Transportation and Communications in 1992 for an airport BOT. They pursued the concession agreement through 1996 to no avail, at which point they decided to terminate pro-active efforts.

The aforementioned Vietnamese project was also one of four INC projects where the general political environment was cited as an impediment. The former U.S. embargo of Vietnam made it a high risk country for private investors, and none of the financiers

approached by the Canadian partner were willing to invest in the project. An applicant pursuing a project in China also reported that financing was difficult to raise because the "political and foreign investment climate is poor." Applicants working in Jordan and Cambodia also reported political instability as a significant deterrent. The political threat in Cambodia was reported as being both general and project specific. In regards to project specific risk it was suggested that the Khmer Rouge might have a particular strategic interest in disrupting the applicant's project. In an effort to mitigate this threat one reviewer suggested that "as for Khmer Rouge, recruitment of local people in the project would by implication mean involvement of any Khmer Rouge in the area and substantially reduce the propensity on their part to try to disrupt it."

Political risk has also brought itself into PPI projects through foreign aid contributions which are either directly related to the project in question, or as an accompanying incentive. In Central America, European aid money is commonly used to leverage the chances of European nationals pursuing projects in that region. Japanese aid and credit are often used to gain similar influence in Asia. On two occasions INC-supported firms lost out on airport projects in Asia due to the weight and conditionality of Overseas Economic Cooperation Fund (OECF) credit which Japanese competitors brought to the project. In the OECF case in China, it was recorded in the project file that "the proposal to form a joint venture...is now in jeopardy as OECF, which has been requested to fund construction of the new terminal, does not fund projects involving a foreign partner...such would be subsidizing foreign competitors of Japanese companies." In the Indonesian case the Canadian firm still has a good chance to secure a $20 M BOT deal for the development, management, and operation of the existing terminal, including expanding and upgrading the apron, the terminal building, and the car park. However, the Canadian firm submitted a bid for the construction of the new terminal building as well, but, the Indonesian government decided to develop the new terminal with an OECF loan instead. The Canadian firm has also noted the existence of other potentially serious political risk factors in Indonesia, particularly the potential for political instability and a change in policy direction subsequent to President Suharto's upcoming succession.

There were four reported instances of social-political risk as potential sources of trouble. These all involved resettlements. These instances are considered social-political risks because such a decision would be a decision of the government. The four projects included one in each of Vietnam (1,200 people), Cuba (1,000-1,5000 people), Laos (3,000 people), and Pakistan. In the case of Vietnam the project was considered "very risky" from the outset because of the relocation issue. In fact, it was reported by INC that the World Bank refuses to fund hydro sector projects in Vietnam largely because of the resettlement problems. In the Laos project, the firm reported poor project economics combined with the relocation of 3,000 as reasons that "further studies should be deferred until more attractive conditions prevail."

Legal and Regulatory Risk

Thirteen instances of legal and regulatory risks were reported in the projects analyzed during this research. In addition to the projects reflected in the data there are also a number of on-going projects which have, or are likely to experience constraints of legal or regulatory risk. The following discussion of these constraints should lead the reader to understand that there is a need to know and respect the legal and regulatory frameworks within which applicants are going to be working. Efforts should be made by applicants to familiarize themselves with legal and regulatory constraints early on, as legal and regulatory issues set the parameters within which a project must operate, and not vice versa. It is the opinion of this writer that the legal and regulatory risk examples which follow mirror the political and social risk issues outlined in the discussion of theory in Chapter Two, and that the nature and frequency of these examples constitutes sufficient proof that, in terms of legal and regulatory risk, INC's experience reflects the theoretical base of knowledge regarding impediments to PPI project success. The purpose of presenting the following examples is to provide evidence that significant manifestations of legal and regulatory risks have impeded INC-supported PPI projects.

In most cases of legal and regulatory risk the problems which arise pertain to constraints imposed by laws and regulations. However, the absence of appropriate laws and regulations can also constitute risk. In the case of an INC-supported effort to build a hazardous waste facility in Mexico, for instance, the lack of appropriate legal and regulatory frameworks was reason enough for investors to shy away from the project. Due to the particular nature of the project, and the potential liability issues, it is understandable that investors would want the comfort of some defined parameters for operation. Not only could investors not be found for this reason, but the government also came to recognize the problem, and has since abandoned the project in favour of focusing on establishing appropriate laws and regulations to govern the hazardous waste industry. The applicant reported that "le pays devait commencer à appliquer une réélementation environnementale et specifier des normes techniques avant de penser d'implanter le proejct."

A lack of defined laws and regulations also caused problems in an INC-supported pipeline effort in Ghana. Problems in this case were severe enough that INC and the applicant jointly decided to terminate INC funding. In this case the problems stemmed from the fact that there was no regulatory framework guiding the bureaucrats on how to deal with the project. Subsequently, the applicant was met with a wall of resistance at the bureaucratic level, and eventually went over the heads of the bureaucrats and sought approval at the Cabinet level. The government, sympathetic to the plight of the applicant and the complaints of other potential foreign investors, is now putting a law through parliament establishing a "frustrated investor's committee" which will be a regulatory body set up to look at foreign investment projects and particularly at infrastructure projects. The applicant reports that it is still monitoring progress in Ghana regarding the general amenability of the local environment to such private initiatives, and the firm plans to resume its efforts there if and when a more appropriate legal and regulatory situation arises. Although the firm has made some ground in taking actions like this, the process has been long and difficult and the development costs have increased accordingly.

In projects in China, Indonesia, and Guatemala a lack of appropriate legislation was cited as a primary constraint. In the final report of a potential port sector BOT in Guatemala the applicant stated that the government will need to introduce legislation for private involvement in ports if the project is to progress. In a Cuban project it was reported by one person reviewing the file during the circulation process that "other than the *Investment Law* which technically permits such an investment, no other regulatory framework can be relied upon." Finally, in the case of an airport BOT in Indonesia there is no enabling legislation so the applicant firm is working with the Indonesian authorities to shape telecom legislation to suit the airport sector.

In the case of a Pakistan power project, information received from the Canadian High Commission details local efforts to enact a basic legal and regulatory framework under which the project can proceed. Such information reveals just how complex it is to establish an appropriate legal environment. Some of the issues noted as needing fine tuning before a project can go ahead are issues surrounding water usage and water rights, environmental regulations, BOO vs. BOT structure, government off-take guarantees, government provision of transmission lines, taxes on imported equipment for hydro power facilities, and discussion of the role of provincial governments in such projects -- as partner or as regulator.

These examples illustrate problems which can arise from the lack of a legal/regulatory framework; however, the presence of such a framework can also be a constraint. Four INC-supported projects reported that problems arose due to jurisdictional uncertainties in the host country. Jurisdictional complications were reported in the Ghanaian case outlined above, as well as in the case of a pipeline project in China, a potable water project in Indonesia, and a hazardous waste project in Argentina.

The most frequently cited legal/regulatory constraint in INC-supported projects involved rigid tariff rates, and rates of return (ROR) which were entrenched in law and were inflexible. Several applicants reported concerns or problems of this nature in China, as did

applicants pursuing projects in Laos and Indonesia. This will likely also emerge as a problem in other countries including, perhaps, Cuba.

In China, for instance, a power initiative was premised on a ROR in excess of the (then) ceiling rate of 15-16%. The ROR was not sufficient return for the investors, thus, the project was deemed commercially unviable due to regulatory constraints. In the case of a coal terminal project in China profitability was premised on an assumption that the government would move to open market determination of pricing, costs, and rates of return, and that the joint venture would be able to set handling charges which the applicant says will otherwise be subject to political influence and constraints. Two other projects in China were also found to be commercially unviable due to RORs being too low to satisfy investors needs. Regulated tariff rates (among other things) did not allow for commercially viable returns to be generated.

In Laos, a power plant project also proved unviable based on present energy rates, while the commercial analysis for a power plant in Vietnam was premised on the willingness of the government to "raise power tariffs to reflect the true cost of power production." In Indonesia a new proposal may well succumb to problems associated with regulated tariffs. The project is already fragile. It is small in size, premised on a 20% return on equity, and, in addition, the firm will have no say in the tariff rate it can charge as such rates are standard rate for all private power concessions of medium and small sizes.

Regulated levels of technology also compromised the commercial viability of some projects. In China, for instance, an applicant reported technical discussions with the Chinese to be much lengthier than expected, noting "we came to realize that power plant design parameters followed different rules in China than the ones normally recognized in the Western world. We, therefore, had to adjust our way of approaching the project." Such changes in technology have significant implications for initial capital investment estimates, but also for long term costing considerations. A second power project in China experienced similar problems as "the primary constraints at this point stem from the Chinese regulatory

process." The primary remaining points of discussion in this case are all regulatory in nature, including the level of technology to be used, and discussions of mechanisms to adjust the prices of coal, steam, and electricity.

Other legal/regulatory risks included environmental issues in one case, and the potential for environmental risk in others. In the case of a potential power facility in Cuba, the project is sited for a location deemed by UNESCO to be an environmentally sensitive heritage site.

Finally, deregulation was a risk issue in two projects. In Jordan, truck deregulation impacted negatively on the commercial potential for a rail project. Deregulation of the gas sector in Ghana impeded progress on a gas distribution project in that country.

Commercial Risk

Eleven INC projects analyzed in this research were rendered unviable due to commercial risk issues, while several additional newer projects appeared to be premised on very tenuous commercial assumptions and may well yet succumb to commercial risk. It is the opinion of this writer that the commercial risk examples which follow mirror the commercial risk issues outlined in the discussion of theory in Chapter Two, and that the kind and frequency of these examples constitutes sufficient proof that, in terms of commercial risk, INC's experience reflects the theoretical base of knowledge regarding impediments to PPI project success. The purpose of presenting the following examples is to provide evidence that significant manifestations of commercial risks have impeded INC-supported PPI projects.

Commercial risks often stem from physical constraints on PPI projects which are linked to the site-specific nature of PPI projects and the fact that they cannot usually be relocated to take advantage of more favourable market dynamics. In the cases of most consumer goods and services, markets are not pre-defined and finite, as they are in the cases of

most infrastructure services. Whereas shoes can be redesigned, marketed differently, or sold into a different market if at first they do not succeed, there is relatively little that can be done with most roads if ridership is insufficient. Commercial project parameters are generally preset in the case of PPI projects; thus, providers must configure the internal aspects of the project to suit the constrained commercial framework they are given to operate in. These parameters have proven unworkable in the cases of several INC-supported projects.

In the case of a gas pipeline project in Malaysia and a power project in China, the markets to be served in each case were determined to be of sizes that made the commercial viability of the project marginal. There were some options noted which might be able to increase market size and increase the scale of operations in the case of the pipeline, such as cross-subsidizing residential markets with industrial clients. However, in the case of the China power project, there is no such option and the scale of operations is too small.

Project size was also an issue in a combined waste water/power project in China. The project was scaled back by authorities to include only the power project, which is not of a commercially viable size. According to the applicant "small plants like this would become obsolete with the development of large more efficient plants. The high cost of the project technology relative to energy commodity and waste water services revenues, combined with the uncertainty of inflation and exchange rate behaviour give the project a 10% chance of exceeding a 4.4% rate of return." The small size of a recently approved power project in Indonesia will likely bring that project initiative to an end in due course if pursued on a BOT basis. The $5 M will not likely be able to realize economies of scale producing adequate commercial return if done as a BOT. As was stated by one reviewer during the circulation process "the size of project of only $US 5 M is not sufficient to justify financing on a complex, limited-recourse basis. Legal, financial and development costs will render the project uneconomical."

Both of the railroad sector projects which INC has supported proved to be commercially problematic. In the case of a rail rehabilitation project in Jordan, in addition to truck deregulation translating into increased transport competition, market uncertainty and falling phosphate prices were also reported as a threat to commercial viability. In the case of a Venezuelan railway rehabilitation study, the project proved commercially unviable due to the fact that the track was originally built to serve political desires rather than commercial purposes. The track routing was sub-optimal and sufficient traffic could not have be generated to warrant the cost of the rehabilitation. In the final report, the applicant concluded "the results of the initial study indicate that there are no instant opportunities for private investors willing to participate in the construction, maintenance, and operation of the railway system."

In the case of a port terminal in China, questions of commercial viability have arisen because the government has required that the port be a low-tech facility. With low labour rates in the region at present a low tech solution is currently viable. However, the prospect of increasing labour rates, and potential competition from mechanized port facilities near-by, would cause the commercial viability of the project to deteriorate over time.

The commercial viability of a relatively new, large power generation project in Cuba is built on optimistic commercial assumptions which might eventually prove problematical. Specifically, the project's commercial viability is premised on the rate of power increasing by 20% over three years. Assurances from Cuban authorities for such an increase might be hard to get with the level of certainty that investors would need.

Creditworthiness was reported as a constraint in two INC projects. In the case of a pipeline project in China the applicant was reportedly unable to obtain a creditworthy payment guarantee. In the case of a waste water treatment facility in Indonesia the key factor in making the project viable is obtaining assurances that the users will pay for the service. The applicant is convinced that they can not rely on the government to enforce users to pay, yet, the applicant does not have the authority to shut-off service for non-payment.

Finally, one applicant was involved in six bids on gas concessions in Argentina. The applicant lost the bids and reported that the winning bids were all well below what was considered by the applicant and its partners to be commercially viable. Competition is the primary market constraint in the one telecom project INC has supported as competition has been described as being "furious." Although competition is a factor for almost all businesses, it is more severe in the case of PPI projects because the parameters for competition are defined by the government and because the market parameters are largely inflexible.

In sum, commercial risks will be largely a function of a market situation and configuration, input prices, competition, pricing regulations, and such. These are largely outside the applicant's capacity to change.

Economic Risk

Economic risk factors were listed as primary constraints in six INC-supported projects. It is the opinion of this writer that the economic risk examples which follow mirror the economic risk issues outlined in the discussion of theory in Chapter Two, and that the kind and frequency of these examples constitutes sufficient proof that, in terms of economic risk, INC's experience reflects the theoretical base of knowledge regarding impediments to PPI project success. The purpose of presenting the following examples is to provide evidence that significant manifestations of economic risks have impeded INC-supported PPI projects.

Economic risks included questions of access to foreign exchange, threats of inflation, and the Peso crisis. Similar to legal, regulatory and commercial risks, economic factors also set the parameters of the environment within which a project must be structured and not vice versa. Guarantees to cover potential areas of volatility provide the best protection against economic risk. There must be someone willing to assume these economic risks, be it a member of the project company, the local government, or an insurer.

The Peso crisis is the most extreme example of economic risk among INC-supported projects. At least three PPI projects under study at the time of the Peso crisis were impacted by its consequences. Applicant D's rapid transit system project, for instance, was impacted upon when the Mexican government canceled the concession following the Peso Crisis. According to Applicant D, "suite à la dévaluation du Peso Mexicain a compter du 20 décembre 1994...le gouvernement de l'état a revoque la concession au mois de février 1995." The Applicant's project was an $850 M rapid transit project which the group had been working on for nearly 10 years. Applicant D has since secured a third tranche of INC funding to resume its efforts in this very risky project. Applicant D is now attempting to secure another concession. The new version of the project has obtained the authority of the President, the Minister of Transport, and the Governor of Guanajuato. Local transport projects are among the most risky of PPI sectors in LDC, because of the exposure which comes from the combined facts that revenue streams are usually wholly in local currencies, while loans are typically in stable foreign currencies. This knowledge, combined with Mexico's volatile economic history, makes the Applicant's initiative an incredibly high risk endeavour. As such, solid and secure risk mitigation measures are critical. (There is much documented evidence of the consequences of economic volatility on PPI transport revenues, including in the case of Mexico's toll road initiative as detailed in Chapter 2 of this thesis). An exchange rate guarantee will likely be necessary to raise financing for this project and could be a primary requirement of the applicant early in the project.

A potable water project which was under study in Mexico was also rendered unprofitable due to the devaluation of the Peso. The firm reported to INC that "la dévaluation de la monnaie (pesos) en 1995 a modifié considerablement le rentabilité du projet. Les partenaires Canadiens (manufacturiers) n'étaient plus interesse à cause de mauvaises expériences financières au Mexique."

