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**DONOR'S AND RECIPIENT'S NATIONAL POLICIES AND THE TRANSFER
OF TECHNOLOGY: DEVELOPMENTAL OUTCOME AND IMPLICATIONS**

by

Natthinee Dhanarajata, B.Soc.Sc.(Eco.), Cert.Bus.Adm.

**A thesis submitted to the Faculty of Graduate
Studies and Research in partial fulfilment
of the requirements for the degree of**

MASTER OF MANAGEMENT STUDIES

**School of Business
Carleton University
Ottawa, Ontario**

January 8, 1993

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submitted by

Natthinee Dhanarajata, B.Soc.Sc.(Eco.), Cert.Bus.Adm.
in partial fulfillment of the requirements for
the degree of Master of Management Studies

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January 15, 1993

ABSTRACT

This research examined the extent to which donor's and recipient's national policies affect technology transfer in terms of the recipient country's developmental needs and priorities. Research results show that the direction of technology, trade, and investment exchanges are heavily influenced by government policies. These policies directly determine the type, scope, and trend of technology transfer in one way or another.

Specific to the extent to which national policies affect technology transfer, results indicate that: 1) donor's policies influence technology transfer by way of financial support; and 2) recipient policies play a powerful and influential role in the transfer, particularly through the Board of Investment. Results also provide evidence to further conclude that technology transfer projects from the Canadian private sector are responsive to the immediate needs/priorities of the recipient country.

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I. INTRODUCTION

Technological change is widely recognized as an important source of economic growth and development. Technology is critical to development because it is a resource and the creator of new resources, a powerful instrument of social control, and because it affects decision-making leading to positive social change (Government of Canada, 1990a).

The effective transfer of technology is a fundamental element in development strategy, and has become the heart of planning for many developing nations that are aiming for rapid economic growth (Marton, 1986). Many in the third world now recognize that a key to development is the ability to use technologies already available (Government of Canada, 1990b). Shifts in the national policies of many countries and a new emphasis on building local capabilities to absorb and manage technology are now evident (United Nations Conference on Trade and Development (UNCTAD), 1982).

Transfer of technology is considered effective not only when the imported technology is adapted to meet the developing nation's capabilities and to suit local conditions, but also when such transfer addresses the needs of many developing nations: for creating employment; for gaining access to foreign markets for exports; and for strengthening the local technical infrastructure (Government of Thailand, 1988). Literature concerning the role of transfer of technology in development has concentrated mainly on two areas

(International Development Research Centre (IDRC), 1983). The first area is national policies and mechanisms to promote transfer of technology to developing countries. This area deals with not only the perspective of the developed countries but also that of the developing countries. The second area is the ability of the recipient countries to absorb and adapt the imported technologies.

Although the above two aspects are essential components in the effective transfer of technology, there is less research concerning the impact/outcome of such transfer in terms of the developing countries' developmental needs as expressed in their national plans. This thesis examines the extent to which national policies of both the donor and the recipient countries affect transfer of technology in terms of the recipient country's pressing developmental needs.

II. OVERVIEW

Thailand became a country of concentration for Canadian development assistance in 1981 (Rahman and Balcome, 1987). It was recognized by the Canadian and the Thai governments that political and economic benefits could be derived from a strengthened political and economic relationship between the two countries. The Canadian aid strategy for Thailand, derived from Canadian-Thai economic co-operation and developed in concert with the Royal Thai government (RTG), includes assisting the RTG in the acquisition of technological capabilities for the public and private sectors, the management of Thailand's natural resources, and the alleviation of rural poverty (Government of Canada, 1988).

In the last two decades, the Thai business sector has developed external links as the development process switched its incentive mechanisms to export-oriented industrialization and carried out a domestic structural adjustment program. Moreover, Thailand has actively sought Canadian involvement in the industrial sector of her economy, specifically in areas where Canadian capabilities and experience had relevance to Thai requirements. Canadian involvement has been predominantly based on Canada's provision of official development assistance and other government support programs (Rahman and Balcome, 1987).

In line with the Thai Economic Plan, the Canadian International Development Agency increases its attention on

industrial development assistance to help Thailand in her rapid transition from an agricultural nation to a newly industrialized society. Such assistance promotes the transfer of Canadian technology and know-how to Thailand through joint ventures and other commercial collaborations.

ECONOMIC CO-OPERATION AGREEMENT

The Economic Co-operation Agreement is a long-term strategic agreement between the Government of Canada and the RTG. Signed in 1988, the objectives are to undertake new and sustained efforts to consolidate, develop, and diversify the commercial, economic, industrial, and human resource development cooperation between the two countries to their mutual benefit.

To the present, the Canadian government has played a catalytic role which is extremely important in providing momentum to the Canadian-Thai economic cooperation. One of the agencies involved in providing direct assistance to developing nations, including Thailand, is the Canadian International Development Agency (CIDA). Approximately 75 percent of Canada's official development assistance (ODA) is managed and administered by CIDA (Government of Canada, 1989).

CIDA AND ITS PROGRAMS

In line with the latest ODA strategy, CIDA created two separate Industrial Cooperation programs: CIDA's Enterprise

Collaboration Project (ECP); and CIDA INC's Industrial Cooperation Program (IC).

The main difference between ECP and IC is that ECP falls under the bilateral program which is administered by CIDA in collaboration with the Canadian Imperial Bank of Commerce whereas IC is under the supervision of CIDA INC's Partnership Program. Furthermore, ECP is one of the projects that is planned and implemented by CIDA in direct cooperation with the government of the recipient countries. It is geared towards providing funding to the recipient country's applicants. On the other hand, IC, in its distinct activities and as one of CIDA INC's channels, is to make financial contributions to Canadian firms participating in the development in the Third World (Government of Canada, 1990a).

Specific to the Thailand-Country Program, both ECP and IC have two main strategic goals: to assist Thailand in the transition from an agricultural to an industrialized society; and to build a base for a long-term economic relationship between Canada and Thailand. These two goals are to be achieved through increased investment of Canadian capital, technology, and expertise to support Thailand's priorities for the modernization of her economy (Government of Canada, 1990a).

While recognizing that both the ECP and the IC are two main mechanisms that CIDA and CIDA INC respectively use to transfer technology to Thailand, and to assist and foster

business linkages between the two countries, the proposed research will query mainly those implementing the CIDA INC strategy and its IC program and those participating in such programs. This is due to the fact that the ECP, created in September 1990, is still at an early stage of implementation. It would, therefore, be difficult to assess and make generalizations concerning the impact of the ECP's response to Thailand's developmental needs at the present time. Furthermore, with regards to the CIDA INC's IC program, Thailand was, and still is one of the leading beneficiaries of the IC program funding in the mid-1980s (Government of Canada, 1985, and Government of Canada, 1990a).

CIDA INC's IC Program and Technology Transfer

IC's activities are primarily concentrated in the manufacturing sector, with the main objective of encouraging transfers of technology and know-how (Rudner, 1986). The IC's role is to promote joint ventures, licensing agreements, survey missions, management contracts, and technology missions (Government of Canada, 1986). As an engine of trade expansion with developing countries, the IC program supports the "front end" costs of joint venture activities in developing countries, including support for project identification, project definition - starter and feasibility studies, technical inputs, training, and industrial services (Government of Canada, 1986). The maximum total contribution

for all the projects is Can\$ 2 million without prior Treasury board approval, excluding the starter study which is at Can\$ 20,000.- maximum (Government of Canada, 1986). In accordance with Treasury Board guidelines, IC Program criteria have been drawn up by CIDA to meet both its primary mandate, to assist the middle income developing countries, and its secondary objective, to ensure mutual benefit which will have a positive impact on the domestic Canadian economy. Therefore, the program criteria for eligibility are considered from both the Canadian and the developing country perspectives (see Appendix 1).

THE THAI SIXTH NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN (1987-1991)

The primary objective of the RTG's Sixth Plan is to raise Thailand's level of development while working to solve poverty, unemployment, and fiscal imbalance. Three major development strategies have been devised to achieve the aforementioned objective (see Appendix 2). The Plan accords the private sector a major role in Thailand's development. It assigns the task of employment creation for the estimated 3.9 million Thais expected to enter the labour force during the 1987-1991 period to the private sector. The Sixth Plan calls for an eight percent annual increase in the private sector's investments, including a 1.06 percent annual increase in foreign investment (Government of Thailand, 1986).

Attractive pricing incentives relevant to specific investment promotion zones are offered to the private sector in order to encourage investments in agriculture, transport, water resource development, energy exploration, education, and public health. At a basic level, they are: 1) exemption or 50% reduction of import duties and business taxes on imported machinery; 2) reduction of duties and business taxes of up to 90% on imported raw materials and components; 3) exemption of corporate income taxes for 3 to 8 years with permission to carry forward losses and deduct them as expenses for up to 5 years; 4) exemption of up to 5 years on withholding tax on goodwill, royalties, or fees remitted abroad; and 5) exclusion from taxable income in the form of dividends derived from promoted enterprises during the income tax holiday (Government of Thailand, 1989). Incentives, however, can be greater depending on the investment location. Other investment incentives provided to the private sector are in areas such as: export marketing; production for export; and the tourism industry. During the Sixth Plan period (1987-1991), emphasis is to be placed on diversifying into new production of existing items (Government of Thailand, 1986). Furthermore, in order to decentralize Bangkok and develop rural areas, incentive and promotion plans are implemented to attract the private sector to move into new investment zones outside of Bangkok.

The Sixth Plan is the RTG's vision concerning the future

direction of the Thai economy. As can be seen, economic growth, development, and expansion are the major objectives. Moreover, the public sector's role is to support private sector initiatives in areas such as industry and export development with emphasis on diversification in the industrial subprograms. Two specific subsectors, the agro-industry and the engineering industry have been identified as "target" industries for diversifying industrial production and increasing exports (Government of Thailand, 1986).

THAILAND'S NEW CABINET AND ITS EFFECT ON NATIONAL POLICY

On March 6, 1991, His Majesty King Bhumibol Adulyadej approved Thailand's 35 member interim cabinet, composed of highly qualified and recognized technocrats, businessmen, and bureaucrats. The cabinet's appointment followed the February 23, 1991 peaceful takeover of the administrative power of the country by the National Peace-keeping Committee. Under the new government, the Sixth Plan remained in effect since this plan has enabled the country to achieve impressive economic growth in the past few years (Yoon, 1991). Furthermore, Prime Minister Anand Panyarachun stated that his new government would emphasize on the continuing process of allowing the private sector to play an important role in the Thai economy (Yoon, 1991).

The Thai business world has reason for optimism under the new cabinet. Prime Minister Anand is a strong supporter of

long-term economic and industrial planning, and appreciates the need to upgrade manpower services and infrastructure throughout the country (The Royal Thai Embassy, Ottawa, 1991). Foreign institutional investors who know Thailand well are also optimistic. Other foreign investors who were initially shocked by the military coup have gained confidence since the new cabinet took office. Foreign bankers have been impressed at the stability of the economy following the takeover and the absence of any indication that the military intends to intervene in the day-to-day commercial and industrial decisions on behalf of any constituency (Handley, 1991). The interim cabinet was to administer the country until general elections were held in early 1992. Its priority would be to ensure continuity in the political and economic life of the country (The Royal Thai Embassy, Ottawa, 1991).

