NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY
TABLE RONDE NATIONALE SUR L'ENVIRONNEMENT ET L'ÉCONOMIE

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NATIONAL ROUND TABLE WORKSHOP ON SUSTAINABLE CITIES SOLUTIONS

MARKET INFORMATION PACKAGES FOR BREAK-OUT GROUPS

Prepared by The Bayswater Consulting Group, Inc.
based on information supplied by
the World Bank,
Environment Canada,
the Canadian International Development Agency,
the United Nations,
the U.S. Agency for International Development
and other sources

January, 1998

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RATIONALE FOR CASE STUDY SELECTION

There are opportunities to tackle urban environmental issues in virtually every country on the globe. Significant Canadian diplomatic, development assistance and trade links with some 80 countries, involving hundreds of cities, in all regions of the world. Canadian companies have important strengths relevant to both cold and hot-climate countries, although they tend to have more experience with those in cold and temperate conditions. It is plain, therefore, that selecting the most appropriate countries and cities in which to focus Canadian efforts to promote sustainable urban solutions is a difficult task, though not an impossible one.

For purposes of the current selection, the beginning point was data collected by the World Resources Institute in Washington, D.C., on the countries of the world. On each continent, the country selected for inclusion was those among the developing and emerging economies *with the most cities having a population of 750,000 or more* as follows:

URBAN INDICATORS FOR MAJOR DEVELOPING/EMERGING COUNTRIES OF THE WORLD

COUNTRY	URBAN POPULATION, 1995 & 2025 MILLIONS	PERCENT URBAN, 1995 & 2025	NUMBER OF CITIES OVER 750,000 NOW	RANK AMONG DEVELOPING/ EMERGING COUNTRIES:
Brazil	1995: 126,599 2025: 204,791	1995: 78 2025: 89	14	4
China	1995: 369,492 2025: 831,880	1995: 30 2025: 55	51	1
India	1995: 250,681 2025: 629,757	1995: 27 2025: 45	34	2
Russia	1995: 111,736 2025: 118,705	1995: 75 2025: 86	16	3
South Africa	1995: 21,073 2025: 48,673	1995: 51 2025: 69	6	8*
TOTAL	1995: 879,581 2025: 1,833,806	N.A.	121	N.A.

Source: World Resources Institute, *World Resources, 1996-97*, Appendix A. Countries with more large cities than South Africa include: Indonesia (9), Mexico and Pakistan (8 each), Ukraine (7). The Republic of Korea also has 6 cities.

A good case could be made for including Indonesia, Mexico, Pakistan, and Ukraine, as well as South Korea in the list of potential countries to receive Canadian attention in the future. They were not included in order to keep the number of packages to five or six.

Chile was added to the list of markets profiled at the request of Industry Canada because of the growing Canadian interest in the urban sector there, following entry into force of a free trade agreement between the two countries.

The only other countries with large numbers of major urban centres are the United States and Germany. While Canadian "team-based" approaches are also relevant there, e.g., in marketing energy-efficient housing technology and products, the relationships are well established. The logic and wisdom of this position on target countries for sustainable cities effort is, of course, open for further debate at the workshop.

OPPORTUNITIES IN BRAZIL

Country Background

Cities are at the centre of Brazil's economic, political and cultural development. The country is highly urbanized, with 75 percent of its population living in urban areas; the vast majority live in medium-to-large cities. The table below contains estimates and projects of population for all urban agglomerations that had at least 750,000 inhabitants in 1990.

CITIES	1990	2000	2015
Sao Paulo	14847	17803	20783
Rio de Janeiro	9515	10213	11554
Belo Horizonte	3339	4429	5540
Porto Alegre	2921	3750	4648
Recife	2772	3538	4381
Salvador	2375	3246	4134
Fortaleza	2193	3116	4034
Curitiba	1894	2637	3399
Brasilia	1547	1869	2429
Campinas	1339	1869	2429
Belem	1269	1879	2498
Santos	1075	1265	1551
Manaus	962	1417	1893
Goiania	913	1146	1444

Source: United Nations, World Urbanization Prospect: The 1994 Revision.

Brazil's 155 million population and rich resources make it a country of tremendous potential. However, it also has high levels of income inequality and extreme poverty, particularly in the Northeast, which has 30 million people living below the poverty line. Environmental problems of deforestation in the Amazon, greenhouse gas production, and loss of biodiversity in the region are of global environmental concern.

Brazil has five priorities for the environment:

1. *Municipal wastewater treatment*: Only about 10 percent of urban wastewater currently receives any form of treatment. Public funding is not keeping pace with the need for municipal water infrastructure and a long-term private concession model has not yet been successfully implemented.

2. *Hazardous industrial waste*: There are no hazardous waste storage and disposal facilities in São Paulo and Rio de Janeiro.

3. *Sewage collection*: Much of the peripheral areas of Brazil's major cities are not connected to the municipal sewage network.

4. *Municipal solid waste*: Only a small percentage of solid waste is disposed of in environmentally safe landfills.

5. *Air pollution*: This is particularly acute in industrial parks such as Cubatao, located near Santo. Automobile emissions are a growing problem in São Paulo.

The key strategic issue facing urban leaders in the country is how to turn the above environmental challenges into economic winners, since all appear on the surface to involve large-scale public expenditure with limited commercial and employment benefits. Unless there are rather visible and direct improvements in municipal services, especially in the large unserviced areas of cities, there may be little support for straight environmental remediation and clean-up.

Strategic Considerations for Canadians: Urban Environment Sector

Canadians have been working for some time in both São Paulo and Rio de Janeiro, the two mega-cities of Brazil, often in contact with State-level officials who can address the full range of regional environmental issues. Canada has much to offer Brazil, particularly in the area of water management, because of its experience dealing with a large number of authorities and institutes. The relationship between Brazil, its states and municipalities is similar to that between Canada, its provinces and municipalities. Canada has developed a number of novel, inter-institutional approaches to pollution prevention and water management which rely upon integrated, holistic, publicly available information and multi-stakeholder approaches to decision-making. Given the present magnitude of the environmental problems in the region, cooperative projects with Canada can help to bring greater integration to the functions of various authorities and institutions.

The State of São Paulo

The State of São Paulo, densely populated and heavily industrialized, is the industrial centre of Brazil generating 45% of its GDP. There are approximately 33.2 million people or 21.1% of the total population of Brazil living in the State which occupies only 2.92% of Brazil's total land mass. In contrast to other large Third World country cities such as Jakarta and Accra, the city of São Paulo is considered a relatively wealthy city, with a population of more than 9.6 million people. The region has approximately 3.5 million vehicles and over 100,000 small, medium and large size industries. An estimated 40,000 of these industries are considered environmental polluters, with only 1,200 responsible for 90% of the pollution.

Key to the health of the city and the region as well as the productivity of its factories is water. Water resources in the Metropolitan São Paulo Region are in critical condition, however. The river systems of the Region bear a significant pollution load produced by the municipalities and industries. The key waterway, the Piracicaba River basin is home to 3 million people who place an enormous demand on the river. It supplies 60% of the drinking water for the 20 million residents of the Metropolitan São Paulo Region, and it provides the water supply for thousands of industrial plants and also for the area's diverse agriculture. Given these demands both the availability and quality of the Piracicaba River's water are serious environmental concerns.

Another major river in the State is the Tiete, whose head waters and many tributaries are close to the sea. The rivers flow inland and eventually exit to the Atlantic Ocean through the River Plate at Buenos Aires in Argentina. The course of the river results in the discharges from the Metropolitan São Paulo Region being carried to other urban and rural areas downstream and to other countries as well. It is estimated that an investment of approximately US$ 2.6 billion is needed to restore the health of the river.

A review of the top environmental priorities for São Paulo drafted by the World Bank included substandard housing, surface water pollution, accumulations of hazardous waste, and poor sanitation, as well as a general lack of urban infrastructure for the poor of the city. These conditions have naturally had a significant impact on the health and living conditions of the people of São Paulo, particularly the poor.

State of Rio de Janeiro

The State of Rio de Janeiro lies on the south-east coast of Brazil, separated by the Rio Preto and Rio Paraíba do sul from the neighbouring state of Minas Gerais to the north. To the north-east is Espírito Santo, to the south-west São Paulo. The coastline of the state is indented; Guanabara Bay, between the cities of Rio de Janeiro and Niterói is claimed to be the best natural harbour in the world.

The State, with slightly more than 10 million inhabitants is dominated by Rio de Janeiro Metropolitan Region, with 9.8 million people, including the Rio de Janeiro Municipality (RJM) with 5.7 million inhabitants. The municipality alone has 56 percent of the population of the state and 77 percent of the income. Rio Municipality generates roughly 85 percent of the State's income and 4,500,000 jobs.

The extreme concentration of the State's population in metropolitan regions means that the most important environmental problems are urban in nature. High income differences within the population mean that the environmental problems of poverty, such as lack of access to sanitation services -- sewage and solid waste collection -- and inadequate housing conditions co-exist with the environmental problems of wealth, such as pollution from increasing traffic volume and unmet demand for environmental amenities.

The State has several critical pollution problems that are causing significant economic damages in terms of health costs and the loss of environmental amenities. These problems are concentrated in the Metropolitan Region and the Paraiba do Sul River Basin.

Water pollution in the Guanabara Bay Basin causes moderate health and very high amenity costs. Water quality in most of the basin has been deteriorating rapidly. Some tributaries and parts of the Bay are essentially open sewers and biologically dead. The expansion of basic sanitation services will lead to very important improvements in the household environment. Even though additional primary wastewater treatment facilities are being built, the current measures are insufficient to bring about major improvements in the water quality of Guanabara Bay.

Specific stretches of the Paraiba do Sul and several of its tributaries are badly polluted by industrial wastes and sewage. The river receives effluents from the heavily industrialized region of Volta Redonda. The main reason for concern about environmental conditions in the Paraiba basin is the role of the river as the primary source of drinking water for the Rio de Janeiro metropolitan area. Spills and other accidental discharges of hazardous pollutants from industrial plants upstream of the pumping station have occurred and remain a problem.

Each day, 13 million person-trips take place in the Metropolitan Region, of which 40 percent are home-to-work trips. Rio's geography and topography with its hills and tunnels is prone to traffic congestion. While Rio does not rank among the world's cities with the very worst air pollution problems, particulate air pollution in the northern part of the Rio Municipality and the Baixada Fluminense (Basin III) is serious enough to cause significant health damages including premature mortality. Although these particulates are mostly from industry they are also due to transport emissions and solid waste burning.

Air quality in the Metropolitan Region has been worsening steadily over the last five years after important gains that were attained between 1975 and 1985. Monitoring of ground-level ozone is insufficient but climatic conditions and emission characteristics would suggest the possibility of a serious ozone problem in Rio. In addition, there are instances of toxic but localized street-level pollution caused by vehicle emissions.

The Opportunity

Priority areas for technical assistance with Brazil's urban regions include:

- establishment of performance contracts for the environmental agencies;
- tertiarization of environmental management functions;
- restructuring of environmental agencies;
- development of public polluter disclosure strategy;
- data and information management;
- development of a water basin agency system;
- development of an air pollution management program;
- measures to reduce garbage burning;
- measurement of currently un-monitored pollutants;
- development of an emergency response system for water supply.

Opportunities in specific sectors include:

Water Quality

Opportunities exist in all of Brazil's largest cities for water quality programs. The settlement density in these cities allows for higher economies of scale because it is easier to connect a community with water and sanitation services.

The World Bank found that in the dense, low-income settlements of Brazil, the per capita investment costs of providing individual house sewer connections were brought down to as little as US $45 whenever linkages with the trunk networks were feasible. Experience there has shown that people who live close together find it easier to recognize common problems and work together on solutions.

Air Quality

State governments in São Paulo and Rio are committed to improving metropolitan transport. For example, in the case of Rio, the main goals are: to extend the existing subway, construction of which has been halted since 1987; to transform the suburban rail system into a modern Metro-like operation; to increase participation of the private sector in the operation and investment of all urban transport systems; and to improve productivity and reduce costs and introduce policies which will promote the use of urban transport.

Energy

Brazil is moving rapidly to modernize and open its $500 billion economy and major sectors such as energy, telecommunications, and transportation are soon to be privatized. Within this context, the energy sector in Brazil is undergoing a dramatic transformation. The estimated energy needs to sustain the impressive economic growth are immense and generation capacity is already below requirements, with brown-outs already occurring in major industrial areas of São Paulo. At the same time, public sector investment is not only failing to meet current and projected demand levels, but estimates are that investments on the order of $10 to $15 billion will be required by the year 2000 to meet rising demand.

In response to the urbanization challenge, governments have realized the need to work with the private sector to augment public sector investments. Privately operated companies are increasingly assuming responsibility for basic infrastructure services like water supply, sanitation and public transport.

Canadian Financing

In recent years, the Canadian International Development Agency's (CIDA) bilateral assistance to Brazil has focused primarily on the transfer of knowledge in the environmental sector. After a series of consultation missions to Brazil in 1995, CIDA and its counterpart, the Brazilian Cooperation Agency, have agreed to diversify bilateral activities and add new dimensions to the current commitment in the environmental sector, particularly in the areas of social development and public-sector reform.

In early 1996, CIDA's bilateral program established the Canada-Brazil Technology Transfer Fund. The Fund has a budget of C$15 million over five years with which to support individual projects between Canadian and Brazilian institutions. CIDA contributions to individual projects are expected to be about C$500,000. The Fund is not designed to duplicate CIDA's Industrial Co-operation Programme (CIDA INC.), which supports joint ventures between private companies in Canada and the developing world, nor the Programme for Export Market Development (PEMD) administered by Foreign Affairs and International Trade Canada.

Projects receiving support under the Fund typically involve training, technical exchanges and other advisory services in areas where Canadian institutions have strong capacities which respond to the priorities of Brazilian partners.

In addition to the bilateral program, Canada provides financial support for Brazilian community groups through the Canada-Brazil Fund. These groups work primarily in training and development, income support, employment creation, preventive programs in health care, nutrition, drugs and AIDS, and in water treatment and sanitation facilities.

The Canadian Partnership Branch supports several partnerships between Canadian and Brazilian private-sector and voluntary organizations. Many of the projects supported by CIDA focus on environmental protection, professional training, public education, national and regional development, and the protection of human rights, particularly the rights of women and children. In 1996-97, there were 116 active projects managed by Canadian non-governmental organizations and institutions, and 12 projects initiated by Canadian businesses.

World Bank Financing

The World Bank is working with national, state and local governments to support the transition from publicly controlled environmental and infrastructure services to a system where the state takes on key regulatory and monitoring functions and transfers some operations and investments to the private sector. Partnerships with the private sector have also been encouraged in environmental policy implementation. Self-reporting, environmental audits, voluntary agreements and formation of semi-independent river basin authorities are increasingly being advocated for controlling the region's industrial pollution.

More specifically, the World Bank is supporting water and sanitation projects in six of Brazil's largest cities. Water quality and pollution control projects are being implemented to protect drinking water supplies by extending sanitation services to some of the poorest settlements and strengthening institutional capacity at the state and municipal levels.

There is also a growing emphasis on empowering those closest to environmental problems, in local governments and the community. Neighbourhood organizations such as water and sanitation user's associations play an important role in providing solutions. For example, in São Paulo, neighbourhood associations took on the role of negotiating with municipal project staff where water and sewerage lines should go to best meet residents' needs. The associations helped to redefine service provision to make it compatible with the community members' needs.

Some of the Bank's first projects were located in São Paulo and Minas Gerais. In 1993, the Bank committed $245 million to water quality and pollution control in São Paulo and $145 million in Minas Gerais. In São Paulo, projects also included the adoption of strategic service planning for the Guarapiranga watershed as well as closing dumps and opening new sanitary land fills.

The Bank's recommended strategy for Rio de Janeiro, operating through several urban environmental management projects is as follows:

- The proposed Rio de Janeiro State Reform would contain an environmental component that includes support for the staff and budgeting reforms and the development of the State Environmental Action Plan.

- The National Environment Project is providing financing for a comprehensive study of environmental problems of the Sepetiba and Ilha Grande Regions.

- The Water Quality and Pollution Control Project supports the development of a water basin agency system for the Rio Paraiba do Sul.

- The National Industrial Pollution Control Project provides financing for the cleanup in Volta Redonda.

The proposed Rio de Janeiro Mass Transit Project would comprise three inter-related components:

- an Institutional and Policy Development component to help in (i) Supporting the process of concession of FLUMITRENS to the private sector; (ii) preparing an integrated Transport Policy, Land Use and Air Quality Management strategy for the Rio de Janeiro Metropolitan Region; (iii) a comprehensive retraining program for FLUMITRENS staff

- an Infrastructure and Equipment component to build/rehabilitate the transfer stations between the trains, metro, buses and ferries; and

- an Environmental and Traffic component to support a pilot program to initiate a vehicle inspection/maintenance program; and a comprehensive review of traffic violations.

The overall cost of the proposed project was estimated at US$ 373 million. The Bank would finance US$ 185 million.

The Water Sector Modernization Project will include the following components which will apply to any utility providing water & sanitation services in the N, NE, & CW regions: (i) management and promotion; (ii) water sector institutional and regulatory reform, including private sector participation; (iii) operational development to eligible utilities willing to increase efficiency, improve cash flow and demonstrate creditworthiness; and (iv) investment of eligible utilities to expand water supply production and distribution and sewage collection, treatment and final disposal. The total project cost is estimated to be US$ 300 million, which US$ 150 million will be financed by IBRD, US$ 45 million by the water utilities and US$ 105 million by OECF.

Inter-American Development Bank Financing

The Inter-American Development Bank has financed 24 projects in the environmental protection sector in Brazil, valued at US$ 2.2 billion. Some of these funds have helped finance the Tiete River Pollution Reduction Program in the State of São Paulo.

The IDB is in the early stages of developing a $600 million Municipal Urban Investment Fund. The Fund would promote the institutional strengthening of municipalities to bring about improvements in the efficiency of municipal social expenditures. It would finance: (a) rehabilitation projects; (b) improvements in urban infrastructure services; (c) neighbourhood improvements; and (d) activities that improve access to and delivery of social services.

The Bank is also supporting the Basic Sanitation Program for the Guanabara Bay Basin, Phase I includes six sub-projects: (a) sewage collection and treatment, including treatment plants, collectors, trunk lines and connections in the bay's most heavily populated areas; (b) potable water supplies, including pumping stations, distribution tanks and networks; (c) solid waste collection and disposal, including trash collection, rehabilitation of solid-waste transfer stations, recycling and incineration plants, as well as institutional strengthening for municipalities in solid waste collection and disposal and in supervision of private firms; (d) canal and river drainage, including works to prevent flooding; (e) complementary environmental programs to control industrial contamination, monitor environmental conditions in the bay and provide environmental education for the area population; and (f) digital mapping and municipal institutional development. Total cost is $793 million ($350.0 million from IDB; $294.2 million co-financing from the Overseas Economic Cooperation Fund (OECF) of Japan).