In Indonesia, Applicant E is having difficulty with issues of economic risk, in its efforts to secure an airport rehabilitation PPI project. Applicant E and the local government are currently negotiating details of a concession agreement for the airport project. One of the

remaining points of negotiation regards fee payments to the government. Applicant E will be required to turn a portion of revenues over to the government, which currently owns and operates the airports. Although Applicant E's revenues will be generated largely in local currency, the government wants to be paid in US dollars, illustrating that not even the government is willing to take its own foreign exchange risk.

Economic risks have also appeared as risk factors in projects in China. In one case the issues of potential inflation and exchange rate fluctuations were factored into a risk analysis to render a power project unviable. In fact, a BOT model was used to assess risk in this project, specifically, to assess the impact of risk exposure stemming from what it denoted as three key variables, foreign exchange constraints, obsolescence, and inflation. In a second project in China the limited availability of foreign exchange was cited as an impediment. In a third Chinese project the applicant reported that "unstable financial markets caused by devaluations of several currencies in the area caused delays of six months or more in receiving favourable responses in the financial market."

Foreign exchange issues will likely also be primary concerns for the three power projects INC is supporting in Cuba. In at least one of the Cuban projects the firm expects payment for the $400 M project to be generated completely in US dollars.[96] However, little evidence has been offered, thus far, to suggest this is a realistic target. The applicant has said that payment in foreign exchange would be ensured through pledges, assignments, and tariffs which will be in place. The only guarantee they have specified, however, is a service tax on tourists. While this may appear initially as a guarantee, it is, in reality, simply a shifting of risk. With such a facility, financiers would have to add a consideration of the volatility of tourist traffic to their risk analyses. And, as one financial expert said when asked during the course of this research about the validity of such a guarantee, all it would take would be one bomb or a hurricane to negate the value of such a guarantee facility.

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[96]This also raises questions regarding the developmental value of the project. Specifically, should CIDA be supporting projects with the capacity to drain valuable foreign exchange reserves from needy countries?

Any project financing relying on locally denominated currencies in Mexico or another country with such volatile economic history should be required to give very early evidence of adequate insurance or guarantee facility availability. Further, countries known to have minimal foreign exchange reserves should be able to offer early proof that their needs in these regards will be met.

Technical Risk

Only two instances of technical risk have been reported in INC-supported PPI projects to date. This is partly due to the fact that technical risks appear more frequently during the construction and operational phases of projects, and only two projects have progressed to such phases. These early examples are evidence that the sorts of technical risks which are detailed in the theory of PPI failure have appeared in INC-supported PPI projects.

Technical issues are difficult to see from the outset; however, they can cause major cost overruns during construction and operation. A PPI project company should look to contract turnkey construction and should require completion and performance bonding as insurance. Technical risks were reported to be a significant constraint in the case of the a hazardous waste facility in Mexico. In this case the applicant company came to realize there was a significant degree of uncertainty as to whether the available technology for such a huge site was adequately refined. In the words of the applicant "there is uncertainty regarding the current technical capacity available for hazardous waste disposal, rendering such a large project questionable." The second reported instance of technical risk was in conjunction with a waste management (and recycling) facility in Mexico. There were several reported problems with the project not the least of which was the fact that the necessary technology had not yet been perfected.

Management Risk

Management risk was reported in three INC PPI cases. Management risk was considered to include cases where there was evidence that the project management was poor enough to be a serious threat to the viability of the project. The threat of management related risks will likely increase as projects proceed and as management skills become increasingly important; thus, the cases reported here are likely just a few early signs. In one case it was reported by the project manager that a primary constraint on the project stemmed from the fact that the there was "a lack of due diligence, inexperience, incompetence, and a lack of commitment on the part of the Canadians." In a second case a project manager reported that the "Canadian firm is naive and inexperienced and should probably have aimed to gain BOO/BOT experience by working on smaller projects in less complicated host states."

Force Majeure Risk

Force majeure has not frequently appeared as a risk factor in INC-supported PPI projects. However, based on the short life span most of the projects this is not unexpected as *force majeure* can impact with equal probability at any point in the project cycle. *Force majeure* is by no means exclusive to PPI projects; however, it is more detrimental to these projects as their assets are physically constrained to one geographical location. Furthermore, because PPI projects are carried out by single-purpose companies, if the revenue stream from the PPI project is disrupted, there is no alternative revenue stream to sustain the company in the interim.

The original (pre-INC) work on a rail rehabilitation project in Jordan illustrated evidence of being seriously constrained by threats of instability. The original study on the project was done in 1990 but shelved due to the Gulf War.

Similarly, efforts to develop the Kam Chay Hydro Dam in Cambodia were conceived of in the 1960s, but put on hold until recently due to civil war in that country. The threat of overall political stability of *force majeure* degree still exists and was considered the main reason the project was not pursued on a private project finance basis. There are several countries, including Cambodia, which can probably be considered to carry too much a social or political *force majeure* risk for financiers to be interested in dealing with on a project finance basis. If such proposals are received from countries where political and social *force majeure* are known risks, the possibility of obtaining *force majeure* risk coverage (an unlikely prospect) might provide a reasonable early basis on which to screen such projects.

CONCLUSION

This chapter has offered the reader an understanding of the types of PPI projects which INC has supported, by analyzing the sample by fiscal year, country, region, and sector of activity. This chapter has also assessed INC's level of performance in PPI projects by ascertaining the level of success which INC has, or is likely to achieve, in supported of PPI projects. Finally, this chapter has tested the hypothesis that *INC supported projects have been impeded by manifestations of a known and defined set of high risk issues*.

The evidence presented in accomplishing the aforementioned purposes has demonstrated that few INC PPI projects have been successful to date, and that few of the projects currently in progress are expected to be successful. INC's performance was also demonstrated in relative terms, wherein it was shown that INC's success rate in support of PPI projects has been far below its rate of success in support of projects in general. Subsequently it was concluded that INC has had little success in the early efforts to support PPI projects.

Once it was determined that INC did, in fact, have few successes thus far, the next step was to determine why, and whether the impediments experienced were consistent with the

impediments detailed in Chapter Two as being most likely to impede PPI projects. The evidence recovered in analyzing the relevant sub-sample illustrated that most of the significant impediments mirrored those outlined in the theory, and that these impediments were reported with significant frequency. With this evidence it can be concluded that *INC PPI projects have been impeded by manifestations of a known and defined set of high risk issues*. As such, the hypothesis can be considered to be affirmed and, by extension, it can be asserted that the theory of PPI failure detailed in Chapter Two does explain the INC experience.

The evidence outlined in this chapter has provided information regarding INC's performance thus far. In doing this, possible remedies and policy directions which can be taken to enhance INC's performance in future PPI project support have become evident. With knowledge of the theory of why PPI projects fail, it becomes evident in reviewing the INC PPI database that in many of the INC-supported projects there was evidence of PPI risk all along and that, therefore, in many cases the projects stood little chance from the outset. If these projects had been evaluated on the basis of project viability (taking account of risk issues detailed in the theory) they would not likely have been approved for funding.

In future PPI work, INC can make use of the theoretical understanding of PPI projects and INC can use it as a mechanism by which likely impediments to projects proposed can be revealed early on. As such, the theory is of value as it can have a functional purpose acting as a filter or screening mechanism providing a basis on which future PPI proposals can be reviewed and considered for funding. The final chapter of this thesis will involve prescribing policy directions based on the theoretical and practical knowledge detailed in this thesis. The aim of the policy direction is to enhance INC's success in leveraging Canadian firms' PPI work in developing countries. The policy direction recommended in the final chapter will centre around the suggestion that INC establish a new funding mechanism for PPI projects, with a risk identification and analysis capacity, informed by the theory outlined in Chapter Two, as the central structure of the mechanism.

CHAPTER 4:

INC POLICY DIRECTION

INTRODUCTION

Having illustrated that INC has had few success in its early efforts to support PPI projects, and having theoretical knowledge of where the problems in these projects tend to arise, it is the purpose of this final chapter to use this evidence and knowledge to make recommendations to INC as to how it can be more effective in its support of PPI projects.

The INC evidence presented in Chapter Three revealed that INC has extended significant amounts of money to very risky projects. Such evidence will not be reiterated here, but to recap, this included a project which was attempted in an environment of major political instability, projects without adequate legal or regulatory environments to legitimize and support them, and several projects wherein commercial terms were inflexible. INC's funding of such projects is evidence to this writer that projects which should not be receiving funding have been and that, therefore, the current process through which PPI proposals are screened for funding is not sufficient. Consequently, it is the opinion of this author that the proposal screening process needs to be amended for this group of high-risk projects. The purpose of this final chapter, therefore, is to propose recommendations regarding a new, PPI-specific funding mechanism.

The thought process behind the design of a new funding mechanism is three-fold. *First*, a mechanical application process suited to PPI projects will be defined. The new mechanism will be designed with two things in mind, the faults of the current mechanism and the demands of PPI projects. *Secondly*, attention will be given to particularly important aspects of the proposal assessment process. This will involve discussion of project viability as a function of project size; assessing applicant commitment; assessing downstream

financing commitments; and assessing agreements and contracts. *Thirdly*, surrounding INC policy issues will be reconsidered and refocused to suit PPI projects. This will involve consideration of the following issues: which projects to include under a PPI mechanism; eligible expenses and cost-sharing; the question of bid support; firm size and other eligibility criteria; project funding vs study funding; and repayment. In this chapter these policy and process issues will be discussed, and recommendations will be made to INC as to how a new mechanism should be structured and how it should be supported by a surrounding policy framework.

Prior to embarking on the aforementioned steps, however, this chapter will begin by clarifying two other issues. *First*, lingering myths that a new funding mechanism is not needed will be dispelled. *Secondly*, recommendations will be made regarding how to structure the review of PPI proposals within INC, so as to deal with them most effectively, and so as to build a critical mass of PPI expertise.

ARGUMENTS AGAINST A NEW FUNDING MECHANISM

In the process of researching this thesis, some INC project managers argued that there is actually no need for a new funding mechanism. Three points were raised in this regard.

First, it was argued that a new mechanism is not needed because current mechanisms are flexible enough to accommodate PPI projects. While it is the case that the current mechanisms *can* be used effectively in this regard, the evidence illustrates that current mechanisms *have not* been so used. Adequate assessment of PPI proposals under the current mechanisms requires specialized knowledge. As was said in *Euromoney*, "there are maybe 50 people worldwide who know what they're doing in this very specialized area."[97] The *Institutional Investor* puts the number higher, at 75, but either way the point is clear. A more directed approach to screening proposals can and should be

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[97]Norman Peagam. "The Hunt For A New Source Of Capital," p. 224.

implemented. This can be accomplished by structuring a new mechanism to directly address and draw-out pertinent risk issues, forcing the weaknesses in a project to become front and centre, and requiring a proposal to be judged on the basis of these weaknesses. A new mechanism can also facilitate proposal review, and it can standardize decisions, bringing a needed level of consistency to the PPI review process.

Secondly, it was said that PPI projects are no different in terms of risk than other projects which INC deals with. On the contrary, this thesis (particularly the introduction to Chapter Two) has illustrated in theoretical and practical terms that PPI projects experience levels of risk which other projects do not experience.

To reinforce the uniqueness of PPI risks, one need only refer again to the Enron case study and the quote which makes the difference between PPIs and most other investment projects so clear. "Besides Joshi's political gymnastics, the project has been battered by bomb blasts, plagues and riots. It has been through 30 government agencies, 170 formal approvals, nine court cases and 39 months of gruelling negotiations. And the end seems no nearer."[98] Shoe factories simply do not face such monumental and enduring hardships. For the most part, the bargaining power in manufacturing-based investments favours the investor, and governments are left to do little but compete with one another to attract foreign investment. The idea of raising barriers so as to, for instance, force a potential shoe factory investor through 170 formal approvals, is unthinkable. The potential investor would simply set-up shop next door. Even in natural resource based projects, although the government does have leverage because the projects are site specific, the lure of value-added work gives the private firm significant leverage to counter with. For many reasons, including the fact that PPI projects are site specific, and including the fact that they involve the transfer of critical government policy issue areas to the private sector, governments have excessive bargaining power in the negotiation of PPI deals. Subsequently, PPI investors have less control over their investments, and they are forced to tolerate a much

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[98]Ben Edwards. "The Mugging Of Enron," p. 28.

higher level of duress than would be tolerated in most other foreign investment initiatives. PPI projects are, on average, more risky, complex, and difficult to execute than other foreign investment projects.

Additional evidence in support of this position is also implicit in the methods various organizations have used to internalize PPI expertise. In the cases of banks, firms, and EDC, all have chosen to build specific units onto their corporate structures to handle project financings. They have done so because they recognize such projects to be a unique grouping of projects demanding a distinct skill set. Furthermore, many sources external to INC which were consulted during this research were asked about the premise at debate here, and all agreed that PPI projects do have unique risk profiles.

In the *third* argument made against a new mechanism, it was put simply that, "if it's not broken, don't fix it." However, it clearly is broken. With a PPI success rate of less than 10% one would be remiss not to acknowledge that, if not completely broken, the funding structure has at least a gaping crack in it. Such a success rate speaks loudly of the problem, being that with the current funding mechanisms available to project managers it would be very difficult for INC to fulfil its mandate within the scope of this grouping of projects. There is a problem, and there are means to address it.

STRUCTURING A NEW MECHANISM WITHIN INC

Consideration will have to be given to how a new mechanism is fitted within the current INC structure. Within INC, work is distributed on a geographical basis, with each project manager being responsible for all projects in one or more countries. The only exceptions are the cases of each of China and India where the volume of activity has required that work be divided sectorally between two project managers. A new funding mechanism could be brought into the INC structure in one of four primary ways.

1) The new mechanism could be introduced and used by project managers in the regular course of their business under the current geography-based structure.

2) The new mechanism could be introduced and used by project managers in the regular course of their business under the current geography-based structure, and a copy of each proposal circulated to an external project finance specialist for comment during the circulation process.

3) The new mechanism could be introduced and used by project managers in the regular course of their business under the current geography-based structure, and a copy of each proposal circulated to an internal project finance specialist for comment during the circulation process.

4) INC could establish an internal PPI unit to take care of all PPI proposals. The unit, for example, could be comprised of one PPI person for each geographic area. During the circulation process PPI proposals originating in the PPI unit could be circulated to the relevant geography-based project manager within INC, who could review it as a country/private investment specialist.

There is a long learning curve to climb in conjunction with understanding the dynamics of PPI projects. If the new funding mechanism is simply integrated into the INC structure as is (ie. as per option 1 above), with no other procedural changes, there will continue to be little capacity to really learn from ongoing experiences because no single project manager will be likely to deal with the critical mass of PPI projects that is required for the learning process to take-off. It would be preferable, from the perspectives of efficiency and effectiveness, if responsibility for PPI projects is narrowly concentrated within INC so that

expertise is able to grow. Thus, option 1 above would not provide the best possible solution.

Option 2 above would also be a sub-optional solution. There would simply be too many PPI proposals to reasonably circulate to an external source for PPI-focussed review. Further, use of an external reviewer would not enable INC to build its own internal expertise, which should be among the ultimate goals of the restructuring process. INC is likely to continue receiving PPI proposals for a significant time hence, thus, making the internalization of PPI knowledge a worthwhile investment.

The option of proposals originating with country-based project managers, and being circulated to an internal PPI specialist (option 3) would also be a sub-optimal solution. Such a procedure would result in a duplication of work, as proposals would have to be reviewed in detail by two people (the project manager and the PPI specialist) rather than being reviewed in detail by one person, with the specialist providing only a targeted review of specific components or facets of a project. The circulation of a PPI proposal to a PPI specialist would have to be met with a thorough and detailed review, consideration for approval by the expert would have to be based on an understanding of the project as a whole, since a PPI assessment pertains to the entire project, not just to an isolated facet of it.