Recent events in May 1992, after the general elections were held, forced the self-elected prime minister to resign. Once again, the Thai King approved the previous interim cabinet headed by Prime Minister Anand to administer the country until future elections. The impact of these events on investment is further discussed in the analysis chapter.

III. RESEARCH PROBLEM

The literature indicates that technology transfer, trade, and foreign investment are regarded as the "missing link" between poverty and affluence in developing countries (Wilson, 1980). Furthermore, the volume of technology, trade, and investment exchanges are heavily influenced by government policies. Such rationale directs the purpose of this thesis which is to examine the extent to which national policies of both the donor and the recipient countries affect transfer of technology in terms of the recipient country's pressing developmental needs. The research problem is, therefore, defined as follows:

How do government policies of the donor and the recipient countries influence technology transfer?

IV. LITERATURE REVIEW

The literature which follows will examine the role of technology in development, the significance of technology transfer to developing countries, and its contribution to economic growth. Such an examination will provide a basis from which technology transfer projects can be profiled and analyzed.

As well, the strategic role of the public sector in guiding and directing development in developing countries will be discussed. Through such discussion, the impact of national policies upon technology transfer can be set into development context and can be represented as a result of the donor and recipient governments' strategic tasks.

TECHNOLOGY, DEVELOPMENT, AND ECONOMIC GROWTH

Technology is one of the prime motive forces of development. It is knowledge about techniques, about the way something can be done, organized or produced, knowledge that can be applied productively. Technology includes process and production know-how, and managerial and financial techniques (Marton, 1986). The "technology" concept, therefore, broadly refers to both equipment, the "hardware" and methods and procedures for employing it, the "software" (United Nations Conference on Trade and Development (UNCTAD), 1982).

Technology is of concern to both developed (DCs) and developing nations (LDCs). The technologies adopted by the

LDCs not only shape national development options but also affect, directly and indirectly, the economic structure of the industrialized countries. Technology transfer is comprised of various stages that precede production, such as project formulation, feasibility studies, detailed project planning and implementation, and post-implementation management, including production planning and marketing (Marton, 1986).

However defined, technology is a major input requirement for economic growth and development. Lee and Naya (1988) have attempted to account for the role of technology in productivity change and economic development in Japan and Korea and Southeast Asia, and have stated that over 50 percent of growth has been attributed to some technological change. Sociological and economic research has also established the indispensability of technology to economic growth (Hirono, 1988). From these facts and from the ever increasing need for technology as an input for economic growth, it can be concluded that technology transfer will continue to be made on a commercial basis, including government-sponsored programs which call for private sector involvement.

The Nature of the Technology Transfer Process

The literature indicates that technology transfer is not generally a one-time or short-lived act, except in turnkey contracts (United Nations Centre on Transnational Corporations, 1987). In most cases, it is a relationship

between two organizations over time.

Three lines of inquiry have emerged from the studies examining such processes. First, the type of technology transferred, the commitment of the supplier firm, and the duration of the arrangement are a function of the mode of association between the transferor and the transferee (Mason, 1980). Second, the effectiveness of a transfer depends on the recipient firm's absorptive capacity and the level of technological development of the host country (International Development Research Centre, 1983). And third, the greater the incidence of assistance and services rendered the licensee, the lower the industrialization and economic development of the recipient's country (Contractor, 1980). These lines of analysis are evident and emphasized in government policies of both the DCs and the LDCs, including CIDA's strategy and Thai National Policy (UNCTAD, 1986). Moreover, government policies with regards to technology transfers can very well affect all of the above mentioned analyses.

LDCs' STRATEGIES AND TECHNOLOGICAL DEVELOPMENT

The literature on technology and industrialization reveals that two broad industrialization strategies are used to accelerate development in third world countries (Marton, 1986). The two strategies are import substitution, and export-oriented industrial development. From the early stages

of development, import substitution has been a major objective in most developing countries. However, in recent decades, the emphasis in many LDCs on the ladder to become Newly Industrialized Countries (NICs) has been shifted towards export-oriented industrial growth (Marton, 1986). These LDCs, of course, adopt a wide range of policies for their purpose. Government policies and measures of NICs and many LDCs have influenced not only the pattern of foreign investment but also the development of technological capabilities in various industries.

Technological Impact of Import Substitution

Import substitution policies have constituted a basic framework for industrialization in most developing countries and NICs, including Thailand. The objectives of such policies are to conserve foreign exchange and to expand the local industrial base (Marton, 1986). As a result, several Latin American countries, and South and Southeast Asian countries, including Thailand, have experienced diversified manufacturing activities (Naya, 1985). Under the import substitution strategy, many LDCs have provided various incentives for the establishment of new industries and the expansion of existing enterprises.

Although foreign investment and production have resulted in considerable technology transfer, application, and absorption in various industries of LDCs, the overall

technological impact has depended on the levels of skills and technological infrastructure available in the host country, the industrial sectors where such import substitution has taken place, and the nature of relationships between local production firms and foreign suppliers of technology and know-how (UNCTAD, 1972). It is evident that foreign capital and technology have played a critical role in the developing nations' import substitution strategy, and, often, multinational corporations (MNCs) are major participants in these programs (Ozawa, 1980). However, it is important to note that the transfer of technology projects to LDCs is often limited to projects that do not require a well educated work force since the portion of the population in LDCs enrolled in secondary education as a percentage of the age group is very small.

Export Promotion: Policies and Impact

With regard to export promotion, the literature reveals that in recent years, considerable attention has been focused on policies and measures designed to achieve a higher degree of exports of non-traditional and manufactured products in developing countries (UNCTAD, 1982). Greater participation in global exports is regarded as an essential requirement for economic development and growth (Ozawa, 1980). In Hong Kong, South Korea, and ASEAN nations, including Thailand, an effective indigenous base is evident (Kiggundu, 1989),

allowing these countries to employ export-promotion strategies and progress rapidly in their economic development. Exporters regard technological developments as essential to their businesses (Rhee et al., 1984). Moreover, there is a strong interaction between exporting and the effectiveness of a country's economic organizations in both the public and private sectors (Rhee et al., 1984). Because technology is viewed as an integral part of development, a wide range of government policies to increase both the export performance, and the number of firms engaging in export-oriented production is adopted. Such policies include direct export subsidies and import entitlements (UNCTAD, 1986). Since the type of technology utilized in export-oriented production must be geared towards competitive factors in the external markets, export-oriented manufacturing, whether undertaken by domestic firms or by MNCs, has to rely heavily on the latest, and often foreign, technology, more so than production for the domestic market (Westphal et al., 1980). Export-oriented operations are evaluated mainly on their contributions to a country's foreign exchange revenues and are eligible for a comprehensive package of attractive incentives given by the local government (Marton, 1986). Often, they have been given a relaxation of regulatory provisions for the entry of foreign investments, ownership structure, and local content. Because of the attractive incentives provided by LDCs, rapid increases in labour costs in industrialized countries, and the availability

of cheap skilled and semi-skilled labour in developing countries, MNCs and foreign firms have begun their sourcing and/or investment in the export-oriented production in LDCs. In response to the above mentioned factors and particularly in Southeast Asia, MNCs that relocated some of their production activities to developing countries with the aim of utilizing these units for exports are primarily from industrial sectors where production processes or certain stages of production involve highly labour-intensive operations.

The participation of MNCs and foreign companies in the export-oriented strategy of developing countries has been concentrated mainly in Southeast Asia and along the U.S.-Mexican border. It is evident in the literature that the role of foreign technology will remain dominant in the export-oriented production of LDCs even in countries where domestically owned industry has developed a substantial export capability, as in Korea, Taiwan, Hong Kong, Singapore, and Thailand (Lee and Naya, 1988). In cases where local export capability exists, local companies have often entered into subcontracting relationships with MNCs and have manufactured parts, components, and intermediate products to their specifications. In such relationships, the required designs, production know-how, and quality control are usually provided by the foreign company.

Export Processing/Investment Promotion Zones

Export Processing Zones (EPZs) have been expected to promote the implementation of LDCs' several development objectives. As part of their industrialization strategy, several developing countries, including Thailand, have established and extended EPZs/investment promotion zones (IPZs). The broad objectives for the creation of EPZs/IPZs are to accelerate industrialization, create employment, reduce congestion within the existing and limited urban areas, and develop exports (Government of Thailand, 1988). Through the creation of EPZs/IPZs, increased use of local raw materials, inflows of foreign capital and technology, and the development of export skills are also expected (Government of Thailand, 1986). Economists and representatives of industrialized countries believe that the creation of EPZs are a step forward in interdependence between DCs and LDCs, and a promising indication that MNCs and LDCs can work together for mutual benefit (United Nations Industrial Development Organization (UNIDO), 1980). Furthermore, the location of such zones away from metropolitan centres can play a significant role in the regional distribution of industries, as in the Greater Bangkok region and the Eastern Seaboard corridor of Thailand (Government of Thailand, 1988).

In most countries, production in the EPZs is restricted mainly to foreign companies, however, domestic companies involved in joint ventures with foreign companies are also

permitted to operate in the zones. The host country governments usually provide the infrastructure, and a comprehensive package of incentives, including suspension of the regulations on foreign direct investments and technology, and on foreign-exchange control (UNIDO, 1980).

Technology transfer by foreign companies in the EPZs is directly related to the type of operation. The production is characterized by a high import propensity and the specialization of the subsidiary in a narrowly defined production process, such as the manufacture of specific parts and components or assembly activity. Such production, however, usually uses labour-intensive processes reflecting the low labour cost of LDCs.

GOVERNMENT'S STRATEGIC MANAGEMENT TASKS AND DEVELOPMENT

Trade, transfer of technology, and foreign investment are seen as the "missing link" between poverty and affluence in developing countries (Wilson, 1980). Obviously, these commercial exchanges occur mainly in the private sector; nevertheless, their volume and scope are heavily influenced by government policies. What is important here, then, is the strategic management tasks (SMATs) concept (Kiggundu, 1989). The study of strategic management in organizations deals with the theory and practice of strategic management tasks in all sectors: private, public, and international. The primary concern here, however, are SMATs that are performed within the

public sector with respect to development.

In the case of developed and developing countries and their national policies, SMATs are tasks executed for the country to identify, define, and/or develop the country's: "1) uniqueness and wholeness; 2) environmental opportunities and threats; 3) internal strengths, weaknesses, or resource gaps; and 4) current values and management philosophy" (Kiggundu, 1989:56). These tasks are performed either by the ministry to which the businesses report, by the national cabinet, or by international funding agencies such as the World Bank, or CIDA.

Specifically related to development programs, strategic management is "the interrelated set of top management interventions which create the framework within which operational decisions and actions are taken to accomplish the goals of a development programme" (Paul, 1983:2). In developing countries, strategic management is applicable in areas of development programs and national policy reform programs (Kiggundu, 1989). Furthermore, both of these areas have received great attention from and active involvement by international development agencies.

Mutual Interests Between Developed and Developing Countries?

Kiggundu (1989) states that organization/country-environment relationships are external and political in nature. Along the line of Kiggundu's (1989) aforementioned

statement, both strategic formulation and strategic implementation by both the donor and the recipient countries in their development policies may be formulated and implemented primarily with their country's interest and benefit in mind.

