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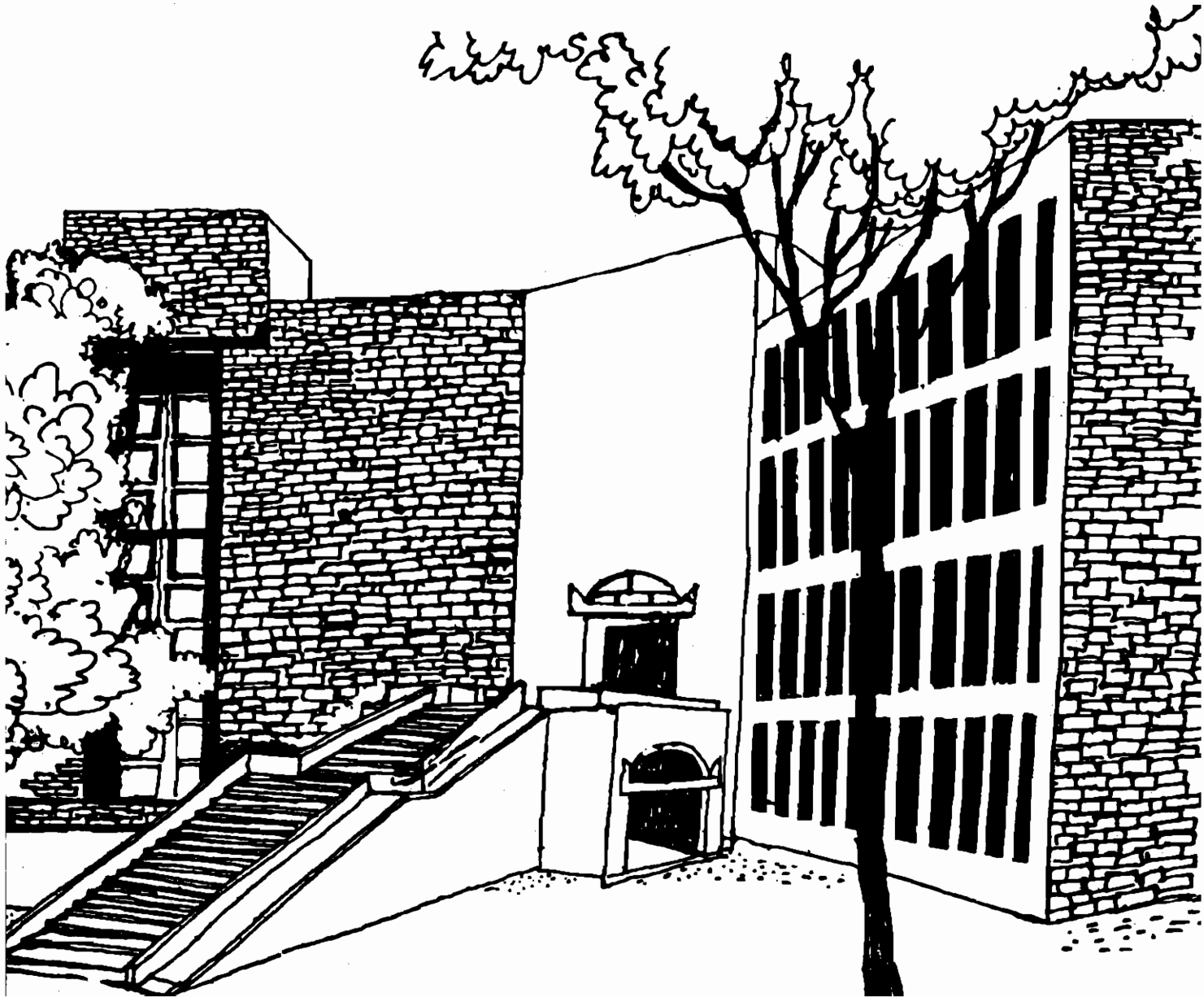

CANADA-INDIA INVESTMENT PROMOTION AND TRANSFER OF TECHNOLOGY WITH SPECIAL REFERENCE TO THE ROLE OF JOINT VENTURES IN RETROSPECT AND PROSPECT

By

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Canada-India Investment Promotion and Transfer of Technology with Special Reference to the Role of Joint Ventures in Retrospect and Prospect

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ABSTRACT

This paper attempts to identify areas which offer good prospects for Indo-Canadian cooperation based on a study of industries where the existence of a 5-20 year technological gap makes Canadian technology particularly appropriate. It is argued that the Free Trade Zones (FTZ) and 100% Export Oriented Scheme (EOS) create a particularly favourable climate for technology transfer and that opportunity for collaboration also exists through Third Country projects.

I

International Scene

THE ECONOMIC GROWTH of the world as a whole and particularly that of the developing countries has been engaging the attention of the United Nations through its various organisations such as UNIDO, UNCTAD, UNDP, UNESCO, FAO as well as the World Bank and a number of international organisations. Many ways, measures, strategies and plans of action have been suggested to achieve the above goal. In essence, however, they all harp on the common theme,[1] "the world partnership in the third/fourth development decade". For a successful partnership between the developed or industrialised and the developing countries, realistic strategies and measures could be adopted for closer economic ties by way of trade and industrial and technological collaborations between two individual countries— a developed

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and a developing one—leading to the fulfillment of the objectives underlined by the United Nations.