Other International Development Assistance Activities

Other development agencies active in Brazil include the United Nations Population Fund (UNFPA), United Nations Children's Fund (UNICEF), United States, Japan, and Germany. In FY96, the United States provided $12.5 million to Brazil, which is about 24 percent of the amount provided by Japan and 31 percent of the amount provided by Germany.

Current Canadian Commercial Involvement

Brazil is currently the largest of Canada's trading partners in the region. As noted, CIDA INC. has an active program in Brazil, reflecting the interest of the Canadian private sector in Brazil. Currently, CIDA INC. is providing support to 16 Canadian companies working in partnership with the Brazilian private sector.

The number of requests from the Canadian private sector is increasing and it is expected that many more Canadian firms will be exploring the opportunities in Brazil in the coming years. Sectors of interest include energy, conservation, health, gas and electrical equipment, plastic moulding, elevator manufacturing, and wastewater and recycling systems.

A major example of current Canadian involvement is the *Watershed Management 2000 Project* in the State of São Paulo, launched in 1997 as a three-year project. The $9.75 million effort aims to improve water quality management in the State of São Paulo by drawing on a range of relevant Canadian and private sector capacities, such as informatics tools, regulatory approaches and specific wastewater treatment technology. CIDA is contributing $3 million to support this initiative, through the Canada-Brazil Technology Fund. Environment Canada will co-ordinate the Canadian project team, which will involve a wide range of expertise from the Canadian public and private sectors.

The project is expected to generate approximately $2.5 million worth of contracts for Canadian companies. There are 22 additional watersheds in the state of São Paulo where this model could be applied. Canadian technology is to be transferred in five main areas of concern with the aim of building capacity in the State of São Paulo:

- Decision Support Systems, including the determination of appropriate hardware and software, the archiving of data, the automatic and remote acquisition of new data, the interpretation of data and its dissemination for public use.

- Process of certification. This will be for the certification of the work force of wastewater treatment plants that allows for plant optimization as well as the certification of laboratories for the quality control and quality assurance of data.

- Planning and implementation of Pollution Prevention Programs.

- Strengthened capacity to identify and mediate nutrient and toxics loads in wastewater.

- Policies regarding sludge management will be examined.

CIDA is also helping to sponsor an initiative with *B.C. Hydro International (BCHIL).* Launched in March 1997, the Electrical Energy Efficiency project is expected to help increase the environment and natural resources management capacity in key Brazilian institutions. BCHIL's mandate is to bring B.C. Hydro's extensive technical and management experience and products to clients in the international energy marketplace. With its experience and long-term stability, BCHIL is one of the most efficient operating utilities in the world with projects in a number of countries including Brazil.

Canadian private sector initiatives are also expanding in the region. During Team Canada's visit to Brazil in January 1998, Canadian firms signed 66 new business deals. Those involved in "sustainable city"-related ventures are as follows:

- *Export Development Corporation* - Among seven new agreements to assist Canadian exporters, the EDC has signed a $60-million line of credit with Embratel of Rio de Janeiro, Brazil's long distance telecommunications company. The financing supports the sale of Canadian telecommunications equipment by Nortel of Ottawa and Newbridge Networks of Kanata, Ontario.

- *Golder Associates Corporation* - Golder Associates of Pointe-Claire, Quebec has signed a memorandum of understanding with ESC Consultoria e Engenharia Ltda. of Belo Horizonte to merge ESC into the Golder Associates group of companies. The $1.4 million deal will allow Golder Associates to strengthen its base in Brazil and give ESC access to Golder's technology base. Golder Associates specializes in geotechnical and environmental engineering, and environmental sciences and management.

- *HYGREX-Spehr Industries* - This Bolton, Ontario firm has signed an exclusive distribution agreement with YETE Engenharia of São Paulo for the marketing and distribution in Brazil of the HYGREX closed-loop drying systems, an award winning environmental technology. HYGREX specializes in drying applications where water is basically the only medium to be removed and employs 20 people.

- *Mackenzie International Strategies Inc.* - Mackenzie has signed a one-year contract with Enger Telecommunicacoes Ltda. of São Paulo, a telecommunications project manger and contractor, to give them support and assistance in the planning and implementation of telecommunications infrastructure projects (inside and outside plants, cellular, CATV, corporate networks) and in the search of Canadian methodologies and technologies to bring the company's productivity and expertise up to North American standards.

- *Miller Thompson* - This full-service legal firm has signed a memorandum of understanding with Azevedo Sette Advogados of São Paulo to work together, with the assistance of Canadian Environmental Solutions Inc. (CENSOL), to facilitate the memorandum of understanding signed on January 16, 1998 between the Ontario International Trade Corporation and Tiete-Parana Development Agency. Miller Thompson offers expertise in a variety of services, including environmental law, infrastructure renewal, and privatizations.

- *Ontario International Trade Corporation* - OITC has signed a memorandum of understanding with the Tiete-Parana Development Agency (ADTP) of São Paulo to work together to explore opportunities for Ontario companies to participate and compete in the market for environmental, transportation, energy, agribusiness, tourism and urban development technologies, services and products in the Tiete-Parana Macro-Region in Brazil. The OITC is a division of the Ontario Ministry of Economic Development, Trade and Tourism, and leads trade promotion and development activities for the Ontario Government.

- *PCI Geomatics Group Inc.* - This company has entered into a partnership with Threetek Ltda. of Rio de Janeiro, a leading Brazilian image mapping product and service provider. The new company, Threetek/PCI Geomatica do Brasil, will build on the PCI leading-edge image processing and digital cartography software to expand its presence in Brazil. PCI's minority equity investment will enable Threetek to open and operate a regional education and training centre and expand its image operational mapping facility. Expanded penetration of the Brazilian market is expected to exceed $2 million in sales over the next three years for PCI.

- *Positron, Inc.* - This Montreal company has signed a memorandum of understanding with the City of Contagen, Minas Gerais, that will provide a new and completely private integrated emergency telecommunications service (911 system) for the City of Contagen. Positron specializes in the design and manufacture of 911 emergency products and software, including specialized telephone and radio dispatchers, emergency systems for public safety, and fibre-optic equipment. The company is the provider of the 911 emergency centre software and equipment in more than 2,600 cities in North America. The agreement is valued at $31.56 million.

- *Shawinigan International Inc.* - This firm has signed a co-operation agreement with Servicio Nacional de Aprendizagem Industrial Departamento Nacional (SENAI), a technical and professional training institution. The two parties will explore ways of further developing their relationship with the objective of jointly managing and implementing international projects, technical assistance in the development of human resources, and environmental technology transfer projects.

- *Teledata Ventures Corp.* - A Vancouver company, Teledata has signed a contract with Polinet Engeharia e Sistemas Telematica of São Paulo to manufacture, distribute and operate a computerized management system for vehicle fleets. Polinet has entered into exclusive agreements with Bradesco, Latin America's largest bank, and Petrobras-BR and Ipiranga, Brazil's two largest oil companies. The Canadian investment is about $6 million. The total project in 1998 is valued at $21 million.

- *Universal Systems Ltd., (CARIS)* - This software and systems integration company from Fredericton, New Brunswick develops, supports and markets geographic information systems (GIS). It has signed a contract with Directoria de Hidrografia e Navegacao (Brazilian Hydrographic Office) to provide CARIS software system for charting and GIS (geographic information system) and training and support.

- *Waterloo Hydrogeologic Inc.* - This firm is working with the Geological Institute of the Ministry of the Environment in the State of São Paulo. They have signed a memorandum of understanding to provide services to the newly created Watershed Management Agencies (conservation authorities) throughout the State of São Paulo. These services include the development and implementation of environmental databases, hydrogeological mapping, groundwater resources vulnerability and assessment. The agreement is valued at $2.5 million, of which $1.25 million is Canadian content.

- *Wintec EMC Energy Management Corporation* - This Toronto company has signed a joint venture agreement with Toledo Ridolfo & Associates of São Paulo to create an energy and environmental services company in São Paulo which will be known as Wintec EMC do Brasil. This agreement provides for a technology transfer and the development of energy projects using Canadian technology, training, design and engineering services and local personnel for project delivery. Several projects have been identified, including a street lighting project for which a letter of intent is also being signed during Team Canada. The new company is pursuing projects related to energy efficiency retrofits for commercial and industrial customers, toxic sludge treatment, recycling of mercury from fluorescent lamps and mercury vapour street lights and co-generation. The joint venture is expected to generate about $10-20 million in annual sales. Wintec specializes in energy management, and environmental technologies and co-generation.

Wintec has also signed a co-operation agreement with the Sister Cities Institute for International Cooperation of São Paulo. The Institute is a non-profit organization that provides consulting services, technology assessments, training and support to Brazilian cities for the improvement of or implementation of new infrastructure facilities. The agreement provides for the provision of consulting services, technology transfer, training programs, financing and the design, engineering and implementation of energy efficiency and environmental solutions for associated cities in Brazil. The agreement is for the delivery of projects amounting to $2.8 million in year one, and growing to $10 million in year three.

There is a further co-operation agreement with the Brazilian Association for Ecology and Air Pollution Prevention (ABEPPOLAR) of São Paulo. ABEPPOLAR's objective is to promote fundamental technical and scientific capabilities of Brazil in co-operation with international leading edge companies. The agreement is for the development of joint co-operative programs for research, studies, know-how and technology transfer with the focus on reducing environmental impact. The specific areas of co-operation are ecological environment; sanitation and water treatment; air and soil pollution control; energy and energy alternatives; environmental education and civil defence; eco-tourism; bio-mass and bio-diversity. Under the terms of this agreement, Wintec EMC will provide technology, services and training for the implementation of energy and environmental projects identified by ABEPPOLAR.

In addition, there is a memorandum of understanding with APLIQUIM Environmental Technology of São Paulo for the delivery of projects in a joint venture. The agreement provides for the use of Brazilian developed and patented Mercury recovery technology. The APLIQUIM technology will be used exclusively by Wintec EMC as part of its integrated approach for energy efficiency and environmental solutions, particularly for municipal street lighting projects, providing a substantial competitive advantage. Wintec will also promote this technology in other South American countries where it is presently developing energy projects, and in Canada. The agreement is valued at $500,000 to $1 million annually.

Finally, Wintec is working in joint venture with NS Power Services Ltd. of Halifax, Nova Scotia, a wholly owned subsidiary of Nova Scotia Power Inc. Both have signed a letter of intent with the Municipality of Angra dos Reis in Rio de Janeiro, Brazil, as a result of a proposal presented to the city of Angra dos Reis for an integrated energy efficiency and environmental program that includes the retrofit of all existing street lights in this city. The project will be a pilot project that will be used to demonstrate the opportunities and benefits for energy conservation at the municipal level.

The project will utilize Canadian-made, energy efficient street light fixtures, design, engineering and project management and will be conducted utilizing local electricians working under Canadian project managers. All design, engineering services and the majority of the products and components used will be Canadian. The first phase of the agreement is valued at $4.5 million, with subsequent phases reaching over $10 million.

Competitive Situation

The Brazilian infrastructure and building construction industry is relatively well developed, particularly in São Paulo, and will continue to dominate both municipal and building construction projects in the formal sector. German and U.S. companies are the main competitors to watch for in in competing for large-scale infrastructure projects.

Apart from a few high-profile infrastructure projects put to tender by IFIs, the Brazilian infrastructure and building market will not likely be breached by major foreign interests acting on their own for some time. There are likely to reciprocal cross-border arrangements involving nearby countries and transnational economic structures. As indicated by the recent Team Canada mission results, local industries are open to joint ventures and strategic alliances in all fields, based on unique strengths of each company.

Meeting the Competition

Canadian strategies should take into account the strengths and technical sophistication of the Brazilian construction industry, particularly in key aspects of basic infrastructure and in the high-rise and medium- rise building sectors. Accordingly, viable investment opportunities could be considered in the longer term, complemented by joint ventures and some technology licensing for production. In the short term, Canadian companies could focus on exploring joint ventures, marketing selected materials and components, and transferring technology for production in Brazil for both local and nearby export markets.

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OPPORTUNITIES IN CHILE

Country Background

Chile has over 14 million inhabitants, and covers an area of 757,000 square kilometres stretching along the Andes. Over one third of the population lives in and around the capital of Santiago. Chile's open market economy, stable political system, and clearly stated investment regulations have created the most dynamic market in Latin America.

CITY	1990	2000	2015
Santiago	4588	5439	6255

Source: United Nations, World Urbanization Prospect: The 1994 Revision.

Chile has the fastest-growing economy in the region, with annual economic growth averaging almost 7 per cent over the last decade. With low unemployment (6.8 per cent), falling inflation (6.2 per cent) and rising wages (7 per cent), this country has established its credentials as a desirable trade and investment partner.

Total trade between Canada and Chile has increased dramatically, more than doubling from $357 million in 1992 to $760 million in 1996, with Canada enjoying a positive trade balance of $75 million. Chile's growth has been mainly in natural resource-based industries such as mining, forestry, agriculture and fishing, but trade is booming in all areas, a sign of the nation's outstanding economic performance.

Chile, however, is increasingly aware that there are limits to growth, and that it cannot continue to use up its natural resources indefinitely. The concept of sustainable growth has taken on new meaning in Chile, and there is now a movement to protect the environment and use resources efficiently. The need to diversify exports and rely less on raw resources has also become apparent. These are issues that Canada has successfully tackled in the past, in precisely the same industries, and Canada has a great deal to offer Chile in resource technology and management.

Expanding infrastructure is a major challenge for the Chilean economy. Rapid economic growth is requiring massive investment in energy, telecommunications, roads, railroads, ports, airports, water supply, and irrigation. In the next six years, the economy is expected to grow at about 6.0 percent annually and total investment requirements in infrastructure are estimated at more than $18 billion.

In order to meet such needs without endangering the budget and diverting resources from pressing social needs, Chile has implemented a policy that allows the private sector to take the lead in infrastructure development. Private companies should meet almost all new investment requirements in telecommunications and energy and a major share in the remaining sectors. In the next six years, private investment in infrastructure should account for about $13 billion, or more than 70 percent of required investment.

Strategic Considerations: Urban Environment Sector

Productive processes and urban expansion cause national and regional environmental problems. One result is the pollution of waterways. Only 10 percent of Chilean sewage systems had effluent treatment processes in 1993, however. The largest and most immediate market will develop in the Santiago Metropolitan Region, which concentrates 40 percent of Chile's 14 million inhabitants within 100 miles of the capital, 2 percent of the national territory. In 1993, 65.4 percent of industrial liquid waste in Santiago was discharged into the municipal sewer network, and 68.1 percent of the total volume handled by the municipal sewer systems went to rivers.

Considering the risks posed to human health by irrigating vegetable crops with water containing untreated sewage, water pollution in Chile may be far more serious than the more visible air pollution. The Chilean water quality standard specifies a maximum of 1,000 faecal coliforms per 100ml. However, water samples taken from various waterways have exceeded this value by more than one thousand-fold.

Prolonged underinvestment in public sector goods and services has created a significant shortage of public-use infrastructure in Chile. In 1995, the government sent two innovative and comprehensive projects to Congress, aimed at increasing private participation in this type of infrastructure: the *Concessions Act* and the *Financing of Infrastructure Act*.

The main goal of the *Concessions Act* is to provide guarantees and flexibility in terms of financing to foreign and domestic private agents interested in investing in infrastructure through concessions. The objective of the *Financing of Infrastructure Act* is to facilitate channelling resources from institutional investors to infrastructure projects by raising the funds necessary to finance infrastructure concessions. This act introduces important changes in the regulation of capital markets; it authorizes new sources of financing for infrastructure, grants greater investment margins; and improves the matching of financial flows from institutional investors to the stream of spending of infrastructure projects.

The Opportunity

On July 5, 1997, the Canada-Chile Free Trade Agreement came into effect, marking the first trade agreement that Chile has signed with a G-7 industrialized nation. The Agreement eliminates tariffs on most industrial goods immediately, which account for 80 per cent of the trade between Canada and Chile, while tariffs on all other products will be removed by January 1, 2004.

Chile implemented a new *Environmental Law* in 1994, which established a general framework for co-ordinated regulation of the environment. Once these regulations come into effect, there will be strong demand for a wide range of equipment and services to assess and control environmental problems. With few exceptions, Chile does not manufacture pollution control equipment, and Canadian companies can take advantage of their solid reputation for expertise in this field.

Building on the progress made with the signing of the bilateral Memorandum of Understanding (MOU) on Environmental Co-operation in January 1995, Canada and Chile have agreed to strengthen co-operation in environmental areas.

The MOU focuses on capacity building, technology transfer, environmental management, technical assistance and international co-operation. It has helped to increase Canadian trade with Chile in environmental technologies and services and in the development of environmental regulations and legislation.

Developments in Chile are creating important opportunities for Canadian suppliers of electrical equipment and services. For example, the demand for electricity is projected to grow about 8 per cent annually over the next five years with planned construction of natural gas-fired plants, hydroelectric power plants and transmission lines. There are also plans to convert two existing coal-fired plants to natural gas and to build four new thermoelectric plants over the next 15 years. As well, environmental concerns are creating a market for the retrofitting of old thermal electric plants to enable use of cleaner technologies. Canadian firms with expertise in this field can participate directly in the development of new plants.

Most new foreign-owned mining operations meet developed-country environmental standards, thereby creating a market for sophisticated pollution control systems and recovery systems to recycle wastes. Equipment for water and sewage treatment plans, and turnkey solutions, also constitute a promising market.

Total investment in water treatment plants will be US$ 168.2 million in 1996 and 1997, US$ 83.8 million between 1997 and 2000, and about US$ 20 million annually after that. A 65 percent share of these amounts is expected to be invested in activated sludge equipment, with U.S. manufacturers supplying about 60 percent of the equipment. Imports are expected to cover 80 percent of total demand.

The sustained growth of the Chilean economy is also driving a robust construction sector, which grew by about 10 per cent in 1996, generating demand for wood products and pre-fabricated housing systems. As Chile's population is expected to reach 15.3 million by 2000, the demand for housing is high. An estimated 400,000 new housing units need to be built by that date, bringing total housing stock to nearly 4.4 million.

CIDA Financing

CIDA maintains very close partnership ties with Chile, particularly in institutional and industrial cooperation. Canada's initiatives in Chile are principally designed to support efforts to achieve sustainable development through long-term partnerships.

These partnerships focus on technology transfer and respond to Chile's needs and priorities.

In 1994-1995, CIDA supported initiatives by 11 Canadian non-governmental organizations and institutions active in Chile, as well as by 33 private business firms. The projects in question involve various fields of social, technological, cultural and technological endeavour.

Apart from NGOs, unions, cooperation agencies, universities, religious groups, research firms, consulting groups and a large number of Canadian business and industrial firms participate in these projects.