The assertion by the Canadian government that there are a broad set of mutual interests and benefits between developed and developing countries is questionable and does not fit with CIDA's stated aim to "help the poorest of the poor". Acknowledgement that there are significant areas of mutual interest does not mean that there are common, let alone identical, interests between Canada and the recipient countries (Rudner, 1986). DCs' development policy/strategy as donor countries are regarded as promoting greater economic interdependence between the donor and the recipient (Dolan, 1987). The political right and left have both been critical of foreign aid. The right has focused on the wastefulness of aid, and the left has claimed that foreign aid is not in the interest of the poor and leads to excessive control over national policy-making (Myrdal, 1971). However, there is a strong evidence in Asia that foreign aid has been highly efficient in stimulating growth when it is accompanied by appropriate economic and development policies in the countries concerned (Chan, 1979).

In the case of the CIDA INC strategy, Dolan (1987) asserts that DCs' *raison d'être* for providing aid should only

be to help developing countries in their economic development rather than acting as a salesperson for their countries' private sector and exporters. On the contrary, reality dictates that foreign aid will only be supported by domestic votes if such aid benefits from the perspective of the granting country as well.

SUMMARY AND CONCLUSION

At present, literature which directly addresses the impact and the effects of government policies on technology transfer to developing countries has been sparse. Literature on development and technology transfer has concentrated mainly on the commercial aspect of technology transfers, the ability of developing countries to absorb and adopt the technologies to suit local conditions, the host country's incentives, and the MNCs response to transferring their technologies in light of such incentives.

Literature from organization behaviour and development administration is useful in identifying the public sector's strategic role, and in formulating and implementing its development policies. Kiggundu (1989) stresses that strategic monitoring and evaluation is a third basic step in the performance of the strategic management tasks, and are usually performed with the help of outsiders who can bring with them the objectivity and added professional expertise. Furthermore, from the aforementioned mutual interests

argument, it is evident that there is clearly a need to examine the performance results of technology transfer projects to assess the outcome and the extent to which the projects impact developing country's developmental needs under the existing policies of both the donor and the recipient countries.

V. HYPOTHESES

By definition, companies that are qualified for CIDA INC's program and are successful in getting their projects approved have to be aware of CIDA INC's objective in providing industrial development assistance to developing countries. Nevertheless, whether such awareness has an impact on the recipient countries' developmental needs is problematic. The following hypotheses, therefore, address the impact of government policies from both the donor and the recipient sides.

Since projects under investigation are subsidized by CIDA INC, project deliveries are likely to be related more to the policies of the donor country. Project deliveries, therefore, reflect the long-term interests of the Canadian economy (See Appendix 1). Moreover, they may even reflect more of the Canadian perspective than the recipient perspective. The first hypothesis addresses accordingly the impact of the donor country's policies upon technology transfer.

Hypothesis 1

Project delivery is related more to policies of the donor country than those of the recipient country.

The Sixth Plan of the Thai government accords the private sector a major role in Thailand's development. Attractive pricing incentives relevant to specific investment promotion zones are offered to the private sector in order to encourage

investments in various sectors of the Thai economy (see details on page 8). Such incentives are expected to attract both local and foreign investments. Concerning foreign investment, it is expected to increase by 1.06% per year during the 1987-1991 period (Government of Thailand, 1986). The second hypothesis, therefore, addresses the impact of the recipient country's initiative/policies on the Canadian private sector's decision to transfer the technology to Thailand.

Hypothesis 2

The incentives aspect of the Thai Plan has a positive impact on the Canadian private sector's decision to transfer its technology to Thailand.

VI. METHODOLOGY

This research was undertaken in order to examine the extent to which the donor's and recipient's national policies affect technology transfer in terms of the recipient country's developmental needs. The purpose of the research methodology was to gain participation of Canadian firms that have transferred their technologies through the CIDA INC program, specifically in order to gather data related to their projects and developmental impact. The sections which follow describe how this participation was gained, how the sample was selected, and how the data gathering process was conducted.

RESEARCH QUESTIONS

The research problem addressed in this thesis may be elaborated in four separate questions. The first two questions focused on the donor side whereas the last two focused on the recipient side. The research questions are as follows:

- 1A) How does CIDA INC's strategy reflect the overall Canadian Aid strategy?
- 1B) In what way does CIDA INC's strategy, specifically the Industrial Cooperation Program, affect the Canadian private sector's technology transfer?
- 2A) To what degree does the Thai government policy influence technology transfer?
- 2B) Which aspects/factors of the Thai government policy,

specifically the Sixth National Economic and Social Development Plan, play a role in the Canadian private sector's technology transfer?

POPULATION AND SAMPLE

This study was limited to three major areas, namely Toronto, Montreal, and Ottawa. This choice was mainly influenced by financial and time constraints. The unit of analysis was projects transferred by the Canadian private sector to Thailand between 1987-1991. Information concerning the population of projects transferred was not made available to the researcher because of confidentiality.

The sample consisted of twenty-seven technology projects transferred from Canada to Thailand. The sample projects came from small, medium, and large size-firms covering a wide range of sectors, e.g. power and energy, transportation, communications, consulting services, manufacturing, and animal husbandry. Also included in the sample were both successful and unsuccessful projects. Although the proportion of the population covered by the sample is not known, the sample could be considered as fairly representative of the population in terms of firm size, sectors, and successful and unsuccessful projects.

Since the technique of convenient sampling was used and the firms were selected by CIDA INC, the possible impact of selection bias on the results cannot be dismissed. In order

to reduce the selection bias, the researcher had made an effort to ensure that the projects met the following criteria: 1) executed between the 1987-1991 period; 2) represented small, medium, and large sized firms; and 3) covered a cross-section of industries and sectors.

The CIDA INC officer stated that he did not have any specific criteria except to contact companies that received the INC funding in 1991, 1990 and 1989 first, waited for companies' responses, and worked backward from the file until he reached 1987 projects. Out of the total contacts, the officer would not specify how many the contacts were, thirteen companies agreed to participate.

DATA COLLECTION METHOD

Data were collected from both primary and secondary sources. The secondary sources of data were used to analyze both CIDA's objective - "to help the poorest of the poor", and, the RTG's objective - "to improve the quality of life". These secondary sources of data include CIDA's annual reports, the RTG's periodical articles, and policy documents of both the Canadian and the RTG governments. An examination of these sources provided an overview of how the policies were being implemented. This overview was subsequently refined through primary sources.

The primary data were collected through personal and telephone interviews. The CIDA INC Manager for the Thai Desk

was contacted and agreed to provide a list of companies concerned. Due to the strategic nature of the agreement between CIDA INC and those companies, and in order to reduce concerns regarding the nature of information sought, potential companies were first contacted directly by CIDA INC requesting their participation with this study. The researcher requested that companies be limited to those located in the Toronto, Montreal, and Ottawa areas, and the respondents be very knowledgeable about the projects. Upon consent, concerned companies provided the names of managers involved with their Thailand projects.

The primary information came from two sources, namely, the CIDA INC officer responsible for approving the Thailand projects, and thirteen executives of Canadian manufacturing/industrial firms in the private sector that have transferred technologies to Thailand through the CIDA INC program.

Fieldwork Plan

The operational procedures for gaining the co-operation of the respondents and conducting the interviews were as follows:

i) Once a list of companies willing to participate in the study had been received from CIDA INC, the individuals were contacted by telephone to confirm their participation and a personal interview date was agreed upon. In a few cases in

which individuals were leaving for business trips, telephone interviews were conducted before their departure.

ii) In advance of the interview date, a copy of the interview schedule was mailed to each individual in order to give all participants time to prepare for the interview, should they wish. A letter from the researcher was also mailed to express appreciation for the co-operation, to specify the purpose of the study, and to provide assurance of confidentiality of the research data and findings.

iii) The interview was conducted.

iv) A "Thank You" note together with a small souvenir from Thailand were mailed out to all respondents after all interviews were completed.

Research Instrument

A structured interview schedule was employed to assess the implementation of the governments' policies and the impact/outcome of Canadian technology transfers to Thailand in terms of Thai developmental needs. Such an instrument offered both the advantages of a richness of information and a certain degree of structure. The instrument was mainly structured in an open-ended question form with some closed questions and nominal demographic questions. Separate interview schedules were developed for the CIDA INC officer and the company representatives (see Appendices 3 and 4). However, questions which could be answered by both the CIDA

INC and the company officers were posed in order to determine discrepancies, should there be any.

The interview schedules requested information regarding the company and its technology transfer projects to Thailand, and the Thai-Industrial Cooperation projects during 1987-1991. Specifically, the following information was requested: the Industrial Cooperation project profile; the company profile; the company's project profile; the sector in which the company belongs to; financial information about the INC projects; the reason for the INC funding; factors responding to the success/failure of its project activities; CIDA INC developmental objective for Thailand and the company's contribution to CIDA INC objective; the company's proposal to CIDA INC; perceived and actual benefits to Canada and the recipient country; and the licensing agreement between the company and its recipient partner. The interview schedules also used rating scales to obtain information. In order to get a deeper understanding of their responses, respondents were encouraged to discuss the rating scale questions in more detail.

Interview Process

Interviews were conducted with the person who was most responsible for the management of his/her company's transfer of technology project. On the CIDA INC side, the interview was conducted with the CIDA INC officer who was directly

responsible for approving the INC projects for Thailand.

Pretest

Before conducting the interviews in the field, two separate pretests were conducted with a CIDA officer and a Canadian firm based in Ottawa. The purpose of the pretest was to identify problems in interview schedule format, wording, and other areas which may have impacted on the validity of the findings. The interview schedules were modified to incorporate the changes as suggested by the CIDA officer as well as the pretest firm.

DATA ANALYSIS

Data were operationalized in the following manner:

i) Focusing on the donor's side, the link between awareness and compliance variables was investigated by examining the type, scope, and trend of technology transfer.

ii) Focusing on the recipient's side, the variables of awareness and influence were investigated by examining the type of technology transferred and the sector where the transfer occurred. Thereafter, each transfer was matched to the program specified in the recipient's National Plan. The incentives factor/aspect was identified by such match.

The data analysis for both primary and secondary data primarily consisted of qualitative data analyses. As the major portion of the data collected was descriptive, data

analysis was simple correlations of data derived from the perceptions of those interviewed. However, quantitative analysis, simple descriptive statistics, nonparametric analysis, chi-square test, median run test, and signed-ranks test, was employed for data that were suitable for numerical analysis.

VII. RESEARCH RESULTS AND FINDINGS

Results of the primary data collection will be presented in two main sections. First, respondent and sample company characteristics will be discussed. Second, transfer of technology projects including project types, and project status will be presented.

RESPONDENT AND COMPANY CHARACTERISTICS

Respondent Characteristics

Interviews were successfully conducted with twelve company executives and one government officer responsible for the CIDA INC-Industrial Cooperation program for Thailand. One company that initially agreed to participate in the study was not included in the study since the participant was in Thailand during the period of data collection. Furthermore, nobody knew his exact return date, and other officers in the company did not have enough details about the project to take the place of the initial participant.

Results, gathered through Part A of the company interview schedule, show that the company respondents were either senior executives, vice-Presidents or presidents. While their titles varied, they all played a major role in the government relations function of their respective organizations. Moreover, they were the principal liaisons with the donor government and their recipient organization. Four of the

twelve company officers were "president" (34%) and four were "vice-president" (34%). The other four were "director of business development", "manager of project development", "vice-president and regional manager for Asia", and "general manager".