In this whole process, the contribution which is being made by some of the developed countries such as Canada which have a very forward-looking, positive and practical approach and which are keen to assist the developing countries by providing financial resources by way of foreign investment, as well as by transferring sophisticated technology to such countries, is indeed noteworthy. Given the will and determination on both the sides—Canada and India—their relationship can become one of the best examples of such "partnership in development".

Foreign Investment and Technology Transfer

As is well recognised, private foreign investment contributes to the economic growth of developed and developing countries. The form in which it is obtained should serve the best interests of the recipient country. In the industrial development strategy of any country, financial resources and technology are very important factors. However, it is also recognised that indigenous technology has to be given preference to imported technology.

Basic Issues of Technology Transfer

A recent study by Wilson (1984) into technology development in Canada defined technology to mean:

> "....Tools and capacity to create and use them. Technology is thus not just about machines; it is about the skills and knowledge and ability of people to develop and use tools which make their lives more enjoyable and productive. Technology in other words is "know-how" and "know-why". As such it is a social, cultural and educational phenomenon which cannot be considered in isolation from its human context. Technology also includes entrepreneurial expertise and professional "know-how". It can be conveniently classified into three groupings:

(a) process technology,
(b) product technology,
(c) general/common service technology.

As regards research in technology, the consensus that has emerged as a result of various studies is that instead of basic research in scientific knowledge, the concern of R&D organisations should be the development of new products and processes and the adaptation and improvement of existing technologies to achieve commercial success. The World Bank has referred to the Japanese experience as an example of applied industrial research.

Technology Transfer Processes

The term "Technology Transfer" is itself somewhat elusive. The process of technology transfer can be divided into three stages:

(a) Absorption and implementation of imported technology by the local work force;

(b) Dissemination to other local production units; and

(c) Adaptation or modification to specific needs or purposes in the local environment.

One of the practical measures for an efficient technology transfer process is the establishment of national technology transfer centres which can improve channels and communications between suppliers and recipients of technology.

Technology can be transferred on either a "packaged" or an "unpackaged" basis. In the former, which involves wholly market-oriented mechanisms, technology is tied with other inputs of production such as finance, management and market access. Direct foreign investment is a classic example of the "packaged" technology transfers.

"Packaged" technology is transferred when knowledge from foreign investors or experts flows to the local work-force within foreign subsidiaries or joint venture firms and is preferred by some developing countries. Technology transfer also takes place when processing and know-how spread from joint ventures to local firms. The transfer can occur either through on-the-job training and exposure or through formal training.

"Unpackaged" transfer occurs through development-oriented mechanisms such as published technical material, training, workshops and seminars, study tours, exhibitions etc., as well as through the market-oriented purchase of equipment or machinery, reverse engineering (imitation) and extension and consultancy services.

Contractual Form of Technology Transfer

The contractual mechanisms provide various modes of transfer of technology required to manufacture particular products, under either private contracts or governmental contracts:

(a) Under private contracts: Joint venture, Licensing agreement, Management agreement, Turn-key agreement, Acquisition of machinery and software, Leasing, Consortia, Contracts with a middleman, Technical assistance, Sub-contracting.

(b) Under governmental contracts: Bilateral industrial cooperation, Multilateral industrial cooperation.

It would be useful if Canadian and Indian companies would examine in detail and identify which particular mode of transfer will be mutually acceptable.

Constraints in Technology Transfer

While examining the constraints relating to technology sharing and transfer, it is possible to identify two types of problems: those which are international in character and others which are internal to the developing country itself. International constraints include inadequate legal framework, lack of expertise for evaluation and costs of technology. Costs of technology transfer can be divided into (a) direct charges clearly stated in contracts covering lump-sum payments, payments by way of royalties, for patents, services etc; and (b) indirect costs resulting from conditions stipulated in contracts affecting marketing, purchasing, guarantees, and pricing policies, or prohibiting recipients from duplicating or further improving technology. Internal constraints consist of a disorganized technology information and transfer system, the lack of appropriate technology, etc.

Institutions concerned with Investment Promotion and Technology Transfer, both in India and Canada, have carefully to examine and identify one or more modes of transfer, as indicated above, which are mutually acceptable and which can be quickly adopted. Such an approach will hasten the process of transfer.

Advantage of Joint Ventures

While using importing technology through any of the modes shown above, some countries prefer technical collaborations by payment of royalty and lump-sum fees without allowing any equity investment. However, it has to be appreciated that for the transfer of sophisticated technology, the supplier of technology will often like to have compensation by way of equity investment and participation in a joint venture. Some of the advantages which a joint venture has over a mere technical collaboration are:

(i) Investment will be venture capital and hence no interest will automatically accrue on the funds contributed until the project starts making profits;

(ii) The project will create an abiding long-term interest by the supplier of technology in the efficient operation of the project since he will want to share the benefits of the prosperity of the project by way of profits generated;

(iii) The project will have the continued benefit of R&D in technology being carried on by the supplier without the payment of any extra charges. It will also have the benefit of managerial and marketing skills of the collaborator, and sometimes of a buy-back arrangement; and

(iv) An economic cooperation of this nature between two partners of two countries may lead to further economic cooperation by way of expansion, diversification of existing projects or establishment of new projects.