The Canada Fund for Local Initiatives supports projects responding to small-scale, local needs. Currently, the Canada Fund focuses on small projects providing economic, technical, educational and social development assistance. The Canada Fund is managed by the Canadian embassy and currently has an annual budget of $250,000.

Chile benefits from a number of regional initiatives, including the Canadian Technology Transfer Project, which focuses on the countries of the Southern Cone, including Chile.

With CIDA support, member municipalities of the FCM have a number of linkage projects in Chile. The Aylmer/Quillota partnership cooperates on administrative improvements and economic development. Charlesbourg/Ovalle focus on participatory urban planning, community services, public consultation and staff development. Ste-Julie/Maule is working on innovative approaches to waste reduction, involving the community in recycling and composting. Finally, the Magog/Villarrica partnership concentrates on strategic planning and on consulting citizens on development of the city's plan, an approach which is to serve as a model for other Chilean municipalities.

International Development Research Centre Projects

IDRC has been involved in a broad range of projects in Chile, where there are currently 21 active projects, funded with $5.9 million. An important initiative has been the development of an innovative fog collection system, which has brought running water to a number of villages for the first time. It is anticipated that this technology could be used in up to 30 countries.

World Bank Financing

The World Bank has been a partner in financing Chile's development. Bank assistance has concentrated on traditional investment lending and technical assistance that addresses new approaches in human resources development and poverty alleviation, infrastructure development, and institutional strengthening. Environmental management and decentralizing of public sector functions have been focal points.

The government of Chile has expressed interest in the possibility of opening Bank guarantees to private sector investors in infrastructure. Beyond this, the Bank will provide advisory services on subjects in areas responsive to the government's priorities.

The World Bank contributed financing of $50 million in 1991 to support the Second Valparaiso Water Supply and Sewerage project and $12 million in 1993, for environmental institution development. An additional $2 million in 1993 was provided by the Bank to support an Ozone Depleting Substance phase-out project.

Within the World Bank Group, the International Finance Corporation (IFC) objective in Chile is to be involved in projects where it brings added value, such as "greenfield" projects, projects in nontraditional industries, cross-border operations, large infrastructure projects requiring longer terms than those usually available, and projects with complex risk-mitigation provisions that justify IFC's involvement. The Corporation foresees involvement in infrastructure-related projects and providing assistance to medium-tier companies with limited access to capital markets. Gross commitments to Chilean companies over 1991-96 totalled about $524 million. Under recent legislation IFC perceives future opportunities in asset securitization, particularly in connection with housing and infrastructure finance.

Current Canadian Commercial Involvement

CIDA INC is very active in Chile, responding to the large interest that the Canadian private sector has in this country. From 1990-91 to 1994-95, the INC program supported 78 Canadian private sector initiatives in Chile for a value of $10.2 million. Projects were centred in the forestry, mining, sanitation and industrial sectors, but also included initiatives in health, communication and transportation. Currently, 23 Canadian companies are receiving support for a broad range of projects in partnership with the local private sector in Chile.

Canadian private sector initiatives are also expanding in the region:

Synmap International Limited (Halifax) - Synmap is a geomatics consulting firm specializing in mineral exploration. Several years ago the company made initial contact in Chile, and began with a couple of small contracts and has now set up an office in Santiago.

Delcan Corporation (Ottawa) - Delcan is a company of engineering and urban planning consultants, and transportation management and environmental management professionals. They have focused on international engineering, transportation management, planning and project management and environmental assessment and management in a number of countries including Chile.

Idealite Systems Incorporated (Toronto) - This manufacturing firm of building products specializes in energy-efficient lighting products supply and installation.

Nu-Fab Building Products Limited (Saskatchewan) - A housing manufacturer and building products distributor, this company has built single and multi-family dwellings in Chile.

Wm.C. Thompson & Associates Limited (Alberta) - This environmental consulting firm specializes in meteorology, flood warning system, air quality, marine monitoring and prediction, forest fire suppression with contract in Chile.

Competitive Situation

The U.S. has free trade negotiations underway with Chile, but these are obviously not progressing as rapidly as did those with Canada. For the most part, domestic firms will continue to dominate the construction sector. U.S. exporters of building materials are being encouraged to consider this market. Generally, the U.S., Germany and Italy have a significant economic and socio-cultural presence in Chile. Many Chilean exports go to the EU and Japan, but the U.S. is the largest source of imports.

Meeting the Competition

Two-way trade between Canada and Chile more than doubled over the past decade, and will continue to grow in the wake of a free trade agreement signed by the two countries. Canadian companies can consider transferring technologies for lower-cost infrastructure and housing production, in particular for miners working for Canadian-owned or joint-venture companies. In the longer term, as the economy improves and both urban infrastructure and housing expand, Chile may be a market for more products and technologies to produce communities for the growing middle class. Frame building technologies have the greatest potential in the southernmost regions of Chile.

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OPPORTUNITIES IN CHINA, WITH EMPHASIS ON YANGTZE BASIN MUNICIPALITIES

Country Background

China is the third largest country in the world after Russia and Canada, with a land area of 9.3 million square kilometres, and a climate ranging from subarctic in the north to tropical in the south. It is the most populous country on Earth, with 1.2 million inhabitants. The table below contains estimates and projects of population for all urban agglomerations in China with at least 750,000 inhabitants in 1990.

CITIES	1990	2000	2015
Shanghai	13452	17213	23382
Beijing	10872	14206	19423
Tianjin	9253	12369	16998
Shenyang	4664	6134	8588
Wuhan	3840	5101	7182
Guangzhou	3595	4676	6591
Chongquing	3086	4087	5788
Chengdu	2942	3963	5623
Harbin	2905	3825	5425
Taipei	2900	4012	5700
Xian	2800	3849	5472
Nanjing	2571	3454	4919
Dalian	2491	3777	5402
Jinan	2365	3663	5250
Changchun	2169	2954	4228
Taryuan	2154	2926	4189
Zhengzhou	1722	2340	3371
Kunming	1683	2269	3270
Tangshan	1557	2053	2962
Guiyang	1554	2095	3025
Lanzhou	1534	2032	2935
Kaohsiung	1480	2027	2932
Anshan	1432	1926	2788
Qiqihar	1430	1916	2774

CITIES	1990	2000	2015
Fushun	1391	1860	2694
Nanchang	1386	1948	2825
Qingdao	1383	1850	2679
Hangzhou	1383	1843	2670
Urumqi	1345	1966	2857
Changsha	1334	1833	2660
Fuzhou	1333	1794	2602
Shijazhuang	1324	1818	2639
Jilin	1299	1766	2563
Nanning	1231	1791	2609
Baotou	1231	1651	2400
Luoyang	1202	1662	2420
Handan	1131	1557	2272
Datong	1114	1488	2168
Daquing	972	1363	1997
Hefei	985	1343	1965
Wuxi	946	1271	1861
Xuzhou	933	1274	1867
Benxi	925	1244	1823
Yichun	914	1230	1803
Hohhot	911	1259	1847
Jixi	896	1213	1779
Jinzhou	883	1313	1932
Shantou	850	1150	1689
Suzhou	790	1065	1567
Fuxin	762	1034	1523
Liuzhou	758	1077	1589

Source: United Nations, *World Urbanization Prospect: The 1994 Revision.*

The growth rate is among the lowest of any developing country, and large strides have been made in increasing agricultural production and reducing food imports. The proportion living in urban areas is increasing rapidly as China industrializes, and is expected to move from 30 percent in 1995 to 55 percent by 2025.

Strategic Considerations: Urban Environment Sector

Since China launched its economic reform program in 1978, its transition from a command to a market-based economy has helped fuel one of the world's highest growth rates: an average growth in Gross Domestic Product (GDP) of 9.3 percent a year. Illiteracy has fallen to below 10 percent of the population and China's high life expectancy and low infant mortality rates are enviable by much richer nations. Today, China is the tenth largest trading nation in the world and attracts more foreign direct investment (FDI) than any country except the United States.

The Yangtze River Basin contains much of China's industrial might. It includes Shanghai municipality, and all or most of the provinces of Jiangsu, Zhejiang, Anhui, Jiangxi, Hunan, Hubei, Guizhou, Sichuan, Yunnan, and the new provincial level Chongqing Municipality. These provinces account for 45 percent of China's population, and 42 percent of its GDP.

There are 235 cities in the Basin, with a total population of 202 million people, representing 38 percent of the basin's population, and accounting for 86 percent of the basin's GDP and 27 percent of China's total GDP. There are 5 cities with populations over 2 million, 69 with populations ranging from 1-2 million, 98 with 500,000 to 1 million and 63 cities with populations under 500,000.

China's past two decades of rapid economic growth, urbanization, and industrialization have been bought at the cost of steady deterioration of the environment. Ambient concentrations of particulates and sulfur dioxide as well as several water pollutants are among the highest in the world, causing damage to human health and lost agricultural productivity estimated at $54 billion a year, or about 8 percent of China's GDP in 1995. Air pollution alone contributes to the premature death of more than a quarter of a million people each year. Major Chinese cities have particulate and sulfur levels from two to five times World Health Organization (WHO) and Chinese standards. The government recently reported that acid rain affects as much as 29 percent of the country's land. The sheer size of China's population and the country's natural resource constraints have exacerbated the situation.

Infrastructure bottlenecks also pose a threat to future growth in China. Investment in transport, telecommunications, and energy has lagged behind that in industry, resulting in chronic shortages of transport services and increased urban congestion. Transport shortages in turn contribute to power shortages, since coal accounts for 70 percent of China's power generation and is mostly transported by rail throughout the country.

Conditions in China's urban environment sector have changed considerably since the early 1990s. Over the next fourteen months, the Government of China (GOC) and the World Bank will be developing a ten year investment plan for the urban environment sector in the Yangtze River Basin.

Objectives of the Yangtze Urban Environment Sector Strategy Study (YUESS):

- Define demand for urban environmental infrastructure and environmental management services in the Basin over the next decade.

- Identify and define strategic objectives for the urban environment sector in the Basin, to be translated into performance criteria against which the Sector Strategy should be regularly monitored.

- Identify environmental infrastructure development and environmental management policy options and recommend the most appropriate set of policies, including priorities and responsibilities for implementation.

- Propose an urban environment investment framework to guide continued Bank and GOC collaboration in this sector in the Yangtze Basin over the next ten years.

YUESS will be conducted in the context of GOC's most recent sectoral policies which are embodied in the Ninth Five-Year plan, the 2010 Outline Plan, the recent State Council "Resolution on Several Environmental Protection Issues", the proceedings of the July 1996 Fourth National Conference on Environmental Protection, and the China Trans-Century Green Plan.

Investment priorities within urban environment sub sectors are likely to vary considerably:

- Some of the Basin's cities are among the 100 cities in China with serious water shortages;

- Rapid economic growth in many cities results in rising industrial and domestic consumer demand for treated water;

- At the same time, rural-urban migration, combined with increased unemployment in the SOE sector are creating a class of urban poor in coastal and near coastal cities;

- Volumes of industrial and domestic wastewater discharges are also increasing, sometimes dramatically;

- Shortage of adequate treatment facilities means that even minimal ground and surface water quality standards cannot be met in many cities;

- Although collection of solid waste appears to be adequate in some municipalities, disposal remains a serious issue, particularly for hazardous wastes;

- Expected rise in automobile ownership suggests that vehicular air pollution will become an increasingly important issue, particularly in basin cities with higher household incomes. This will exacerbate already serious air pollution problems in many cities caused by industrial and power plant emissions;

- Geographic conditions that influence the retention of pollutants vary widely across the Basin;

- Degradation of land resources, particularly the consumption of agricultural and ecologically sensitive land by uncontrolled urban development, also needs to be examined systematically.

The Opportunity

Raising capital for infrastructure improvements is a major task: an estimated $75 billion will be required over the next decade. Although the private sector is expected to play a key role in meeting China's huge infrastructure needs, public spending will also be required.

In operational terms, the World Bank's collaboration with the Government of China on urban environment addresses the following:

- water intake and conveyance networks
- water treatment facilities
- water distribution networks
- wastewater collection
- domestic and industrial wastewater treatment
- wastewater disposal
- drainage
- solid waste management, including hazardous waste
- industrial air pollution control
- vehicular air pollution control
- urban transport
- urban land management

Urban infrastructure investments of US$ 10 billion will be required in the Basin over the next ten years, and may reach $15 billion. The World Bank plans to contribute $5 billion to the Yangtze Basin urban environment sector, contingent on matching investments from other sources within China.

The divergent demographic, economic, geographic and hydrological conditions with the YRB suggest that policy and investment interventions need to be flexible if local urban environmental issues are to be addressed effectively. An integrated approach to urban environmental management requires coordinated interventions in all of the sub-sectors. However, China's existing institutional framework poses unique challenges. Various State and provincial level ministries and commissions are paralleled at the municipal level in various commissions and bureaus. Development and operational mandates are often passed through to locally-owned SOEs such as water companies and bus companies.

Municipal fiscal capacities remain weak in most cities, including those along the coast. As a result of a rapid decline in central government investment in local infrastructure over the past decade, and tight central controls over credit allocations, local governments are increasingly relying on extrabudgetary revenues and administrative direction to SOEs to invest or borrow for infrastructure. Since local governments are not allowed to issue bonds, and local SOEs are not likely to obtain central approval for corporate bond issues ahead of State-level SOEs, investment capital formation is becoming an increasingly difficult challenge for municipalities.

In response, a growing number of local governments are seeking to have non-state firms, particularly foreign investors, finance local infrastructure investments through concession contracts to cooperative and equity joint ventures. For example, SPC is currently developing BOT framework legislation and regulations with a view to systematically channelling FDI into local infrastructure. One of its five BOT pilot projects is a wastewater treatment plant in Chengdu for which private sector bids will be called in August, 1997.

CIDA Financing

CIDA manages a bilateral development assistance program with China. The program is based on partnerships with Canadian businesses, non-governmental organizations, professional associations, labour, educational institutions, and all levels of government. Chinese counterpart organizations are full partners in all bilateral initiatives.

Canada wants to assist the promotion of environmentally sustainable development in China by enhancing its capacity to manage its environment. Human resource development and technology transfer are at the centre of many program activities in the key areas of agriculture, forestry, energy, transportation, telecommunications and education.

The bilateral China Open cities Project is funded by CIDA and managed by FCM and China's Special Economic Zones Office. The project has provided specialized training for hundreds of Chinese municipal authorities, through seminars, training programs and courses in China.

World Bank Financing

China has been the World Bank's largest borrower since 1992. In FY97, $2.8 billion of Bank funds went to China. The Bank's Country Assistance Strategy for China identifies four areas to focus on operationally: macroeconomic and structural reforms, removal of infrastructure bottlenecks, poverty alleviation, and environmental protection. Urban environmental issues are specified as important challenges relevant to the latter three focus areas. The Bank's most recent assistance to Chinese policymakers is its environmental study, "Clear Water, Blue Skies", produced in close collaboration with China's National Environmental Protection Agency and the State Planning Commission.

Other studies include urban environmental management, the environmental impact of coal use, energy conservation, options in greenhouse gas emissions control, and biodiversity conservation. Based on the findings of these studies the Bank has channelled almost $3 billion to improve air and water quality in urban centres nationwide and to other developments to improve the quality of life in China's cities.

In FY97, the largest share of World Bank support was directed to China's goal of alleviating major infrastructure bottlenecks. The Bank approved $1.52 billion for five projects aimed at improving and expanding transport systems and power capacity.

In the past few years, lending for environmental protection has become the fastest growing area of the World Bank's program in China. Lending to this sector in FY96 totalled $720 million for four projects addressing industrial and commercial environmental problems and reforming environmental protection policies in the Yangtze Basin (Shanghai, Yunnan, Chongqing, and Hubei). In 1997, the Hubei Urban Environmental Protection, Yunnan Environment, Second Shanghai Sewerage, and Chongqing Industrial Reform and Pollution Control Projects were approved, to address urban air and water pollution.

Since 1990, the World Bank has loaned China more than $2 billion for urban renewal and environmental projects in the Yangtze Basin. These projects have included:

- capital investment in water, wastewater, solid waste management and urban transport;
- innovative financing in support of industrial pollution control by enterprises;
- environment and development monitoring;
- tariff reforms to support demand management and cost recovery;
- policy support in urban land management and urban housing.

Other Financing Sources

Other agencies and institutions have been increasingly involved in China's urban environment sector:

- The Asian Development Bank (AsDB) has recently commenced lending in urban water resources, water supply and wastewater treatment in China. AsDB's Technical Assistance program has recently included considerable advisory work on urban environmental planning, infrastructure services cost recovery, and municipal finance;
- Bilateral agencies, including Japan's Overseas Economic Cooperation Fund, Japanese International Cooperation Agency, British Department for International Development, Danish International Development Agency and CIDA have been providing financing and technical assistance on several urban environment initiatives;
- The UNDP/UNCHS/World Bank's Urban Management Programme is currently seeking to support initiatives in individual cities in China on urban poverty, urban environmental management and participatory urban governance; and
- Both the International Finance Corporation and AsDB's Private Sector Group are actively pursuing equity and debt investments in urban infrastructure projects involving participation by non-state sector, particularly direct foreign investors.

Current Canadian Commercial Involvement

Canadian private sector initiatives in China, many of which affect the Yangtze Basin, include:

BC Hydro International Limited (BCHIL) - A wholly-owned subsidiary of B.C. Hydro, B.C. Hydro International (BCHIL) is the Canadian Executing Agency for the CIDA-funded EPRI Phase II Technical Assistance Project which is an extension of a project begun in 1983 and completed in 1992. Participating Canadian electric utilities include Ontario Hydro Technologies, SaskPower, Manitoba Hydro and Hydro Quebec International. The purpose of the project is to help China improve its research capacity so that it can increase the production and transport of electricity with the least impact on the environment.

AGRA Inc. (Ontario) - AGRA Inc. provides engineering and construction, environment and systems technology solutions to government and private sector customers around the world. The aim of the South China Power Studies Project is to strengthen the capacity of the South China provinces of Guangdong and Guangxi for strategic planning in energy development, and to make such development more economically, environmentally and socially sustainable. Led by AGRA Monenco of Calgary, the consortium of Canadian power companies includes Manitoba Hydro-Electric Board, Ontario Hydro and Teshmont Consultants. Funding for the work with China's Ministry of Water Resources and Electric Power comes from CIDA.

N.D. Lea International Ltd. (Vancouver) - This company offers consulting services with an emphasis on transportation, planning, engineering, management and training. The Yunnan Chuda Expressway Corporation (YCEC) is utilizing a loan from the Asian Development Bank (ADB) to implement a 187-kilometre expressway project from Chuxiong to Dali, Yunnan Province, in southern China. N.D. Lea International Ltd. has been engaged to form part of the YCEC headquarters team in Kunming for overall supervision of the construction activities over a three year period, from 1996-1998, including technical assistance for project management and quality control, highway safety engineering, tunnel engineering and other related technical aspects as required. In addition, Lea is developing and coordinating a training programme for all staff of YCEC, their domestic consultants and contractors.