The positions held by the respondents show that when the firms were contacted, specifying the subject and the purpose of this research and requesting the participation of an officer who is most knowledgeable about the CIDA INC funded project to Thailand, senior executives agreed to be interviewed rather than delegating the task to their subordinates. Furthermore, this would seem to suggest that their INC funded technology transfer project to Thailand is regarded as strategic for their company. The involvement of senior executives, along with the nature of their positions and the realm of their responsibilities, indicates that there must be some importance elements attached to the Thailand project.

Since there was only one interviewee representing the donor government, the researcher wishes to have the government title remain confident and to not disclose the title of the concerned respondent.

Sample Company Characteristics

Company characteristics were examined in Part B of the company interview schedule in order to qualify this research

effort and understand the environments in which the sample companies operate. Areas of interest include: size of sample companies during the time of their application to the INC funding; and general characteristics of their business and transfer of technology project activities to the recipient country, Thailand.

Sample Projects

During the 1987-1991 period, there were twenty-seven technology transfer sample projects from twelve sample companies. The breakdown of projects per company as classified by size is shown in Table 1. It should be noted that type and name of technology transfer projects for each sample company will not be shown in this table in order to disguise the identity of sample companies.

Company size and break down of projects

Annual dollar sales and number of employees were ascertained during the interview in Part B of the interview schedule to determine the size of companies participating in this study. However, because of the fact that sample companies belong to various industries, a classification of size according to number of employees may not be suitable. The current study, therefore, uses annual dollar sales to determine the size of sample companies at the time of their application to the INC funding.

Company size was determined using the classification of Craig and Beamish's study (1989). In their study, Craig and Beamish classified small size companies to be companies with up to \$2 million in annual dollar sales. Medium size companies referred to those with annual dollar sales between \$2 million and \$25 million, and companies with annual dollar sales exceeding \$25 million were considered large.

TABLE 1
NUMBER OF PROJECTS PER COMPANY

Company Number	Size of Company	No. of Projects/ Company
Company 1	large	2
Company 2	large	6
Company 3	large	3
Company 4	large	1
Company 5	medium	1
Company 6	medium	3
Company 7	medium	4
Company 8	medium	2
Company 9	medium	2
Company 10	medium	1
Company 11	medium	1
Company 12	small	1

According to such a classification, one small firm, seven medium firms (59%), and four large firms (33%) participated in this study. Evidence shows that companies of all sizes were eligible for and have received financial assistance from CIDA INC. However, due to a small sample size and unavailability of confidential data on the total INC projects

to Thailand during the 1987-1991 period, the impact of company size on the INC funding cannot be fully analyzed.

Notwithstanding, an attempt has been made to assess the relationship between the company size and the amount of the INC funding that each sample companies received. The correlation coefficient is 0.0242. This indicates a weak relationship between company size and the INC funding. The implication of this finding is that CIDA INC does not discriminate on the basis of company size in granting funding.

International Business Experience and Reasons for Entering CIDA INC-Thailand Project

The findings in this section describe the respondents' experience overseas before their initial INC funded project and their reasons for entering the CIDA INC transfer of technology project. The results presented here were gathered through Parts B and C of the company personal interview, Part A of the government interview schedule, and further comments from respondents.

General results from the Canadian government show that during the 1987-1991 period, there were approximately one hundred and twenty transfer of technology proposals submitted, and approximately half, sixty projects, were approved. Of these approved projects, approximately one fourth of the Canadian private sector partners, fifteen firms, had been involved in some form of business collaborations before their

initial INC projects. However, all firms had to have at least set foot/visited in Thailand before going to CIDA INC and should have a good idea of what they could do in Thailand in order to qualify for the INC contribution. The government respondent stressed that this was and still is an unwritten condition of the INC program.

Specific results from sample companies indicate that half of the respondents' companies, two large and four medium size companies, have engaged in some types of technology transfer before their initial INC funded project. These projects were under contract and sub-contract types of business collaboration and were funded by World Bank, the Japanese government as a donor country, CIDA Bilateral, or the public sector of the recipient country. The other half, one small, three medium, and two large size companies, had no experience in transferring technology to other countries before their initial INC funded project.

International business and sales to customers in foreign markets are a necessity for the Canadian private sector. Moreover, the involvement of senior executives in this study seems to indicate that the INC funded project was regarded as important to their company. All respondents expressed interest in doing business in Southeast Asia and regarded such an opportunity as one that should not be missed. When respondents were asked their reasons for selecting Thailand other than other ASEAN and Asian countries as a recipient of

their technology, all twelve replied that as one of the countries with a rapid economic growth, Thailand represents a great business opportunity for them. Eight of the twelve respondents (69%) replied that they regard Thailand as a business centre for Southeast Asia and Indo-China because of: a large, well-educated and hard working workforce; language capability of the Thais in English, Chinese dialects, and similar neighbouring language (Laos); and easy access to neighbouring countries. They want to establish their presence in Thailand and use it as a base in order to further their business and expand into the neighbouring countries, for example, Laos, Vietnam, Cambodia, and Burma. Canadian manufacturing companies want to use Thailand as a production base and export their products to the neighbouring countries whereas the engineering/consulting firms that transfer their technologies to the Thai public sector want their presence to be known to the neighbouring countries' governments. This is because of the close business relationships between Thailand and neighbouring governments.

TECHNOLOGY TRANSFER PROJECTS

In order to grasp the significance of the donor policy, INC funded and additional/downstream projects will be discussed separately, where applicable.

The researcher was able to examine twenty-seven technology transfer projects to Thailand from the twelve

sample companies during the 1987-1991 period. Investment value of these projects ranged from Can. \$330,000 to \$600 million. Results from Part A of both the government and the company interview schedules show that the type of collaboration among these projects was either one or two of the following: sub-contract, contract, licensing agreement, turnkey, and joint venture (see Table 3). Technology recipients were in both the private and public sectors. Seventeen of the twenty-seven sample projects (63%) had the host country's public sector as recipients while the other ten projects (37%) had the local private sector as recipients.

In cases where technology recipients were the public sector, sample companies usually provided sub-contract assignments of their projects to the local companies. They indicated that in most cases certain recipient government departments made it mandatory for them to include local partners. It was the recipient government departments' policy that the Canadian technology be transferred to both the private and the public sectors at the same time. In a few cases, sample companies made such an offer themselves.

Types of Technology Transferred to Recipient Country

Technology transfer can be either "software" or "hardware" or both (UNCTAD, 1982). Moreover, technology transfer can include various stages that precede production/implementation (Marton, 1986). These stages are

project formulation, feasibility studies, detailed project planning and implementation, etc. Results gathered from Part A of both government and company interviews confirm that technologies being transferred to the recipient country were both "hardware" and "software", with CIDA INC helping to finance the first stage of the transfer-the project formulation or the feasibility stages.

Results from Part A of the government interview schedule indicate that all types of technology in which Canada is competitive were transferred to Thailand through the INC program. Technology types ranged from telecommunication technology to energy technology light and heavy manufacturing technologies in various sectors such as manufacturing, and animal husbandry. Results indicate further that agriculture technology was no longer in a great concentration of projects. This would seem to indicate that CIDA INC program is a reactive program to the Canadian private sector's needs to transfer their technology to the targeted sectors of the Thai economy, at the same time, and is responsive to the Sixth Plan of the Thai government in moving away from an agricultural economy to a newly industrialized society. With such a move, the RTG projected that principal opportunities for the Thai economy would be in tourism and export. To facilitate the aforementioned opportunities, the RTG placed an emphasis on improving basic services and diversifying the country's industrial base. Technology

transfer projects from the Canadian private sector clearly indicate a responsiveness to the Sixth Plan since these projects were to diversify the recipient's industrial base and geared towards export, or to increase efficiency in basic services (see Table 2 for specific technology types and sectors).

Results from Part A of the company interview schedule show that ten (37%) of twenty-seven sample technology transfer projects included both "software" and "hardware" technologies. As for the other seventeen projects (63%), transfers were focused only on technique, process, and advisory/consultancy services, the "software" technology. This would seem to correspond with the North-South Institute's statement (1987) that Canadian consulting companies have developed extensive experience and credibility in developing countries based to a large extent on contracts from CIDA.

During the Sixth Plan period, investors were encouraged to invest in "target" sectors such as agriculture, transport, water resource development, and energy exploration (Government of Thailand, 1986). Results indicate that sample companies have transferred various types of technology to various "target" sectors and sub-sectors of the recipient country. Table 2 presents types of technology transferred from Canadian sample companies to Thailand during the Sixth Plan period.

TABLE 2
TECHNOLOGY TYPES CLASSIFIED ACCORDING TO SECTORS

Sector	Technology Type	No. of Projects
Power & Energy 27%	SW - technical assistance, supervisory work	2
	SW - consultancy work, advisory services	4
	SW & HW - consultancy work, computer software	1
Transportation 16%	SW - consultancy work	2
	SW - technical assistance, installation supervision	1
	SW - training	1
	SW & HW - construction supervision, equipment	1
Communications 8%	SW - construction supervision	1
	SW - consultancy work	1
Other Services 11%	SW - quality control & assurance system	1
	SW - costal management, training	1
	SW - marketing of tropical fruits and vegetable	1
Geographic Surveys 8%	SW & HW - mineral exploration & computer processing techniques, map production, equipment	2
Manufacturing 23%	SW & HW - juice processing techniques & machinery	3
	SW & HW - bronze casting process & technique, foundry technology & raw materials	1
	SW - aluminium railing technique	1
	SW & HW - grader know-how, kit, equipment	1
Animal Husbandry 8%	SW & HW - dairy management, training, life stock	1
	SW & HW - shrimp culture technology, training, equipment	1
<hr/> TOTAL 100%		<hr/> 27
SW = software, HW = hardware		

As can be seen from Table 2, sample projects belong to various industries of the Canadian economy. With specific reference to their involvement in Thailand, these sample projects fell under the following industries/sectors: animal husbandry (8%); manufacturing (23%); and the service sector-power and energy consultant engineering (27%), transportation consultant engineering (16%), communication consultant engineering (8%), geotechnical surveys and consulting (8%), and other consultancy services (11%). The RTG identified agriculture, transport, water resource development, energy exploration, manufacturing, and engineering industries as "target" industries during the Sixth Plan period (Government of Thailand, 1989). More than half of the sample projects (61%) were from the engineering sector, the rest were also from industries which were considered important to the Thai economy. This would seem to suggest that the Canadian government was receptive to Thailand's developmental needs and, thereby, approved projects involving Canadian enterprises that responded to Thailand's development priorities.

CIDA INC Technology Transfer Projects

Results presented in this section are gathered from Part A of the government interview schedule and Parts A and B of the company interview schedule.

CIDA INC project approval

The government respondent remarked that there were no specific funds set for specific countries, however, each year, funds were divided arbitrarily among regions, Africa, Asia, and Latin America. These funds could also be shifted from one region to another should demand for projects in a particular country arise. The number of projects approved per year, thus, depended on the availability of funds within the Industrial Cooperation branch and not within a particular country or region. This was the difference between Bilateral and Industrial Cooperation branch.