Thus the joint venture concept is becoming more acceptable to many developing countries, desirous of quick industrial development. Moreover, the joint venture concept is an illustration of the linkage between investment and technology transfer. Equity investment not only helps in increasing the pro-

duction and the profitability of the company but also augments proportionately the revenue resources of the country by way of higher receivables on account of excise, income tax on profits and dividends, sales tax, etc. The more efficiently operated a project is, the larger will be the production it generates and the greater will be the benefit accruing to the economic growth of the country.

Having dealt with the wider issues of technology transfer and foreign investment, let us now have a broad overview of the present status and potential of foreign investment and technology transfer in some of the South Asian countries, e.g. Pakistan and Bangladesh, and, in greater detail, India.

South Asia—Transfer of Technology in Pakistan and Bangladesh Identification and Evaluation

In South Asia, besides India, Pakistan and Bangladesh are two countries where considerable transfer of technology from abroad takes place regularly.

In Pakistan[1], according to the data available for the period 1976-1985, inflow of foreign investment has been consistent except for 1978 and 1980 when the inflow slightly dwindled. In 1985, the FDI was @ Pakistani[2] Rs.4361 million recording a growth of 105% over that for 1976. The countries contributing major portions to the FDI have been the UK, USA, UAE, Saudi Arabia and Kuwait followed by the Netherlands, Switzerland, Belgium, Denmark and West Germany. The investment flows from other countries, including Japan, have not been so substantial. Sectorally, about 50% of the FDI went into manufacturing, comprising pharmaceuticals, leather and leather products, engineering goods, electrical machinery and equipment, and agro-based industries and about 25% went into mining, the balance being spread over the other industrial sectors. It is pertinent to note that more than 85% of the FDI came to Pakistan in the form of joint ventures; some investment was made in wholly-owned subsidiaries. FDI involving 100% foreign equity is also permitted in Pakistan in certain areas.

As a policy, foreign direct investment is allowed in Pakistan in areas where it brings advance technology, managerial and technical skill and marketing expertise. FDI is governed by the Foreign Private Investment (Promotion and Protection) Act of 1976, which provides for security against expropriation and adequate compensation. The Industrial Property Order, 1979 is also applicable. Management control of foreign parties in joint ventures is in accordance with their equity in the venture. There is complete freedom of repatriation of foreign capital and dividends. Remittances of the approved royalty and technical fees are freely allowed. There is no rigidity about the quantum of foreign equity or the choice of industries by foreign investors. However, foreign investment in Pakistan has to subserve national objectives and policies. Special fiscal and tax incentives are available to foreign entrepreneurs setting up ventures in the Export Processing Zone, Karachi. An Investment Promotion Bureau encourages and stimulates foreign investment in Pakistan. With all these measures, foreign investment is expected to improve in the not too distant future.

In Bangladesh, the trends in private foreign investment also come principally from the UK, the USA, Singapore, West Germany, Thailand, South Korea, India and the Netherlands. Data for the period 1973-74 to 1982-83 show that private foreign investment, as a percentage of total investment, has ranged from 0.02 to 3.86. In 1982-83, private foreign investment (PFI) was Taka[3] 501.94 million out of a total investment of Taka 38,304 million representing 1.31%, and the net foreign aid stood at Taka 30,271 million, accounting for 79% of the total foreign investment. The total PFI in Bangladesh was distributed in food-processing industries (67.54%), pharmaceuticals and chemicals (8.08%), textiles (6.32%), electronics (3.14%), electrical goods (2.44%), metal products (1.42%) and tobacco (1.76%). Foreign participation in Bangladesh has taken the shape of contractual arrangements, equity participation, technical collaboration and licensing arrangements.

A Board of Investment has been set up in Bangladesh to encourage foreign investment in appropriate sectors, either directly or in collaboration with local investors, generally on a joint venture basis. However, 100% foreign investment can also be allowed. Foreign investment is also encouraged in the Export Processing Zone, Chittagong. The Foreign Private Investment (Promotion and Protection) Act 1980 promotes and protects private foreign investment in Bangladesh. The Act protects against non-business risks, and ensures repatriation of profits and capital, and compensation for nationalisation. Adequate fiscal incentives and tax concessions are also made available for promoting foreign private investment.

Looking at the areas available for foreign investment in Pakistan and Bangladesh, areas such as pharmaceuticals, electric goods, chemicals, food-processing industries, and also at the technologies available from Canadian firms for transfer, the scope of technological collaboration and foreign investment by Canadian firms in Bangladesh and Pakistan seems to be quite promising.

India—Indian Economy—Its Status

India has made remarkable progress in all industrial fields through successive Five-Year Plans. During this period, India has not only undergone a rapid transformation from an agro-economy to a growing industrial nation but has also emerged as one of the leading industrialised countries among the developing countries. The industrial and economic progress achieved by India has helped in the development of an extensive infrastructure and a sound technical base. India has not only absorbed these technologies, but has also adapted them to suit its own requirements in the context of a very large pool of labour available in the country. It has to its credit at present over 12,000 collaboration agreements.