Option 4 would provide INC with the most thorough, effective, and efficient means of reviewing PPI proposals; thus, it is this option which is being recommended herein. To recap, the idea is that one, two, or three INC personnel be designated to deal with all PPI projects, in essence constituting a PPI unit within INC. PPI proposals would originate with the PPI specialists and during the circulation process they would be circulated to the regular list of people, as well as to the relevant geography-based project manager within INC, who would review it as a country specialist. PPI projects will only be optimally dealt with if handled by people with specific PPI knowledge, including knowledge of project structures, risk assessment methods, risk mitigation techniques, legislative constraints,

case studies, and the variances in PPI experience across sectors and among countries. Thus, PPI projects within INC would be best served were INC to create a distinct unit for them.

A PPI unit within INC would assure that the highest possible level of expertise is engaged to review PPI proposals, and it would ensure consistency in how projects are evaluated and dealt with. Further, locating such work within a distinct unit with a small number of people would facilitate the establishment of contacts and relationships with the project finance community outside of INC. This is an important issue both in that it would enhance INC expertise and that it would respond to the desires of the Canadian private sector who, through the Kilmo report and the Industry Canada consultant's report have called for greater coordination among the project finance community at the support level. The appropriateness of such a structure is also evident in that it is reflective of the way others (EDC, banks, and many private firms) have chosen to internalize project finance expertise.

It was suggested during the course of this research, that the decision to create a PPI unit within INC might be met negatively by project managers. This is a an important point. However, more important is the fact that under the current structure and process INC's mandate is not being met within the scope of PPI projects. These facts, combined with the fact that PPI work can be most effectively and efficiently done by those with specific and dedicated expertise, should, in the opinion of this writer, outweigh other concerns.

HOW TO STRUCTURE A NEW PPI FUNDING MECHANISM FOR INC

Problems With Current Funding Mechanisms

Current INC funding mechanisms do not solicit the information necessary to adequately assess PPI proposals and to differentiate between them. There are three primary problems with the current mechanisms.

First, the current INC funding mechanisms employ a narrow definition of developmental benefits. Subsequently, complete and accurate information about the developmental impacts of PPI projects is not generated. Developmental benefits are considered to include social, gender, environmental, and job creation benefits. This negates the fact that infrastructure of basic necessity has inherent developmentally beneficial qualities. Basic infrastructure projects do not attain developmental valuable because of, for instance, add-on WID components.

Secondly, the current funding mechanisms do not solicit information regarding project viability. Under the current mechanism a firm completes an application for funding responding primarily to questions regarding the benefits of the proposed project. The formal structure does not ask about the greater costs associated with the project, nor does it ask about the problems associated with the project. Subsequently, an optimal funding decision can not be made based on the information garnered by the current application process alone. The inclusion of questions regarding benefits and development issues is important, it is also likely premature and incomplete. To ask how women are going to be brought into a particular project, without first asking whether it is within the bounds of the law for the private sector to do the project in question, for instance, is insufficient. *Thirdly,* current funding mechanisms do not demand information regarding project risk to be brought to the fore. There are no formal questions put to the applicant regarding which PPI risks the project will be most vulnerable to, how viable the project is in light of these risks, or what the probability of implementation is. While funding decisions are to include consideration of project viability, such assessments can not be meaningful without knowledge of the risk issues the project faces. The current funding mechanisms tend to focus on garnering information regarding benefits -- particularly social, gender, environmental, and employment benefits. This focus overshadows concerns about project viability, risks, and costs. Regardless of how good of a case an applicant can build for a PPI project in terms of benefits, there are basic go/no-go points which override all other considerations. These go/no-go points centre around the risk issues outlined in Chapter Two and they involve factors which will define the environment and parameters within

which a project must operate. If, for instance, an applicant submits a proposal to INC for a power project in China, if the project economics are premised on any divergence of the power tariff from its current rate the project should probably be considered a non-starter, regardless of how good the Canadian benefits might appear to be. Similarly, if an applicant submits a proposal to INC for a gas-fired power project in India, and the applicant can not show proof of a government gas allotment, the project should probably be considered a non-starter regardless of how well conceived the gender, social, and training considerations are. In virtually all cases of PPI projects, issues outside of those addressed within the current INC application structure are, in fact, the issues which will determine whether or not a project is a success.

There is no formal capacity within the application process for applicants to be asked the most basic and essential questions. This is problematic and a new INC funding mechanism should address this by being structured so as to force the problems with projects to be taken into consideration by the project manager in deciding whether to approve a proposal.

It is the recommendation of this author that risk identification and risk assessment be the primary purposes of a new PPI funding mechanism. As such, the central focus of the application process should be a structure capable of drawing-out information about risks the project is likely to face. This is important for all projects, but is particularly critical in PPI projects because of the fact that their defining quality is a high risk profile. A mechanism is needed which draws-out the complications and fundamental flaws in projects as it is these flaws which will determine whether projects can succeed.

Risk Identification and Assessment Mechanism

As mentioned, it is recommended that the central focus of the application process should be a structure capable of drawing-out information pertaining to risk and project viability. In this section recommendations will be made regarding the incorporation into the proposal review process of a mechanism capable of screening PPI projects for viability and risk.

There are two ways to deal with risk identification and management, through the *traditional approach*, and the *risk management approach*. In the *traditional approach*, project developers use intuition and the rules of thumb to respond to risk elements. The *risk management approach*, however, "tries systematically to identify, to analyze and to evaluate risks in order to consider an appropriate response strategy from among different alternatives."[99] The *traditional approach* is responsive, unstructured and based on intuition, whereas the *risk management approach* is systematic, analytical, and strategic. This writer recommends that a structure consistent with the *risk management approach* be the focal point of a new funding mechanism, and suggests that it be used in tandem with "intuitive judgement, brainstorming meetings, and personal experience of the risk analysts."[100] Subsequently, there is, in fact, a need for aspects of both the *traditional approach* and the *risk management approach* in PPI risk identification tasks.

To formally identify risks, (as per the *risk management approach*) a structure akin to a PPI template or lens is needed so projects are viewed, first and foremost, as PPI projects. The purpose of such a lens would be to look for evidence of PPI risks and to force early identification and preliminary assessment of PPI risks. There are several potential risk templates which could be used as such, and many of these were outlined in Chapter Two. The way in which risks are managed will be largely determined by how risks are classified for identification purposes. Different authors have different conceptions of how risks are best classified, and each classification system forms the basis of a potential template which might be able to serve INC's needs. However, as was illustrated in Chapter Two, some risk templates are more comprehensive and effective than others. Some templates fail to force the user to investigate particular high-risk PPI issues because categories are too broad, while others have very narrow and limiting categories neglecting entire issue areas all together. It is the opinion of this author that the system used to categorize risk in Chapter Two of this thesis reflects the most effective way to classify risks for INC's

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[99] Antonio Dias Jr. PhD thesis, p. 99.

[100] C. Walker and A.J. Smith. *Privatized Infrastructure: the BOT Approach*, p. 162.

purpose, and that it could provide an effective mechanism and structure for the risk identification process within a new PPI funding mechanism. The structure of the following discussion mirrors the framework of the risk presentation in Chapters Two and Three, and it represents what this writer considers to be the most logical way to classify risks, for INCs purposes. In recapping the preferred risk identification framework from Chapter Two, additional details will also be offered. Specifically, in conjunction with each risk category, several questions which are capable of generating the information needed to assess risk in consideration of the evidence presented in Chapter Two, will be noted.

1) Legal and Regulatory Risk

In seeking to identify and assess legal and regulatory risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- Is the user rate or tariff flexible in the country and sector in question?
- Is there a ceiling on allowable rates of return on private infrastructure investments?
- Is there a general, or sector-specific PPI law in this country and sector?
- If there is not a PPI law regulating the project, what laws and regulations within the country and sector will provide the legal and regulatory framework for operation, and what restrictions do these laws and regulations place on the project?
- Has any other firm successfully carried out a PPI project in this sector and country?

2) Political and Social Risk

In seeking to identify and assess political and social risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- Has the host government supported any PPI projects in the past? If not, why do you think you can be the first?
- What political support is there for the project?
- Who are your competitors for this project?
- Will you obtain political risk insurance?

- What are the sentiments of the local people regarding the project?
- Will the local people be negatively impacted by the project?
- Will the project necessitate a relocation of people?

3) Commercial Risk

In seeking to identify and assess commercial risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- What is the estimated size of the project?
- Is there a creditworthy off-taker?
- What restrictions are there on the supply of fuel or other inputs?
- What sources of competition will your project encounter? Deregulation? Competing infrastructure units? Potential advents of technology rendering the unit obsolete?
- Is there a real need for this good or service? What evidence of demand exists?
- What assumptions are being made regarding the commercial aspects of the project?

4) Economic Risk

In seeking to identify and assess economic risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- Who will assume the risk of inflation?
- Who will assume the foreign exchange risk?
- What guarantee do you have that the level of foreign exchange you are expecting to generate will be made available to you?

5) Technical Risk

In seeking to identify and assess technical risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- Are you using tried and true technology?
- Do the technical specifications of your work and technology conform with industry standards in the country and sector in question?
- What risk mitigation measures will be taken with regards to construction completion, quality, performance, reliability, and timeliness of suppliers?

6) Management Risk

In seeking to identify and assess management risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the question,

- Is the firm capable of managing a PPI project?

7) *Force Majeure* Risk

In seeking to identify and assess *force majeure* risk under a PPI funding mechanism, information should be revealed pertaining to issues such as those addressed through the following series of questions.

- Is there a known or suspected threat of political or social *force majeure*?

ASSESSING PROPOSALS UNDER A NEW PPI MECHANISM

A PPI-specific proposal structure will go a long way in providing INC with the tools required to more effectively screen PPI proposals. In addition there are other issues in the review process which will need reconsideration in light of a new funding mechanism. This thesis will now address some of these issues and recommend preferred policy direction in conjunction with each issue area. The issues included in this section are, project viability as a function of project size; assessing commitment to a project; assessing downstream financing commitments; and assessing agreements and contracts.

Project Viability As A Function of Project Size

In screening PPI proposals, project size should be taken into consideration. There are differing opinions as to how small a PPI project can be and still be viable. PPI projects have very high overhead costs which increase as a portion of the overall project cost as a project is scaled down. These overhead costs include legal and financial advisory fees, as well as the costs associated with securing primary project documentation. In the case of power generation projects for instance, legally binding power purchase agreements are necessary, and regardless of the dollar value of the output, virtually the same effort at legal and financial analysis has to be put into securing these documents. The same holds true for concession agreements, fuel supply agreements, consortia and joint venture agreements, financing agreements, and so on. Subsequently, because of the high overhead common to PPI projects, a small project is not simply a small version of a large project. It is, instead, a different project, and it will likely be a less viable project.

Non-INC personnel contacted during the course of this research were asked what the smallest sized project is that they would be willing to consider undertaking on a PPI basis. Answers ranged from a cautions $15 M to $50 M. Applicants were also asked whether they would ever participate in a $5 M BOT (INC has recently provided funding to such a project). In every case a prompt negative response was rendered.

In defense of small PPI projects it was argued from within INC that a small project could, in fact, be a good and viable project because it requires less due diligence than large projects, and because it is less critical to have a watertight set of agreements in place. This line of thought, however, reflects misplaced risk assessment. This argument suggests that a smaller project will necessarily be less risky because it is less costly, and because, therefore, less money will be lost if the project fails. This is essentially saying that if two projects face identical risks, the lower cost project is the less risky of the two. This

supposes risk to be an *externally* relative measure, whereas risk, in fact, should be looked at by INC as an *internal* project measure.

It is this writer's opinion that it would be inappropriate to set a threshold project size on which funding decisions would be based. However, it would be prudent to recommend that project economics be considered very suspect and be diligently scrutinized on very small projects (under $15 M). The exception to these generalizations on project size are the cases of expansionary or rehabilitative projects which are, typically, less costly projects because much of the initial capital investments have already been made.

Assessing Commitment To A Project

In assessing a PPI proposal it is critical, though difficult, to ascertain the level of commitment of the applicant to the downstream project. One way to ascertain commitment is to understand where the INC-supported project fits within the applicant's business strategy and overall business plan. Based on the fact that the INC contribution is repayable, one can assume that projects which are sure to be successful are likely to be sent to INC for funding more than are the more risky projects. In the case of projects with minimal risk, the INC process will be seen as little more than an added cost, as there is not perceived to be any significant risk to share. This may explain why none of the many successful project financings in the telecom sector, which have shown up at EDC, have appeared at INC. One can assume that there will be a direct and positive correlation between the level of risk in a project, and the likelihood of the firm approaching INC for funding. Therefore, the projects submitted to INC can be concluded to be, in general, relatively high risk projects. This point is reinforced by an observation regarding business strategy offered by EDC. It was explained that firms will have an allotment of internal resources to chase projects each year, and that such resources will be allocated to several selected project opportunities, with the allocations being heavily skewed in favour of the least risky projects, and with the minimal allocations for the riskier endeavours being topped-up with INC funding. This strategy brings to the forefront two pertinent points. *First,*

INC receives relatively risky projects. *Secondly*, the projects INC supports, which belong to firms organized in this manner, might be very low priorities for the firms involved.

Further, in ascertaining commitment it is also useful to understand how PPI work, in general, fits within a company's overall strategy. Is the applicant committed to project financing? or, is the applicant just pursuing the current project for lack of other work, and will the applicant readily shelve the PPI project if paid contract work opportunities come along? To ascertain commitment it is also useful to monitor the number of PPI projects a single firm, or a single individual, is involved in at any given time. In one case, for instance, one individual is listed as an employee of two different firms, working on three different INC PPI proposals, in three different countries, and in three different sectors. For whatever reason this person appears so frequently, the bottom line is that it is not possible for him to be truly committed to doing so many diverse PPI projects simultaneously.

Commitment can also be assessed by understanding the motivation of the applicant. It is useful to ask why the applicant has chosen this particular project - is it because the project is so attractive in and of itself, or, are there factors external to the immediate project, which are mitigating the risk, and contributing to the firm's decision? External factors could include the opportunity to engage in other business, or to explore other business opportunities while abroad. One applicant, for instance, having just returned from the LDC country in which he had been working on an INC-supported project, noted that he had also been chasing other work while he was there. This makes good business sense; however, it is also evidence for INC that the applicant might not have much stake in the project, or any real commitment to it. Perhaps, in some instances, the INC-supported project is more likely a vehicle to obtain funding to travel abroad and sniff-out business opportunities, than it is a firm commitment to one particular project. In the case cited above, the applicant actually secured other contract work for his company while abroad. Assuming the contract is greater in value than the 20%, or so, share of the costs which the applicant is responsible for in the INC project, the commitment to the project can be

assumed to be significantly diminished, or even negated, as the applicant subsequently has little to lose if the original project does not come to fruition.

More tangible signs of commitment can also be looked to, such as an expressed willingness to be an equity participant in the project, evidence of downstream financing, initiatives taken to formally establish a consortium, and evidence of significant and promising pre-feasibility work. It has been suggested that one or some of these tangible signs of commitment be required in order to obtain INC funding; however, with the exception of notable pre-feasibility work having been done, the other signs listed here will actually carry little real meaning at such an early stage in the project, as they will be only conditional commitments.

In sum, commitment can largely be seen to be based on what the applicant has at stake, or how much the applicant stands to lose if the PPI effort fails. Without an incentive for the applicant to perform well, one can assume that the ultimate performance will be less than optimal. Therefore, there needs to be at least a certainty that the applicant will lose money if the project in not implemented.

Assessing Downstream Financing Commitments

The PPI model is essentially a financing method and the applicant's particular approach to financing is of strategic importance and should be taken into consideration in assessing the viability of a project. In general, a project financing will usually be structured with roughly 30% equity and 70% debt. Financing for PPIs still comes largely from traditional sources; thus, claims to use innovative financing sources, or even to use stock issues in support of a project should be questioned. Project company members will usually contribute equity to the project both out of necessity and to present an air of confidence about the project. INC PPI applicants should be willing to commit a share of the equity, and one should be suspect of the commitment of an INC applicant who refuses to take an equity role in the project.