Results from Part A of the government interview schedule show that the proportion of the INC funding for Thailand to the total Industrial Cooperation funding available in each year during the 1987-1991 period was roughly five to eight percent. Unfortunately, exact proportions for each of the years could not be obtained. Nevertheless, there was an indication that the INC funding for Thailand was on the decline. Proportions spent on Thailand for 1991 and 1992 were available. In 1991, Can. \$3.3 million (5%) of the Industrial Cooperation budget of Can. \$65 million was spent on Thailand projects whereas only Can. \$1.6 million of the total budget was spent in 1992.

Results from Part A of the government interview schedule further show that of the total of sixty INC approved projects during the 1987-1991 period, approximately thirty-five (58%)

were completed, and twenty-five (42%) were still active. Of the twenty-five active projects, fifteen were expected to be completed by the year 1992. The government respondent stated that the Thailand programs had been one of the most successful programs of the entire Industrial Cooperation branch.

CIDA INC sample projects

Results gathered from interviews with sample companies show that twelve of the total projects were initially funded by CIDA INC with contributions that ranged from Can. \$33,000 to \$2,600,000. Under the INC funding, five of these twelve projects fell under Canadian Project Support Facility (CPSF), five fell under Canadian Project Preparation Facility (CPPF), one fell under Canadian Technology Transfer Facility (CTTF), and one fell under "other" sub-program, a combination of Technical Support and Project Support sub-programs, created especially for a particular project.

It should be noted here that results from Part A of the government interview schedule indicate that: 1) the most utilized forms of assistance during the 1987-1991 period were the Viability Study, with a maximum contribution of Can. \$100,000, and the CPPF with a maximum contribution of Can. \$500,000; 2) Canadian companies that received an INC contribution under CPPF would not be eligible to receive further funding from INC under the same project, however, if initial funding was received for a Starter Study Canadian

companies would be eligible to receive further funding under the Viability Study and Project Support sub-programs within the same initial projects; and 3) CTTF, CPPF, CPSF, CREF, Technical Support, and Industrial Development Services ceased to exist in 1991 and were replaced with Capital Project Preliminary Study and Capital Project Detail Study. These have a maximum contribution of Can. \$350,000 and Can. \$500,000 respectively.

Size and significance of financial contributions according to CIDA INC project types

Company respondents provided data on the size of financial contributions from the CIDA INC-IC program as measured in Canadian dollars. Most of the funding arises from the CPPF, CPSF, and CTTF sub-programs. Table 3 summarizes the number of projects which have been initiated under the IC program, showing the relationships amongst company's size, INC funding and total expense incurred on the INC funded project. Projects are categorized by current sub-programs under the overall IC program.

TABLE 3
PROJECTS INITIATED UNDER THE INDUSTRIAL CORPORATION PROGRAM

Project	Company Size	\$INC Contribution	\$Total Expense (INC included)
CPPF	medium	33,000	330,000*
	medium	185,000	3,750,000
	medium	300,000	600,000,000
	large	400,000	50,000,000
	large	600,000	2,000,000
CPSF	small	225,000	800,000
	medium	400,000	800,000
CTTF	large	100,000	1,100,000
	large	250,000	1,500,000
	medium	275,000	3,700,000
	medium	350,000	1,000,000
OTHER	medium	2,600,000	5,000,000

* Expense incurred only up until the first phase of the project, the study stage. The project was never implemented due to lack of recipient's funding.

In order to grasp the significance of the INC financial contributions for the sample companies and their reason for applying for the INC funding, company respondents were asked: 1) to classify whether or not they considered the current Thai technology transfer project riskier venture than most other technology transfer projects for the company; 2) to select one of the five reasons, outlined in Part B of the company interview schedule, for going to CIDA INC for funding; and 3) to project the future of their project without the INC funding. Two large and two medium companies (41%) considered

the current Thai project riskier than most other projects. One small company answered that this factor could not be answered since the company had no previous international business dealing. The other seven companies (59%), medium and large, did not see their current Thai projects any riskier. As for sample companies' reason for applying for the INC funding, all but one sample firm (92%) responded that the INC funding served as a means to recover the front-end costs for their project, regardless of the risk factor. Only one sample company replied that the firm applied for the INC funding because it was uncertain about the project's probability of success and considered the project a risk. It, therefore, needed some assistance from CIDA INC.

The government respondent was asked a similar question in Part A of the government interview schedule. However, the question did not provide any selection choice except to request the two major reasons for companies applying for the INC funding. It is interesting to note here that the donor government perceived lead time and difficulty of doing business in a developing country/probability of success as the two major reasons for the Canadian private sector to come to CIDA INC for financial assistance. These two reasons were also provided as choices for the company respondents to select. None of the twelve company respondents selected lead time as their main reason and only one of the respondents selected probability of success as the major reason for

applying for the INC funding.

Company respondents' perceptions on their decision/action with regard to their project without the INC funding were as follow: eight of the twelve sample companies (67%) would have cancelled the project entirely; two sample companies (16.5%) would have proceeded in part at a smaller scale, 25 and 40 percent smaller respectively, than the original project; and two (16.5%) would have proceeded with the original project but scaled down other business opportunity identification ventures. Table 4 summarizes the importance of the INC funding and companies' reasons for applying for CIDA INC financial assistance.

TABLE 4
COMPANIES' REASON AND PERCEPTION OF THE INC FUNDING

Company Size	Project = Risk	Reason for INC Funding	Existence of Project Without INC Funding
Small	N/A	front-end costs	yes (60% of original)
Medium	no	front-end costs	no
	no	front-end costs	no
	no	front-end costs	no
	no	front-end costs	no
	yes	front-end costs	yes (100% of original)
	yes	front-end costs	no
Large	yes	front-end costs	yes (100% of original)
	no	front-end costs	no
	no	front-end costs	no
	yes	front-end costs	no
	yes	probability of success	yes (75% of original)

All sample companies that responded that their technology transfer projects would have been cancelled entirely (67%) were among consultant engineering and light manufacturing groups. The consultant engineering group, regardless of the company size, stated that without the INC funding, their company would not have been the technology transferor of the INC project since their technology was to be transferred to the recipient's government, not the private sector. The project, instead, would have fallen into another country's hand. The initial stage of the project, the pre-feasibility study stage, had to be financed by the donor government in order for the consulting firm to offer the service on a free basis to the concerned department of the recipient government. The recipient government would not be willing to provide any funding for the study stage since they knew that many donor countries would be willing to finance it in order for their country's company to receive contract for the downstream work.

Without the INC funding, the light manufacturing group stated that they could not have afforded to have their technology transfer projects started and their business set up in Thailand. Their transfer of technology included bringing their Thai employees to train in Canada and/or sending Canadian staff to Thailand, at least in the beginning, to oversee the business. The INC funding was utilized as a mean of reducing the total costs of their projects. Without the INC funding, the project, therefore, would have to be

abandoned because it would be too expensive for these manufacturing firms to transfer their technology and invest abroad.

For the rest of the sample companies (33%), respondents indicated that they would have proceeded with their project even without the INC funding. These sample companies were from medium and heavy manufacturing, and animal husbandry sectors. Sample firms within these sectors stated that they regarded Thailand as a strategic country to base their operations. They further stated that Thailand was weighed against China and other Asean nations in terms of opportunity, capability, and familiarity in conducting business with foreigners, Thailand is the strongest in all areas according to their judgement. Their replies and enthusiasm demonstrate that the pursuit of opportunities in Thailand appears to have emerged either as part of a broad Asian expansion or on an ad hoc basis.

Downstream Transfer of Technology Projects

Results from Part B of the company interview show that initial INC funded projects have led to fifteen additional/downstream technology transfer projects to Thailand during the 1987-1991 period for seven of the sample companies (58%) with investment value ranging from Can. \$1 million to \$600 million. The median for additional projects resulted from sample companies' initial INC funding was 4. It should

be noted here that there was no additional project in 1987 and 1989 from sample companies. Therefore, it is not instructive to calculate the median on a yearly basis during this 5 year-period.

The downstream/additional projects were in agriculture, engineering, and manufacturing industries. Technologies were transferred through the additional/downstream projects to the same initial recipient organizations in both the private and the public sectors of Thailand. All of these sample companies stated that these downstream/additional projects were a result of their initial INC funded projects. It is interesting to note that of the seven sample companies that have obtained downstream projects, five of them perceived that their initial project would have been cancelled entirely without the INC funding. Results also show that two of the sample firms were about to sign three additional downstream projects with the same recipients during mid 1992 as a result of their initial INC funding. These projects, however, were not included in this study for two reasons. First, this study focused only on transfer of technology projects that began during the 1987 to 1991 period, and second, these projects were not yet signed during the period of data collection.

The fact that sample companies were able to obtain additional projects with their initial recipients would seem to suggest that the donor government has played an initiator role in fostering Canadian business links to the recipient

country, Thailand. It would seem to imply further that the INC funding has helped the Canadian private sector secure their business dealings in Thailand. Table 5 summarizes the status of the twenty-seven sample projects. In this table, INC funded and additional projects will not be distinguished in order to conceal sample companies' identity.

TABLE 5
STATUS OF TECHNOLOGY TRANSFER PROJECTS

Project by Sector	collabo- ration	Reci- pient	Start	Complete
POWER & ENERGY				
1 Power Station Expansion	contract & sbtract	public private	1987	1995
2 Power & Energy Consulting	contract	public	1991	1991
3 Study of Thermos Power Plant	contract & jtven.	public private	1987	1992
4 Pipeline Advisory Services	contract	public	1988	1989
5 Pipeline Advisory Services	contract	public	1990	1991
6 Pipeline Consultancy Project	contract & jtven.	public private	1991	1993
7 Pipeline Consulting	contract & jtven.	public private	1991	1993
TRANSPORTATION				
8 Mass Transit Construction	contract & jtven.	public private	1987	1998
9 Railway Extension	contract	public	1988	?
10 Railway Technical Assistance	contract	public	1988	1990
11 Railway Management Training	contract	public	1990	1991
12 Railway Installation Supervision	sbtract	public	1988	1992

continued on next page

COMMUNICATIONS

13 Fibre Optic Communication System	contract & jtven. turnkey	public private public	1987 1991	1991 1992
14 Telecommunications				

OTHER SERVICES

15 Quality Control/ Assurance	jtven.	private	1990	1993
16 Coastal Zoning & Management	contract	public	1990	1993
17 Marketing of Tropical Products	jtven.	private	1987	1987

GEOGRAPHIC SURVEYS

18 Mineral Exploration & Map Production	sbtract	public	1987	1990
19 Geophysical Surveys & Map Production	jtven.	private	1990	1992

MANUFACTURING

20 Juice Extraction & Production	contract	private	1988	1989
21 Juice Extraction & Production	contract	private	1990	1991
22 Juice Manufacture	jtven.	private	1991	1992
23 Sculptor Production	jtven.	private	1989	1992
24 Railing Production	jtven.	private	1989	1993
25 Motor Grader Production	license	private	1987	1990

ANIMAL HUSBANDRY

26 Dairy Management & Production	contract	public	1990	1994
27 Shrimp Production	jtven.	private	1989	1992

sbtract = subcontract
jtven. = joint venture

Successful versus Unsuccessful Technology Transfer Projects

Since the purpose of this research is to examine the extent to which national policies of both the donor and the

recipient countries affect transfer of technology in terms of the recipient country's developmental needs, successful and unsuccessful technology transfer projects must be distinguished in order to identify the impact/outcome these transfers had on the recipient country. Marton (1986) indicated that technology transfer consists of many stages that precede operation/production. For technology transfer to be considered complete, the transfer must reach the implementation/operation stage.