The Government of India enunciated a clear, positive foreign investment policy with the statement in Parliament by Pt. Jawaharlal Nehru, the then

Prime Minister, in the year 1956. This statement recognised the important role foreign investment plays in the economic development of the country. The policy views foreign investment as "an important vehicle of technology transfer and of economic and industrial growth". The Indian government has evinced keen interest in attracting foreign investment in a wide range of industries especially those for export and for improving export capability. The basic objective of Indian policy is to acquire sophisticated technology either accompanied by foreign investment or through suitable collaboration terms. Foreign investment has been instrumental in making Indian products competitive in the world market by keeping Indian industry abreast with ever continuing technological developments abroad.

Again a right climate has been created for foreign investment in India as it is not exposed to any risk of political uncertainties. India's foreign investment policy has the twin advantage of being pragmatic and flexible. The guidelines evolved for both foreign investments and payment of licensing fees are clear. While the normal, notional ceiling for foreign equity, by customary practice, comes to around 40%, higher foreign equity is also permitted in areas of high priority, export-oriented ventures, state-of-art-technology and where a closely held sophisticated technology is to be procured. Higher equity, and longer periods for royalty payments have been approved in such projects as come within the purview of the above guidelines. Again, in 100% export-oriented proposals, the entire 100% equity could be held by a foreign company. On exports, a higher royalty than the normal 5% is automatically allowed by Government, ranging from 6% to 10%, e.g., in the case of antifriction bearings for aircraft.

India has a large domestic market serving 800 million population, and urbanisation and industrialisation have resulted in market expansion. Such a vast sheltered market is an added attraction for foreign investors, who often find developed markets reaching a saturation point. A number of studies, including a recent one by the Indo-American Chamber of Commerce, have concluded that foreign investment in India is profitable with an average return of 12% to 15% (net of taxes) on investment which compares very favourably with the return on investment in other developing countries.

The taxation policy of India is oriented towards growth and investment and a host of tax incentives such as accelerated depreciation, investment allowance, partial tax holiday and full tax holiday (in the case of units in Free Trade Zones and those set up under 100% Export Oriented Schemes) are available. Further 100% exemption of tax on profits generated out of exports brings down the tax burden substantially and is an attractive incentive to investors. India has entered into double taxation avoidance agreements with a number of countries.

Remittances of earnings by foreign investors on account of profits and dividends and technical know-how are allowed freely. Similarly, the original capital and its appreciated value are also allowed to be repatriated subject to payment of taxes.

Fears of nationalisation are unrealistic as India does not follow a policy of nationalisation for its own sake. Indian Constitution and Civil Laws provide for fair compensation in the rare event of nationalisation which can be done only in the public interest, as is the case with most developed countries.

By way of liberalisation, a number of industries have been freed from the requirements of obtaining industrial licences for their establishments. In many others, the investment levels for which the licence requirement remains have been raised very substantially. In effect, the requirement of a letter of intent or a licence to set up an industry is no longer essential for a large number of industries in India.

Thus in the current situation in India, foreign companies can play an exciting and rewarding role. India is seeking, welcoming and encouraging foreign equity participation and foreign technology tie-ups in a conscious and positive manner in order to ensure greater inflow of technology and foreign exchange resources. A series of steps have been taken specifically to remove many of the procedural delays, problems and irritants affecting foreign investors. Some of the measures relate to liberal approvals for establishment of liaison offices of foreign companies in India, appointment of technicians, directors, etc.

Canada—Canadian Economy—Its Status

The European Economic forum, an independent foundation which keeps an annual score of international competitiveness among 22 developed countries, ranked Canada sixth in its 1986 report—after Japan, the USA, Switzerland, West Germany and Denmark. Canada improved its standing from 11th position in 1984 to seventh in 1985. Canada is a major producer of zinc ore, nickel, lead, copper, tungsten, uranium, platinum, molybdenum, hold, dilver and natural gas. It is one of the most important suppliers of nuclear fuel to world markets and is self-sufficient in energy. It ranks among the world's leading industrial nations, its industry accounting for about one-third of the GDP and employment of one-fourth of the labour force. The manufacturing industry in Canada is highly rationalised and automated. Ontario has the distinction of claiming more than 50% of all Canada's manufacturing industries in the country. Canada's resource-based industries are very dependent on export markets. Because of its excellent export performance, Canada ranks as the seventh largest exporter in the world.

Canadian manufactured goods and technology today are world renowned. The country has been endowed with vast energy resources, crude oil and natural gas, and hydro-electric power all of which have helped give the country a leading edge in the development of new products and materials. Telecommunications, electronics, space technology, agriculture and natural resource extraction and refining are only a few of the fields in which Canada excels. The country also has some of the world's leading manufacturers of lumber, pulp

and newsprint, turbines, automotive vehicles and parts, commuter aircraft and urban transit systems.