DESSAU (Montreal) - Dessau has recently completed a major project in collaboration with the Ministry of Internal Trade of China. The project, funded in part by the World Bank and the Canadian International Development Agency (CIDA), sought to improve the transport, storage, distribution and marketing of grain. Dessau was responsible for helping construct and in some cases rehabilitate 3 major ocean ports, 6 barge terminals, 59 secondary grain depots and 259 primary depots. Through the China Energy Efficiency Alliance, the firm is also involved in the Increasing Energy Efficiency in Buildings Project. This mandate aims at assisting China's Ministry of Construction to develop energy efficiency technologies and energy consumption guidelines and practices, assess potential for energy savings in buildings and implement initiatives to reduce the use of all domestic energy resources. It includes as well five energy efficiency pilot demonstration projects, among which three are already ongoing in Harbin (Heilongjiang Province), Beijing and Wuxi (Jiangsu Province). The other two pilot projects will take place next year in the Fujian and Guang Dong Provinces.

SNC-Lavalin Group Inc. (Montreal) - The SNC-Lavalin's core services include engineering procurement and construction, operation and maintenance of facilities, project management systems, project development, public private partnerships, and project financing. SNC-Lavalin is conducting a study on behalf of a privately-funded initiative for development of a toll super expressway and rapid transit system to connect the City of Tianjin to the Tianjin Economic Development Area and Tanggu City Port. The feasibility analysis has been completed and the construction of the rapid transit system's priority line is scheduled to being in the fall of 1997. The initial transit system will be approximately 38 km long, with a capacity of 30,000 passengers/hour/direction.

Chreod Associates (Ottawa) - Chreod's project's in China include: Tianjin Infrastructure Planning and Management Support; Environmental Planning of Middle Level Cities; Design of Environmental Planning GIS for Shanghai; and Preparatory Mission on Rehabilitation of Historic Urban Areas in China

Delcan Corporation (Ontario) - Delcan specializes in international engineering, transportation management, planning and project management. The company worked on projects in China for the World Bank and CIDA.

CWMM Consulting Engineers Limited (Vancouver) - CWMM has had a number of projects in the People's Republic of China focused on structural engineering, buildings, bridges, marine and unique structures.

McGill University School of Architecture, Minimum Cost Housing Group (Montreal) - The Group has worked with the Beijing Institute of Architectural Design and Research in the area of housing, architectural and urban design, and research and training in related fields.

Canrede (Ontario) - Canrede is involved in the preliminary and final engineering design, construction management and supervision of the Ningbo, China industrial wastewater plant.

RFI (Resource Futures International) (Ottawa) - RFI assisted with sustainable development strategies and environmental impact assessment in China with funding from the Asian Development Bank and CIDA.

Suimon Engineering Canada Limited (Vancouver) - Suimon has engineered wastewater treatment systems in China and promoted an advanced wastewater treatment system called "BioGreen".

Competitive Situation

Infrastructure and housing construction activity in China will grow as the Chinese domestic housing industry itself grows. Almost every trading nation in the world is involved with China. Many have or are seeking major projects in that country. Major participants in the modernization of Chinese industry -- either through joint ventures or in response to tenders for facilities -- are Japan, the United States, and Germany. Germany is the leading continental European participant in the Chinese economy, with Italy and France also key trading partners.

Today, high-end construction garners the greatest publicity. As well, overseas Chinese firms, especially from Hong Kong, Taiwan and Singapore, build on their links both with China itself and with foreign suppliers and international partners in joint ventures.

In many cases, ties to foreign firms on the industrial side of the project may also provide a connection to associated housing. For example, the development of the industrial zone in Pudong, on the eastern bank of the Huangpu river, involves high-rise factory buildings, chemical processing facilities, a new police training centre, and apartment and office buildings.

Over a two-year period, the amount of Pudong office space alone will likely grow from almost zero to more than six million square feet. About half of US$ 100 billion infrastructure and facility investment planned for in the greater Shanghai area by 2000 is targeted for Pudong.

New transport infrastructure, including new roads and a subway, is also fostering the relocation of population into new high-rise apartment complexes in Shanghai. Large energy projects also present significant opportunities for related housing development.

In northern areas where wood-frame buildings may be developed, competition may come from Korea Japan, and Russia in the north, all of whom are involved as partners in eastern Siberian forest industry development. If these timber markets develop, American West Coast companies could also become more involved, either directly from their home base or through Siberian development. Australia is another potential player in Chinese markets, helping to provide financing and deal-structuring in joint ventures with Japanese trading companies.

The staying power of various players differs, as indicated by some recent declines in foreign venture development activities. Ambiguous property laws, complex land transfer rules, and capital gains on real estate in the 30 to 60 percent range are part of the difficulties associated with property development during the Chinese economic boom.

Meeting the Competition

Right now, governments are working to help position their companies for medium- to long-term development in construction, including housing. Better information and realistic assessment of conditions, risks and obstacles are the first steps. Identifying international consortium possibilities, financing and penetration strategies, including joint ventures, will also offer keys to success in China. While the opportunities are huge, the scale of financing required is unprecedented. It is essential that political structures and processes in China be monitored closely as the new leadership consolidates its grip on power over the next few years.

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ANNEX: WORLD BANK PROJECT DETAILS

Chongqing Urban Environment Project

Chongqing is now the world's largest single metropolitan area, with nearly 35 million residents, including 6 million urban residents. The project would enable Chongqing Municipality to implement a long term program of water resource management, to recover from past environmental degradation of its water and land resources, to provide an adequate supply of safe water to its growing urban population and economy, and to maintain water quality at levels compatible with the needs of the entire Yangtze River Basin.

IBRD $250 million
Total estimated project cost $500 million

Yunnan Environment

The project will enhance the provision of cost effective urban environmental services to sustain economic growth. Financial initiatives will focus on tariff adjustments and sustainability. Wastewater, solid waste, and clean technology programs will be supported. Credit/loan was signed on 13 September 1996.

IBRD US$ 125.0 million
IDA US$ 25.0 million
Total estimated project $348.6 million

Hubei Urban Environmental

The project will provide (a) support to improve water-pollution control in the mid-Yangtze River basin and (b) possible physical investments in Wuhan, Xiangfan, Huangshi, and Yichang for wastewater collection and treatment, solid waste management, night soil management, water quality monitoring, industrial pollution control, institutional development of sector agencies, and training. Loan/credit was signed on 31 January 1996.

IBRD US$ 125.0 million
IDA US$ 25.0 million

Sichuan Urban Environment

The project is the first phase of a long-term program to improve urban environmental services such as water, wastewater and solid waste management. The target cities are expected to be Chengdu and other major cities of Sichuan Province to be identified in two river basins. The policy components will focus on municipal finance, land management and financial sustainability of urban services. Initial discussions on the project are under way.

IBRD US$ 200.0 million

Second Shanghai Sewerage Project

The Second Shanghai Sewerage Project is part of the next phase of Shanghai Municipality's development program to improve environmental conditions and management. Specific objectives of the project are to: 1) enhance wastewater and stormwater management through expanding wastewater collection, pretreatment and disposal capacity and stormwater drainage facilities; 2) reduce urban pollution impact, while facilitating pollution control; 3) improve wastewater utility financial and operational management; and 4) strengthen sector institutions through training, feasibility studies, and future investment project preparation in the environment area.

Shanghai Environment Project

The main components would comprise: (a) construction of a major raw water supply intake, pump stations, multibarrel supply main, improvements to existing water treatment facilities and distribution network; (b) engineering protection measures in the Upper Huangpu River Catchment; (c) wastewater collection and treatment in Songjiang Town; (d) construction of a water quality monitoring facility; (e) investments in mechanical plant and civil works to improve solid waste, nightsoil and hazardous wastes collection and disposal; and (f) technical assistance and training, including preparation of a water supply master plan, geographic information systems development in support of planning and the Shanghai Reform Action Plan, water supply management and environmental monitoring, institutional strengthening, feasibility studies and future project preparation.

Chongqing Industrial Pollution Control and Reform Project

The project will include the following components: 1) support for development and implementation of economic and environmental policy agendas and action plans; 2) relocation of the city's two major polluting steel mills; 3) restructuring of advisory facilities for industrial enterprises; 4) a line of credit to support a pilot program in industrial enterprise reform, pollution control and restructuring; and 5) technical assistance to strengthen environmental regulation, surplus labour reemployment and innovation in state asset management.

OPPORTUNITIES IN INDIA

Country Background

India's total population, estimated at 931 million people in mid-1996, is second only to China's. The 25 states that make up India's federation are larger than many countries. Thirteen states have more than 20 million people, six have populations of 60 million, three exceed 80 million, and one has more than 140 million people. These states differ vastly in terms of their natural resources, administrative capacity, and economic performance. The table below offers estimates of population for all urban agglomerations that had at least 750,000 inhabitants in 1990.

CITIES	1990	2000	2015
Mumbay (Bombay)	12223	18121	27373
Calcutta	10741	12660	17621
Delhi	8171	11678	17553
Madras	5283	6561	9451
Hyderabad	4126	6678	10663
Bangalore	4009	5527	8324
Ahmedaban	3242	4158	6124
Pune (Poona)	2422	3493	5407
Kanpur	2076	2654	3941
Nagpur	1635	2073	3085
Lucknow	1590	2512	4057
Jaipur	1475	2153	3382
Surat	1467	2357	3837
Coimbatore	1120	1379	2046
Kochi (Cochin)	1102	1773	2905
Vadodara	1086	1591	2519
Patna	1086	1299	1910
Indore	1083	1428	2175
Madurai	1080	1302	1919

CITIES	1990	2000	2015
Bhopal	1032	1591	2571
Ulhasnagar	1031	1643	2687
Visakhapatnam	1014	1703	2840
Varanasi	1009	1292	1949
Ludhiana	978	1579	2598
Agra	940	1196	1803
Jabalpur	878	1032	1514
Srinagar	850	1200	1884
Allahabad	843	1103	1685
Meerut	822	1263	2048
Jamshedpur	822	1022	1533
Vijayawada	821	1246	2012
Dhanbad	807	974	1445
Thiruvananthapur	801	1237	2011
Kozhikode	781	1124	1780

Source: United Nations, World Urbanization Prospect: The 1994 Revision.

India has made enormous strides since it achieved independence fifty years ago. The country's development strategy has helped it eliminate famines and reduce illiteracy and fertility rates. India also developed a diversified industrial base and a relatively large and sophisticated financial sector. These successes have taken place against a backdrop of India's well established democratic system -- the largest in the world -- which has provided its population with an unusual degree of political freedom and stability.

Helped by reforms, a temporary relaxation in fiscal policies, and good monsoons, growth accelerated to 5 percent in 1992-94. For the third year in a row, GDP grew at around 7 percent in 1996, placing India among the world's best performing economies. At $2.6 billion in 1996-97, foreign direct investment is nearly 16 times higher than it was before the economy was liberalized.

With a Gross National Product (GNP) per capita of $340 million in 1995, India continues to have the highest concentration of poor people of any country, accounting for a quarter of the world's poor. More than 300 million-approximately one-third of the population-are estimated to live below the poverty line. Social indicators are also among the lowest in the world.

Strategic Considerations: Urban Environment Sector

The inadequacy of existing infrastructure is emerging as one of India's most serious constraints to maintaining current levels of growth. To help address these problems the government is turning to the private sector to substantially raise the level of infrastructure investment and the efficiency of infrastructure services.

India's rapid industrialization and urbanization have created major air, water and soil pollution problems throughout the country. Many of these problems are concentrated, however, in the 23 metropolitan cities which account for approximately one-third of India's urban population of 300 million. The World Health Organization ranks India's largest urban centres of Bombay, Delhi and Calcutta among the world's ten most polluted cities.

India's four year old economic reform program has brought renewed efforts by the Indian government, business community and people to address its serious environmental problems. Appropriate and affordable environmental technologies, environmental management expertise and environmentally-focused financial resources are, however, all in short supply.

The Government of India finalized its Environment Action Program (EAP) in 1993. The EAP identifies seven environmental priorities for the government, including the following: control of industrial and related pollution with an accent on the reduction and or management of wastes, particularly hazardous wastes; improving access to clean technologies; tackling urban environmental issues; and developing an alternative energy plan. Increased public awareness of the environment has spurred India's government to pursue environment-friendly technologies, making India one of the most attractive markets for environmental equipment and services. The market's current size (1997), estimated at US$ 3.1 billion is expected to grow 20 to 25 percent a year.

The Opportunity

Air Quality

Air quality is a serious concern in urban areas mainly because of vehicular and industrial emissions. The number of vehicles in the country has increased from 23 million in 1992-93 to 31 million in 1995-96 (about 34 percent) and is expected to increase to 53 million by the year 2001.

In New Delhi, vehicular sources contribute about 64 percent of total pollutants emitted, followed by thermal power plants with 16 percent, industry with 12 percent, and the domestic sector with 7 percent. Major contributors to air pollution problems in India include thermal power stations, industrial factories, and vehicles. The use of non-commercial fuels by large sections of the population compounds the problem.

Prime sources of air pollution in India are automobiles, and the thermal power, steel and cement industries. India's air-pollution control equipment market is estimated at US$ 650 million, with the best opportunities in technologies for utilization of fly ash, flue gas desulphurization, and gas scrubbers. Planned initiatives include a mission of Canadian clean-air technology firms to India early in 1999 to investigate business opportunities.

The market for mobile source air pollution equipment and services is growing fast with the improving level of enforcement for prescribed emission norms, including the recent Government of India requirement for catalytic convertors in all new gasoline powered automobiles in the four major metropolitan areas beginning April 1, 1995.

Water Quality

Most of the rivers, streams, and large stretches of the coastal marine environment in India are highly polluted. Wastewater from municipal sources accounts for about three quarters of total wastewater generation in volume and almost one-half of the total pollution load on surface waters. In the major cities, less than 50 percent of the total wastewater generated is collected and less than one-fourth is treated. Out of a total of 3,245 towns and cities in India, less than two percent had partial or full treatment facilities as of 1991.

The need to address this serious problem should translate into a market of some US$ 2 billion. Canadian companies have opportunities to supply equipment and technologies for waste water and effluent treatment in a variety of industries such as tanning, dairy, textiles, pulp and paper, coal beneficiation and refining.

Total capital investments in 1994 for the 23 largest metropolitan cities was about US$ 140 million for municipal wastewater treatment, excluding land/interceptor sewers and pumping stations. Investment is hampered by the shortage of funds among state owned municipal corporations, though the Government of Delhi recently committed US$ 100 million for the construction of 16 sewage treatment plants.

Solid and Hazardous Waste Management

It is estimated that up to 5 million tons of hazardous wastes are generated every year in India, most of it concentrated in the highly industrialized states (Gujarat, Maharashtra, Andhra Pradesh, and Tamil Nadu).

Often, toxic and hazardous waste is disposed off without any treatment, frequently mixed with domestic solid waste in unsafe dumps that pollute groundwater, or is dumped directly into surface water bodies. Opportunities exist for industrial waste incinerators, toxic waste treatment systems, equipment for removal of toxic elements, and coal-washing technologies to reduce ash emissions.

The amount of garbage generated in most India cities in increasing. Per-capita solid waste generation is estimated to be about 350 to 500 gms. Only about 60 percent of this waste is collected and even then it is irregular (not daily) and disposed of in ways which result in ground water and air pollution. Uncontrolled dumping in non-sanitary landfills remains the most common method of municipal solid waste management practised in Indian cities.

Environmental Monitoring/Testing Equipment and Services

Total capital investments in 1994 for environmental monitoring equipment and services was approximately US$ 17.3 million.

Environmental Consulting Services

Total capital investments in 1994 for environmental consulting services was approximately US$ 37 million. A good portion of the demand for environmental consulting services comes from external donor agencies apart from individual enterprises and the Government of India. The key potential business opportunities in environmental consulting services: Pollution Prevention Studies; Environmental Impact Assessments; Safety Reports/Safety Audits; Environmental Policy and Regulatory Studies; Environmental Management Systems; Environmental Training.

Infrastructure Construction - Ports

The adoption of the *Port Laws (Amendment) Ordinance* in 1997 opened the development of the ports sector to private investment. In order to reach its goal of increasing the capacity of major ports from the existing 177 million tonnes to 424 million tonnes, India will require an estimated expenditure of $US 48 million. In June, 1998, Indian project developers, representatives of engineering firms, public works departments from selected states and large industrial houses that own jetty and port facilities will tour Canada to view our technologies.

Export Development Corporation Financing

The EDC is providing up to US$ 12.5 million in financing to support the sale of industrial equipment by Belleville-based Svedala Industries to a steel company in India This is the first EDC financing to the private sector in India on a direct-risk basis. The EDC has stated that there is a huge potential for industrial equipment supply to India, particularly to the steel and power sectors.

Multilateral Financing

The most common method for financing environmental ventures in India is through projects funded by multilateral development banks such as the World Bank and the Asian Development Bank (ADB). Financing is available to joint-venture companies through a number of specialized financial institutions at national and state levels. The most important ones include the Industrial Finance and Corporation of India (IFCI), the Industrial Credit and Investment Corporation of India (ICICI), the Industrial Reconstruction Bank of India (IRBI), and the Industrial Development Bank of India (IDBI).

The Infrastructure Development Finance Company Ltd. (IDFC) has been set up to address the scarcity of long-term financing for private infrastructure projects in India. IDFC will focus on innovative ways to create instruments to unbundle and mitigate risks for investors in infrastructure projects, to promote the development of local long-term bond markets and to develop expertise in structured financing for infrastructure. Significant private sector and institutional shareholders in IDFC include, life insurance companies, commercial banks and bilateral and multilateral institutions such as Government of Singapore Investment Corporation, the International Finance Corporation, the Asian Development Bank and the Commonwealth Development Corporation.

Venture capital for financing environmental projects is still a new concept. One venture capital fund is the Infrastructure Leasing and Financial Services (IL&FS) fund. Infrastructure Leasing & Financial Services Limited (IL&FS) is pioneering and promoting innovative approaches to infrastructure development in India. It is developing a pipeline of commercially viable projects which includes urban by-passes, mass transit systems, water and sanitation infrastructure and integrated area development.

World Bank Financing

In absolute terms, India is the World Bank's largest single borrower, with cumulative lending of around $49 billion at the end of FY97. India is also the largest overall recipient of development credits from the International Development Association (IDA). The Bank's assistance program for India over the FY96-98 stresses assistance to establish a framework for efficient private investment in infrastructure. Reforming urban, water supply, and sanitation sectors to enhance productivity and environmental protection remains a priority for states and municipalities. In the urban development subsector, the Bank is examining how to enhance the quality of urban living by promoting more efficient provision and operation of urban infrastructure and services. Operations such as sewage disposal and sanitation and hazardous waste management are in the FY96-98 lending program.