With CIDA INC financing only the preliminary stage of the project, the feasibility study stage, a company must find additional funding to support the implementation of the project, either from the recipient or the donor as the case may be, if the study proved that such transfer would be beneficial. If the project had to be terminated at the feasibility stage for any reason, direct developmental impact would not occur. The feasibility stage in itself would not provide any benefit to both the donor and the recipient in the long run except to provide a very short term employment to the donor country's consultants and an end report to the recipient. The end report, in turn, would be shelved for an undetermined period as long as there was no funding to support the implementation stage.

Successful and unsuccessful sample projects, therefore, were classified according to the above argument. Accordingly, results reveal that as of July, 1992, of the twenty-seven

sample projects, eighteen technology transfer projects (67%) have been completed and were in operation, five projects (18%) would be completed by 1993, three additional projects (11%) would be completed beyond 1993, and one project (4%) had no implementation prospect in the immediate future. The sample company concerned stated that this so called "unsuccessful" project was terminated due to lack of recipient's funding and that the company had no knowledge as to when the implementation stage will occur. Since the implementation stage was not likely to occur in the near future, the project, therefore, had to be classified as unsuccessful project.

Subsequent results and analysis of primary data, specifically developmental outcome/impact, are mainly focused on successful projects. The unsuccessful project is included in the discussion and the analysis only when presenting the initial impact of the INC funding itself.

FACTORS INFLUENCING TECHNOLOGY TRANSFER PROJECTS

In order to establish the significance of each of the factors believed to be influential, respondents were asked to rate factors influencing their technology transfer projects in Part B of the interview schedule. They were required to rate six factors, CIDA INC policies, Thai policies, penetration into Thai market, sales of the firm's technology, low labour cost in Thailand, and Thai BOI's pricing incentives, on a scale of 1 to 5, where 1 represents no

influence, 2 and 3 represent uncertain, and 4 and 5 represent full influence. Median results of the ratings are shown in Table 6.

TABLE 6
FACTORS INFLUENCING TECHNOLOGY TRANSFER PROJECTS

Factor	CIDA INC Project	Other Project
a) CIDA INC policies	5*	1.5
b) Thai policies	4	4.5*
c) penetration into Thai Market	3	3
d) sales of technology	4	4
e) low labour cost in Thailand	1	1
f) Thai BOI's pricing incentives	2.5	2

The chi square = 19.33 for CIDA projects, and for other projects, the chi square = 33.14. Both of these values are greater than the critical value at the 5% significance level with 5 df, i.e., 11.07.

The chi square values obtained from the extension of the median test indicate that null hypothesis of no difference is rejected. This implies that the median values are in fact different for the variables. As can be seen from Table 6, CIDA INC policies were the most influential factor for the Canadian private sector's technology transfer projects (5 median), with the Thai policies and sales of technology as the second highest influential factors (4 median). However, this

was the case with only INC funded projects. This, perhaps, confirms the fact that INC was utilized as additional financial source to get the project started and, that in order to meet the INC requirements, Thai policies were taken into account when sample firms applied for INC funding. In other projects, non-INC projects, Thai policies were rated as the most influential factor on technology transfer projects (4.5 median), with sales of sample firm's technology as the second highest influential factor (4 median). In all cases, low labour cost in Thailand was rated the lowest. Respondents further commented that wages and salaries in Thailand drastically increased during the Sixth Plan period (1987-1991). Quite a few respondents stated that when they first studied the technology transfer prospect in early 1987, the salaries in Thailand were low, thus, considered very attractive. However, as time progressed, salaries in Thailand almost doubled the initial negotiated salaries. This was especially true for the educated workforce in Thailand, engineers, computer analysts, and managers. This would seem to suggest that sourcing and taking advantage of low labour costs were no longer the main reasons for foreign investors investing in Thailand. There was only one respondent, representing one sample project, that indicated his reason for investing in Thailand was taking advantage of skilled labour to produce his product at reasonable costs. Others testified that labour was not all that cheap in Thailand when

compared with other neighbouring developing countries, such as Malaysia, Philippines, and Indonesia. The growth of manufacturing industry coupled with Thailand's status as a new NIC had, perhaps, significantly contributed to increases in the wages and salaries.

Success Factors of Project Activities

All sample firms indicated the major factors contributing to the success of their project activities were the relationships with the recipients, and the capabilities of the recipients to adapt, learn, and use the technologies to their fullest potential. Careful planning, co-operation of their Thai partners, and the overall management of both Canadians and Thais working together to reach the goals and objectives were also part of the success factors.

CIDA INC was part of the success factors, but only in the initial stages of the projects. It was seen as providing the necessary funds to get the projects started.

As first time transferrers, a few firms indicated that the joint venture type of business gave them, the technology owners, less control over the direction of the business and less power in the decision making process. This factor coupled with the distance made it difficult for them to establish any concrete agreement concerning ways of handling the operation and running the business. Perhaps this was one of the reasons why some firms began their transfers as

contracts or licensing agreements. If they were pleased with the results, they would form a joint venture with their original partners on future projects. In such types of business collaborations, they felt they had more control and more say in the business.

RESTRICTIVE CONDITIONS IN TECHNOLOGY TRANSFER CONTRACTS

An examination of primary data on licensing agreements provides evidence that technology recipients in Thailand were restricted by a small number of well-known requirements and prohibitions. Restrictive conditions in technology transfer contracts are presented in Table 7.

TABLE 7
RESTRICTIVE CONDITIONS IN TECHNOLOGY TRANSFER CONTRACTS

Type of Restriction	% of 26 Contracts
a) market restrictions	
- absolutely no export of product	11.1
- export to certain countries only	11.1
- export allowed on permit only	3.8
- others	3.8
total	29.8
b) sales agents selected by owner of technology	23.9
c) prices of output set by owner of technology	26.4
d) selling of intermediate product needs permit from owner of technology	7.7
e) prohibition of partners producing competing product	26.9
f) machinery can only be bought from owner of technology	7.7
g) raw materials and intermediate products can only be bought from owner of technology	0
h) technology must be kept secret	23.1

The effect of the restrictive conditions was tested in order to establish whether these conditions had an effect on technology transfer; and, if so, which was the most effective restriction. The results of the tests are presented in Table 8. From Table 8, the hypothesis of no effect is rejected at the .01 level of significance. This implies that the restrictive conditions had some effect on the use of the technology transferred. In addition, the most effective restrictive condition was market restrictions.

Constantino (1977) cautioned developing countries to be aware of the fact that the profit motive made developed countries refuse to share their technologies except on their own terms and for their own interests. This is also the case with sample firms' technologies.

However, the fact that less than one-third of the sample contracts contained export-restrictive and production-restrictive clauses (clauses a and e in Table 7) demonstrated Thailand's low degree of subordination to and dependency on the donor country, Canada. The subordination and the dependency factors were, sometimes, brought on by the recipients, themselves. Prasith-rathsint (1987) asserted that a large number of Thai firms preferred their foreign partners to handle the marketing side, either through subcontracting or guaranteed export volume because foreign investors are knowledgeable in the international market, while the recipients themselves administered and handled production.

The requirement that the recipients were bound to keep the technology a secret was present in less than one-quarter of the total projects. This seems to be in line with respondents' stated comments that they wanted to establish their presence in Thailand and let it to be known to the neighbouring developing countries in order to expand their businesses into these countries.

It should be noted that although only a minority of the transferor firms required the technology to be kept secret, transferor firms, nevertheless, could still exert their dominant power through joint ventures, and not necessarily through explicit contracts. Prasartset (1979) indicated further that the transferor could exert its power as technology is usually embodied in technical and managerial skills, and systems of production and distribution.

The restrictive nature of imported technology, present mostly in sample manufacturing projects, could dampen independent industrial development in Thailand to some extent since Thailand could not produce competing products and was constrained with export restrictions. It should be noted here, however, that with all sample projects, there were no second-hand machines and semi-obsolete labour-intensive technologies transferred to the host country. This fact could be confirmed since the researcher had opportunities to visit sample firms' offices and plant sites in Canada, and were shown pictures of Thai plant sites and offices, and the actual

technologies that were transferred to Thailand. The technologies transferred to Thailand were still present in the Canadian sample firms.

TABLE 8
EFFECT OF LICENSING AGREEMENT

Variable Pairs	Wilcoxon Matched-Pairs Z-Score	Signed-ranks Test P-Value
1) market restrictions with sales agents	-2.0226	0.0431
2) market restrictions with price of output	-2.5205	0.0117
3) market restrictions with selling of intermediate product	0	1.0
4) market restrictions with producing competing products	-2.0226	0.0431
5) market restrictions with buying machinery only from technology owner	0	1.0
6) market restrictions with buying raw materials & intermediate products only from technology owner	-1.3416	0.1797
7) market restrictions with keeping technology a secret	-1.8257	0.0679
----- YES with NO	-2.5205	0.0117

RECIPIENT POLICIES AND TECHNOLOGY TRANSFER

Respondents were questioned about recipient policies in Part C of the interview schedule. Table 9 summarizes the results. The majority of company respondents (75%) were not

aware of the Sixth Plan of Thailand. The rest (25%) were aware and indicated that the Plan played a full role in their technology transfer projects. The government respondent was also aware of the Plan, but, indicated that the Plan played no direct role in CIDA INC strategy with regards to its development objectives for Thailand.

All respondents, company and government respondents, were aware of the Thai Board of Investment (BOI). Of the twenty-six sample projects, only seven projects (27%) from seven different firms received BOI incentives. Sixteen projects (61%) which did not qualify for BOI incentives, however, paid no tax because their projects were considered as engineering/consulting services, "non-products." Furthermore, under BOI laws, engineering services are non-taxable. These projects, therefore, had no need to go through BOI. Two other projects (8%) did not apply for BOI because their projects only lasted a year. They, themselves, regarded their contracts as too short a term to bother applying for BOI incentives. Another project did not apply. The respondent concerned mentioned that someone from the private sector told him that his investment was too small to qualify for BOI. He, therefore, did not bother to apply. He, in fact, was misinformed. Many sample projects that were qualified for BOI incentives invested less and/or equal amount of money as the respondent who did not apply.

TABLE 9
RECIPIENT POLICIES AND TRANSFER OF TECHNOLOGY PROJECTS

Project	Sixth Plan Awareness	BOI Awareness	BOI Incentives
POWER & ENERGY			
1.	no	yes	no
2.	no	yes	no
3.	no	yes	no
4.	no	yes	no
5.	no	yes	no
6.	no	yes	no
7.	no	yes	no
TRANSPORTATION			
8.	no	yes	yes
9. unsuccessful	--	---	---
10.	no	yes	no
11.	no	yes	no
12.	no	yes	no
COMMUNICATIONS			
13.	yes	yes	yes
14.	yes	yes	no
OTHER SERVICES			
15.	no	yes	no
16.	yes	yes	no
17.	yes	yes	no
GEOGRAPHIC SURVEYS			
18.	no	yes	no
19.	no	yes	yes
MANUFACTURING			
20.	no	yes	no
21.	no	yes	no
22.	no	yes	yes
23.	no	yes	yes
24.	no	yes	no
25.	no	yes	yes
ANIMAL HUSBANDRY			
26.	yes	yes	no
27.	yes	yes	yes

The way in which the Plan played a role in technology transfer projects and the way in which BOI criteria for approving investment promotion and providing tax privileges

influenced the technology transfer content will be discussed further in the next chapter.