Indo-Canadian Relations

Using the above background, we shall now review the present position of Canadian foreign collaboration in India. The Canadian presence in India, so far, is limited, not so much because there is no complementarity, but mainly because of the "information gap" that exists between Canadian business and India and which has acted as an obstacle. The general impression gathered is that the perceptions of Canadian businesses about their own involvement shows a tendency to be risk-averse enterprises concerned about their exposure in what to them is a relatively unknown country. Also there is little awareness in Canada of Indian conditions. Canadian companies do not appear to be willing to incur the costs required to build a long term presence. Coming to the trade and industrial relations between Canada and India, it seems such relations started, in any noticeable manner, only after India's independence in 1947. Lack of historical ties with India and lack of Asian experience are also, therefore, factors accounting for Canada's not-so-successful performance in investment in India. On the other hand, Canada's close proximity to and long-established business relationship with the USA found for them an attractive market in that country.

Out of over 12,000 foreign collaborations approved by India up to 1988, only 118 were for foreign collaboration with Canada. During the years 1961 to 1980, approvals were given for some 54 Indo-Canadian collaborations. However, there was a marked improvement in the number of collaborations during the period from 1981 to 1988, when 66 collaborations were approved.

A large number of these collaborations have taken the form of technology sales and there are few collaborations with Canadian financial commitments, i.e., investment. It is, however, noteworthy that these collaborations cover a variety of industries producing diverse products and services which range from felts to hydroelectric projects to floppy diskettes. The Indian partners in these collaborations are primarily from the private sector. Bata was one of the first Canadian companies to establish its presence there, as was Alcan Company Limited of Montreal which has had a long and close association with Calcutta's Indian Aluminium Company Ltd.

Some of the other important Canadian collaborations include Mandya Paper Mills for paper, Amalgamations Pvt. Ltd. for tractors with Massey Ferguson, Albany Felt for paper making felts, Comminco Binani with Comminco Ltd. for non ferrous metals, Howe International Inc. for consultancy services etc. Major projects at the Government level where Canadian firms were involved include Kudremukh Iron Ore Company for mining of iron ore and Nhava Sheva Port for construction work. Though small in number, they cover a wide range of important industrial activity.

Canada's FDI in India

According to the RBI's survey of India's International Investment Position, 1977-78 to 1979-80 (RBI Bulletin, April 1985), the direct investment capital of Canada in corporate industrial and commercial enterprises in India was Rs.341 million[4]. Of this, Rs.338 million was in the manufacturing sector and the balance of Rs.3 million was in the services sector. This is a negligible proportion when viewed against the total direct investment capital of Rs.9332 million from all countries in India as at the end of March, 1980. Data on foreign collaboration approvals reveal that approvals for Canadian financial participation in India have been accorded regularly from 1981 amounting to Rs.55.46 million up to 1988. If this trend continues, foreign direct investment from Canada in India will substantially increase in subsequent years. Again, an aspect which is not touched upon generally, is the link between the two countries as members of the Commonwealth, which is a favourable factor in strengthening economic relations. Both the countries share Commonwealth background, common English language, and long partnership in development oriented activities such as the Colombo Plan.

Canadians of Indian Origin

An estimated 0.25 million to 0.4 million non-resident Indians and those of Indian origin live in Canada. They are well established in business and industry and have an astute understanding of India's business potential. Acting as NRIs, they can make a significant contribution towards promoting joint ventures between Canadian and Indian companies.

India-Canada Joint Business Council

This Council has been playing a very important role in enhancing the economic and commercial relations between India and Canada by identifying opportunities for investment and technology transfer and industrial cooperation between the two countries. With the expertise available in the two countries, projects in third country markets, in the areas of power and construction, architecture and town planning, and heavy industry could be undertaken.

Canadian Assistance to Indian Projects

One of the prominent Canadian Government agencies designated to promote joint ventures and transfer of technology between Canada and other countries is CIDA, the Canadian International Development Agency's Business Cooperation Branch which is in charge of the Industrial Cooperation Programme (INC). INC provides financial assistance to Canadian firms to cover the front-end costs of studies that determine the technical and economic

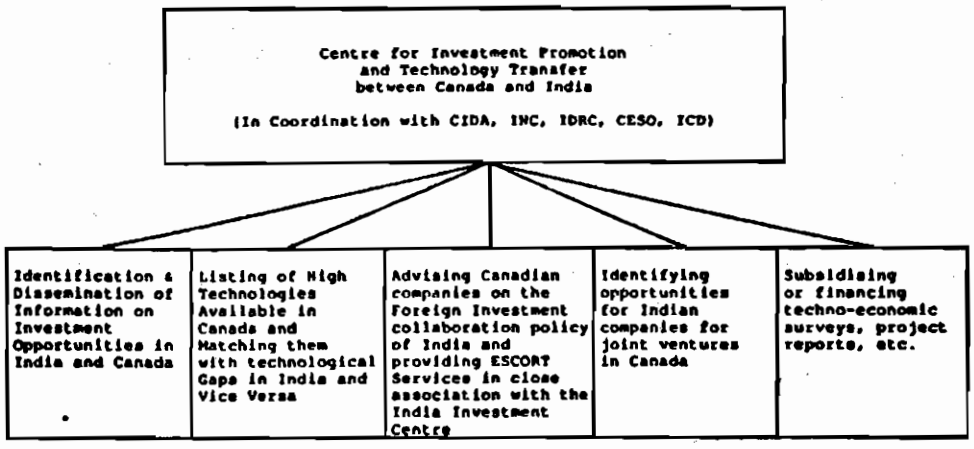
viability of projects. India's is the fastest growing industrial programme in CIDA.