The World Bank's South Asia Region has recently decided to develop actively the urban sector portfolio for India, given the importance of the urban sector for India's sustainable economic development. Within context of this strategy, the Region will undertake the following two urban sector operations:

- Implementation of Completion Report (ICR) for Tamil Nadu Urban Development Project I;

- Development of Urban Development Fund Project (UDFP).

In FY97, IFC approved a project to promote energy efficiency by helping to set up an energy services company. IFC's FY97 technical assistance and advisory services projects included a privately financed water supply project in Cochin in the southern state of Kerala.

The Bank's Second Bombay Urban Transport Project is one of the initial investments forming part of the recently completed Comprehensive Transport Plan for Bombay Metropolitan Region. The planning office of the Bombay Metropolitan Regional Development Authority has prepared a comprehensive core program of urban transport investments for Bombay. This envisions an expenditure of about US$ 800 million over a 5 year period. The breakdown includes Rail Improvements ($455 million); Road Improvements ($145 million); Bus Improvements ($100 million); Traffic Management ($40 million); R&R ($30 million); and Other ($30 million).

World Bank activities in India also include a line of credit for Infrastructure Lending and Financial Services (ILFS), an intermediary which will invest in water and sanitation systems and other infrastructure operations to provide environmental and human health improvements. Their Environmental and Social Assessment Framework is being applied to other Indian private sector infrastructure development projects.

Asian Development Bank Financing

The Asian Development Bank is developing a US$ 400,000 project to contribute to urban infrastructure development in India. The Urban and Environmental Infrastructure Finance Project will include the establishment of an urban and environment infrastructure fund (or a suitable option such as a financing facility) for leveraging private sector and external resources for urban development and urban environmental improvement and preparation of urban environmental and infrastructure subprojects involving public-private investments. The technical assistance (TA) program will evaluate options for financing mechanisms including whether a separate fund or facility is most appropriate, and subsequently develop a proposed financial, corporate, and institutional structure.

Karnataka

Another proposed US$ 800,000 TA would prepare a project which will facilitate sustainable development of the two west coast districts of Karnataka; with particular attention to the urbanized and industrialized areas, potential industrial areas, potential industrial and tourism development zones, and ecologically sensitive areas. The project's executing agency is the Karnataka Urban Infrastructure Development Finance Corporation.

Rajasthan Urban Development

The objective of the technical assistance (TA) is to assess the feasibility of an urban development project in Rajasthan State focusing on the development of Jaipur and the five other principal cities in the State, namely, Ajmer, Bikaner, Jodhpur, Kota and Udaipur. The US$ 600,000 TA will consider proposals for addressing the inter-related problems of water supply, sewerage, drainage, slum upgrading, solid waste management, roads and traffic management and land development. TA will also consider the issue of cost recovery from urban infrastructure and the requirement for institutional and financial strengthening of appropriate state and local government agencies.

US Agency for International Development (USAID) Financing

Trade in Environmental Services and Technologies (TEST) is a US$ 30 million USAID funded program to improve environmental protection in India while increasing the productivity of Indian industry, and to encourage and facilitate profitable business linkages between U.S. and Indian firms in the environmental sector. The TEST program focuses on the following priority areas: Wastewater, Air pollution control, Resource recovery and reuse, Hazardous Waste management, Environmental Instrumentation and Laboratory Services.

TEST assesses technology needs; finds long-term business partners; facilitates business meetings and exchanges; and finance projects.

Japan Overseas Economic Cooperation Fund (OECF) Financing

OECF has committed a cumulative total of 132 loans to India, amounting to approximately US$ 11.45 billion.

The FY96 package amounts to US$ 1,013 million, OECF's largest commitment to India, and includes the following urban infrastructure projects:

Kerala Water Supply Project (US$ 91.58 million)

The project is intended to enhance residents' welfare by increasing the supply of safe water in five cities and towns in Kerala, including the capital of the State.

The Calcutta Transport Infrastructure Development Project (US$ 81.52 million)

Designed to alleviate traffic jams in the centre of Calcutta by improving intersections and constructing flyovers.

The Delhi Mass Rapid Transport System Project (US$ 112.67 million)

One of the priority projects in the 8th Five Year plan, aims to build a mass transit system to cope with traffic congestion and air pollution caused by the increased use of buses and private cars in recent years by constructing subways and surface and elevated railways.

Japanese grants are also being used to prepare several environment projects including the proposed Hazardous Waste Management and Urban (Delhi and Surat) Environmental Management projects. Japan's Overseas Economic Cooperation Fund (OECF) has also worked closely with the World Bank in the design of its Industrial Pollution Prevention project in West Bengal.

Current Canadian Commercial Involvement

Canadian private sector initiatives in India include:

> *SNC-Lavalin* (Montreal) - SNC-Lavalin of Montreal is the Canadian partner of the KSEB Systems Enhancement Project: IDUKKI. As a follow-up to the Idukki Phase II, this project aims to increase the availability of electricity in Kerala State through reduction in energy losses in KSEB's transmission and distribution systems. It also seeks to improve it's long term operating efficiency through the enhancement of water management, dam instrumentation, and environmental and energy-use management systems. SNC's Indian partner is the Kerala State Electricity Board (KSEB).

Agriteam Canada - In 1996, Agriteam Canada initiated a CIDA-funded project for the Facilitation of Private Sector Development. The project is helping the Government of India manage the transition towards an open-market economy and promote entrepreneurial activity. Focus will be on addressing obstacles to private sector growth in the areas of energy, telecommunications and financial services - sectors where India has identified a need and Canada has extensive experience. Overall themes to be addressed across these sectors are the protection of consumers, the role of women in business and the need to facilitate the access of the poor to funding support for viable enterprises.

R.V. Anderson Associates Limited (Ottawa) - Upgrading sewerage capabilities for the Municipal Corporation of Greater Bombay; operation of a large industrial wastewater facility in Vapi, India; World Bank funded sewer operation and maintenance contract in Mumbai; For the project, RVA enlisted the support of a number of Ontario partners, including the Ontario Clean Water Agency, Envirotrain International (a consortium of six Canadian Community Colleges), and the Regional Municipality of Ottawa Carleton. Also instrumental in winning the bid was the bidding support provided by CIDA INC and the Ontario International Trade Corporation. The Team approach included DFAIT, Industry Canada, CIDA, EDC and the provincial government.

Idealite Systems Incorporated (Toronto) - Idealite has worked in India specializing in energy efficient lighting products, manufacturing, supply and installations.

McGill University School of Architecture, Minimum Cost Housing Group (Montreal) - The Group worked with the Housing and Urban Development Corporation, India in the field of housing, architectural and urban design, and research and training.

Plan: Net 2000 Limited (Calgary) - Plan: Net 2000 is involved in program/project management and evaluation; urban and rural development planning; and conducted the Lutheran World Service (India) mid-term program evaluation.

RFI (Resource Futures International) (Ottawa) - RFI projects are focused on sustainable development strategies; impact assessment; communications and public involvement in India for international institutions (e.g. Asian Development Bank, CIDA, etc.)

Competitive Situation

Indian companies have the greatest number of joint ventures and licensing arrangements with US companies (40 percent), followed by the United Kingdom (21 percent), Germany (17 percent), Sweden (6 percent), Netherlands (5 percent) and the rest from Japan, Denmark, Switzerland, Canada, Australia, France, and others.

India is largely self-sufficient in infrastructure and building-related products. The Indian construction products sector is expected to be a high profile growth industry into the next decade. Foreign products tend to be considered luxury items. Labour costs are low, hence sophisticated technologies are not attractive. However, traditional techniques and materials are being revised to speed up the construction process and improve quality of materials.

There are not many established construction contractors in India, and most dwellings are self-built or custom built. There is also a significant lack of specialty products and services in construction. While India is not currently a significant market for Canadian exports, Canadian and other exporters are seeing opportunities created by market-oriented changes in its economic policies and regulations. For example, U.S. firms are now entering into joint ventures to produce prefabricated dwellings and building materials.

Meeting the Competition

Significant potential exists for the sale of low-cost community infrastructure and housing technology. Moderate-cost infrastructure and self-building options and products targeted to the middle class have good prospects. In the medium term, direct linkages with large project developers could be profitable. In addition, a focus on secondary cities with less overheated real estate markets but thriving industrialization, is also recommended.

In the Indian economy, relatively small centres of activity have large effects. For example, India is a large internationally-competitive base for batch processing of data and a significant global competitor in software. Within this large economy, demand for technological sophistication can provide entry points for specialized services and technology transfers, including those related to housing. Over time, India may provide a market for large-scale socio-technical transfers and collaborations, including urban development, infrastructure and housing systems.

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OPPORTUNITIES IN RUSSIA

Country Background

The Russian Federation remains the largest country in the world in terms of land area (about 15 percent of the world's land surface) despite the departure from the Soviet Union in 1991. The current population of the Russian Federation is approximately 150 million persons. The country stretches over 11 time zones from the Baltic Sea to the Pacific Ocean and from the North Pole to the Black Sea, with climates ranging from Arctic to sub-tropical in the South.

CITIES	1990	2000	2015
Moscow	9048	9282	9306
Saint Petersburg	5053	5111	5111
Novosibirsk	1449	1471	1472
Nizhni Novgorod	1447	1454	1454
Ekaterinberg	1379	1425	1430
Samara	1260	1260	1260
Omsk	1166	1212	1219
Chelyabinsk	1153	1181	1185
Kazan	1108	1133	1138
Ufa	1100	1135	1142
Perm	1098	1114	1117
Rostov-on-Don	1029	1046	1050
Volgograd	1008	1017	1020
Krasnoyarsk	928	973	984
Saratov	911	913	918
Voronezh	900	937	947

Source: United Nations, World Urbanization Prospect: The 1994 Revision.

Strategic Considerations: Urban Environment Sector

Russia's ecological problems date back to the Soviet era, but environmental protection remains a low priority for many officials and businessmen. Despite the fall in industrial production, pollution levels in Russia remained unacceptably high in 1996. Air pollution exceeded admissible levels in more than 200 cities with a total population of more than 60 million, ITAR-TASS and Reuters reported. In 120 of those cities, pollution levels were five times the permitted maximum. Water pollution levels also remained high.

In Moscow, the decline in factory smoke has been offset by a huge increase in exhaust fumes from automobiles. Russian made cars are heavy polluters and fail to meet European standards. The total level of air pollution in Moscow has doubled in the past five years.

Russia's urban heating system is notoriously inefficient. Heating in the major cities is centralized, and residents cannot control the heat in their own apartments. As a result, Russians often keep their windows open to cool overheated apartments. There are few incentives to encourage efficient energy use in apartments and factories. And political pressure has ensured that the price charged for heating is lower than the actual cost.

The Opportunity

Russia represents a large potential market for Canadian exporters. In 1996, Canada's merchandise exports reached $319 million, a 53 percent over 1995. Canadian services exports are also significant. Canada's main export interests in the Russian market have included oil and gas equipment, agri-food products, vehicles, and telecommunications equipment.

In terms of sustainable city exports, the primary areas of interest are transportation, communication, and construction. The technical state of railways and roads in the Russian Federation is very poor and has been worsening in recent years. It is estimated that about 8.5 percent of all railways are defective in some respects.

Russia's telecommunications system offers considerable opportunities for Canadian expertise in this area. The Russian domestic phone system is still one of the worst in any industrialized country. Line quality is poor and cutoffs and crossed-lines are frequent. Cellular phones may be an option for rapid installation of local telephone services. Fax use is increasing, especially in Moscow, but still limited elsewhere because of the need for more telephone lines.

Housing is the most pressing social and economic issue in Russia. It has become one of the government's top priorities. A State Mortgage Fund has been established to support home ownership, and a decree allowing private ownership of agricultural land was signed by President Yeltsin in March 1996. Meanwhile, the Duma (parliament) is discussing a new Land Code, and the World Bank is funding a US$ 400-million project to develop free market housing in five major cities. Russia is eager to share Canada's expertise in cold weather construction. This market offers tremendous opportunities to developers and exporters of pre-fabricated houses and building materials.

Cities such as St. Petersburg and Novgorod, which are part of the World Bank's development project for Russia, are looking to Canada to help address a serious shortage of low-cost housing. There is a demand for state of the art technologies using inexpensive construction materials.

During the period 1998-2000, attention will turn to housing for middle-income Russians. There will be accelerated activity by natural resource companies, increased purchases by wealthier regional administrations or republics, and the first major developments under the "Own Home" program announced in 1996. The Russian Far East is emerging as a region of rapid housing growth due to increasing foreign investments in the energy sector to exploit finds on Sakhalin Island. In this region especially, frame construction already has a good reputation based on superior performance during earthquakes.

As a large, former command economy in transition, Russia requires a long and complex reform process to bring its trade and economic system into conformity with the disciplines of the WTO agreements. Some relevant legislation is still to be completed. Issues under discussion include trade and purchasing subsidies; taxation; licensing; quotas; tariffs and the customs system; barter and countertrade; government procurement; technical barriers (standards); intellectual property; trade in services; sectoral policies in both agriculture and industry; subfederal powers affecting trade; regional trade arrangements; and, in general: transparency, consistency and predictability.

In the bilateral market access negotiations which began in 1997, Canada requested of Russia the lowering of tariffs and other barriers on goods and services of present and future importance to Canadian exporters.

Major challenges also remain for construction operations on Russian soil due to a lack of comprehensive legislation on the private ownership of land. Current laws allow for ownership of real property such as buildings, structures and other fixtures which are distinguished under Russian laws. Without implementation of private land ownership, however, developers must deal with long-term leases. Moreover, Russian banks, still in their infancy, do not provide mortgages.

DFAIT Financing

Canadian businesses can draw upon a number of resources to establish themselves in the Russian market. For instance, support for companies to prepare and execute marketing plans is available from the Program for Export Market Development (PEMD) administered by DFAIT. Canada's assistance has tried primarily to improve opportunities for the Canadian private sector by targeting the major constraints in the enabling environment, namely the policy, regulatory, institutional, professional and legal framework for market-based economic development.

CIDA Financing

Canada's Program of Technical Cooperation to Russia was established in 1991 to promote and support democratic development and the transition to market-based economies, and to increase trade and investment with Russia. Administered by CIDA, the program is actively supporting Russia's integration into the global economy by providing management training and financial services as well as fostering links between Canadian and Russian entrepreneurs.

Since 1990, the Renaissance Eastern Europe program (REE) has been helping Canadian companies position themselves in Central and Eastern Europe and the former Soviet Union. REE supports Canadian-Russian joint ventures by investing in feasibility studies, personnel training, and bilateral business councils. By 1996, it had supported some 115 projects in Russia, many of which led to considerable increases in Canadian exports.

In addition to the bilateral technical co-operation prgram and the Renaissance Eastern Europe program, assistance for infrastructure related projects is available through the following channels:

- Regional (multi-country) initiatives such as the Professional Partnerships Program and the East-West Enterprise Exchange.

- The Canadian fund administered directly by the Canadian Embassy in Moscow, responds to requests for assistance from small-scale locally-initiated projects in Russia. Its budget for 1997-98 is $200,000 with a maximum CIDA contribution of $10,000 per project.

Canada also maintains trust funds at the World Bank and EBRD which may be used by IFI project staff to hire Canadian consultants for work on project preparation, appraisal and technical assistance.

CIDA draws on the expertise of Canada's private sector, non-governmental organizations, professional and labour associations, educational institutions, and all levels of government to build partnerships with Russian counterparts.

Some of CIDA's initiatives include:

- assisting in developing a financial plan for the privatization, modernization and construction of the Samara regional airport;
- funding a demonstration project to revitalize Russian highways;
- sponsoring an energy conservation report by Power Smart; and
- assisting the Carleton Education Network with municipal affairs training.

Canada Mortgage and Housing Corporation Financing

The Canadian Mortgage and Housing Corporation (CMHC) signed a Memorandum of Understanding with the Russian Ministry of Construction for co-operation in cold weather technology, building codes and standards, and to support new business ventures. CMHC built a model home in Tver, northwest of Moscow, which features Canadian environmental building technologies.

EDC Financing

The EDC provides risk management services and established a line of credit of $100 million in Russia for the purchase of Canadian goods and services. Also available is Foreign Investment Insurance which offers a general insurance service to private enterprises interested in starting a venture in a country where there exist certain financial risks. In addition, some private banks, notably Barklays Bank of Canada, provide direct links to Russian banks.

World Bank Financing

Since the early 1990s, the Bank has helped the regions countries establish realistic regional and national targets for environmental improvements. At a regional level, the Bank has contributed to developing and implementing the Environmental Action Programme (EAP) for Central and Eastern Europe. Nationally, the Bank supported 14 countries as they prepared national environmental action plans (NEAPs) or environmental strategies.

Currently, the Bank's environmental portfolio in the region consists of 22 projects. The portfolio's pollution and urban environmental management projects deal with oil spill problems, urban air pollution abatement, and improving water and sanitation. The total Bank support for these projects is almost $2.2 billion out of a total project cost of $4.8 billion. Projects in the Russian Federation include environmental management, emergency oil spill management, biodiversity conservation priority response program, greenhouse gas reduction, and a phaseout of ozone depleting substance program. In addition, the World Bank has $700 million in housing-related lending projects underway, for both new construction and apartment renovation.

Overall, the World Bank lending program has set aside approximately US$1.5 billion per year for infrastructure, energy, environment and institution building (including legal and financial reform). The EBRD is also providing investment funding for small- and medium-enterprise development, energy and environment.

Current Canadian Commercial Involvement

Canadian involvement in Russia's urban infrastructure remains limited. The Canadian government has focused on the economic and political reform process and much of the technical assistance has targeted the fossil fuel energy sector and nuclear safety. Although Canadian companies have been quick to respond to the demands of the Russian market, many companies are reluctant to take on the risks of the changing regulatory environment and the nascent financial sector.

Ferguson Simek Clark (Yellowknife) - Canada's expertise in cold climate construction found a ready market in the city of Yakusk, Russia. The city contracted Ferguson Simek Clark, based in Yellowknife, to design, procure and build 513 forty-eight square meter apartment units in eight plex buildings as replacement accommodation. The housing units, utilizing northern Canadian wood frame building technology, were founded on "freezeback" concrete piles. The company also helped construct the Yakutsk International Air Terminal Building, with a project value of US$ 17.5 million.

Jacques Whitford Environmental Ltd. (Halifax) - Jacques Whitford is directing a project with the Centre for River Basin Resource Management in the Komi Republic. The project will develop and implement environmental impact assessment guidelines and strengthen the institutional capacity for water and environmental management.