Often PPI proposals are submitted to INC containing letters from financial institutions, proclaiming their interest in being involved in financing the project, conditional on the study finding it to be a "good project." There is no shortage of financial resources waiting to be invested in good projects; thus, the inclusion of such letters is of little real significance, other than as an illustration that the applicant has extended the effort to contact potential financiers. A key issue in financing PPIs is ascertaining who is going to take the commercial risk. With regard to the conditional letters of financing which will be included in proposals, EDC's advice is to follow-up on them to see if the institution is willing to take the commercial risk, and to find out exactly what conditions they would need secured in order to commit to the project.

Because INC sees projects at such an early stage, INC can not expect financing to have been secured by the time the application is received. One component of the INC-supported study should, however, directly address financial packaging. Further, at the time of application, the applicant should acknowledge the importance of the financing package and should demonstrate a willingness to consult a financial advisor (external or internal). Retainer fees can, however, be significant and engineering firms have shown great reluctance to hire such expertise. However, no more should a banker be designing a bridge, than should an engineer be sourcing financing. Financing is a necessary part of building a PPI project, where, in essence, a technical project and a financial project are being built parallel to each other, simultaneously, and will, one hopes, end up at the same place at the same time. Engineering firms that are developing projects, and that do not have internal project finance expertise, should be prepared to pay for an external financial advisor. The financial advisor's role is defined as follows:

> The adviser will have expertise and contacts in the country where the project is located and can advise on structures and local conditions as well as having the expertise and contacts to "sell" the project to the lending banks. The adviser may be a lender too, but this does involve the potential for conflict of interest. The adviser will prepare, but seldom accept responsibility for, and information memorandum outlining the nature and economic feasibility of the project, based on the relevant assumptions relating to project costs, market prices and demand, exchange rates, and so on together with a profile of each of the project sponsors - their financial results and their track record in similar projects.[101]

Assessing Agreements and Contracts

The process of implementing a PPI project is, essentially, the process of building a contractual vehicle. To monitor progress, project managers can look for evidence of the necessary contracts being put in place. While payments should not be conditional on progress, a level of progress can be looked to as indicative of whether a project should continue to receive INC funding. "Exit ramps" need to be identified by the project manager so that funding can be withdrawn if progress is not being made. This would help to avoid the present situation of having projects still disbursing with no chance of being implemented.

Bringing a project to financial close requires the identification, assessment, and mitigation of risks, to a comfort level that all project participants can work with. Throughout the development stage of the project the applicant will be putting in place the necessary contractual agreements, so as to emerge at the end with a watertight structure to implement the project. The objectives of the work done with INC support should then, logically, focus on putting this contractual structure in place. Among the primary project documents which will need to be secured during the development phase are the concession agreement; government licenses; royalty agreements; title to land documents

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[101]Clifford Chance. *Project Finance*, p. 8.

including surface and sub-sea rights; joint venture and consortia agreements; shareholders' agreements; project management agreement; construction, operation, and supply contracts and sub-contractings; technical consultancy agreements; performance bonds and guarantees at various stages; project insurance of various sorts; supply contracts for fuel or other required inputs; off-take agreements; operating licences; throughput agreements; planning and environmental permits; utility agreement; transport contracts; and financing documents. This listing is based primarily on *Project Finance*, by Clifford Chance. The scope of this thesis does not allow further detail regarding these agreements; however, such detail can be found in Chapters 5 and 6 of the Clifford Chance document listed in the bibliography to this thesis.

Two of the most important agreements are the concession agreement, which is needed for virtually every PPI project, and the off-take agreement where applicable. In the power sector the off-take agreement, known as the power purchase agreement (PPA), ensures a market for the off-take on a take-and-pay or take-or-pay basis. In some other sectors such as water provision and treatment and some transport sectors, off-take agreements built on the principle of a government guarantee also exist. Detailed sample Concession and PPA agreements drawn-up by the IFC as a guide as to what should be included in such agreements can be found in the IFC document entitled *Financing Private Infrastructure: Lessons of Experience* (see pp. 112-114 and 118-126). Securing the network of contracts necessary to implement a PPI and particularly to obtain the concession and off-take agreements should be the primary objectives of the funding INC provides to PPI applicants.

POLICY ISSUES IN NEED OF RECONSIDERATION

Many policy issues will need to be established or else amended for PPI projects. Among the policy issues in need of consideration are, determining which projects to filter through a new mechanism; eligible expenses and cost-sharing; bid support; firm size as a funding

criterion; funding studies versus funding projects; and repayment. These issues will be discussed in what follows.

Which Projects To Filter Through New Mechanism

Much debate was held during the course of this research about the range of projects which should be filtered through the new mechanism. This involves consideration of the project itself, as well as consideration of the role of the applicant in the project. In terms of the range of projects to be included under the new mechanism, INC should include PPI projects rather than the more narrow grouping of BOT projects. While there is no ultimate definition of PPI projects, they can be generally described as having the characteristics of a BOT, though liberally interpreted or pushed beyond the traditional, rigid BOT boundaries. In expanding the definitional boundaries for INC use, to include a broader scope of projects, the deciding factor regarding how far to stretch the boundaries should be determined by the risk profile of the projects subsequently included. For a project to be filtered through a new PPI mechanism it should have a high risk profile and the following characteristics from the BOT definition,

- it should be based on non- or limited-recourse project financing,
- it should involving the provision of basic infrastructure which was previously provided by the government,
- it should involve infrastructure which has inherent strategic policy implications and a multiplicity of government policy purposes,
- it should be undertaken by single-purpose companies,
- it should be a project in which there are limited market output options,
- it should be a project wherein the financing, provision/rehabilitation, and operation of the infrastructure by the private sector are of primary importance, whereas on-going output pricing, management, and technical complexity are lesser considerations.
- it should be based on a series of contracts beginning with a concession agreement, and going on to link together the parties to the project.

Two other definitional characteristics, however, require greater scrutiny in regards to how they should be interpreted for INC's purposes. Specifically, a decision has to be made regarding how INC will *sectorally* define the projects to be filtered through a new mechanism, and a decision has to be made as to whether *privatizations*, or only greenfield projects will be included. The purpose of a new mechanism is to effectively screen a group of projects subjected to similar high risk issues. Thus, stretching the definition sectorally or to include privatizations can be legitimized as long as the projects subsequently included are projects subject to the high risk profile defined in Chapter Two.

It is unlikely that the privatization of an infrastructure asset without a rehabilitative or expansionary component could be in the same category of risk as a greenfield PPI project. This is the case because the highest risk phase of a PPI project is from development to the start of operation. However, in the case of a privatization the applicant would become involved in the project only after the peak risk period had expired. Subsequently, it is unlikely that a privatization project would have a severe enough risk profile to qualify to be put through the new mechanism and likely only greenfield or rehabilitative projects will be candidates.

It is likely that some projects in sectors other than the traditional BOT infrastructure sectors (transport, telecom, power, and water and sanitation) could fit an expanded PPI definition. It is impossible to speculate, however, on what sectors an expanded definition might include though the two most oft cited ones are education and health care. It is this writer's opinion that private education projects will not likely carry enough risk to comprise the high risk profile of PPI projects. The initial project costs of education projects are relatively low, thus limiting exposure to economic risk, while the output options are varied and the marketing options flexible, thereby, reducing commercial risk. It is more likely that a private health care facility could carry a risk profile requiring of scrutiny under a new PPI mechanism.

One important goal of a new mechanism is that projects which face PPI risks, should be evaluated on the basis of those risks. Thus, INC should assess any proposal which involves a PPI project, directly or indirectly, as a PPI project. As such, it is *project risk,* not simply the *applicant risk* which needs to be assessed. What this means is that if INC receives an application from a client intending to supply goods or services to a PPI project, the application should be treated as a PPI application and should be scrutinized under the PPI mechanism. The opposing view supposes that if a firm is requesting funding to act as a supplier to a PPI project (for instance, providing rolling stock to a high speed rail project on a contract basis) there is little risk for the supplier and, therefore, no need to screen the proposal as a PPI proposal. While it is correct that direct applicant risk is diminished in this case, this is a very narrow assessment of risk. This assessment considers only the risk between the supplier and the client, and fails to acknowledge that the supplier's risk is actually a function of the overall project risk. It also fails to consider the risk to INC's contribution which remains high. In a case where the applicant is a PPI supplier, the probability of INC's money effectively leveraging Canadian interests is a function of the project being implemented and is, thereby, a function of the risk issues detailed in Chapter Two. Regardless of how certain the applicant firm is that it will be contracted to sell its goods into a project, if the project does not get implemented, the Canadian supplier does not get the contract. In either case, the probability of INC funds being put to good use and the probability of the applicant getting a contract are, primarily, a function of PPI risk issues.

Eligible Expenses and Cost-Sharing In PPI Projects

In establishing a new funding mechanism consideration will have to be given to eligible expenses and cost-sharing. This includes issues of what additional costs, if any, should be made eligible expenses; what the cost-share ratio should be; and whether the cost-share ratio should vary throughout the project's development phase or be constant.

Eligible costs in PPI projects should include expenses typically covered for investment projects as well as for portions of the costly financial and legal expenses required for PPI project development. Such costs will depend on the specific project and its configuration; however, in general, recognition of such costs being covered in addition to otherwise eligible costs, INC should expect PPI projects to be more expensive to fund than many other projects. According to some project managers, legal and financial advisory fees are already easily accommodated under the current mechanisms, and a change of policy would simply be a formality. However, two project managers also reported not having actually covered such expenses in conjunction with particular on-going projects, because the applicants did not request it. Therefore, such expenses should be made obvious to the applicant during the application process so as to enable the applicant to access all the advantages for which it is eligible and so as to enhance the applicant's chance of success.

As a rough idea of what to expect, financial arrangers fees at ABN-AMRO Bank, for instance, are comprised of three components. *First*, the client is required to pay a retainer's fee to the bank. The retainer's fee will be either a flat fee or a monthly rate in the vicinity of $25,000 to $50,000 per month. *Secondly*, the client will have to pay out-of-pocket expenses. *Thirdly*, the client will have to pay a "success fee" if the bank gets the project to financial close. The average "success fee" for raising $100 M is estimated to be about $300,000. In light of these costs, INC should be prepared to cover a share of the retainer fee and out of pocket expenses. INC should also be prepared to cover a portion of legal fees associated with putting in place agreements such as the PPA, concession, fuel supply agreement, etc.[102]

As far as what percentage of costs (unique to PPI and otherwise) should be eligible expenses, several project managers suggested that the 80:20 cost-share maximum is too high. They believe an 80:20 ratio distorts commercial reality too much, and leaves little at stake on the part of the applicant. It is commonly held that the 80:20 cost share will, in

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[102] Information of ABN AMRO's came from an interview with a representative of ABN AMRO Bank Canada, June 10, 1997, in Toronto.

reality, often cover an applicant's real costs - a worst case scenario of which is likely what is submitted by some to INC for funding. As such the firm's stake in the project is eroded as the firm has no financial commitment to the project.

To address the specifics of the cost-share question, INC could choose to stick with the idea of a constant ratio, but decrease the maximum coverage downward from 80%. Or, INC could use a sliding ratio, increasing or decreasing the cost-share ratio throughout the project life-cycle. If a sliding ratio is deemed more appropriate, it would be reasonable to concentrate INC funds early in the project, and to decrease the proportion of costs covered by INC as the study goes forward. This would most effectively serve INC's objective of encouraging investment by decreasing risk, as it is the early stages of PPI projects which are the highest risk stages for the applicants.

The early development stage activities typically include preliminary technical and commercial studies, and efforts to configure and design the structure of the project by working on the various agreements holding it together. One applicant explained that if he takes a project much beyond these preliminary activities, for instance to the point of working directly on incorporating a consortium, obtaining the concession and other formal agreements, or drawing up a marketable business plan, he would have to be about 80% certain that the project was going to go ahead. Thus, if he does go beyond the early study stage, he is willing to put his own money in because he only goes there perceiving there to be very little real risk. It is this writer's opinion that funding should be skewed in favour of earlier development activities and that for funding to continue reasonable progress should be made, and critical milestones should be achieved. Project managers should be prepared to terminate funding if the project is not progressing, such as in the cases of the currently disbursing projects which were given no chance of being implemented.

Bid Support

INC has traditionally supported applicants involved in international competitive bids by providing a *Letter of Interest* to the firm, stating that INC would be prepared to accept a funding proposal from the company if they are successful in their bid. The intent of the letter is to provide leverage by illustrating that the Canadian government is behind the project both in name and financially. INC went beyond this standard practice, however, in the case of one recent PPI proposal, providing financial support to an applicant at the bid stage where usually only a *Letter of Interest* is provided. The applicant firm received INC funding for work it was undertaking in conjunction with two bids it is making for power transmission concessions in Mexico. The INC contribution was specifically geared to help cover costs associated with technical, financial, and legal aspects of bid preparation which the project manager considered to "constitute elements that are well outside the scope of a traditional turnkey approach." Support of this nature has the potential to cause significant confusion for applicants and project managers who will be left questioning why some applicants are awarded financial assistance for bid preparation support, while others receive only *Letters Of Interest*.

INC will have to develop some consistent policy guidelines regarding bid support for PPI projects. INC could choose to change its bid support policy for PPIs and offer support to cover aspects of bid preparation which the project manager in the case detailed above has rightly identified as being costs not incurred in traditional (non-PPI) bids for work of this nature. Such a decision would reflect unique costs, but it would also be recognition of the disadvantages Canadian firms face because they have not had the opportunity to develop projects and hone their expertise at home as their competitors from other countries have. INC's intervention to leverage bids would help applicant firms to gain experience and to have projects to show as evidence of their capabilities the next time they compete for a project. Furthermore many European governments provide bid bonds and guarantees to

their domestic firms which are bidding on international capital projects,[103] so, bid support can be considered to bring some Canadian firms closer to the starting line from which international competition is beginning.

On the other hand, INC could choose to apply the standard approach in cases of PPI bid preparation support, offering only a *Letter Of Interest.* Such a position is defensible on the grounds that firms need to show some degree of initiative and a spark of entrepreneurship. Further, a decision to support bid preparation could result in an influx of ill-considered proposals which may, in cases, be little more than knee-jerk reactions to the international PPI bid listings which many foreign governments post on the Internet. It will likely be the case that firms will have very little at stake at the bid stage of a project, and it will likely be difficult to assess true commitment. If INC decides to support bid preparation work, a high level of scrutiny will be required in the review of applications and funds should be directed to unique PPI costs such as financial and legal consultations. Bid support is a difficult issue, certainly it would help applicants, but is it going too far to help them? This writer is not comfortable recommending that INC offer financial assistance to PPI applicants at the bid stage.

Firm Size And Other Eligibility Criteria

Under current INC mechanisms firms must have had revenues in excess of $1 M per annum, for each of the last two years, in order to be eligible for support. Revenues of $1 M per annum, however, are likely not indicative of the financial strength required to implement a successful PPI project. PPI projects are larger and riskier, on average, than most projects INC deals with. PPI investors, require deep pockets and an appetite for risk. Financial strain in PPI projects comes partially from the fact that vast quantities of capital are tied-up for lengthy periods of time before a return is realized. Further, bonding requirements can demand that a firm to set aside much more in guarantee facilities than

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[103]Toronto Consultants International Limited. *The Structuring and Financing of International Capital Projects*, pp. 40-6.

is required to implement the project. The unpredictable nature of PPI projects can also translate into further expenses by way of time and cost overruns. As was observed by one applicant, "everyone underestimates the time and cost required to pull one of these deals off."

Ascertaining whether an applicant is financially capable of participating in a PPI project requires, first of all, understanding where in the project the applicant fits. The applicant might be a small, independent engineering firm which has an idea it needs to document in order to bring the bigger players on-board. Or, the applicant might be a sophisticated company or consortium. Otherwise, the applicant might be some configuration of firms assembled to suit the project at some stage along the development path.