VIII. ANALYSIS

This discussion analyzes the results in the context of the research questions and hypotheses. In order to provide an overview of how policies of both the donor and the recipient governments were being implemented, the analysis will begin with an examination of the secondary data. The qualitative analysis of secondary data specifically focuses on the objectives of CIDA and the RTG which respectively are "to help the poorest of the poor" and "to improve the quality of life", and is placed in the context of the concerned research questions. Subsequently, this overview will be refined through the analysis of the primary data.

A REFLECTION OF CIDA INC'S STRATEGY UPON THE OVERALL CANADIAN AID STRATEGY

Secondary source findings show that in response to the Winegard Report, CIDA endorsed the recommendation of the Special Joint Committee that "meeting the needs of the poorest countries and people should remain the primary and overriding objective of the Canadian aid program" (Government of Canada, 1987c). An examination of policy documents, nevertheless, provided evidence that CIDA's strategic approach to development stemmed from concerns that are political, humanitarian, economic, and commercial in nature (Government of Canada, 1987b). As such, CIDA's primary mandate-"to help the poorest of the poor countries and people" is usually

coupled with the fact that aid programs ought to have economic and commercial components attached to the primary objective. This was evident in CIDA's response to the Winegard Report, *To Benefit a Better World*:

The government therefore adopts the three (Charter) principles proposed by the Committee and adds one more:
iv) development assistance should strengthen the links between Canadian citizens and institutions and those in the Third World. The government will therefore endeavour to foster a partnership between the people of Canada and the people of the Third World (Government of Canada, 1987b).

Such a charter on development aid had been carried into CIDA INC's strategic goals: to assist developing countries in their development; and to build a base for a long-term economic relationship between developing countries and Canada (Government of Canada, 1987a). This would seem to indicate that the INC strategy is, therefore, a reflection and an extension of the overall Canadian aid strategy.

The Canadian government asserted that in order for Canada to strengthen the fabric of international cooperation and social coherence, Canada's cooperative efforts with other countries, bilaterally, multilaterally, and through private links are essential elements in Canada's constructive nationalism. Furthermore, Canada's well-being depends on developing countries' economic growth. Aid programs, thus, help Canada form mutually beneficial economic relationships with recipient countries (Government of Canada, 1987a). Such

an assertion would seem to indicate that Canada's development assistance ought to be in an aid cum trade form in order for Canada to benefit from helping developing countries.

It was evident throughout CIDA's response to the Winegard Report that the economic well-being of Canada and commercial ties between Canada and developing countries are equally as important as CIDA's primary objective-"to help the poorest of the poor countries and people." Throughout the Report, the government outlined many reasons to justify its aid cum trade strategy. Among such reasons, the government indicated that Canada is dependent on exports for a third of its income, an open international trade and an open financial environment with developing countries are, therefore, essential. Moreover, developing countries' needs for technology, skills, and goods and services provided Canada with opportunities to expand and extend economic and commercial relations with these countries (Government of Canada, 1987b and 1987c). Opportunities in the service sector, training and professional development, technology, and in collaborative ventures and investment would, therefore, dictate the strategy of CIDA INC. Such opportunities were considered by the Canadian government to be "brighter than the prospects for expansion of traditional resource based and manufactured exports" in developing countries (Government of Canada, 1987a).

According to CIDA, development is

concerned with improving quantity and quality

of physical assets, but more importantly, it is concerned with increasing human capacity through the use of land, labour, capital, technology and applied intelligence (Government of Canada, 1987b).

With this definition, development would, again, seem to indicate an aid cum trade approach since physical assets and human capacity were to be improved through technology transfer. Again, CIDA INC would seem to be the unit that directly serves the aforementioned definition. As a matter of fact, the government stated that through the INC programs, the government can strengthen support for Canadian exporters who have/are prepared to develop the capacity to function successfully in overseas markets (Government of Canada, 1987b).

Development is complex. When classified by GNP per capita according to the 1991 World Bank Report, among the thirty-four principal recipients of the Canadian aid, eleven countries (32%), including Thailand, were from lower-middle income countries and twenty-three (68%) were from low income countries (Government of Canada, 1990b). Some argued that many countries which received Canadian assistance should not be eligible since they were not the so called "poorest of the poor". Others, including the Canadian and the Thai governments, viewed that there are two sides to development and that each of the two is important. To them, and in reality, there are affluent and poverty sectors in each

developing country. Policymakers in most developing countries have long recognized that development encompassed more than just rapid economic growth. Moreover, countries, including Thailand, which until a short time ago were considered underdeveloped, have experienced high growth. However, because the problems of income disparity among different regions and sectors within these countries have not been solved, poverty remains for large population specially in rural areas (World Bank, 1991, Government of Canada, 1987b, and Government of Thailand, 1988).

The fact that a country is classified as a lower-middle income country by its GNP per capita does not mean that the total population is out of poverty. Staudt (1991) stated that GNP and GNP per capita are insensitive to the distribution of wealth by class, sector, region, and to the quality of life. Foreign assistance and expertise can reach and improve living standards of many of the so called "poorest of the poor" in lower-middle income countries if effectively targeted and carefully managed. For example, a Canadian service within the power and energy sector would greatly impact on the population as a whole. In many of the lower-middle income countries and not only in the low income countries, electricity has not reached many rural areas. These countries' energy requirements are increasing drastically at the same time as they are experiencing rapid economic growth and at a time when cost of imported energy is increasingly volatile and

indigenous energy sources are over-exploited. With an expansion of power generation through foreign assistance, electricity can begin to be extended to the poorest population.

In its mandate, CIDA stated that one of the key factors in determining the degree of Canadian government support for development would be the way in which a country approached the question of poverty alleviation (Government of Canada, 1987b). Therefore, the fact that some lower-middle income countries were selected by CIDA would seem to suggest that, perhaps, humanitarian ground along with political, economic and commercial factors were taken into consideration.

Primary data seem to correspond to the findings of the secondary source. The government respondent was questioned on how CIDA INC development objective for Thailand fitted in with CIDA's stated objective-"to help the poorest of the poor." To this the government respondent replied that he agreed to the fact that Thailand is not a "poorest of the poor" country. However, revealing only in general terms since these technology transfer projects are commercially protected, CIDA INC's case studies had demonstrated that there had been a positive developmental impact on the country as well as a positive impact on the business ventures between the Thai and the Canadian firms. The INC program had been particularly helpful in the industrial, manufacturing and infrastructure sectors. The program had furthered CIDA INC developmental

objectives in Thailand in the sense that required technologies were transferred to Thailand.

The government respondent further stated that he would not go so far as saying that all INC projects went to help the poorest of the poor in Thailand. The INC program was not aimed at rural development or helping illiterate people become literate. Rather, it was aimed at transferring technology and, in the same instance, helping with human resource development. CIDA INC's intention was to help developing countries achieve self-sustainable development by encouraging the participation of the Canadian private sector in their industrial development and growth. Industrial development and growth would in turn bear a positive impact on the poor, particularly with Canadian infrastructure projects.

Additional comments from both the government and company respondents further reveal that the bilateral programs for Thailand and Malaysia would be phased out within the next five years. This was indicative to the "poorest of the poor countries and people" objective. CIDA INC's involvement in Thailand, Singapore, and South Korea, to the present, was also lessening. Respondents indicated that it had become increasingly difficult for CIDA INC to get proposals from and to grant support to the Canadian private sector in these countries. These countries were becoming less and less of a concern for CIDA and CIDA INC than in the past. There was a screening process on the proposals from the Canadian private

sector, CIDA INC's involvement and what CIDA INC saw as technologies that really needed for the countries concerned. This would seem to suggest that the Canadian private sector had difficulties justifying a CIDA INC contribution on developmental grounds. This was because the Canadian private sector could not warrant some of the specific objectives of the INC program on developmental impact. Betterment of the balance of payment situation, betterment in terms of employment record of the country could not be justified, since the concerned developing countries were experiencing high economic growth. On such a basis, CIDA INC could become more selective, and, in this respect, served a proactive rather than a reactive role through its selective screening process.

Many donor countries' aid programs have been severely criticized. Such criticism attacked donor countries for wasting aid money on those countries that are considered to be "financial basket cases" (Camm W. Ure Management Consulting Ltd., 1986). Donor countries' politicians are becoming more and more aware of the cost of aid. As a consequence, the political voice is calling for an accounting of the performance of the aid program. Camm W. Ure Management Consulting Ltd. (1986) stated that donor countries, including Canada, are looking for the so called "success stories" in their programs, given a tight economy, and an ever-increasing awareness on the part of the public for use of Technical Assistance funds. As a result, many donor countries will have

a continued interest in Thailand as an aid recipient because of Thailand's achievement in its economic performance despite a very difficult global economic environment.

What is apparent is that CIDA INC's assistance objectives are coupled with trade objectives, a reflection of the overall aid strategy. Both objectives go hand in hand, although this is not explicitly stated by the Canadian government. This should not be a surprise. After all, foreign aid and assistance would only be supported by domestic votes if such aid and assistance also benefited from the perspective of the donor country. What is significant here, however, is the developmental impact of Canadian aid upon developing nations and their populations, and not so much the classification of the concerned countries and CIDA's aid cum trade strategy.

INDUSTRIAL COOPERATION PROGRAM'S EFFECT ON THE CANADIAN PRIVATE SECTOR'S TECHNOLOGY TRANSFER

The effect of the Industrial Cooperation Program on the Canadian private sector's technology transfer was investigated in Part B of the interview schedule. To establish such effects, the link between awareness and compliance variables was investigated by examining: 1) the necessity and the impact of the INC funding; 2) the Canadian private sector's awareness of CIDA INC development objective; 3) the Canadian private sector's compliance in helping CIDA INC attain such objective, including their perceptions of the expected and the actual

benefits to both the donor and the recipient countries from their technology transfer projects; and 4) the type and scope of technology transfer to the recipient country, including the downstream and/or additional projects resulting from their initial INC projects.

Necessity of CIDA INC Funding

The necessity of INC funding provides evidence that the Industrial Cooperation program played an important role and had a great effect on the Canadian private sector's technology transfer. As presented in the preceding chapter, the majority of company respondents generally indicated that their initial projects would not have existed without the INC funding. Because of the distance and the time required to establish contacts and secure the business, the INC funding was an absolute necessity. INC funding served either as helping to reduce a great deal of the total costs incurred on the project in cases of manufacturing firms or helping to finance the feasibility study required for the downstream project in cases of consulting firms.

As reported in the preceding chapter, seven of the twelve sample firms were able to have fifteen additional projects. Such results point to the direction that the IC program had provided momentum for the Canadian private sector to secure further projects with the recipient country.