Nascor Inc. (Calgary) - This company specializes in advanced housing technology. The company is a well-known supplier of roof systems, wall systems, floor joists and polystyrene insulation utilized in its patented walls. In the Russian Far East, the Gassinski model forest centre demonstrated the use of alternative housing technologies from Canada, show-casing pre-fabricated Nascor walls and preserved wood foundations. Along with its Russian partner Nascor is also building 10,000 single and multifamily units in the Moscow region.

SNC-Lavalin Group Inc. (Montreal) - With over 20 years of experience in Russia, SNC-Lavalin Group Inc. has a number of large and varied projects under its belt in that country - in addition to a number of major contracts it is currently working on. Russia and the Commonwealth of Independent States rank among the key regions where it supplies its engineering and project management services catering to a wide range of industry and infrastructure. Its projects include the construction of four phosphoric acid plants, urban transit, and the modernization of an oil refinery.

Teron International (Ottawa) - Since 1955, Teron has offered services as a Canadian designer, builder and developer. The company signed a Protocol with the Russian Federation in 1993 to make available its patented building technology. The Teron technology uses significantly less material, less labour per square metre of building and simplifies the total building process. These savings are used to reduce the costs or to add more insulation, better kitchens, bathrooms, energy efficient heating systems and controls, etc.

Competitive Situation

Russia has an extensive construction industry, but must rely on foreign capital investment and technology transfers to modernize it due to the flight of domestic capital and need for new technologies. Greater variation in types of infrastructure and housing production are required, as well as infrastructure for lower density, low- and medium-rise communities.

Experience in building infrastructure and housing for military officers returning from abroad gives firms from Germany, Finland and Turkey an edge among current foreign builders. Most of the US$ 5 billion in housing built with German funds for returning officers is located in the Russian Federation. About a dozen countries, including Canada, are positioning themselves to compete for parts of the World Bank-supported land development and housing program with Russian municipalities. These include Germany, U.S., France, Britain, Netherlands, Turkey, and former Yugoslavia (Serbia and Montenegro). Ukraine and Belarus barter housing construction in oil and gas-rich areas of Russia in return for fuel.

Meeting the Competition

Infrastructure and housing in Russia are important, both in their own right, and because of their links to Canadian interests in other sectors such as oil and gas. Canadian suppliers of specific infrastructure and building products and systems are entering this market, e.g., doors and windows.

Key barriers exist to productive building ventures and investments in local production, in the form of outdated codes, standards and other building regulations. The good reputation of Canadian companies can assist work by public-private partnerships to overcome obstacles to expanding market share. World Bank and European Bank for Reconstruction and Development construction activities are growing in Russia. Canadian firms are well-positioned in relation to both.

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OPPORTUNITIES IN SOUTH AFRICA

Country Background

South Africa is richly endowed with human and natural resources and is one keystone of development within the entire Southern Africa region. It has the most developed and diversified economy in sub-Saharan Africa and the continent's most modern and efficient road, rail, and telecommunications networks. The 1995 gross domestic product (GDP) was $133.6 billion, larger than any of the other countries in the Southern Africa region. The GDP growth rate for 1994-95 was 2.96 percent, slightly positive in per capita terms.

The table below contains estimates and projects of population for all urban agglomerations that had at least 750,000 inhabitants in 1990.

CITIES	1990	2000	2015
Cape Town	2294	3073	4508
Johannesburg	1792	2974	3059
East Rand	1111	1372	2050
Durban	1049	1296	1939
Pretoria	942	1229	1847
West Rand	752	996	1507

Source: United Nations, *World Urbanization Prospect: The 1994 Revision.*

Poverty in South Africa is predominantly, but not exclusively, a rural problem. Roughly 40 percent of the total population resides in rural areas. The high rate of growth in the urban areas (almost 3 percent per year) could, however, shift the population such that 80 percent of the population might live in urban areas by 2010. The small, poorly-constructed, over-crowded housing of the urban poor generally lacks public utilities. Housing has been ranked by historically disadvantaged South Africans as one of their highest priorities, along with education and health. A shortage of 1.5 million units in urban areas alone needs to be addressed

Growth, investment and economic assistance are needed to reduce the alarming poverty in South Africa. At present, approximately 48 percent of all South African households lack adequate housing. An estimated 34 percent lack safe drinking water and 45 percent lack inside sanitation. More than one third of the adult work force is jobless, while 50 percent of the work force is functionally illiterate.

The vestiges of the apartheid system that remain are especially formidable:

- only 1 of 100 black South Africans entering first grade finishes high school;
- only 12 percent of black households have electricity; and
- a black child is nearly 10 times more likely to die during the first year of life than a white child.

The government faces the following challenges:

- Economic growth must increase considerably and become more labour-absorbing and equitable.
- Poverty must be reduced.
- Basic services in health, education, water, sanitation, electricity and increased access to assets especially housing, credit and land must be extended to the poor.
- Human and institutional capacity to manage development programs and deliver services must be built up, particularly at the provincial and local levels.

The Opportunity

Since December 1994, an Urban Infrastructure Investment Planning Task Team has developed a comprehensive perspective on infrastructure needs in South Africa's metropolitan regions, cities and small towns.

Cities and towns generate 80 percent of South Africa's GDP. Estimates of the present urban population vary between 19.6 million and 26 million: but there is a distinct growth pattern and by 2020, 75 percent of the population will live and work in these cities and towns. The greatest concentrations of urban populations are in the three main metropolitan areas of Witwatersrand/Pretoria, Durban and Cape Town which together account for some 70 percent of the total urban population.

This Municipal Infrastructure Investment Framework (MIIF) highlighted that urban infrastructure needs are vast:

- Some 4 million people (15 percent of the urban population) only have access to water which is untreated and not reticulated.
- About 8 million (30 percent) have access to only minimal sanitation (ie. shared toilet facilities and unimproved pit latrines).

- Approximately 8.5 million (32 percent) do not have access to electricity). In the absence of electricity, coal and wood burning stoves are utilized for heat and food preparation, resulting in serious air pollution and respiratory problems.

- Some 8 million (30 percent) do not have formal road access to their residence, nor do they have any form of stormwater drainage.

These conditions, combined with overcrowding, are leading to an urban environmental crisis that will be further aggravated by increased migration to urban centres.

The cost of addressing these backlogs depends on the levels of services introduced. The Task Team estimates that an appropriate mix of basic, intermediate and full service investments linked to household affordability in the forthcoming 10 years will cost the country approximately R61 billion. This cost refers to municipal infrastructure only. It thus excludes economic (commercial and industrial) and social facilities as well as national bulk schemes like dams and electricity generating plants. It also excludes recurrent costs of services like water and electricity.

The municipal investment programme will aim at upgrading existing and constructing new housing; restoring and extending infrastructure services; alleviating environmental health hazards; encouraging investment; and providing job opportunities and social and community facilities. The government believes that a ten year programme costing R60-R70 billion in capital expenditure and R7-10 billion in land costs is feasible from a macroeconomic point of view.

There are also nearly 600 local governments in South Africa and the demand for information, debt, equity, and management assistance to increase the level of municipal environmental infrastructure is enormous.

The South African government has already embarked upon short and medium term programmes to kick-start reconstruction and development. These interventions will not only be utilised as starting points for GNU strategies. They will also serve as learning experiences, aiding the ongoing formulation and implementation of the Urban Strategy.

Four such programs are particularly relevant to urban development and form part of the evolving Urban Strategy.

They are the Extension of Municipal Services Programme, Special Integrated Projects (SIPS), the Masakhane Campaign, and the National Housing Programme, detailed as follows:

- The Extension of Municipal Services Programme: The importance of urban reconstruction and development as part of national transition has motivated the design and implementation of this programme. R800 million has been approved for the 1994/95 and 1995/96 fiscal years. The programme seeks to achieve its objectives through two sub-programmes: Rehabilitation of infrastructure systems and facilities that have collapsed to ensure the provision of basic municipal services; and, Extension of infrastructure systems and facilities to provide basic municipal services to new areas. Business plans for the overall programme have been developed for each of the provinces.

- Special Integrated Projects on Urban Renewal (SIPS) seek to fast-track and kickstart development in selected crisis and violence torn areas. The emphasis of these projects is on integrated provision of infrastructure services, housing and community facilities. Job creation and capacity building receive particular attention. They are intended to set precedents for integrating delivery mechanisms, the structuring of integrated development finance packages and for promoting community participation.

- The Masakhane Campaign, aimed at normalising governance and accelerating municipal service provision, inter alia seeking to ensure that users pay for services they consume.

- The National Housing Programme aims to meet the housing challenge by mobilising and harnessing the resources, efforts and initiatives Of communities, the private sector and the state to increase sustainable housing delivery. As far as targets are concerned, the government's aim is to increase housing's share of the budget to 5 percent and housing delivery to a sustained 350,000 units per annum within five years.

Local authorities will be responsible for development and physical planning as well as the preparation of 5-year infrastructure investment programmes. Based on this, local authorities and communities will select, prepare, and implement infrastructure projects within an integrated framework and to promote local economic development.

Provincial Governments are focusing on evaluation and prioritisation of infrastructure programmes that require public funding. This will also require monitoring of projects within a program context. In particular, provinces will be expected to ensure that funding criteria are being followed.

The central government will largely direct the availability of public funds within the national framework which it sets for infrastructure investment.

The private sector will play a central role in managing service delivery, investing in service delivery companies, and in financing infrastructure investments

The existing Urban Development Task Team will be repositioned as a standing intergovernmental committee with a mandate to design, coordinate, and drive the urban development strategy. Technical support for this UDTT will be mobilised from the appropriate departments, with leadership being taken by the Department of Housing Urban Settlement Sub-directorate.

South African Government Financing

Government is also paying priority attention to the development finance system. The financing of local government comes from a number of sources. Where local authorities have a strong rates base, all efforts should be made to leverage finance from the capital markets for development initiatives. Even certain medium sized towns will have some attractiveness to capital markets if ways are sought to reduce risk for investors.

Mechanisms are being explored, to do this, eg. the use of public intermediaries and debt pooling. Direct grants from government will be necessary for some medium and smaller towns but the principle of leverage will still apply to ensure that local governments make a contribution towards their local development. Moves towards greater financial accountability and reliance on capital markets will also impact on local government restructuring. It is recognised, however, that local authorities may face some constraints in this regard. Hence institutional initiatives, like the restructuring and reorientation of the Development Bank of Southern Africa and the Local Authorities Loan Fund, are critical.

CIDA Financing

CIDA supports the South African government's strategy for change. The Reconstruction and Development Program works toward the re-establishment of democratic structures at all levels of society, the renewal of a framework of democratic rights and freedoms, the redistribution of resources and services, and social reconciliation for all South Africans.

While the largest portion of CIDA's assistance to South Africa is provided through its bilateral and partnership programs, South Africa also benefits from Canada's active and influential participation in multilateral development organizations such as the United Nations Development Program, UNICEF, the African Development Bank, the World Bank and the Commonwealth.

CIDA uses its membership in and financial contributions to these organizations to improve their leadership and effectiveness in aid coordination and to promote actions within these organizations that complement Canada's development priorities.

Founded in 1984 as the international program of the Cooperative Housing Federation, Rooftops Canada consists of cooperative and social housing organizations in Canada. It is recognized nationally and internationally as the primary Canadian non-governmental group focused on international housing and human settlements issues. The main focus is on disadvantaged communities in the South and on countries in transition.

Rooftops has worked with South African partners using CIDA funding since 1989. They have had a team of full-time advisors working in South Africa since November, 1992, helping a network of ten urban sector NGOs and the National Union of Mineworkers to contribute to housing policy and implement community and workplace based housing projects. The project is in its second phase and four full-time advisors are in the field. Recent work includes: social housing policy development, low income urban upgrading and sites/services projects, renovation of hostels, and the rehabilitation of inner city apartments by housing associations. Rooftops is also assisting the Parliamentary Housing Portfolio Committee to more effectively develop and monitor housing policy in South Africa.

Also with CIDA support, FCM has been involved in a governance forum in Cape Town. In East London, where the population has skyrocketed to 800,000 through amalgamation, and the city is trying to re-invent itself in order to provide services, FCM is helping the city tackle its many problems through its East London bilateral project. Results to date include growing familiarity with participatory processes, increased confidence among councillors and better opportunities to raise issues affecting women. FCM is also exploring other opportunities for bilateral initiatives in South Africa.

World Bank Financing

Since relations with the World Bank were re-established 1992, South Africa has consulted the Bank's analytical and advisory services on a variety of subjects such as health, enterprise development, urban infrastructure and the economy, as well as organized training programs and internships for South African nationals.

South Africa currently has no active environment-related lending operations supported by World Bank funds.

USAID Financing

USAID/South Africa's limited environmental activities are largely urban and thus are integrated into the housing and urban development programs.

South Africa is proposed as a key participant in USAID's newly-announced Economic Growth Initiative (EGI). South Africa's participation would focus on combining improved urban planning and access to financing mechanisms to help create a well-functioning municipal infrastructure finance market in South Africa and thus ensure that coverage of services such as water, waste and solid waste disposal is expanded.
This program would also create an outreach program to local governments and U.S. provider of goods and services in the environmental infrastructure sector. Under the outreach program training, study tours, and selected technical assistance to local authorities which are seeking private equity partners in expanding or improving their delivery of water, waste water, and solid waste services would be provided. Secondly, the program would develop linkages with U.S. private providers of urban environmental services and make them aware of potential opportunities with local governments.
Other comparative models have supported booked deals in excess of $10 million and total investments of over $3 billion.

Financing From Other Donors

Other major donors currently active in South Africa's urban development sector are:

- Japan, through bulk infrastructure loans and grants;
- Germany, through project preparation technical assistance and training program for local officials and a $22 million urban upgrading program in the Eastern Cape;
- Scandinavian countries are implementing urban sector programs. However, these are essentially small technical assistance programs in urban environment and/or municipal management.

Current Canadian Commercial Involvement

South Africa is more promising than it has been in the past as a growing market for Canadian expertise in urban infrastructure. Canadian companies are interested in creating alliances with the rapidly developing Black communities. Areas for Canadian growth include urban planning and sewage systems as well as low-income housing.

SNC-Lavalin (Montreal) - This company has been working in South Africa for close to 30 years, and recently signed an agreement with the government-owned Airports Company Limited of South Africa. The Canadian company will manage a development program for a new international airport in the province of KwaZulu-Natal to be relocated at La Mercy, a city near Durban. This project will be carried out in collaboration with E.C. Harris, a British-based international program management firm with extensive experience in South Africa. The joint management responsibilities will be for the delivery of a comprehensive relocation package; proposal, including the upgrading of the existing Durban international airport, and the re-deployment of facilities at the existing airport site.

Envision Sustainability Tools Inc. - Envision developed QUEST, a computer based scenario generation and evaluation system designed to encourage thinking about sustainability in a regional context. The company is currently in discussion with agencies in South Africa about its product.

Canadian Alliance for Business in Southern Africa (CABSA) - CABSA's objective is to identify financially feasible joint venture projects that will benefit both Canada and Southern Africa and to facilitate implementation of these projects.

Competitive Situation

The South African construction industry mirros the society as a whole, with a very sophisticated and well-developed capacity to serve part of the population and very limited capabilities in "the townships". The development of a South African construction industry managed by the majority black population will parallel export and development strategies. The emergence of the domestic construction industry on a scale adequate to the challenge could provide opportunities for joint foreign-domestic participation, depending on South African policy.

As aid to South Africa rises on national agendas, a number of foreign governments are committing to work in the housing sector in particular, including the United Kingdom, France, Germany, and the United States. British and Kuwaiti commercial firms are already active. Turkey's association of construction companies intends to compete for housing construction and other projects. The country's main trading partners are the United States, United Kingdom, France, Germany, Hong Kong, and Japan.

Meeting the Competition

South African development hinges on training and other aspects of human resources development. Projects using domestic labour will be favoured over straight imports, where there is a choice.

Because of its requirements and prospects as a "southern" base for African and Asian markets, particularly across the Indian Ocean, South Africa may become very attractive for international companies, if its political and economic transition is completed successfully. Such commercial activity will also play an increasing role in social stabilization.

Initial entry might be easiest through Canadian government programs and with cooperation of International Financial Institutions, emphasizing technologies suitable for low-cost community infrastructure and for social housing development. Venturesome private-sector players might also wish to explore local partnerships or supply possibilities oriented to middle-class community infrastructure and housing and the possibility of long-term relationships as an entry point to wider markets.

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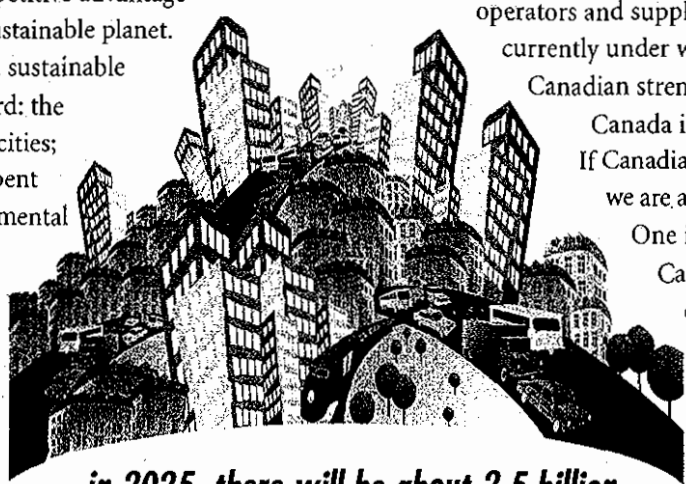
The Sustainable Cities Initiative:

Putting the City at the Centre of Public-Private Infrastructure Investment

Background

Canada has the potential to be a world leader in the provision of environmentally-sound infrastructure in developing countries. Few commercial, environmental and political opportunities are as significant. Strengthening and developing Canada's competency in urban-based public-private infrastructure (PPI) will lead to a global competitive advantage while contributing to a more sustainable planet.

The *environmental* case for a sustainable cities initiative is straightforward: the bulk of the population lives in cities; they are where a given dollar spent has maximum positive environmental impact; and in cities the connection between environmental improvement and quality of life is immediate (and thus an emerging political priority). If cities are important now, they will be almost the only priority in coming years.



... in 2025, there will be about 2.5 billion more city dwellers than there are today ... [cities] will be almost the only priority in coming years.

Demographic experts estimate that in 2025, there will be about 2.5 billion more city dwellers than there are today. The vast majority will be in the cities of the developing world. To put this in perspective, cities of the developing world will need to cope with the rough equivalent of two more "Chinas" worth of population within one generation. Decisions made today about urban transport, energy, water and waste infrastructure, buildings, and even products and services will have an ongoing environmental impact. If Canada hopes to make a positive contribution to global sustainable development, perhaps nothing is so important as "getting cities right."