If the project in question is an open bid, INC should expect the applicant to be a sophisticated company or consortium. Original projects, on the other-hand, might be presented to INC by lesser players. INC should not shy away from supporting smaller companies if they come to INC with solid project ideas, provided the project looks fundamentally sound; the intention is to bring in bigger players, the Canadian firm is credible and knowledgeable about the PPI industry, the applicant is organized in its efforts, and is capable of playing its role in the project. Such a proposal can be supported on the understanding that a good project opportunity will naturally attract the larger, more resourceful partners to come on-board. Like financiers, the large firms too are looking for good project opportunities. The need for such support was backed by an INC applicant who cited the case of a project his company is currently working on. He reported that the project started as an original idea by an individual, who referred it to someone else, who shopped it to the applicant's firm. Others echoed the sentiment that many projects do originate with small independents. Another applicant, representing a large Canadian firm, reported that he is pitched roughly a dozen power projects weekly by companies trying to get his firm to come on-board. According to the applicant, however, only about one in 40 unsolicited pitches he hears merits follow-up.

There is no single guide to financial strength as an indication of applicant capacity or likelihood that a project will be implemented, and it is likely best not to try to define absolute applicant size criteria in respect of the reasons detailed above, and because the configuration of PPI projects changes throughout the project cycle. Like everything to do with PPI projects, each project needs to be considered individually.

Many of INC's brightest spots in PPI projects involved the support of small applicant firms. INC's $400 M pipeline project in Tanzania, for instance, was initiated with a small study by a small firm, and one of INC's two PPI successes involved a small applicant firm, Applicant A (denoted as such in an earlier reference). In the case of Applicant A, the applicant pursued an appropriately small ($10 M) project, with strong and connected local partners. While the applicant's balance sheet did not allow it to invest significantly in the project at the outset, the company is increasing its stake in the Philippine power project by converting its fees into equity. In this case, the applicant appeared to have a realistic idea of what it role it was capable of playing, and in what sort of project.

In that some consideration has to be given to financial strength as a general guideline, financial strength might be best assessed as a ratio of revenues to project size. Such methodology would not block the efforts of smaller firms pursuing appropriately smaller projects, whereas an absolute size threshold would be inherently biassed against small firms.

Some are of the opinion that when a project involves a consortium, the member with the strongest balance sheet should be the applicant. While it is important to have someone credible as the applicant, the best firm for the role of applicant is the firm best able to perform the role. A judgement of ability would include consideration of the overall strategy of the firms involved, past experience in PPI projects, and who has a desire to play the role of applicant. The balance sheet is important though not paramount.

There are two other components to INC's eligibility criteria at present which need to be reconsidered to be reasonable in the context of PPI projects. *First*, is the requirement that INC applicants "have a track record in the services offered or in manufacturing the products for which assistance is required." This has been interpreted by at least some at INC to mean that an applicant must have a track record in PPI projects in order to be funded for one. It is the recommendation of this author, however, that this policy be reinterpreted and that the "services offered" be considered to refer to the infrastructure unit itself rather than the method of delivery – PPI.

Secondly, is an INC requirement that in order to be eligible for INC funding, an applicant firm "demonstrate that it possesses the necessary human and technical resources to carry out the study and the capacity to perform the activities required to complete the project with CIDA support."It is the recommendation of this writer that this requirement be reconsidered in the context of PPI projects based on the fact that PPI projects are most often implemented by consortia. A reasonable reinterpretation of this guideline would see it reinterpreted such that an applicant need not have the "capacity to perform the activities required to complete the project," but rather, the applicant should be able to demonstrate that it can realistically bring together a consortium with the capacity "to perform the activities required to complete the project."

Also at issue has been the question of what sort of applicants INC should be funding for PPI development work. For instance, should INC provide funding to a developer whose intention it is to make money by developing a project, with the intention of withdrawing from the project at financial close? Or, should INC be looking only to fund those intending to stay in the project for the long-term? Or, should INC be concerning itself with the internal structure and strategy of the project at all?

In making decisions such as whether a developer should be supported, INC's concerns should focus on its mandate. INC should be concerned with successfully leveraging developmentally sound projects which generate Canadian benefits. If these criteria are

satisfied, INC should consider its job successfully done. Thus, the issue of a developer pulling out at financial close could be of concern if this leaves scope for repercussions such as limiting the Canadian benefits in the project. If the developer is going to develop a project and sell it to a project company with significant Canadian representation, however, there should be no concern as to whether the developer stays on as part of the project company. In principle INC should not be concerned with a developer pulling out at financial close. INC's objectives are being met if its money is successfully leveraging infrastructure development in LDCs, and if Canadian benefits are being realized. In fact, such should be seen as indicative of a firm which has developed a business for itself of developing projects, and this should be seen as a positive sign of a firm having found its niche in the PPI business. If INC supports a developer, INC should apply the same standards of commitment and capacity it would apply otherwise. Further, in supporting developers INC should limit support to feasibility work, requiring that pre-feasibility work has been completed.

Funding Studies Versus Funding Projects

Further on the issue of eligibility is the issue of funding studies, as opposed to funding projects. One of the greatest reservations project managers have in approving proposals is the concern that they are funding studies done by applicants with little, or no, real interest in implementing a downstream project. There is reason to believe that some PPI applicant firms had little real desire to implement the downstream projects associated with their

The objective of one INC-supported project was described as being the development of a BOO plan for government. In another case an applicant received INC funding to do a study for the government on the feasibility of privatizing ports and to assist the government with the preparation of public tendering documents. In both of these examples it appeared that the firm would like to have been involved in the project implementation; however, there appeared nothing convincing in this regard, and it was not evident they would stand

to lose anything if they did not get past the study stage. Early government solicited studies such as these, with no direct ties to downstream projects, should not be the purview of a new PPI mechanism. Rather, INC should take a project-focussed approach to its support. INC should support studies only in cases when a direct link can be drawn to the implementation of a downstream project, and only when the applicant can demonstrate its commitment to have a downstream project implemented. Commitment to the downstream project can be evidenced by linking the project to the overall business strategy of the applicant, or by determining whether the firm can walk away unscathed after the study stage.

The intentions of host governments should also be analyzed with scepticism. Commitment by a host government to implement a project can not be taken for granted. It is sometimes the intention of the government simply to have a study done so it can be in possession of a bankable document. Concern over such was voiced during the review of one INC project when the reviewer said, "my fear is that this will be another great Canadian feasibility study which gets built by someone else."

The threat of INC becoming a factory for studies being carried out by consulting firms short of work, or by firms who are simply misled, is an on-going and difficult issue and one of the primary preoccupations of project managers in PPI and non-PPI proejcts alike. In the context of the new PPI mechanism it is recommended that proposals be required to be directly project focussed, and that there be something at stake on the part of the applicant which would prohibit it from walking away unscathed at the end of a study.

Repayment

Since 1990, INC funding commitments in excess of $100,000 have been subject to repayment based on revenues generated in the three years following the last INC payment. Much fun has been had with the INC repayment clause. In the course of this research, representatives of some Canadian firms were asked about the repayment issue

and were vehemently, and seemingly sincerely, of the opinion that the repayment clause should be enforced. It was added that there would be much more incentive to repay if the money went back into a pot for INC applicants to draw on again.

The repayment issue is being revisited for INC as a whole, but there are certain additional issues which need to be taken into consideration in the case of PPI projects. The primary concerns pertaining to repayment in the context of PPI projects are *when*, and on *what conditions*, repayment should be required. There are three main options to consider:

> **1)** Repayment in the case of PPI projects could remain consistent with the repayment policy for the rest of INC. The problem with this, however, is that there is a small probability of any PPI project generating revenues within three years from the time of the last INC payment. Therefore, under the status quo, repayment would infrequently be a real issue.
>
> **2)** In the case of PPI projects INC could shift the timing at which the repayment clause comes into effect so as to make it coincide with financial close. The project will have significant financial resources at its disposal at financial close; however, it will also be facing huge and increasing risks, as the risk profile of PPI projects increases through development and construction, to peak at the early operational phase. There is still plenty of opportunity for a project to fail after financial close and revenues are still long from being generated; thus, repayment at this juncture might be premature. A policy of repayment at financial close might also discriminate against small projects. While it might be reasonable to expect an applicant implementing a $100 M project to repay an INC contribution of $500,000 at financial close, it might not be reasonable to expect an applicant

implementing a $10 M PPI project to repay a $400,000 commitment at financial close.

3) Alternatively, repayment could be required at some point after construction has finished and operation of the facility has commenced. In the interest of the applicant, this sort of timing would allow the firm to pass its peak risk period without the added strain of repayment. In the interest of INC, this would create a real opportunity for repayment, not simply a facade. It is this writer's opinion that the most reasonable solution would be to require repayment once the infrastructure begins to generate revenues, without imposing a time frame for repayment. One concern in this regard, however, pertains to the practice (as in Applicant A's case) of converting fees into equity. If a firm is converting its payment fees into equity, should the fees be considered revenue on which repayment is based? Another concern involves repayment in the case of pure developers. It is recommended that if an applicant sells the project to a project company, that the time of such a transaction be considered the most reasonable juncture for repayment.

CONCLUSION

Based on the fact that, through this early stage of INC's efforts to support PPI projects, many proposals with little real chance of success have made it through the INC application process and received INC funding, it can be concluded that INC's screening process for PPI applications is inadequate and that a new screening process is needed. It is the recommendation of this author that a new screening process be implemented by way of a new PPI-specific funding mechanism for INC. In conclusion to this chapter on INC PPI policy direction, the general intent of a new funding mechanism will be reiterated in the

following four points. These points will be followed by a recap some of the specific policy recommendations made in the foregoing pages of this chapter.

> **1)** The objective of a PPI funding mechanism is to implement private infrastructure projects with developmentally positive consequences for the LDC host, and with commercially positive consequences for Canada.
>
> **2)** The reason for implementing a new PPI funding mechanism is to facilitate the screening of PPI proposals so as to extend less money to troubled projects and to increase INC's success rate in leveraging PPI work.
>
> **3)** The anticipated result of INC funding is to bring PPI projects to financial close.
>
> **4)** The PPI development funding will be geared towards securing the concession agreement and other contractual agreements needed to reach financial close; structure a financing package; putting in place appropriate conditions to mitigate risk, such as insurance and guarantee facilities; carrying out detailed commercial and technical analyses; formally establishing a project company; and conducting environmental impact analysis.

In terms of specific detailed policy changes, the following recommendations pertaining to the implementation of a PPI funding mechanism which were put forth in this chapter:

> **1)** The central focus of a PPI funding mechanism should be a template to facilitate risk identification and assessment. The recommended template is that mirroring the structure of risks in the theory section of this thesis.
>
> **2)** INC should establish an internal PPI unit to take care of all PPI proposals.
>
> **3)** The projects to be filtered through a new mechanism should be those fitting a liberal interpretation of the BOT definition in *Appendix A* to this thesis.

4) Eligible expenses should include expenses eligible under the investment mechanism as well as including legal and financial costs incurred in PPI development.

5) Applicant eligibility should include serious PPI project developers.

6) Applicant eligibility criteria will have to be reinterpreted in many respects, several of which were detailed within the context of this thesis.

7) Funding can be concentrated in the earlier stages of project development and taper off as the project progresses and as risk subsides.

8) In order to be approved a PPI proposal should be directly linked to a downstream project. Government studies and unfocussed applicant studies should not be the purview of the PPI funding mechanism.

9) Bid support should probably not be extended under a PPI funding mechanism.

10) Very small projects (under $15 M) should be reviewed with scepticism.

11) Funding commitments should be terminated if reasonable progress is not made.

12) The approval process should consider project risk rather than only applicant risk.

13) Repayment of the INC contribution should be required once the infrastructure unit is operational and generating revenues, or, in the case of a developer, when the applicant sells the project.

CONCLUSION

The purposes of this paper, as stated in the Introduction, were to examine CIDA INC's record in support of PPI projects, and to make suggestions as to how INC could be more effective in future efforts to support PPI work.

The first purpose was achieved by outlining a set of explanations (or theory) as to why PPI projects fail, and by analyzing the INC experience to see if it could be explained by the theory. Following several levels of analysis it was illustrated that the impediments reported in the INC-supported projects mirrored those detailed in the theory, and that the INC experience was, in fact, explained by the theory.

The second purpose was achieved by using the theoretical and practical knowledge outlined in this thesis to offer policy recommendations regarding how INC should handle PPI project proposals in the future. It was concluded that since the primary causes of PPI failure are a known set of impediments, it would be reasonable to institute a practice of assessing PPI funding proposals so as to bring to the fore, evidence of potential vulnerability to these impediments. Subsequently, it was recommended that INC implement a new funding mechanism for PPI projects which is structured around a mechanism capable of assessing PPI projects in terms of viability, by interrogating each project on the bases of legal/regulatory risk, political/social risk, commercial risk, economic risk, technical risk, management risk, and *force majeure* risk. Such a funding mechanism, combined with the other recommendations outlined in this thesis should enable INC to identify poor PPI project proposals, to expend its resources on the most deserving projects, to develop a critical mass of internal PPI expertise, and to develop useful links with others involved in PPI work.

Through achieving these purposes, it is hoped that this thesis has, in the most minute of measures, made some contribution to the growing body of though on "how to finance the progress of civilization."

Appendix A:

Defining the BOT and PPI Concepts

NOTES ON METHODOLOGY

PPI projects involve the private sector assuming responsibility for financing, building, maintaining, and operating infrastructure units. A much more precise definition is necessary, however, for the discussion to follow to be properly understood.

The process of defining the private infrastructure concept will centre around the construction of a definition of the generic BOT concept, rather than the broader PPI concept. This choice was made because the BOT concept is relatively amenable to definition. The PPI concept, on the other hand, is essentially a liberal interpretation of the BOT concept. The PPI concept is inclusive of BOTs, and also of an essentially undefinable, and likely infinite set of project types which are not quite BOTs because they somehow compromise the boundaries of the narrower BOT concept. If one can gain an understanding of what a BOT is from the following discussion, one will also gain an understanding of the greater PPI concept, which can be adapted by pushing and pulling the BOT boundaries. A working BOT definition will be established by referring to existing definitions; by drawing on generalized discussions of the concept in the relevant literature; and by reviewing specific BOT case studies.

As this paper undertakes the task of defining the BOT concept, it does so with apprehension. Such apprehension stems from a realization that a categorical definition of the concept will, in fact, be contrary to the very essence of the concept which, at the most precise level, defies ultimate definition largely due to the fact that the involvement of the

private sector brings unknowable forces of innovation, adaptation, and evolution to bear. Implicit in an understanding of BOTs must, therefore, be an understanding of the forces which drive private interests in a capitalist framework. In respect of these forces, any offerings of a BOT definition made herein, should be understood in tandem with a realization that the concept is in perpetual evolution, and that it has no finite parameters or firm boundaries, and that there is no ultimate BOT definition waiting to be unveiled.

Although the bulk of BOT projects are relatively easy for the trained eye to identify, their complex nature renders them difficult to define. Those who have written about BOT projects have come, primarily, from inside the industry. Thus, current BOT definitions are largely informal and without due academic rigor. Establishing a clear and common understanding of BOT projects is necessary in order to effectively understand and work with the concept. At an academic level, a solid BOT definition is necessary for theoretical and analytical discussions to be of value. At a practical level, a clear definition offers policy makers and project developers a solid foundation from which to build their projects.

In the simplest of terms, BOT projects are those projects wherein the private sector assumes responsibility for the provision of infrastructure previously considered to be within the domain of the state. More particularly, however, there are specific characteristics pertaining to the *sort* of infrastructure, the *level* of responsibility, and the *nature* of the provision referred to in this statement. These must be specified for a BOT definition to be appropriately narrowed and adequately meaningful.

In establishing a definition, this paper will investigate those facets of infrastructure projects which constitute the uniquenesses common to all BOTs. This will include looking to the infrastructure sectors involved; the countries in question; the policy implications of turning the responsibility for provision over to the private sector; the type of the service being provided; the financing methods employed; and the structures of projects and participants. It is the opinion of this writer that an investigation into these facets of infrastructure projects will reveal the defining characteristics of BOT projects, the result of which will be an

understanding of BOTs which will facilitate identification of BOTs, and understanding of them as a unique and cohesive grouping of projects.