In the sphere of Overseas Development Assistance, Canada has a place of pride since it ranks very high. India has been one of its greatest beneficiaries. Canadian aid to India aggregated to Rs.18740 million up to 31 March 1988, which is 3.05% of the total aid received by India from all sources. About one-fourth of the Canadian aid is in the form of grants. It is heartening to note that the Canadian Government has recently decided that all future CIDA assistance for development projects will be fully in the form of grants.

Some of the major projects undertaken with Canadian assistance and which encompass wide-ranging economic development areas are: Chamera Hydro-electric Power Project in Himachal Pradesh, Idukki Hydroelectric Project in Kerala, dryland agricultural research, oilseeds production programme, and Andhra Pradesh Social Forestry Project. One prominent area in which Canada is associated with India is its oil exploration programme. Possibilities also exist for Petro-Canada to collaborate in the areas of manufacturing certain products connected with the oil exploration programme, such as chemicals, rock bits and other items.

All of these projects will require large financial outlays which will be made available by Canada through a mix of CIDA grant funds and export credits provided through the Export Development Corporation (EDC) of Canada.

Canada also works to develop closer ties between Canadian and Indian business through its INC. The INC provides financial incentives in two areas, viz. (i) consultancy, whereby consultants can locate and test the feasibility of development projects, and (ii) contribution to individual companies for investigating mutually beneficial joint ventures, licencing arrangements and other forms of cooperation. The Canadian government has so far invested more than five million dollars in this programme in India. See below for a chart showing the extent of assistance to India under this programme from 1982-83 to 1985-86.



A small but very significant new phase of Canada's programme will provide for the establishment of linkages between Canada and India at the institutional level.

Canadian assistance has been tailored to the capability of the Canadian economy to respond to Indian needs and priorities which is the basic tenet for a successful partnership in a programme of "Development through Cooperation". The effort has been rightly focussed on the areas where Canadians are most experienced and where Canadian products and resources are most competitive.

II

Future Prospects

The prospects for closer economic relations between India and Canada are very bright in view of India's desire to import technologies in its endeavour to modernise the economy for greater industrial growth and Canada's positive response and ability to supply these in wide-ranging sectors. It is also possible to have joint ventures and collaborations in Canada by the Indian public and private sector companies. The scope for Indo-Canadian joint ventures is enormous. What is required is to establish a mechanism for bridging the information gap which exists concerning each other's capabilities, through regular exchange of information supplemented by visits of sector-specific delegations, and investment promotion experts, and by evolving suitable investment promotion and technology transfer mechanisms, both in Canada and India.

Specific measures aimed at improving Indo-Canadian economic relations include the setting up of the Canadian trade office at Bombay in March, 1986 and the recent opening of the Government of Ontario's trade office in New Delhi. An agreement between Canada and India for the avoidance of double taxation and the prevention of fiscal evasion with respect to taxes on income has been effective since January, 1987. In view of the steps taken by the Government of India in the matter of liberalisation of industrial licensing problems, foreign investment policy and taxation laws as indicated earlier, and the Canadian Government's continuing encouragement of Canadian business collaboration with India, there is considerable scope for Indo-Canadian cooperation. However, a detailed analysis of the requirements and identification of specific sectors of collaboration by experts will be necessary. Based on some expert opinion, these areas are identified very broadly as follows:

(1) Transportation
(2) Computers—hardware and software
(3) Electronics
(4) Telecommunications

(5) Automotive parts
(6) Afforestation and forest development technology
(7) Pulp and paper
(8) Medical technology and biotechnology
(9) Oil and gas
(10) Power—thermal, hydro and nuclear

Matching Technologies

A recent scientific study by the Associated Chambers of Commerce and Industry of India has identified technology gaps in selected Indian industries such as paper, aluminium, engineering, inorganic and organic chemicals, cement, steel, etc., in terms of number of years, and it is interesting to note that the gaps range from five to twenty years. It is precisely in these technology transfer areas that sophisticated technology from Canadian firms is available and can be procured on a long-term basis to fill in these gaps.

Transportation Systems

Two areas in which Canadian technology could be made use of are inland water transport and expansion and modernisation of the urban transport systems. India looks for technologies for high capacity bulk movement wagons for cement, coal, oil, foodgrains, and fertilizers, and also for solid state micro-processor signalling equipment, equipment for controlling movement of road transport systems, handling equipment at ports, loading or unloading terminals and related areas. Canadian firms such as Canadian Marconi Company, Syntronics Systems Inc., Met Chem Canada Inc., and UTDC Inc., who have these technologies could offer them.

Computer Software

Canada offers immense potential for software exports and collaboration in software development and marketing. There is a wide area of software development for specific applications which could be exploited through the collective efforts of Indian and Canadian software houses. India could offer the services of their software experts who are some of the best in the world and are also capable of developing the company-specific requirements for software. Canada has technologies available in the area of data management, communication and networking, energy, graphics, etc. Centres of excellence are being built around the Canadian Universities for research in the software area. In order to develop better linkages between Canadian companies and units in other countries, big computer houses in Canada should send missions to different nations to prepare profiles of companies in those countries. The information could then be disseminated to small companies.