The *commercial* case is also clear. Viable cities are essential to wealth creation. The World Bank estimates that as much as USD $200 billion per annum over the next decade needs to be spent on urban infrastructure in Asia alone. When other areas of the developing world are considered, this figure rises to approximately USD $4.5 trillion over the next ten years. Such investments are an enormous opportunity for Canadian builders, operators and suppliers. Major financed projects are currently under way in many cities that could use Canadian strengths.

Canada is not getting its share of this market. If Canadians continue with "business-as-usual," we are almost certain to fall further behind. One indicator of underperformance is Canada's record in winning World Bank contracts. Historically Canada has done well in winning consulting contracts from the World Bank (over twice the average disbursement on a per capita basis). However, we obtain less than the average disbursement for equipment, and only one-quarter of the average disbursement for civil works projects (World Bank, 1997 figures).

Furthermore, urban infrastructure will increasingly be delivered by the private sector — primarily through public-private partnerships involving municipal governments. In 1990, annual global infrastructure spending was approximately USD $100 billion, with financing almost evenly divided between the private and public sources (including international financial institutions, development and export credit agencies). By 1996, global infrastructure spending increased to approximately USD $850 billion, and the private sector's share rose to 85 percent (Export Development Corporation, 1997 figures).

National Round Table on the Environment and the Economy

Table ronde nationale sur l'environnement et l'économie

If Canadians are to participate meaningfully in this expanding global market, we will have to become more aggressive, effective and strategic in securing public-private infrastructure (PPI) projects and other public-private partnerships. Canada also needs to distinguish itself from its competitors: particularly France, Germany, the Netherlands, and the United States.

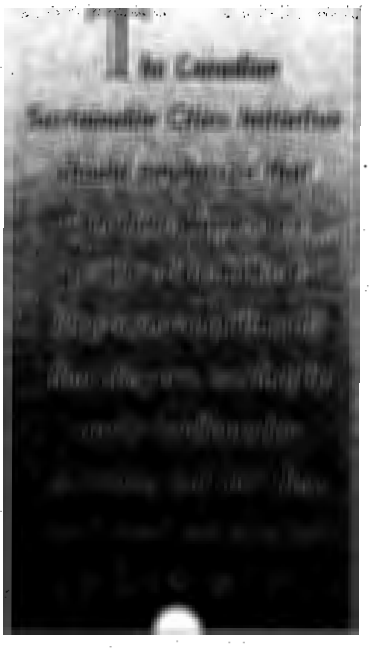
American, Dutch, and German companies have access to internal and external financing sources that, together with Japanese firms, set them apart. The giant Compagnie Générale des Eaux (Vivendi) is aggressively promoting its cross-sectoral urban expertise. Countries such as Switzerland and Holland are already marketing their companies as providers of integrated sustainable cities solutions, and are providing the governmental and institutional support that make them well positioned to deliver on these promises. In both cases, the rationale would appear to be the enormous scope for both environmental and economic benefits and the associated goodwill such activities generate.

Clearly, Industry Canada's September 14-15 conference on PPI is very timely. The question of what Canada and its firms can do to undertake such projects could not be more relevant.

Directions for Change: the NRTEE Proposal

From the National Round Table on the Environment and the Economy's (NRTEE) perspective, and from that of the dozens of private sector experts contributing to the *Sustainable Cities Initiative*, the best way forward is:

1) to focus on "urban-scale" projects such as transit systems, water supply and wastewater treatment facilities and district heating systems; and
2) to increase Canadian firms' familiarity, knowledge and competency with PPI projects to contribute to a more comprehensive strategy aimed at responding to the ballooning demand for "sustainable urban solutions" in select cities around the globe.



The *Sustainable Cities Initiative* has four key messages:

1) ***Differentiate the "product."*** Canada's international stature as a Good Samaritan will stand us in good stead. It will be reinforced by targeting urban, environmentally-sound, and demand-driven projects — by wedding private enterprise to public purpose.

   Canada has proven sectoral strengths and a fine record of government support. With fine-tuning of program design and incentives, and with the commitment of all three orders of government, sustainable urban development can become a unique Canadian marketing proposition. Should Canada's commitment to reduce greenhouse gas emissions unfold as many expect, Canadian firms able to do this abroad will have an important market — and access to additional financing. Because reducing urban air pollution has direct climate change benefits, and because health and urban air quality are key issues in developing cities, emissions reductions can be pursued as an environment-economy win-win with significant political benefits.

   The Canadian government wants new ways to showcase the capabilities of Canadian project developers and vendors in foreign countries. The NRTEE has highlighted how key firms in the telecommunications, transportation, energy, building and environmental sectors can be marketed as providers of sustainable cities solutions. The Canadian government should implement the minor institutional changes that will allow Canadian firms to maximize this opportunity. In this way, expanding urban infrastructure opportunities become the framework for increased Canadian efforts to expand our PPI capabilities.

2) ***Give municipal leaders and urban residents what they want.*** Increasingly, this is cross-sectoral suites of products and services that address underlying needs, rather than unsynchronized, ad hoc marketing of isolated products and services. For example, the need to improve the quantity and quality of drinking water can be met by a team of actors which, together, can provide a solution. This team could include land-use planning and municipal regulation experts in addition to those with complementary products and services.

   This type of unified approach places a premium on identifying municipal and local industrial needs, and forming partnerships capable of responding to them.

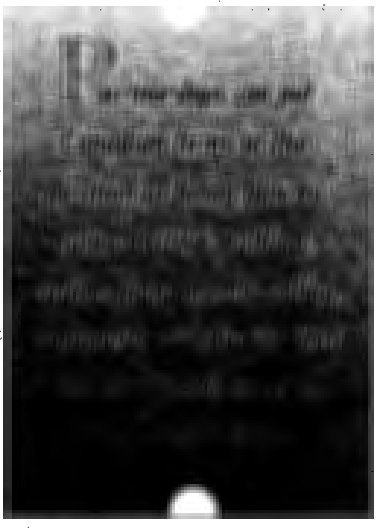
   - Needs Identification: Few Canadian companies have the financial and human resources to conduct in-depth market assessments in a number of cities, let alone to gain the confidence of city officials who know or indeed formulate the precise urban development priorities. Yet we do have officials, not-for-profit groups, twinning arrangements, and business ventures operating in cities around the world that have gained local confidence and are helping to shape the demand. The key is to turn these isolated actors into networks, and their knowledge into opportunities.

   - Partnerships: Partnerships are important for a number of reasons. Projects need to be a certain size to attract debt and equity capital. The transaction costs for smaller urban projects are not significantly less than those associated with mega-projects. This tends to skew the market toward the latter, regardless of whether these projects are appropriate in

terms of risk, or to the actual requirements of the community. If smaller projects are put together as a package, this impediment may well be overcome.

Furthermore, formal partnerships with associated arrangements for performance bonding and risk insurance can link competencies, thereby decreasing risk and increasing lender confidence. Partnerships can put Canadian firms in the position of being able to solve a city's problem, rather than merely selling a product — a factor that can set Canadians apart from competitors.

To facilitate such partnerships, the NRTEE and the Department of Foreign Affairs and International Trade (DFAIT) commissioned a study of the various Canadian organizations and businesses active in cities around the world, outlining their core activities and local partners. This is the first attempt at a comprehensive record of who is doing what on a city-by-city basis. This compendium can serve as an indispensable tool for both needs identification and partnership formation.



3) ***Come to the table with readily-accessible financing.*** There are two points to be made, both related to risk.

- The major challenge is not availability of financing, but rather the challenge of ensuring Canadian firms are adept at assuming, allocating and managing risk. Without addressing these risk issues, attempts to expand Canadian PPI capability may falter.
- Assuming that companies have or gain these competencies, it is important to have a governmental backdrop in Canada that works to reduce the risk factors. There are things we can do to make the financing process more transparent, streamlined and predictable — particularly during the crucial development phase.

4) ***Target specific urban markets with the greatest potential for success.*** Starting with the cities where Canada already has a significant presence, the NRTEE put these through a number of screens. These screens include:

- financial and administrative capacity to undertake PPI projects;
- interest of the international financial institutions (IFIs);
- stable government; and
- a match between needs and Canadian capabilities.

This enabled the NRTEE to identify Canadian niche opportunities in a "short list" of cities.

These city profiles offer Canadian firms a form of primary due diligence. Whether or not individual companies agree that the identified cities are the places to start, the profiles serve as a model of the type of reports needed to set the stage for more in-depth due diligence by both public and private players.

Act Now

The NRTEE is urging the federal government to collaborate with industry and other interested groups and to act now to put Canada in a leadership position for sustainable urban development. Clear business support for a *Sustainable Cities Initiative* will be a powerful catalyst of government action.

The NRTEE is developing detailed recommendations for the federal government. These recommendations track the arguments made above.

1. Differentiate the Canadian approach.

Canada has managed massive post-war urbanization remarkably smoothly, and can boast of several significant achievements. Our development firms and implementing agencies have a first-rate reputation. The *Sustainable Cities Initiative* should build on these strengths. Among other selling points, the Canadian *Sustainable Cities Initiative* should emphasize that Canadian players are prepared to make a long-term commitment; that they are seeking to apply leading-edge solutions; and that they would work cooperatively to find the best fit. They are not simply "pushing technologies."

- *Industry Canada and DFAIT should develop and maintain an up-to-date marketing package of Canadian strength in sustainable urban infrastructure, building and environmental management. They should promote our integrated and development-oriented expertise as a distinct feature of Canada.* There should be an explicit frame put around our expertise in telecommunications, urban transit, information technology, water and wastewater systems, community energy systems, buildings and facilities.
- *Canadian development agencies should make sustainable urban development a key policy and programming priority.*

2. Make financing readily available.

a) Increasing experience with PPI/ risk assumption and management

- *The most important action that Canadian governments at every level can take is to use the PPI model themselves.* Critically, these projects must involve a sharing of risk between the partners.

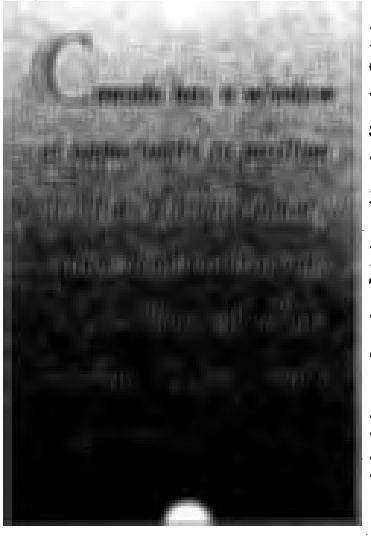
  Without this experience with PPI and risk, efforts to expand Canadian PPI activity abroad will be thwarted. Indeed, Canada is now at the point where Canadian firms are becoming uncompetitive for PPI projects even in Canada. Most of the Canadian success stories abroad involve those who first road-tested PPI projects in Canada.

b) **Removing impediments to the flow of capital to international urban infrastructure projects**

- *The Export Development Corporation (EDC) should use its powers and mandate to establish "regional infrastructure investment funds."* These funds should be set up with Canadian lending institutions and the relevant international financial institutions and should be targeted for infrastructure and building projects in selected urban regions around the world.
- *The EDC should consider providing investment guarantees to Canadian investors in PPI projects that meet agreed-upon sustainable development criteria.* Investment guarantees would put Canadian firms on a more equal footing with American firms receiving support from the Overseas Private Investment Corporation (OPIC).
- *The Department of Finance should consider relaxing restrictions on the ability of labour-sponsored venture capital funds and pension funds to invest in foreign ventures* — provided those funds flow into approved urban environmental ventures and PPI projects.

c) **Making the process for receipt of development funds more transparent, streamlined and predictable**

- *The Canadian International Development Agency (CIDA) should develop "city strategies" within its country programs, focussing first on those urban areas most likely to be successful as part of a "sustainable cities initiative."*
- *Within these city strategies, CIDA funding rules should:*
  - *encourage initial due diligence to identify sound local partners;*
  - *foster teaming rather than competition among Canadian implementing agencies; and*
  - *encourage implementing agencies to pursue development projects, commercial projects or a combination of the two that meet the requirements of the municipality and that have been developed collaboratively.*



3. Support team building.

a) *CIDA and other funding criteria should be modified to encourage combined proposals by Canadian teams in urban regions and to encourage partnerships.*

b) In those cities/regions where primary due diligence has been conducted (such as via the city profiles described above), *expenses associated with finding local partners should be eligible for front-end funding, recoverable upon success.*

c) In selected cities where substantial Canadian teams are working, *CIDA or another funding agency should provide "team secretariat" funding over the life-cycle of a comprehensive project.* This would permit a corporate memory to be developed and sustained. As well, ongoing contacts with municipal officials, industrial leaders and community residents would be maintained. Canadian companies benefitting from these services could also contribute to their costs based upon success in PPI or similar ventures.

In Conclusion

The NRTEE *Sustainable Cities Initiative* is about:

- recognizing cities as a distinct developmental and market opportunity; and
- simultaneously and synergistically reaping economic, environmental and political benefits.

We are convinced that focussing on the second point will make the urban market greater and development work more effective. The NRTEE's work outlines what needs to be done to realize synergies among Canadian strengths in design, technological innovation, financing and implementation.

Cities are also an important locus of public-private partnerships and PPI projects. The *Sustainable Cities Initiative* gives a framework and a compelling justification for concerted action to expand our PPI capabilities.

Canada has a window of opportunity to position itself as a front-runner, rather than an also-ran, in providing real urban solutions. We just need to get started — now.

Detailed information about the National Round Table on the Environment and the Economy (NRTEE)and its *Sustainable Cities Initiative* will be available at the PPI Conference this September 14-15, as will copies of the *Map of Canadian Sustainable Cities Capabilities* (detailing who is doing what/where in cities around the world) and six city profiles. In the interim, more information is available on the NRTEE Web site and on the Web site of The Bayswater Consulting Group, or by contacting NRTEE Policy Advisor David Morgan at: tel.: (204) 958-7740; fax: (204) 958-7710; e-mail: dgmorgan@istar.ca.

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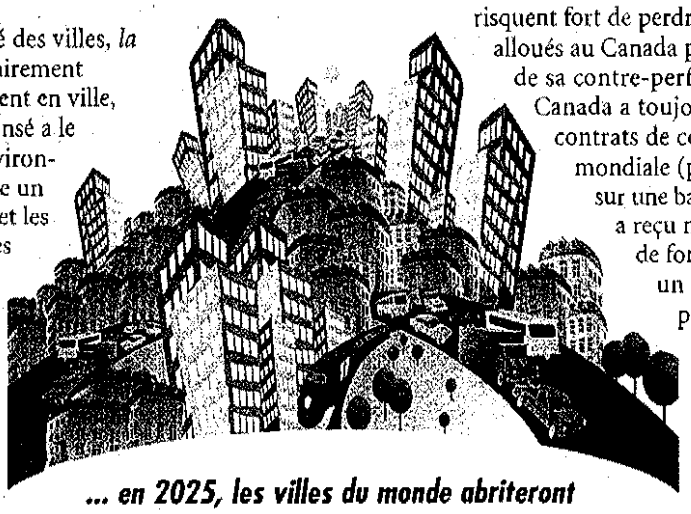
L'Initiative sur les villes viables :

la ville au cœur de l'investissement d'infrastructures public et privé

Historique

Le Canada a le potentiel voulu pour jouer un rôle de premier plan sur la scène mondiale à titre de fournisseur d'infrastructures urbaines écologiques aux pays en voie de développement. Il existe peu d'occasions commerciales, environnementales et politiques aussi prometteuses. L'élargissement et la consolidation des compétences au niveau des projets d'infrastructures des secteurs public et privé (IPP) assurent au Canada un avantage concurrentiel mondial tout en favorisant la viabilité de la planète.

En ce qui concerne la viabilité des villes, *la situation environnementale* est clairement définie. La plupart des gens résident en ville, soit le lieu où chaque dollar dépensé a le plus grand effet possible sur l'environnement. Et dans les villes, on note un lien direct entre la qualité de vie et les améliorations environnementales (ce qui engendre du fait même une nouvelle priorité politique). Nul ne saurait contester l'importance actuelle des villes. Néanmoins, au fil des ans, les villes en arriveront à constituer l'une des plus grandes priorités qui soient.



... en 2025, les villes du monde abriteront 2,5 milliards d'individus de plus qu'aujourd'hui... les villes en arriveront à constituer l'une des plus grandes priorités qui soient.

Les démographes estiment qu'en 2025, les villes du monde abriteront 2,5 milliards d'individus de plus qu'aujourd'hui et que la plupart de ces citadins résideront dans des pays en voie de développement. De façon plus concrète, les villes des pays en voie de développement devront accommoder, d'ici une génération, des populations dont la taille représentera «deux fois la Chine». Les décisions actuelles portant sur les transports urbains, l'énergie, les infrastructures de traitement des eaux et des eaux usées, les immeubles et même les produits et services, auront un effet soutenu sur l'environnement. Si le Canada entend faire sa marque au niveau du développement viable des villes, il doit d'abord concentrer ses efforts pour «redresser la situation au sein des villes».

L'aspect commercial entre clairement en jeu. La viabilité des villes s'avère essentielle à la création de la richesse. La Banque mondiale estime qu'en Asie seulement, il faudra investir jusqu'à 200 milliards de dollars US annuellement en infrastructures urbaines au cours de la prochaine décennie. Si l'on tient également compte des autres pays en voie de développement, la note pourrait bien grimper à 4,5 billions de dollars US échelonnés sur dix ans. De tels investissements renferment un potentiel énorme pour les constructeurs, les exploitants et les fournisseurs canadiens. Il existe déjà, dans plusieurs villes, de grands projets financés aptes à profiter grandement de l'expertise canadienne.

À l'heure actuelle, le Canada ne jouit pas de sa juste part du marché. Si les Canadiens ne déploient pas de nouveaux efforts, ils risquent fort de perdre du terrain. Le nombre de contrats alloués au Canada par la Banque mondiale atteste bien de sa contre-performance. Traditionnellement, le Canada a toujours eu du succès à dénicher des contrats de consultation auprès de la Banque mondiale (plus de deux fois les sorties de fonds sur une base par habitant). Par contre, le Canada a reçu moins que la moyenne des allocations de fonds pour l'équipement et seulement un quart de la moyenne du budget pour les projets de génie civil (Banque mondiale, données de 1997).

En outre, les projets d'infrastructures urbaines relèveront de plus en plus du secteur privé. Ils tiendront surtout au jumelage des secteurs public et privé et engageront la participation des gouvernements municipaux. En 1990, les dépenses annuelles liées aux projets d'infrastructures à l'échelle mondiale atteignaient 100 milliards de dollars US environ. Leur financement provenait, à parts quasi-égales, de sources privées et publiques telles qu'institutions financières internationales, agences de développement et sociétés de crédit à l'exportation. En 1996, ces dépenses augmentaient à 850 milliards de dollars US environ et la part du secteur privé grimpait à 85 p. 100 (Société pour l'expansion des importations, données de 1997).