BOT DEFINITION

The *type of infrastructure* being provided in BOT projects is a defining characteristic of the concept, and projects may be relegated outside of the scope of BOTs if they do not meet criteria pertaining to the infrastructure sector involved; the policy implications of involving the private sector; the question of outright privatizations; and considerations of history, culture, and timeliness.

BOT projects involve private sector provision of infrastructure which is of strategic importance, basic necessity, and which was previously provided by the public sector. Further, the infrastructure units in question are multi-faceted policy tools, working simultaneously as vehicles which evoke overlapping economic, military, social, and business policies. The autobahns of Germany and the metro systems of St. Petersburg are infrastructure projects which exemplify the overlapping policy intentions which can be built into infrastructure, each having significant military, social, and economic policy purposes. An example closer to home would be the road infrastructure of Manitoba, much of which is built to function not only as transport infrastructure, but as dikes as well in times of flooding. Further, BOT infrastructure projects involve infrastructure sectors which are sources of state sovereignty and security, as well as international prestige and domestic pride. The Great Wall of China, the Canadian Pacific Railway, and more recently the Eurotunnel and the Three Gorges Dam illustrate the potential for infrastructure to play such roles.

The significance of defining BOTs in terms of policy implications is that such overlapping policy intentions add a level of complexity and risk to such projects. In allowing private sector firms to undertake such infrastructure projects, the government is foregoing control on not only the most transparent level, but also on a number of less obvious policy fronts.

Further, BOT projects involve infrastructure in which the government has a significant regulatory role, stemming from recognition of the sector involved as being naturally monopolistic; or, a role to provide safety or security considerations; or, to evoke equity in distribution, recognizing that these infrastructure units provide basic necessities. Recognition of these factors translates into an inherently high level of political risk in these projects.

BOT projects cannot be *sectorally* defined in a conclusive manner as it is not possible to speculate on all the sectors in which BOT projects may appear. As more and more responsibility is being allocated away from the public sector, more new infrastructure sectors are being opened up to the private sector, thus, continually expanding the sectoral parameters of the BOT definition. Subsequently, there is a need to preserve sectoral flexibility. Most BOT projects to date have involved the provision of power; transport (roads, tunnels, bridges, rapid transit, mass transit airports, railways); water; sewage services; waste and hazardous waste management; telecommunications; and gas distribution.

Generally speaking, BOT projects involve the provision of public works and utilities. Natural resource extraction projects and the provision of social infrastructure such as education and health services, are not considered BOTs, though they are part of the greater PPI concept. According to Walker and Smith, infrastructure *provision* and *financing* are the paramount issues in BOT projects. The authors make this statement within the context of a discussion of whether the concept is inclusive of highly technical maintenance facilities, such as defense servicing and information systems facilities. The authors determine such projects to be outside of the scope of BOT concept, as the build, finance, and operate issues take on only secondary importance, while technical complexity, ongoing management, and output pricing become paramount.[104]

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[104] C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 248.

While there is no explicit discussion of BOTs which focuses on *output*, thoughtful consideration of the output issue demonstrates there to be common constraints regarding the market options for BOT output. Specifically, BOT output is constrained by very limited market options. Projects in which output can be sold in export markets are not typically BOT projects. This constitutes a unique revenue risk element in BOT projects. If the original purchaser renegs, or if the market deteriorates for reasons of economics, technology, obsolescence, or other demand-side movements, the contractor retains few or no marketing options. Consideration of this point offers understanding as to why pulp and paper, timber, and mining projects are not BOT projects. Vendors of these products do not face the same levels of risk, if they lose their original market, as do those providing electricity, airports, or highways. Unlike gold or timber, bus service, electricity, and airport facilities cannot simply be redirected or utilized elsewhere if an output agreement fails to materialize, or if a market otherwise deteriorates.

BOT projects are not outright *privatizations*, though privatizations do fall under the broader PPI concept. Privatizations occur when state owned assets are turned over to the private sector through a variety of methods, for continued operation. BOTs, on the other hand, involve greenfield projects or privatizations with significant reconstructive or expansionary components. The distinction between BOTs and privatizations is not clear-cut and simple, and the two methods are sometimes hard to differentiate. They are best conceived of as being separated by a variable and fluid division. Recently, privatizations have outnumbered greenfield projects. Most illustrative of the difficulties which can exist in trying to distinguish between privatizations and greenfield projects are examples from the telecommunications industry. Private firms often acquire access to a state's telecommunications infrastructure through a privatization programme. However, since telecoms is such a growth industry, the initial privatization will likely be only part of the investment, and will most likely be followed-up by significant additional investment in new facilities and expanded capacity. Based on IFC experience, privatizations with a significant expansionary component have been almost as frequent as greenfield projects. Of 113

IFC-supported PPIs, 55 were expansionary-PPIs, and 58 were greenfield-PPIs.[105] Industry analysts at the World Bank expect that new investments will soon take over from privatizations as the driver of the market.[106]

BOT projects can be *country specific*, incorporating issues of history, such as political culture, institutional structures, past policies, and legal traditions. Put more eloquently, "experiences in private involvement have been shaped by contingencies of political and institutional development and idiosyncrasies of time, place, and circumstance."[107] The value of understanding the contingencies of time, place, and circumstance is that it brings awareness to the fact that a project which is a BOT project in one country, might not be considered a BOT in another country. This is a useful characteristic to understand when reviewing present day infrastructure development in transitional economies. BOT projects involve private development of infrastructure which has historically been in the public domain in that country.

The specifics of *financing* are among the most defining characteristics of BOTs. Many authors actually define BOTs as a financing method. All authors at least acknowledge the importance of the financing aspects of BOT projects. Critical to understanding the financing constraints of BOT projects is an understanding of the fact that BOT projects are implemented by single-purpose companies. Subsequently, debt appears only on the balance sheet of the new project company, thus, employing off-balance-sheet financing. Using this method, debt is raised without participant company's assets standing as collateral. Further, BOT projects utilize non- or limited-recourse project financing methods (also referred to as project financing). In cases of non-recourse project financing, lenders

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[105] IFC. Financing Private Infrastructure: Lessons of Experience, 1996, p. 94.

[106] World Bank. The Emerging Infrastructure Industry: a US$60 Billion Market, p. 3.

[107] Charles D. Jacobson and Joel A. Tarr. Owning and Financing Infrastructure: Historical Perspectives, p. 31.

can look only to the revenue stream of the project for debt repayment. In the case of limited-recourse project financing, lenders also look to the revenue stream for repayment; however, in the event of default they have a limited degree of recourse to the project assets and possible guarantees. The project financing method is not exclusive to BOT projects. There are projects of other types, most notably natural resource extraction projects, which are also structured on project financing bases, though not typically by single-purpose companies, and not typically with all of the other risk-burdens associated with BOT work. As such, an important distinction exists in that while all BOTs are project financings, not all project financings are BOTs. Aside from the lack of recourse, financing risk also exists in the long-term nature of the revenue streams characteristic of these projects. Threats of inflation, foreign exchange rate swings, or interest rate increases are among the obvious examples of risks which may impact on the lengthy revenue stream, building a high level of economic risk into these projects.

A consultant's report prepared for Industry Canada in 1994 offers a definition of BOTs which gives primacy to financing aspects, both in regards to the impetus for the concept and its subsequent nature. The report envisages the BOT mechanism to be, primarily, a financing tool which has emerged as a response to a changed financial environment worldwide:

> As a result of credit constraints world-wide, countries have been looking for innovative new ways of financing projects. One set of such techniques is the "Build, Own, Operate" (BOO), "Build, Own, Transfer" (BOT), and "Build, Own, Operate, Transfer" (BOOT). These terms describe very similar transactions. The underlying approach involves a group of equity investors assuming the risk of design, construction, financing, completion, start-up and operation of a project.
>
> Cash for repayment and of investment and loans necessary to construct the project and capitalize interest during construction and start-up, plus a margin for safety and profit, comes from the cash flow generated by providing the product or service over a number of years. This cash flow may be guaranteed by a government or user of the product or service under an unconditional "take-or-pay" contract or a conditional "take-and-pay" (take if delivered) contract.[108]

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[108] Toronto Consultants International Limited. The Structuring and Financing of International Capital Projects, Appendix A, p. 2.

Smith and Walker, in *Privatized Infrastructure: the BOT Approach*, also stress the importance of financing issues as they banter about a definition of BOTs. Their comprehension of the concept is that it is a mechanism which has emerged to benefit the community by allowing the "use of the facility without being indirectly taxed to fund building that facility."[109] Further, the authors express their vision of the role of the financing issues internal to BOTs, when they state that BOTs are those "types of business where the provision and financing of the facility itself is the major business issue."[110] This point is a critical one and it will be taken up again later in this paper as several of the projects in the original INC sample will be rejected in this paper's follow-up analysis, due to the fact that their primary issues are not in the provision and financing.

The way in which projects are *structured* is another definitive characteristic of BOTs. Smith and Walker stress the value of project structure being a definitive element of BOT projects, in their description of BOTs as "contractual vehicles." The crux of BOTs, they believe, is found in "the formalized risk relationships between government, lenders, investor and contractors."[111] Further, Norman Peagam defines a project financing in general as simply "a network of contracts."[112] The World Bank also focuses on the importance of the contractual structure of PPI projects, defining them, in part as "concession-type arrangement, granting both rights and obligations."

The main tiers of contracted players comprising the structure of BOT projects are the project sponsor, which is the government extending the concession; the project developer, which is the company or consortium accepting the concession and managing the project;

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[109] C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 6.

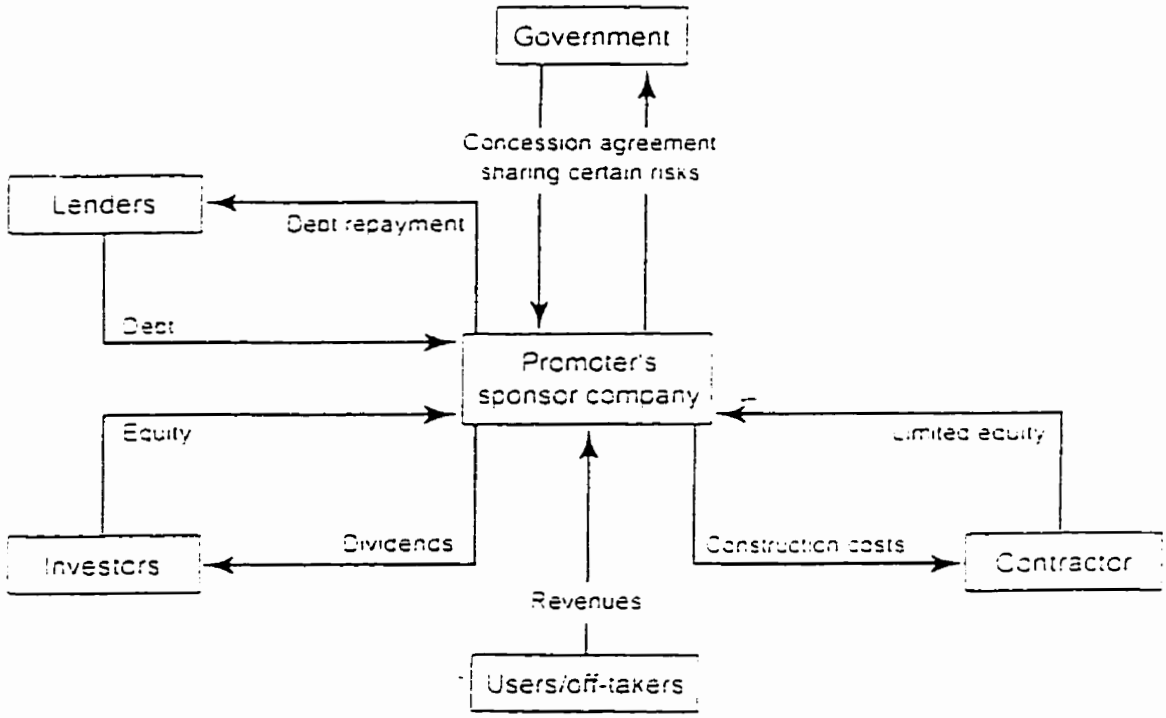
[110] C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 248.

[111] C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 6.

[112] Norman Peagam. "The Hunt For A New Source of Capital," p. 222.

and external parties to the project who are not part of the concession company, such as suppliers and contractors; and the lenders. *Diagram A.1* illustrates the basic contractual structure linking these parties.

DIAGRAM A.1: **BASIC BOT STRUCTURE**
(Source: C. Walker and A.J. Smith. Privatized Infrastructure: the BOT Approach, p. 5)



Actual projects will be structured on a framework which begins in a structure akin to *Diagram A.1* and is then tailored to the specific needs of each project. Each project will have a formal concession agreement linking the government to the single-purpose company which will be undertaking the project. Concessions are sometimes allocated by sole-sourcing, and are other times let through competitive bidding. The mechanism of the concession process depends on whether the project was a solicited or an unsolicited project, and on what the local law dictates. Competitive bidding is being utilized increasingly in the allocation of BOT concessions. The function of the concession is to verify the government's agreement to extend the right to provide the infrastructure unit in question, to the project company. The concession agreement will also outline the terms, conditions, and expectations of the project. The fact that BOT projects are extended through formal concession agreements illustrates the importance of the infrastructure to the government. The government could choose to completely divest itself of involvement in the sector altogether, by deregulating the sector and opening it to competition. But, the fact that limited, contractual divestiture is the method of choice, illustrates the importance of the sector to the government and its desire to maintain an entry point through which it can re-involve itself at some point in the future, if it so chooses. Although the concession is usually extended by the government, there have been occasions when the government has not been a signatory to the concession agreement, but, rather, the concession has been a private or quasi-private/private agreement.

The next contractual level of importance in BOT projects is the web of contracts tying together the parties to the concession, and others not party to the concession, but who will be involved in the design, construction, operation, or maintenance of the facility at some point in the life of the project. Typically, there will be a dedicated developer or else one or more construction, engineering, or supply firms to take on the role of project developer, forming a consortium to act as concessionaire. Many traditional supply, construction, engineering, or management firms have restructured to internalize PPI expertise, to better enable them to play the role of PPI project developer. There is also a slowly emerging group of dedicated project developers who are in the project only for the high risk, high

reward development stage, selling out at financial close. Thus, the developer can be of any of a variety of types.

The number of contracts binding the private sector participants together will depend on the project itself, and the strategy with which it is undertaken. As more strategy is employed in project structuring, more and more risk is being allocated away from the project developers via the network of contracts holding the project together. The methods and complexities of risk allocation are varied. One of the most often used strategies is the contracting out of construction on a fixed-price, turnkey basis. Much competitive advantage can be gained from a well-structured project, and as the BOT concept endures, the role of particular participants in this industry is changing as each finds its personal comfort level. Thus, details of how the various participants to a project are involved, and what each will be responsible for is in constant flux. What is important is that there is a solid contractual network joining a number of firms together, each seeking to participate at that juncture where it is best suited to carrying the risk inherent at that point in the project.

Finally, there is the critical network of contracts comprising the financing structure of the project bringing in both debt and equity participation. The debt to equity ratio in BOTs is typically in the 80:20 range, though, more risky projects tend to require greater portion equity financing to attract the debt. The debt contribution is typically sourced from commercial banks loans, bond issues, and ECAs. BOT lending is most accurately designated as financial engineering, and, as such, lending agreements are not for the uninitiated or faint-of-heart. In the case of the Eurotunnel, for instance, the credit agreement extending the primary loan facility from the banking consortium was more than 2,400 pages in length, and tied-in more than 220 commercial lenders.[113] The bulk of the equity in a BOT project usually comes from members of the concession company and from

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[113] Rod Morrison. "GE Launches US$2bn Equity Fund."