Electronics

India's future growth strategy in the electronics sector comprises the growth of the computer software industry for both domestic applications and exports; production of consumer electronic goods in economic quantities and at reasonable prices; and the promotion of the application of electronics on an integrated basis. The production in the electronics industry in India in 1987-88 was Rs.52 billion, which could be raised to over Rs.100 billion by 1990. The Canadian electronics industry is highly specialised and Indian companies in the public and the private sectors can readily have collaboration with Canadian firms such as Precision Photomosk Inc., or Syntronics Systems Inc.

Telecommunications

Development of telecommunication has been recognised in India as a "technology mission". India's current Five-Year Plan provides for an overall outlay of Rs.60 million (C $5 million) towards improving the telecom services. Steps have been taken to improve or replace the worn out equipment, to induct digital and optic fibre technology, and to introduce value-added services including computer communications with integrated service with the eventual target of providing an integrated services digital network.

The participation of the private sector in the development of telecommunications has increased over the years. Greater interaction between the Canadian and the Indian companies in this sector would be essential.

Auto-Parts Buy-Back Arrangements

Some of the Canadian companies are setting up auto parts projects in other countries on a buy-back basis (the Chrysler Corporation of Canada's project in Thailand). Over the last decade, Indian automotive industry had undergone a rapid transformation following a large number of collaborations with leading automotive manufacturers of the world. The components industry too underwent similar transformation to keep pace with the increasing requirements of vehicle manufacturers for state-of-the art components. Canadian firms should consider the possibilities of setting up units with their technology and know-how on a buy-back basis or for exports to third countries.

Forestry—Forest based Products

The development and exploitation of forest-based products has been one of Canada's traditional resource strong-holds, and India continues to have an important requirement here. Canadian experts could work with their Indian counterparts in forest management and reforestation, as well as collaborate in pulp and paper mill production, planning and processing. Sentrol Systems Ltd., was the first company to introduce online web scanning measurement of

colour, formation and ash constituents to the paper making industry. This firm also has an excellent reputation for its sensors which use infra-red, X-ray, gamma ray, optional chromatographics and laser techniques.

Medical products and technologies—Medical and Hospital Equipment

The Canadian Medical Technology Mission which visited India in 1987 identified a number of areas where Canada's 400 prominent firms representing 1200 different medical products or technologies, could collaborate with their Indian counterparts. These include gamma sterilisers used for destroying bacteria and viruses for irradiating donor blood prior to transfusion; diagnostic imaging tools including CAT scanners and specialised X-ray machines; ultrasonic diagnostic equipment for eye and sinus disease; laser surgery equipment for quick and economic treatment of cataracts, detached retinas; blood analyses no-needle-insulin injectors and a variety of more traditional medical and hospital equipment. These may be tapped.

Bio-Technology

In Canada over 100 firms are involved in bio-technology development, in areas of Health care, Food and beverages, Agriculture, Waste Treatment, Engineering, Mineral Resources and Forestry. Their technologies include monoclonal antibody diagnostic kits for early detection of rubella and leukemia, bio-degradable fungal pest control, "in situ" microbial bleeding of minerals, etc.

Oil and Gas Exploration

Already there is active collaboration between India and Canada in the field of Oil and Gas, both onshore and offshore. As the indigenisation of the Indian oil and gas sector continues, many more joint ventures may be concluded. There is a great scope for collaboration with Petro-Canada for manufacturing products connected with oil exploration.

Free Trade Zones—100% Export-Oriented Scheme

India offers facilities for setting up units in the Free Trade Zones (FTZ) and under the 100% Export Oriented Scheme (EOS). Under the export processing zones, a number of tax and other incentives are offered to entrepreneurs.

Foreign investors could hold up to 100% equity and repatriate capital to the extent of original investment and profits and dividends after payment of taxes. Similar facilities are available under the 100% EOS which can be set up anywhere in the country.

Investment Promotion and Technology Transfer

The catalyst for attracting foreign investment or obtaining technology by India, as well as for overseas investment and technology transfer by Canada, is the mechanism known as "Investment Promotion and Technology Transfer Centre". For such investment promotion and technology transfer between Canada and India, both ways, there is a much-felt need for evolving an efficient and effective mechanism which can be named as "Investment Promotion and Technology Transfer Centre" supported by various Canadian economic development agencies and a counterpart set-up in India. A chart illustrating this is annexed to this paper. India can also establish a branch of its "Indian Investment Centre" in Canada.

Development through cooperation—Agreement of 1989

Because of the keen desire of both the Government of Canada and the Government of India to foster development through cooperation between the two countries, they have signed a "General Agreement on Development Cooperation" in February 1989 which envisages a number of measures to achieve their objective, such as the sending of appraisal and evaluation missions to India to study and analyse development projects; the granting of fellowships to nationals of the Republic of India for studies and professional training in Canada, India or a third country; the assignment of Canadian experts, advisers and other specialists to India; the development and carrying out of specific studies and projects; and the promotion of relations between firms, institutions and persons of the two countries.