Si les Canadiens veulent jouer un rôle de premier plan dans ce marché global en pleine expansion, ils devront agir de façon plus audacieuse et efficace, et devenir de meilleurs stratèges pour pouvoir se doter de projets d'infrastructures des secteurs public et privé (IPP) et pour conclure d'autres partenariats avec les secteurs public et privé. Le Canada devra également trouver le moyen de se distinguer de ses concurrents, particulièrement la France, l'Allemagne, les Pays-Bas et les États-Unis.

Table ronde nationale sur l'environnement et l'économie

National Round Table on the Environment and the Economy

Les entreprises américaines, hollandaises et allemandes ont toutes accès à des sources de financement, à l'interne comme à l'externe. De ce fait, elles sont dans une classe à part, tout comme les sociétés japonaises. La gigantesque Compagnie Générale des Eaux (Vivendi) de France s'emploie activement à faire connaître son expertise urbaine intersectorielle. Des pays comme la Suisse et la Hollande présentent déjà leurs entreprises comme des fournisseurs de solutions urbaines viables intégrées. Ils dispensent aux institutions et aux gouvernements un appui qui les positionne bien pour donner suite à leurs promesses. Dans les deux cas, ces efforts semblent justifiés par les énormes avantages environnementaux et économiques possibles et par la bonne volonté que génèrent de telles activités.

Dans ce contexte, nul doute la Conférence nationale sur les IPP organisée par Industrie Canada les 14 et 15 septembre 1998 arrive-t-elle à point. Il est grand temps de définir ce que le Canada et ses entreprises sont en mesure d'accomplir au niveau de tels projets.

Des changements à l'horizon : la proposition de la TRNEE

Selon les membres de la Table ronde nationale sur l'environnement et l'économie (TRNEE) et les douzaines de spécialistes du secteur privé qui participent à l'*Initiative sur les villes viables*, la meilleure approche consiste à :

1) concentrer les efforts sur des projets «aux dimensions urbaines» tels que les systèmes de transport, les installations d'approvisionnement en eau et en traitement des eaux usées et les installations de chanffage à distance;
2) familiariser davantage les entreprises canadiennes aux projets en IPP et les aider à améliorer leurs connaissances et leurs compétences, de manière à perfectionner la stratégie pour répondre à la demande croissante de «solutions urbaines viables» applicables à des villes particulières à travers le monde.

L'*Initiative sur les villes viables* comporte quatre messages clés :

1) ***Aider le Canada à «se distinguer» des autres :*** La réputation internationale de «bon samaritain» du Canada devrait lui profiter. Il y aurait lieu de la consolider en ciblant expressément des projets écologiques urbains régis par la demande et en alliant les objectifs de l'entreprise privée et les préoccupations d'ordre public.

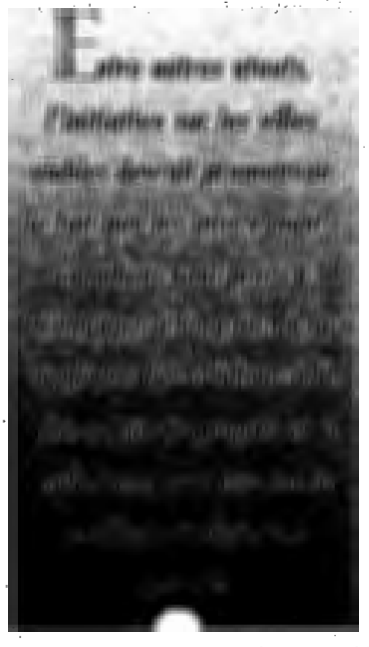
   Le Canada démontre des forces considérables dans certains secteurs et affiche un dossier de soutien gouvernemental fort impressionnant. S'il arrive à affiner quelque peu le mode de conception des programmes et les mesures d'encouragement, et à garantir la participation des trois niveaux de gouvernement, il peut transformer le secteur du développement urbain viable en une occasion d'affaires fort intéressante.

   Si le processus de changement climatique se déploie comme plusieurs s'y attendent, les firmes canadiennes qui ont suffisamment d'expérience pour réduire les émissions à l'étranger accéderont à un solide marché et à un financement supplémentaire. Puisque la réduction de la pollution atmosphérique a des incidences positives directes sur le changement climatique et que la qualité de la santé et de l'air en région urbaine constitue un enjeu clé au niveau des villes en développement, il y a lieu d'envisager la réduction des émissions comme une entreprise environnementale et économique «gagnante» qui profite à tout le monde et assure d'importants gains politiques.

   Le gouvernement du Canada veut trouver de nouvelles façons de mettre en valeur le potentiel des vendeurs et des promoteurs de projets canadiens à l'étranger. La TRNEE a démontré en quoi on peut promouvoir les grandes entreprises canadiennes actives au niveau des télécommunications, du transport, de l'énergie, de la construction et de l'environnement comme des fournisseurs de solutions urbaines viables. Il incombe au gouvernement d'aider les sociétés canadiennes à profiter au maximum de toutes les occasions en procédant aux changements institutionnels mineurs qui s'imposent. Ainsi, les nouvelles perspectives qui surgissent quant aux infrastructures urbaines peuvent servir de fondement aux efforts canadiens en vue d'élargir nos activités en IPP.

2) ***Donner aux leaders municipaux et aux citadins ce qu'ils veulent.*** De plus en plus, il s'agit d'offrir un éventail de produits et services intersectoriels qui répondent à des besoins sous-jacents plutôt que de commercialiser de manière improvisée et mal synchronisée des produits et services isolés. S'il s'agit d'améliorer la qualité et la quantité d'eau potable par exemple, on peut faire appel à une équipe d'intervenants qui, ensemble, sauront trouver la solution. Cette équipe pourrait réunir des urbanistes, des responsables en réglementation municipale, de même que des gens capables d'offrir des produits et des services complémentaires.

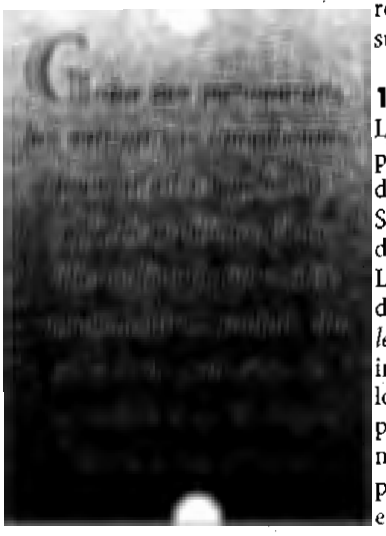
Ce type d'approche intégrée oblige à déterminer les besoins municipaux et régionaux, et à former des partenariats efficaces pour arriver à les combler.



- Détermination des besoins : Peu d'entreprises jouissent des ressources financières et humaines nécessaires pour mener à bien des évaluations détaillées du marché dans diverses villes et pour gagner la confiance de fonctionnaires municipaux qui connaissent bien, voire même qui établissent, les priorités en développement urbain. Il existe néanmoins, dans diverses villes du monde, des représentants officiels, des groupes sans but lucratif, des ententes jumelées, des entreprises commerciales qui ont la confiance des municipalités et qui aident à déterminer la demande. La solution réside dans le réseautage de ces intervenants isolés et dans la transposition de leurs connaissances en occasions d'affaires.
- Partenariats : Les partenariats s'avèrent importants pour diverses raisons. Les projets doivent souvent atteindre une certaine taille pour attirer les capitaux. Les frais de transaction associés aux projets urbains plus petits ne sont pas de beaucoup inférieurs à ceux des méga-projets. Ceci tend à biaiser le marché en faveur des méga-projets, que cela soit approprié ou non en fonction des risques ou des besoins réels d'une collectivité. Si on arrive à commercialiser les projets plus petits dans le cadre d'une même démarche, il serait probablement possible de contourner cet obstacle.

Par ailleurs, les partenariats officiels qui comportent des dispositions particulières de garantie de bonne exécution et d'assurance des risques peuvent contribuer à consolider les compétences, réduisant ainsi les risques et rehaussant la confiance du prêteur. Grâce aux partenariats, les entreprises canadiennes peuvent être appelées à régler le problème d'une ville au lieu de lui vendre uniquement un produit. Un tel facteur peut aider les Canadiens à se distinguer de leurs concurrents.

Pour faciliter de tels partenariats, la TRNEE et le ministère des Affaires étrangères et du Commerce international ont commandé une étude de diverses entreprises et organisations canadiennes actives à travers le monde. Cette étude vise à faire ressortir les grandes lignes de leurs activités principales et à établir qui sont les partenaires locaux. Il s'agit d'une première tentative en vue de dresser une liste détaillée des activités en fonction de chaque ville. Ce recueil peut devenir un outil indispensable à la détermination des besoins et à la formation de partenariats.



3) ***Présenter des projets assortis d'un financement immédiatement accessible.*** Il importe de soulever deux points se rapportant à l'élément de risque.

   - Le plus grand défi ne consiste pas à obtenir un financement mais à garantir que les entreprises canadiennes seront en mesure d'assumer, de gérer et de répartir le risque. À défaut de tenir compte de tels enjeux, les efforts pour accroître les capacités canadiennes en IPP pourraient s'avérer moins fructueux.
   - En supposant que les entreprises possèdent déjà ou arrivent à acquérir les compétences voulues, il importe que le gouvernement du Canada établisse l'infrastructure nécessaire à l'atténuation des facteurs de risque. Certaines mesures peuvent être prises pour rendre le processus de financement plus transparent, plus rationalisé et plus prévisible, surtout à l'étape cruciale du développement.

4) ***Cibler les marchés urbains qui présentent le plus grand potentiel de succès.*** En commençant par les villes où la représentation canadienne est déjà importante, la TRNEE a utilisé un certain nombre de critères d'évaluation des marchés potentiels, dont les suivants :

   - capacité financière et administrative d'entreprendre des projets en IPP
   - intérêt des institutions financières internationales
   - stabilité politique
   - concordance entre les besoins étrangers et les capacités canadiennes

   Ceci a permis à la TRNEE d'établir un «creuset» de capacités canadiennes applicables à une liste restreinte de villes.

Ces profils urbains offrent aux entreprises canadiennes une forme fondamentale de diligence raisonnable. Qu'une entreprise soit d'accord ou non avec les villes proposées pour lancer ses opérations, les profils peuvent servir de modèle quant au type de rapports ouvrant la voie à une diligence raisonnable plus approfondie de la part des intéressés des secteurs public et privé.

Il faut agir dès maintenant

La TRNEE demande avec insistance au gouvernement fédéral de collaborer avec l'industrie et les autres groupes intéressés et d'agir dès maintenant en vue de consolider la position de meneur du Canada dans le domaine du développement urbain viable. Le soutien manifeste du monde des affaires face à l'*Initiative sur les villes viables* aidera grandement à catalyser l'action gouvernementale.

La TRNEE est à mettre au point une série de recommandations détaillées à l'intention du gouvernement fédéral. Ces recommandations reprennent les arguments susmentionnés.

1. Différencier l'approche canadienne.

Le Canada a remarquablement bien géré d'énormes projets d'urbanisation d'après-guerre et compte diverses réalisations de poids dont il est très fier. Ses entreprises de développement et ses organismes d'exécution jouissent d'une excellente réputation. L'*Initiative sur les villes viables* devrait tirer profit de telles forces. Entre autres atouts, l'*Initiative sur les villes viables* devrait promouvoir le fait que les intervenants canadiens sont prêts à s'engager à long terme, à appliquer des solutions à la fine pointe du progrès et à collaborer pour assurer la meilleure intégration possible. Ils ne tiennent pas à «implanter» des technologies sans autre fin en soi.

- *Industrie Canada et le ministère des Affaires étrangères et du Commerce international devraient élaborer et tenir à jour des outils de marketing évolués vantant l'expertise canadienne en infrastructures urbaines viables, en construction et en gestion de l'environnement. Ils devraient afficher les compétences particulières des Canadiens en intégration et en développement comme des atouts distinctifs.* Ils devraient également encadrer l'expertise particulière du Canada dans des secteurs comme les télécommunications, les transports urbains, les technologies de l'information, l'approvisionnement en eau et le traitement des eaux usées, les systèmes d'énergie communautaires, la construction et les installations publiques.
- *Les agences de développement canadiennes devraient faire du développement urbain viable une politique clé et une priorité de programmation.*

2. Assurer un accès facile au financement.

a) **Accroître l'expérience au niveau des projets en IPP - prise en charge du risque et de la gestion**

- *La plus grande mesure que le gouvernement peut adopter, à tous les niveaux, consisterait à recourir lui-même au modèle des projets en IPP.* Il importe que ces projets donnent lieu à un partage des risques entre les divers partenaires.

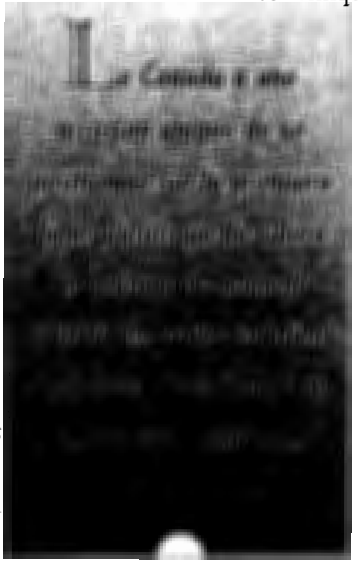
  Sans cette expérience, les efforts pour accroître les activités canadiennes en IPP à l'étranger pourraient bien se solder par un échec. À vrai dire, les firmes canadiennes pourraient avoir du mal à faire face à la concurrence au niveau des projets en IPP, même au Canada. Les plupart des réussites canadiennes à l'étranger peuvent être attribuées aux entreprises qui ont d'abord testé les projets en IPP au Canada.

b) **Éliminer les obstacles à la circulation des capitaux vers les projets d'infrastructures urbaines internationaux**

- *La Société pour l'expansion des exportations (SEE) devrait utiliser son mandat et ses pouvoirs en vue d'établir des «fonds d'investissement pour les infrastructures régionales».* Ces fonds devraient être constitués en accord avec les établissements de crédit canadiens et les institutions financières internationales appropriées. Ils devraient aussi être consacrés à des projets d'infrastructures et de construction dans des régions urbaines choisies de par le monde.
- *La SEE devrait songer à fournir des cautions aux investisseurs canadiens de projets en IPP qui acceptent de respecter divers critères de développement durable.* De telles cautions placeraient les entreprises canadiennes au rang d'égalité avec les sociétés américaines qui obtiennent un soutien de la part du Overseas Private Investment Corporation (OPIC).
- *Le ministère des Finances devrait envisager la possibilité d'adoucir les restrictions sur la capacité d'investir les fonds de capitaux de risque des travailleurs et des caisses de retraite dans le capital-risque à l'étranger* — pourvu que ces fonds servent à des initiatives et à des projets en IPP approuvés en environnement urbain.

c) **Rendre le processus de rentrée des fonds de développement plus transparent, rationnel et prévisible.**

- *L'Agence canadienne de développement international (ACDI) devrait concevoir des «stratégies urbaines» et les intégrer à ses programmes par pays en misant d'abord sur les secteurs urbains qui offrent la meilleure chance de succès à une initiative sur les villes viables.*
- *Dans le contexte de telles stratégies urbaines, les règles de financement de l'ACDI devraient tenir compte des éléments suivants :*
  - *encourager la diligence raisonnable initiale au moment d'identifier des partenaires locaux solvables;*
  - *favoriser la collaboration plutôt que la concurrence parmi les diverses agences d'exécution canadiennes;*
  - *inciter les agences d'exécution à poursuivre leurs projets de développement, leurs projets commerciaux ou un amalgame des deux en s'assurant qu'ils satisfont aux exigences des municipalités et qu'ils ont été mis au point en collaboration avec les parties intéressées.*



3. Appuyer la constitution de partenariats.

a) *Il y aurait lieu de modifier les critères de financement de l'ACDI et d'autres entités de manière à encourager les propositions combinées de partenariats canadiens en régions urbaines et à favoriser les partenariats.*

b) Dans le cas des villes ou des régions où l'on a fait preuve d'une forme fondamentale de diligence raisonnable (comme le recours aux profils urbains décrits ci-dessus), *les fonds de lancement devraient permettre de couvrir les dépenses liées à la quête de partenaires locaux et ces dépenses devraient être recouvrables suivant la réussite des travaux.*

c) Dans certaines villes où d'imposants partenariats canadiens se sont formés, l'*ACDI ou d'autres organismes de financement devraient fournir des fonds pour établir une «équipe de secrétariat» qui demeurerait en fonction tout au long du cycle de vie du projet.* Ceci assurerait la création et le maintien d'une «mémoire de l'organisation». En outre, il serait plus facile de garder un contact régulier avec les fonctionnaires municipaux, les leaders de l'industrie et les membres de la collectivité. Les entreprises canadiennes profitant de tels services pourraient aussi participer à leur financement en fonction du succès remporté par leurs projets en IPP et autres.

Conclusion

L'*Initiative sur les villes viables* de la TRNEE permet de :

- reconnaître le potentiel des villes comme sources distinctes de développement et de création de marchés
- tirer profit, simultanément et en synergie, des divers avantages économiques, environnementaux et politiques.

La TRNEE a la conviction qu'en misant sur le deuxième élément, il sera possible d'accroître considérablement le marché urbain et de rendre le travail de développement plus efficace. Les travaux de la TRNEE permettront de mieux définir les mesures à prendre pour favoriser la synergie entre divers champs d'activités comme la conception, l'innovation technologique, le financement et la mise en œuvre.

Les villes constituent aussi d'importants points de convergence pour les partenariats entre les secteurs public et privé, et pour les projets en IPP. L'*Initiative sur les villes viables* fournit un cadre de travail efficace et justifie amplement le recours à la concertation pour rehausser l'expertise canadienne en IPP.

Le Canada a une occasion unique de se positionner sur la première ligne plutôt que de suivre le peloton au moment d'offrir de vraies solutions urbaines. Mais il doit se lancer dès maintenant dans la course.

Les intéressés pourront obtenir des renseignements plus détaillés sur les activités de la Table ronde nationale sur l'environnement et l'économie (TRNEE) et sur son *Initiative sur les villes viables* au moment de la Conférence sur les IPP qui aura lieu les 14 et 15 septembre 1998. Des exemplaires de la «*Map of Canadian Sustainable Cities Capabilities*» (indiquant qui fait quoi dans les villes du monde) et six profils urbains seront également disponibles. Entre-temps, il est possible d'obtenir de plus amples détails en consultant les sites Web de la TRNEE et du Bayswater Consulting Group ou en communiquant avec le conseiller en politiques de la TRNEE, David Morgan, aux coordonnées suivantes : téléphone : (204) 958-7740; télécopieur : (204) 958-7710; courriel : dgmorgan@istar.ca.

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