***DIAGRAM A.2*: BOT Project Structure Example -- Geheyan Power Project**
(Source: Toronto Consultants International. *The Structuring and Financing of International Capital Projects*, Geheyan Case Study, p. 2)

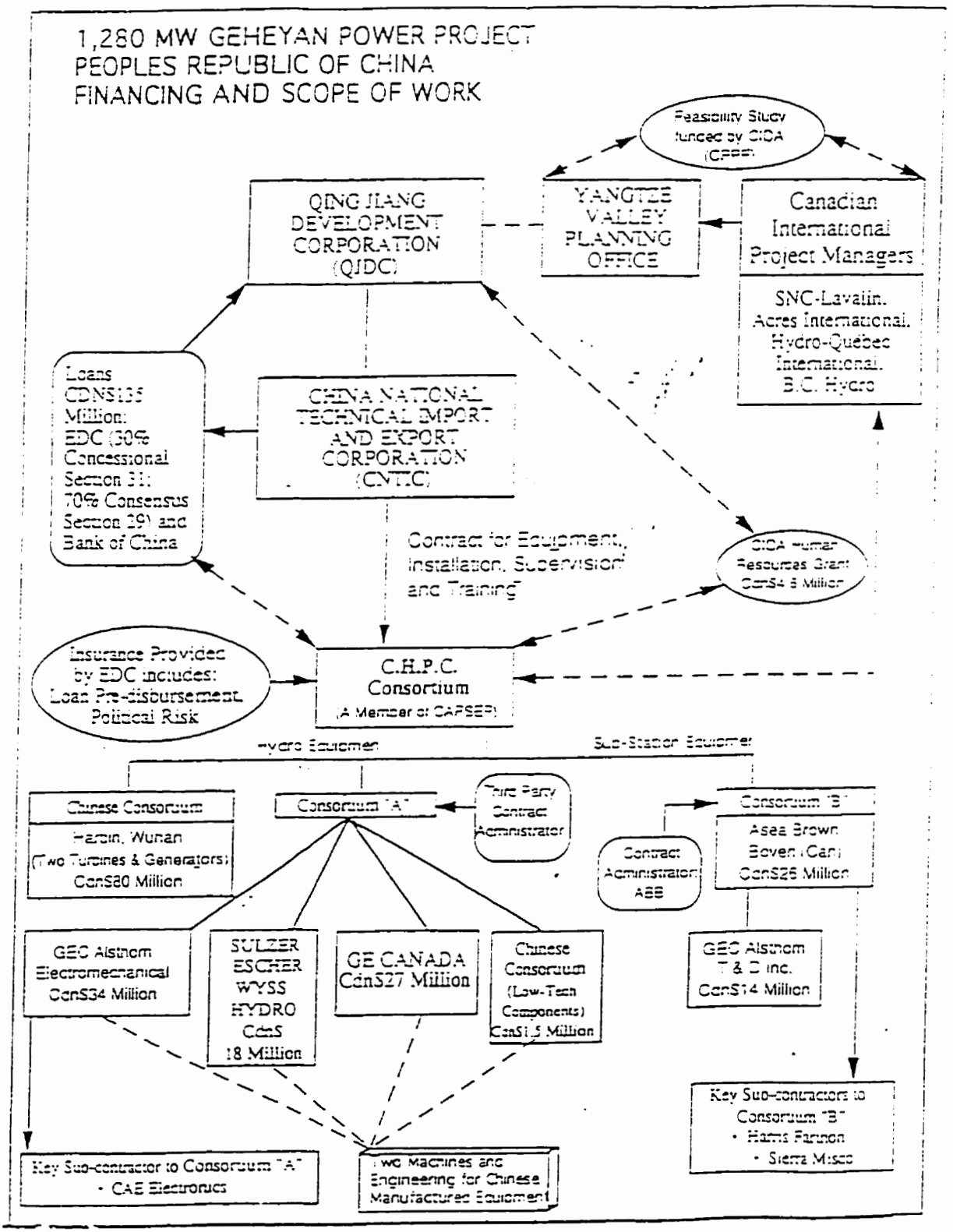
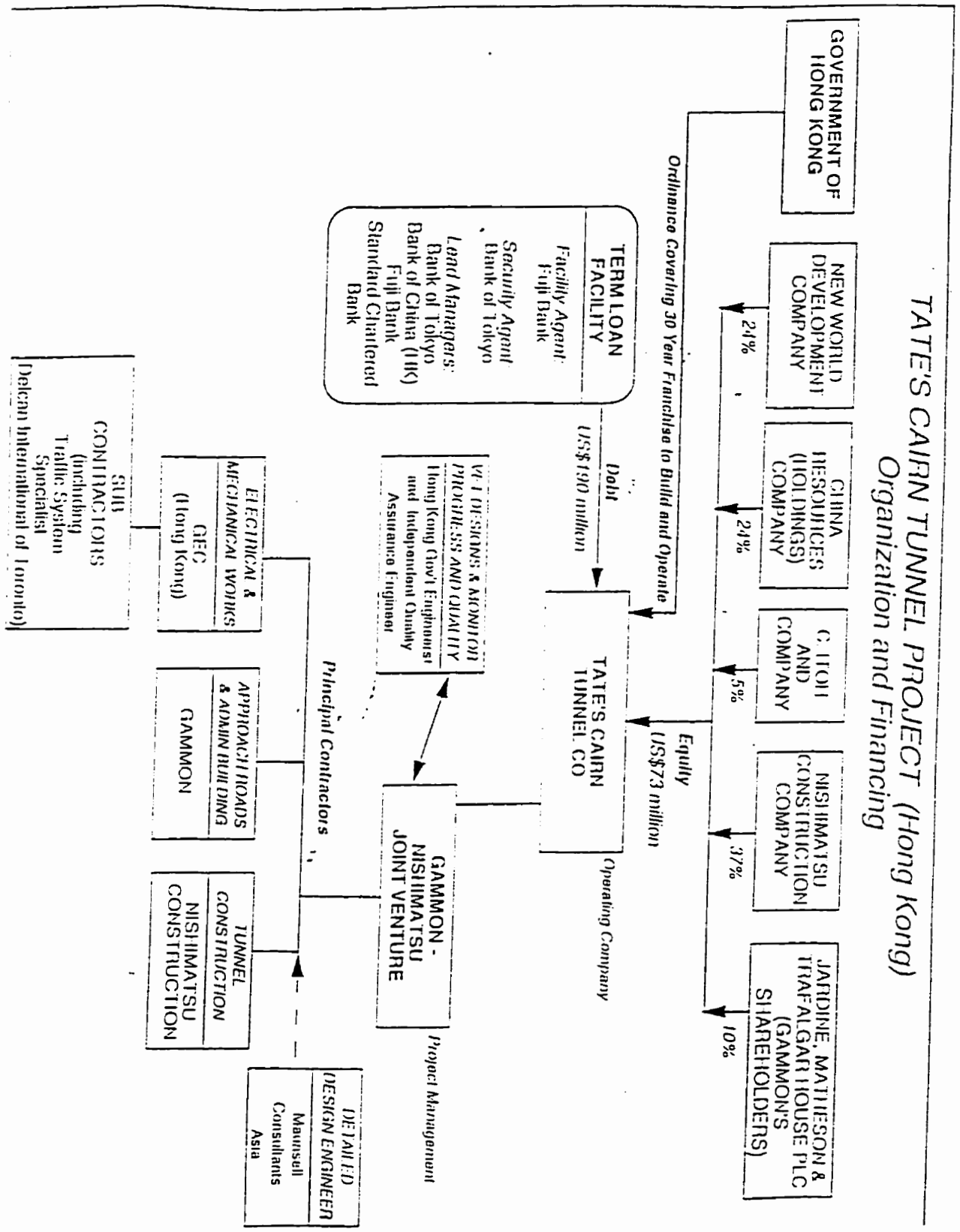


***DIAGRAM A.3*: BOT Project Structure Example – Tate's Cairn Tunnel**
(Source: Toronto Consultants International. The Structuring and Financing of International Capital Projects, Tate's Cairn Tunnel Case Study, p. 4).



other private sector participants in the project, such as contracted suppliers and engineers. Thus, contractual financing agreements must extend to these participants as well as to any other equity investors which may include the host government, IFIs, or development banks. *Diagrams A.2* and *A.3* illustrate some project structures based on different networks of contractual agreements. These examples are real BOT projects, and they build on the basic project structure illustrated earlier in this section. They are being presented herein to offer insight into how a final project might be structured.

SUMMARY

A strict BOT definition can be considered to have the following characteristics:

- It involves the provision of infrastructure which was previously the state's responsibility,

- It involves the provision of infrastructure which has a multiplicity of overlapping policy purposes,

- It involves (though not definitively) provision of infrastructure in the following sectors: power; transport (roads, tunnels, bridges, rapid transit, mass transit, airports, railroads); water; sewage services; waste and hazardous waste management; telecommunications; gas distribution,

- It involves provision of infrastructure wherein the issues of provision and financing are of paramount concern. Issues of on-going management, output pricing, and technical complexity are secondary,

- It involves greenfield or rehabilitative projects,

- It is structured on limited- or non-recourse financing,

- It is undertaken by a single-purpose company with no other assets or revenue streams,

- It is based on a series of contracts beginning with a concession agreement, and linking together the government, project company, external suppliers, and lenders,

- It involves provision of output with limited market options.

APPENDIX B:

WORLD BANK PPI DATA TABLES

NEW PPI PROJECTS BY REGION (1984-1997)

Region	New PPI Projects Identified By WB
Asia (LDC and Industrializing)	163
North America	152
OECD Europe	137
Latin America & Caribbean	127
Africa & Middle East	52
Asia (Industrialized)	47
Eastern Europe & CIS	32
Total	**710**

NEW PPI PROJECTS IN LDC & INDUSTRIALIZING ASIA x COUNTRY x SECTOR

Country	Sector	New PPI Projects Identified By WB
Cambodia	Telecom	1
China	Power	16
	Transport	14
	Telecom	6
	Water	1
India	Power	11
	Transport	1
	Telecom	9
Indonesia	Power	5
	Transport	5
	Telecom	1
Laos	Power	2
Malaysia	Power	4
	Gas/Power	1
	Transport	12
	Waste	1
	Water	6
Pakistan	Power	5
	Transport	2
	Telecom	5
Philippines	Power	38
	Transport	5
	Telecom	4
Thailand	Power	1
	Power/Waste	1
	Transport	2
	Telecom	1
	Waste	1
Vietnam	Power	1
	Transport	1
		Total: 163

NEW PPI PROJECTS IN LATIN AMERICA & CARIBBEAN x COUNTRY x SECTOR

Country	Sector	New PPI Projects Identified By WB
Argentina	Power	8
	Transport	12
	Telecom`	2
	Waste/Water	1
Brazil	Transport	1
Chile	Power	3
	Transport	8
	Telecom	1
Colombia	Power	4
	Transport	4
	Telecom	2
Costa Rica	Power	2
Dominican Republic	Power	3
Ecuador	Transport	1
El Salvador	Power	2
Guatemala	Power	3
Honduras	Power	2
Jamaica	Power	2
Mexico	Power	4
	Gas/Power	1
	Power/Water	1
	Transport	46
	Waste	8
	Waste/Water	1
Panama	Transport	2
Peru	Gas/Power	1
Puerto Rico	Transport	1
Venezuela	Telecom	1
		Total: 127

NEW PPI PROJECTS IN AFRICA & THE MIDDLE EAST x COUNTRY x SECTOR

Country	Sector	New PPI Projects Identified By WB
Algeria	Gas	3
Baharin	Telecom	1
Benin	Waste/Water	1
Burundi	Telecom	1
Cameroon	Transport	1
Cote d'Ivoire	Power	1
	Gas	1
	Waste/Water	1
Egypt	Telecom	1
Ethiopia	Gas/Power	2
Ghana	Telecom	2
Guinea	Telecom	2
	Water	1
Israel	Telecom	2
Madagascar	Telecom	1
Mali	Transport	1
Mauritius	Telecom	1
Morocco	Power	1
	Gas	1
	Telecom	1
	Water	2
Mozambique	Power	1
Namibia	Telecom	1
Nigeria	Gas	1
	Telecom	1
South Africa	Transport	8
	Telecom	3
Tanzania	Gas/Power	1
	Power/Waste	1
	Telecom	1
Tunisia	Gas	1
Uganda	Telecom	2
Yemen	Telecom	2
Zaire	Telecom	1
		Total: 52

APPENDIX C:

KEY BOT VARIANTS

This thesis has used the acronym BOT in a generic manner, encompassing a host of terms representing various BOT methods. Some of the more common terms included under the generic use of the term are BOO, BOT, BOOT, ROT, DBFO, BLT, BRT, and DBFO. These variants will now be briefly described.

The essence of a build-operate-transfer (*BOT*) project is that a private firm is permitted to build and operate an infrastructure unit. The unit must be transferred to the government after a specified period of time, determined by calculations of how long it is expected to take the concessionaire to recoup its investment, pay-back its debt, and earn a fair return on the project. While there is no explicit ownership component in BOTs, in some countries the assets constructed under BOTs are implicitly understood to be property of the concession company for the duration of the concession. In other countries, however, assets revert to government ownership immediately upon construction. This distinction is important in terms of financing considerations. If the assets revert immediately to the state, the project is then non-recourse and, subsequently, it will be more difficult to finance.

The acronym *BOO* designates build-own-operate projects. This mechanism is rapidly emerging as the PPI mechanism of choice. In BOO schemes the private sector company assumes an indefinite concession. In other-words, there is no automatic transfer mechanism to turn the unit over to the government. In some BOO schemes, the ownership component gives the concessionaire property rights to the assets constructed, and, in some cases (depending on domestic legal frameworks or the specific contract) the concessionaire might also obtain property rights to adjoining lands. The specifics of the

"ownership" component need to be detailed in the concession agreement and in BOT-related legislation. One of the most illustrative examples of the value of adjoining land rights being granted is in the case of highway projects, wherein the adjoining land is then utilized for complementary services such as gas stations, hotels, and shopping facilities. Inclusion of such ownership rights will provide the operator with additional revenues. Such will benefit the concessionaire, but as such revenues will also be factored in to the company's commercial analysis of the project, it should produce a welfare benefit as well, as user fees should be lower. Furthermore, because BOO projects are not constructed on finite time-lines, they have an inherent capacity to generate lower user charges, as recoupment can be factored over a longer period of time. A BOO scheme also has an inherent capacity to provide higher quality services and better maintenance since the contractor has a direct interest in revenues over the long-term. Finally, because the ownership component of BOOs creates (at least) the appearance of assets as collateral, such projects should be easier to find financing for, and financing should come at a slightly better price.

The build-own-operate-transfer (*BOOT*) variant of projects combines characteristics of BOOs and BOTs. In reality the differences between BOOs, BOTs, and BOOTs are inconsistent, and the lines separating the three mechanisms are blurred. The BOOT contractor builds, owns, and operates the facility, and transfers it to the government after a specified concession period. As under the BOO mechanisms, ownership rights may pertain to the assets constructed, or to other property rights, depending on the details of the contract, and depending on domestic legislation.

DBFO (design-build-finance-operate) is a British project concept also in the BOT family. The idea emerged subsequent to the UK government's commissioning of a paper on DBFOs in 1994. The paper culminated in eight DBFO toll road concessions being let. DBFO is a combined public-private sector effort. Under DBFO mechanisms, toll road remuneration is paid by the government, to the concessionaire, through shadow tolls based on estimated traffic flow measures. An issue which has arisen in DBFO discussions

in the UK, but which really pertains to any BOT method, regards whether new roads should have to conform to Transport Department criteria. It has been suggested that such a stipulation "may remove the innovation in design and methods offered by the private sector, and in particular, the adoption of new techniques and ideas from abroad,"[114] thereby negating much of the value of bringing-in the private sector in the first place.

Investments in already standing structures are often referred to as *ROT*s (rehabilitate-operate-transfer) or *LROT*s (lease-rehabilitate-operate-transfer). In the case of ROTs, a firm acquires existing assets which are in poor or non-operating condition. The firm rehabilitates the assets and operates the unit on a non- or limited-recourse basis. The same uncertainty prevails with respect to ownership conditions as was discussed in the case of BOTs. In LROT projects, the contractor pays the government a lease rate for an old site which it then rehabilitates, operates, and eventually transfers back to the government.