Linkages between Canadian Manufacturers' Association and Confederation of Engineering Industries in India (CMA/CEI)

The Canadian "partner country participation" at the 7th Indian Engineering Trade Fair 1987 organised by the Confederation of Engineering Industry (CEI) was a mile-stone in Canadian initiative to foster industrial cooperation and trade between the two countries. The 7th IETF represented Canada's largest promotional project ever undertaken in India. A memorandum of understanding (MOU) was signed at the Fair between the two countries. The MOU envisaged expansion of bilateral industrial cooperation between the two countries by encouraging joint ventures, technical collaborations, licensing arrangements, joint research and development and two-way investment in areas of complementary interest.

Perspective on Indo-Canadian Technology Transfer and Cooperation on Third Country Projects

Canadian Government policy is very supportive of both acquiring and supplying technology in cooperation with foreign collaborators on commercial

terms. It is, therefore, possible for India to develop Canada-based initiative where these fulfill a need in consonance with Government of India's policy.

An illustration of this process of two-way technology transfer is the example of collaboration between George and Nick's Machine Works Ltd., of Calgary, Alberta, and ONGC (India), which jointly developed the technological basis for a new pipeline instrument called a 'photoinclinometer'. Thus technology transfer flow is already moving in both directions and there are many other areas where India and Canada could begin to develop proprietory products which, combined with sharing of global marketing, would give India an eventual edge in world markets. By a careful selection of collaboration areas, India and Canada could embark upon Indo-Canadian joint ventures.

Third Country Projects—Service Sector

Consulting sector cooperation on third country projects is another area where India and Canada can have greater cooperation. Canada has a strong consulting engineering sector with world-class expertise in hydro, thermal and other energy production and transmission systems, transport infrastructure, ports, communications, mining, agricultural development, industrial plants and processes. Utilising this experience and India's consulting sector's excellent engineers, skilled labour and engineering products, both the countries could form a formidable partnership for third country projects in Latin America, Africa, Asia, the USSR, and the other Socialist Countries of Eastern Europe.

Ferrous and non-ferrous industries, petrochemical complexes, railways, energy, irrigation, civil construction, agriculture and biotechnology are some of the areas that offer possibilities for such joint collaboration in third countries. M/s. Howe (India) Pvt. Ltd., in collaboration with M/s. Howe International Ltd., (HIL) of Canada, have already rendered yeoman service in this area. They have provided a variety of services in the fields of foundation engineering, structural engineering, marine structure, dredging and reclamation, bulk and bagged material handling, mechanical engineering, container handling, electrical engineering, field work and contract management to a number of private and public sector organisations, such as Visakhapatnam Port Trust, Madras Port Trust, Food Corporation of India, Marmagoa Port Trust, University of Riyadh of Saudi Arabia, Paradip Port Trust, Towell Construction of Kuwait, Nhava Sheva Port Trust and National Dairy Development Board. There is thus tremendous scope for Indo-Canadian collaboration in the services sector for operating in India and Canada as well as in the third world countries.

In order to improve the international commercial relations between Canada and India, a suggestion is made for setting up an Indo-Canadian Chamber of Commerce in India.

In essence, the objective of "Development through Cooperation" could be

achieved if Canadian and Indian authorities could work together by taking concrete measures to achieve it.

NOTES

1 "Recent Developments in Foreign Direct Investment in Asia and the Pacific"—ADB/IFC Symposium on FDI in the Asian and Pacific Region, 25-27, January 1988.
2 US$ = Pakistani Rs.21.00 (end of June, 1989)
3 US$ = Taka 32.270 (end of June 1989)
4 US$ = Indian Rs.16.531 (end of June 1989)

REFERENCES

1. "Linkages between Investment Promotion and Acquisition of Technology"—ESCAP Document No.IHT/TAGIT/6 dated 26.12.1985.
2. Andrew H.Wilson: "Technology Development: A Canadian Priority" *Prometheus*, Vol.3, No.1. (June 1985).
3. "Recent Developments in Foreign Direct Investment in Asia and the Pacific"—ADB/IFC Symposium on FDI in the Asian and Pacific Region, 25/27 January, 1988.
4. "Monthly Newsletter", Indian Investment Centre, New Delhi, Vol.XXVI, No.6—25.6.1989 (pp.65-68).
5. Supplement on Canada, "The Economic Times", 21.2.1989, New Delhi.
6. "India's International Investment Position, 1977-78 to 1979-80", *RBI Bulletin*, April 1985.
7. "Foreign Collaborations in India: Policy, Procedures and Opportunities"—Maharashtra Economic Development Council, Bombay.
8. Report of the Federation of Indian Chambers of Commerce and Industry (FICCI), New Delhi, on FICCI Delegation to Canada, September 11-16, 1988.
9. General Agreement on Development Cooperation between the Government of Canada and the Government of the Republic of India, dated 13.2.1989.
10. "Strategy for bridging technology gaps in Indian Industry"—The Associated Chambers of Commerce and Industry of India, New Delhi.
11. "Two Nations: Canada-India Development Cooperation"—Canadian International Development Agency, February, 1987.
12. Kavita A.Sharma: "Canada-US Free Trade Agreement—An Overview"—*Foreign Trade Review*, Vol.XXIII, No.2, July-September, 1988, Indian Institute of Foreign Trade, New Delhi.
13. "Economic Profiles of 55 Major Countries, 1989"—Centre for Monitoring Indian Economy, Bombay.
14. Foreign Collaboration Statistics from Indian Investment Centre, New Delhi.