BLT (build-lease-transfer) or *BRT* (build-rent-transfer) mechanisms are less frequently used methods in which the concessionaire finances, designs, builds and owns a facility which it subsequently leases back to the government. Ownership is not conceded by the private sector until the transfer stage. The same concept is sometimes witnessed in private-private projects such as in the case of the Standard Chartered Bank in Hong Kong, which was commissioned on such terms.

The rapid growth in the popularity of private infrastructure provision is forcing new and innovative means of bringing-in the private sector. While the formal mechanisms outlined above are among the most commonly observed mechanisms, they are by no means exhaustive. In fact, it is critical that the boundaries be considered fluid and the options

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[114] Geoff Haley. "Developing BOT Variants."

infinite, as the very nature and the job of the private sector is to push such concepts, and to find new and better ways of creating, providing, and delivering goods and services.

APPENDIX D:

INC PPI PROPOSALS APPROVED x FISCAL YEAR

INC PPI PROPOSALS APPROVED IN FY97						
	K-Number	Country	Sector	File Status	$ Disbursed or Committed	Comments
1	052594 **	Mexico	Power Trans	Disbursing	$498,761	
2	052450 **	India	Power Gen	Disbursing	$191,200	
3	052594 **	Peru	Power Gen	Disbursing	$498,761	

INC PPI PROPOSALS APPROVED IN FY96						
	K-Number	Country	Sector	File Status	$ Disbursed or Committed	Comments
1	051862 ☼♣	Indonesia	Power Gen	Disbursing	$420,000	
2	052176 **	Nepal	Waste Mgmt	Disbursing	$242,600	

Appendix D continued ☞

INC PPI PROPOSALS APPROVED IN FY96						
3	052128 ☼♣	Mexico	Rapid Transit	Disbursing	$250,000	Second approval. See also K044400
4	051372 ♦♣	Mexico	Power Gen	Disbursing	$229,000	In audit
5	050956 ☼♣	Cuba	Power Gen	Disbursing	$100,000	
6	052125 ♣	Cuba	Power Gen	Disbursing	$230,000	
7	051947 ♣	Cuba	Power Gen	Disbursing	$329,615	
8	052051 ♣	Peru	Power gen	Disbursing	$499,024	
9	051651 ♣	Tanzania	Pipeline	Disbursing	$2,161,468	4th approval on this project. May expand to include water distribution
10	051865 ♣	Egypt	Waste Mgmt	Disbursing	$495,000	
11	052085 ♣	Turkey	Airport	Disbursing	$200,000	

Appendix D continued

INC PPI PROPOSALS APPROVED IN FY95						
	K-Number	Country	Sector	File Status	$ Disbursed or Committed	Comments
1	051075 ♣	China	Power Gen	Disbursing	$481,486	
2	049667 ♣	Philippines	Power Gen	Disbursing	$474,129	
3	049451 ☼♣	Philippines	Toll Road	Canceled & Closed	$816,780	Not Implemented
4	050510 ☼♣	Indonesia	Potable Water	Follow Up	$160,000	Not implemented
5	049362 ☼♣	Indonesia	Waste Water	Disbursing	$120,000	
6	048156 ☼♣	Malaysia	Pipeline	Follow Up	$292,333	
7	049164 ♣	Vietnam	Telecom	Disbursing	$488,652	
8	050965 ♣	Pakistan	Transit	Follow Up	$496,000	
9	050496 ♣	Pakistan	Power Gen	Follow Up	$428,200	
10	048484 ☼♣	Mexico	Waste Mgmt	Follow Up	$316,214	
11	049330 ☼♣	Guatemala	Ports	Follow Up	$248,400	
12	048500 ♣	Costa Rica	Power Gen	Disbursing	$434,500	Successful.
13	049882 ♣	Jordan	Airport	Disbursing	$385,000	
14	049883 ☼♣	Jordan	Railway	Disbursing	$75,000	

Appendix D continued ☞

INC PPI PROPOSALS APPROVED IN FY95						
15	047479 ***☼	Ghana	Pipeline	Canceled & Closed	$2,798,000 (Committed) $521,000 (Disbursed)	Third application on this file. Cancelled. Applicant still pursuing

INC PPI PROPOSALS APPROVED IN FY94						
	K-Number	Country	Sector	File Status	$ Committed or Disbursed	Comments
1	046520 •	Philippines	Power Gen	Closed	$492,075	Success. See also K043004 K050712
2	047683 ☼♣	China	Power Gen	Follow Up	$99,000 (Committed) $95,636 (Disbursed)	Subsequent application rejected, see K050791
3	048332 ☼♣	China	Power Gen & Waste Water	Disbursing	$300,000	

Appendix D continued

INC PPI PROPOSALS APPROVED IN FY94						
4	047981 ☼♣	China	Pipeline	Closed	$99,000 (Committed) $63,061 (Disbursed)	Not Implemented
5	046790 ☼♣	China	Port Terminal	Closed	$300,000 (Committed) $284,103 (Disbursed)	Not Implemented
6	048227 ♣	Indonesia	Airport	Follow Up	$350,000	Expecting word on $20 M ROT concession in June 1997
7	047874 ♣	Indonesia	Waste Water	Disbursing	$495,895	
8	047406 ☼♣	India	Power Gen	Closed	$266,915	Subsequent application rejected, see K051007
9	046581 ☼♣	Vietnam	Power Gen	Follow Up	$316,850	Subsequent application rejected, see K052389

Appendix D continued

INC PPI PROPOSALS APPROVED IN FY94						
10	048168 ☼♣	Laos	Power Gen	Closed	$476,800 (Committed) $403,199 (Disbursed)	Not Implemented
11	047660 ☼♣	Cambodia	Power Gen	Follow Up	$347,313 (Committed) $342,270 (Disbursed)	Subsequent application rejected, see K051005
12	048155 ***	Bangladesh	Power Gen	Follow Up	$372,450	Subsequent application rejected, see K051365
13	042806 ☼♣	Panama	Pipeline	Cancelled & Closed	$460,240 (Committed) $148,061 (Disbursed)	
14	048697 ☼♣	Argentina	Hazardous Waste	Cancelled & Closed	$350,000 (Committed) $87,000 (Disbursed)	
15	048016 ♦♣	Mexico	Power Gen	Disbursing	$99,000	In Audit

Appendix D continued ☞

INC PPI PROPOSALS APPROVED IN FY94						
16	035736 ☼♣	Mexico	Hazardous Waste	Closed	$924,040	Not Implemented
17	047401 ☼♣	Mexico	Potable Water	Closed	$83,414	Not Implemented
18	048330 ☼♣	Venezuela	Railway	Follow Up	$92,059 (Committed) $88,158 (Disbursed)	
19	045970 *	Ghana	Pipeline	Closed	$66,200	First of three applications approved on this project
20	047296 *	Ghana	Pipeline	Closed	$200,000	Second of three applications approved on this project.

Appendix D continued

INC PPI PROPOSALS APPROVED IN FY93						
	K-Number	Country	Sector	File Status	$ Disbursed or Committed	Comments
1	046735 ☼♣	China	Power Gen	Follow Up	$345,000	
2	044400 *	Mexico	Rapid Transit	Follow Up	$412,050	Subsequent application approved, see K052128
3	045763 ♦♣	Venezuela	Rail	Follow Up	$99,990	

Appendix D continued

INC PPI PROPOSALS APPROVED IN FY92						
	K-Number	Country	Sector	File Status	$ Disbursed or Committed	Comments
1	044515 ✡♣	China	Airport	Follow Up	$484,000	
2	043004 ♣	Philippines	Power Gen	Follow Up	$228,172	Success. See also K046502 (approved) and K050712 (declined)
3	042741 *	Tanzania	Pipeline	Closed	$15,000 (Committed) $14,710 (Disbursed)	Subsequent app. approved, see K051651. Prior apps for related project different applicant, see K040486 and K026817.

INC PPI PROPOSALS APPROVED IN FY91 & EARLIER						
	K-Number	Country	Sector	File Status	FY Approved	$ Committed or Disbursed
1	040000 ☼♣	Vietnam	Airport	Closed	91	$321,110
2	040601 ☼♣	Argentina	Pipeline	Closed	91	$318,750
3	041311 *	Mexico	Rapid Transit	Closed	91	$495,233
4	035746 *	Tanzania	Pipeline	Closed	90	$646,563
5	026817 *	Tanzania	Pipeline	Closed	88	$420,330

** denotes proposals which were included in the count of 63 proposals which had been approved but which were not counted in the count of 52 project having been approved. The reason they were not included was because there was more than one proposal associated with each of these projects, another of which was included in the count of 52 approved projects.*

♣ denotes the 46 projects which were rated for probability of implementation.

*** denotes projects which were not included in the probability of implementation rating or in the survey of risks. Each of these projects was withdrawn from the sample at that stage of analysis because the projects were too new to make such judgements.*

**** denotes projects which were not included in the probability of implementation measure due to conflicting opinions on status.*

☼denotes the 28 projects which were analyzed for evidence of PPI risk factors.

♦ denotes projects withdrawn from risk analysis due to inadequate information.

APPENDIX E

INC PPI ACTIVITY IN FY96-97, NOT INCLUDING APPROVALS

CURRENTLY IN INC PIPELINE (As of May 1997)						
	K-Number	**Country**	**Sector**	**File Status**	**$ Requested**	**Comments**
1	052399	Guyana	Power Gen	In Circ.	$1,844,000	
2	051323	China	Power Trans	In Circ.	$500,000	
3	052671	Philippines	Water	In Circ.	$635,024	
4	052089	Morocco	Power Gen	In Circ.	$499,147	
5	052506	Congo	Power Gen	Awaiting Circ.	$349,200	
6	052676	Uruguay	Pipeline	Awaiting Circ.	$412,848	
7	None Yet	Philippines	Power Gen	Expecting Proposal	N/A	

Appendix E continued ⇨

CURRENTLY IN INC PIPELINE (As of May 1997)						
8	None Yet	China	Power Gen	Expecting Proposal	N/A	

DECLINED & REJECTED IN FY96-7 *(THIS IS NOT AN EXHAUSTIVE LIST)*						
	K-Number	**Country**	**Sector**	**File Status**	**$ Committed or Disbursed**	**Comments**
1	050791	China	Power Gen	Rejected after Circ	$350,000	Second application on this project.
2	052389	Vietnam	Power Gen	Rejected after Circ.	$500,000	Second application on this project
3	051005	Cambodia	Power Gen	Rejected after Circ.	$500,000	Second application on this project.
4	051365	Bangladesh	Power gen	Rejected after Circ	$500,000	second application on this project. Now teamed-up with US company.

Appendix E continued ⇨

DECLINED & REJECTED IN FY96-7 *(THIS IS NOT AN EXHAUSTIVE LIST)*						
5	050203	India	Port	Rejected after Circ	$348,827	
6	050712	Philippines	Power Gen	Rejected before Circ.	$225,000	Third application on this project. Successful result.
7	051007	India	Power Gen	Rejected before Circ.	$499,480	Second application on this project
8	051187	Vietnam	Airport	Rejected before Circ	$496285	
9	051491	Turkey	Power Gen	Rejected before Circ.	$500,000	
10	051837	Kenya	Pipeline	Rejected before Circ.	$432,727	
11	051537	Kenya	Railway	Rejected before Circ.	$100,000	
12	None	Mexico	Pipeline	Rejected request for Letter of Interest	N/A	Other Canadian firms in bidding

Appendix E Continued ⇨

INC PPI CANCELLATIONS IN FY96					
	K-Number	Country	Sector	File Status	Comments
1	047479	Ghana	Pipeline	Approv. 95 Cancel. 96	Third approval on project. Canceled after disbursements began. Company still pursuing project.
2	048471	Philippines	Toll Road	Approv. 95 Cancel. 96	No disbursement

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IMAGE EVALUATION
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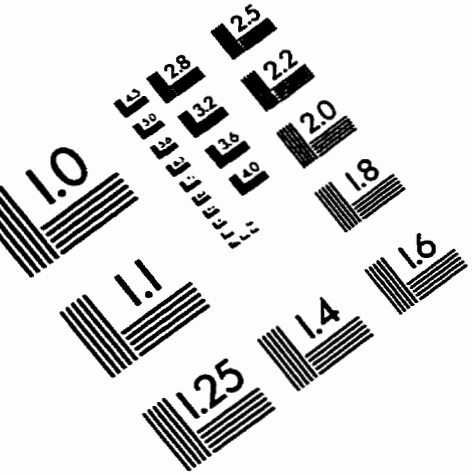

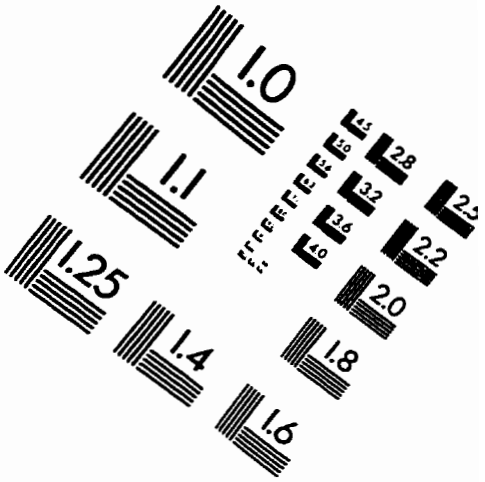

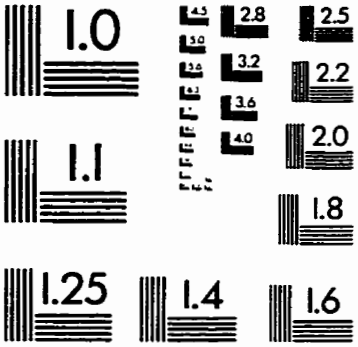

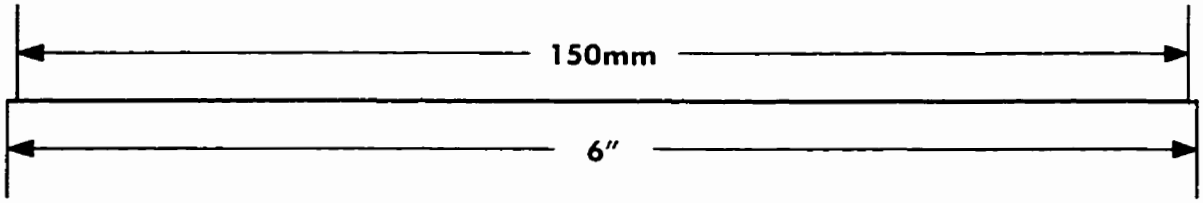

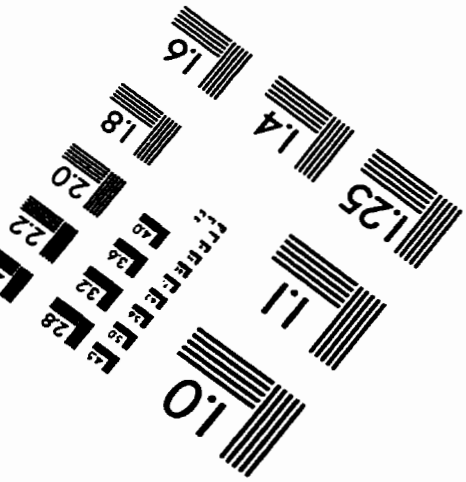

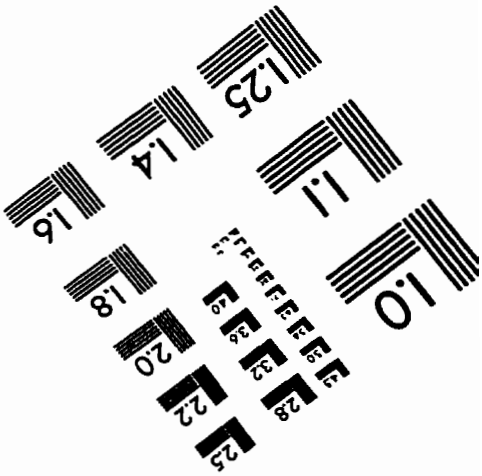

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