Development Objective: Awareness and Compliance

The Canadian private sector's awareness of and compliance with the INC development objective were examined in order to further establish the impact of the IC program. On the awareness side, sample companies were asked to state the CIDA INC development objective for Thailand. Their replies point to the direction that they were aware of the INC development objective. In one way or another, their replies were conclusive to the INC objective in helping the recipient country achieve self-sustainable development and growth. Nevertheless when answering this question, although the question only requested for development objective for the recipient country, all but one company respondent stressed that CIDA INC facilitates the Canadian private sector doing business in Thailand at the same time as helping the recipient country with its development. Examples of respondents' replies are as follows: "To help Thailand develop sustainable industries at the same time as to increase Canadian private sector involvement there"; "CIDA INC main objective is to foster and facilitate the involvement of Canadian business in Thailand ... but the longer-term objective is to reduce importation of foreign expertise into Thailand. Our technology is to help Thailand be self-sustainable in the future"; and "To provide Canadian assistance in helping Thailand to become NIC. This assistance is, of course, fitted in with the business plan of companies that desire to do

business there". Some respondents even went further as to say that the INC ultimate objective is to increase trade between Canada and Thailand. This would seem to confirm the findings of secondary data, and further indicate that: 1) the aid cum trade strategy of the Canadian government is a known fact, and is, somehow, engraved into the minds of the Canadian private sector; and 2) the development and commercial objectives are inseparable.

One way of examining the compliance variable was to directly question sample companies on how their companies transfer of technology helped CIDA INC attain its development objective. To this, sample companies responded that they helped CIDA INC attain its objective by establishing long term business collaborations ranging from contracts, to licensing agreements, to joint ventures with the recipient country. At the same time, their technologies and expertise provided the recipient country with knowledge, skills, processes, know-how and/or products to expand its industrial base in the following industries: power and energy, transportation, communications, manufacturing, geographic services, and animal husbandry. The majority of company respondents indicated further that they helped CIDA INC fulfil its objective since their projects provided temporary and long term employment for Canadians and brought investment projects and profits to Canada as well. CIDA INC'S commercial objective emerged from a great majority of respondents although the concerned question never asked

about CIDA INC'S commercial objective. This, again, would seem to confirm that aid objective of CIDA INC served as aid cum trade assistance in reality.

The government respondent was also asked whether he believed the Canadian private sector helped CIDA INC attain its development objective. The respondent stated that CIDA INC's success stories of Thailand projects have demonstrated that there has been a positive developmental impact on the recipient country as well as on the business ventures between the Thai and Canadian firms. The Canadian private sector has been helpful especially in industries, manufacturing, and infrastructure sectors. The government respondent further stated that he would not go as far as saying that the IC program is helping the poorest of the poor in Thailand since such program is not one aimed at rural development in the recipient countries with the participation of the Canadian private sector. In this respect, the concerned respondent emphasized that IC-Thailand program has been one of the most successful programs of the entire Industrial Cooperation program.

Further comments from respondents provide evidence that the IC program acted primarily in response to initiatives taken by the Canadian private sector. All technology transfer projects were initially created by Canadian firms. CIDA INC was approached once the initial projects/ideas had been developed and potential recipients had been sought. CIDA INC,

in turn, reacted to proposals that came before them from the private sector. Proposals were analyzed in terms of benefits to both the recipient and the donor countries as well as the competitiveness of the concerned Canadian companies and their abilities to sustain the project until completion.

Type and Trend of Technology Transfer

As mentioned earlier, the IC program acted primarily in response to initiatives taken by the Canadian private sector. The Canadian private sector, therefore, must provide detailed support concerning the developmental impact of the recipient country from its technology transfer project as well as benefits to Canada in order to qualify for INC contribution. Questions 23 and 24 in the company interview schedule examined the impact of this compliance factor. Results provide evidence that all sample companies were familiar with Thailand in either of the following manners: 1) had business dealing(s) with Thailand before their initial INC project; or 2) although never had any previous business collaboration in Thailand, had visited and established contact with potential recipient there.

As an aspect of their project, technology transfer was presented by sample firms in their proposals as providing necessary skills, knowledge, and/or techniques relevant to their respective industries. These technologies, either software, hardware, or both, would go to fuel the

industrialization process in the recipient country. Since there were various technologies transferred to Thailand during the 1987-1991 period (see Tables 2 and 5), technology transfer as an aspect of the project will be separately discussed below, placing it into its respective industry/sector.

Technology transfer within the power and energy sector

Within the Power and Energy sector, technology transfers were mainly software technologies with some computer software as hardware technology. The main recipients were in the public sector. However, in most cases, Canadian firms also provided sub-contract work to the Thai private sector as part of the Thai public sector's contract requirement. Technology transferred through the INC program were thermos power and power expansion technologies. As an aspect of their projects, technology transfer was described and presented within the Power and Energy sector as transferring Canadian experience, expertise, and the application of the technical knowledge, which were gained from their experience in working overseas. Company respondents stressed that apart from the computer software and the technical knowledge, they would be providing person-to-person knowledge which required working together with their recipients' clients and local private consultants. By working together, the technology would be transferred. On some larger assignments, their specialists would give courses to the local people. However, on consulting projects, the

training that took place would be by working together with their recipients, public and private. The Canadian engineers remarked that in the case of Thailand, based from their twenty year-experience in most parts of the world, there was not a great deal they could teach the local engineers. They found local engineers to be knowledgeable in their field asserting that Thai universities have high standards and many Thai engineers have gone on to do postgraduate studies abroad. Therefore, in presenting technology transfer to CIDA INC, Canadian consultants emphasized their capabilities in planning and organization and their experience overseas in many different countries. Such capabilities were brought out as their competitiveness and ability to help the recipient country with her development. They also represented to CIDA INC that the needs for better and more efficient power supply, including increasing power capacity in order to facilitate industrialization, in Thailand fitted in well with their capabilities and competitiveness. Within this sector, INC funded projects served as a means to either study the number of options available to extend the existing power plant in Thailand, or to locate future power generating source.

Technology transfer within the transportation sector

Two INC funded projects within the Transportation sector focused on railway and above ground transit systems. Technology transfers were mainly software technologies. The

2 OF 2

PM-1 3 1/2" x 4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

main recipients of these technologies were in the public sector. However, with one extremely large scale project, the local engineering firm was brought onto the engineering team.

As an aspect of the project, technology transfer within the railway realm was presented as the way in which Canada could transfer technical knowledge, skills, and provide training to the recipient. Such transfer would reduce unnecessary import of foreign expertise in the future and would, in turn, help the recipient's balance of trade situation. The main focus of technology transfer was on transferring skills and passing on Canadian knowledge in a railway project area to allow the recipient country to do her own operations work. The transfer, as presented to CIDA INC, would help the recipient to become self-supporting in the railway operations.

The mass transit technology transfer project was described and presented in the proposal to CIDA INC as a mechanism to provide Canadian expertise and capabilities in correcting the recipient's existing problems of inadequate infrastructure. This problem would be solved by putting in highly qualified engineers with direct experience in this type of work to design appropriate infrastructure. Further comments from the sample firm seem to indicate that technology transfer aspect of the project was presented as a way in which it would bring about a long term business collaboration between the firm and its recipient. The project, therefore,

would help CIDA INC achieve its long term business collaboration-commercial goal. The sample firm, in fact, stated that CIDA INC was and still is counting on its firm to carry and represent the Canadian flag. Because of its reputation and this large scale project, the sample firm would be able to help CIDA INC establish a Canadian presence not only in Thailand but also in other Southeast Asian countries.

Technology transfer within the communications sector

Within the communications sector, CIDA INC funded one sample project, the fibre optics communication system. This technology was, again, transferred to the public sector of the Thai economy. Sample company presented technology transfer to CIDA INC as a package which involved training, the design of the system, the operation of the proposed system, and the operational maintenance. Presented also was the fact that the proposed system was based upon the sample firm's expertise in using the railway right of way as the avenue to provide communications into city centres. Canada is currently using this system, also designed by the firm. The system has worked extremely well and presented itself as a competitive product. A growing country like Thailand would require this type of technology in expanding her telecommunication base, and fuelling her industrialization process. The system would in fact serve telephone, railway and communication services in Thailand.

Technology transfer and consulting service

The other engineering service project initially funded by CIDA INC was a quality control/quality assurance project. This project was directly transferred to the private sector to form a joint venture business between Canadian and local partner. The technology transfer aspect was presented as training and transferring of know-how on controlling and assuring quality on all types of products. The training required bringing Thai staff, men and women, to train in Canada both in the sample firm's office and in the field. They, in turn, would go back and perform quality control consulting services for their clients in Thailand. The sample firm stated to CIDA INC that Thailand, as a fast growing economy, has to think about quality and quality control to be competitive in the world market. This quality control service would be important to Thai products and their competitiveness. As an expert in quality control, the sample firm has the technology that could help Thailand in her industrialization process. The sample firm indicated that the objective of the INC funded project was to transfer and adapt the technology to the needs of Thai industries, and to develop quality control programs to be implemented in various industries in Thailand.

Technology transfer and geographic surveys service

With respect to the geographic surveys service, the

technology was transferred to develop a joint venture business with a local partner in the private sector. In complying with CIDA INC's requirements, the sample company proposed to CIDA INC by basically explaining that Canadian mineral exploration technology should be one of the technologies that Canada exports since Canada is a world leader in this technology. The sample company indicated that its technology would be "one of a kind" technology in Thailand. Such technology would help in the development of the mining industry. At the same time, Canada, being an expert in mining, could take advantage of the sample firm's technology to explore opportunities in Thailand. As an aside, the sample firm added that mining is beginning to boom in Thailand and Canadian should not let the opportunity pass by. There is very little Canadian presence within the mining industry there, and Australian mining firms could be found everywhere.

The sample firm's technology would allow Thailand to develop her mineral resources and industrial base. At present, Thailand has to import minerals, which drains foreign exchange. This technology would allow Thailand to develop serious mining projects in the future. With this technology, the manufacturing of maps and computer software would be transferred as well. Transfer of technology in this case included both hardware and software technologies. The training required for the Thai staff would take place in Canada.

Technology transfer within the manufacturing sector

Within the manufacturing sector, four distinct types of production and technology were initially funded by and transferred through the IC program: motor grader technology; aluminium railing technology; bronze casting technology; and juice processing technology. Business collaborations were with the private sector within their respective industries and of contract and joint venture types.

As an aspect of its project, the motor grader manufacturing firm presented its technology as an important contribution to the Thais within the manufacturing sector. The technology, involving hardware technology, motor grader kit, and software technology, know-how and process, would allow Thailand to produce and supply motor graders locally and abroad, however, with certain market restrictions. This, in turn, would cut down the importation of motor graders, and would provide hard currency earned through export. Moreover, the motor grader technology would give Thailand the skill set for operating a very large manufacturing company.

With respect to the aluminum railing project, technology transfer was presented to CIDA INC as a transfer of new and advanced technology into the recipient country. The technology was described as having a greater advantage than the present technology used in railing production in Thailand. The end result of this technology would be railing produced by using aluminum. This type of railing would be new to

Thailand. It would cost less than the steel railing, would last for life, and would be easy to assemble as a clip-on product. Types of railings present in the recipient country were concrete and steel railings. In the case of concrete railing, it chipped and cracked very easily when exposed to the elements for a certain period of time. In case of steel railing, apart from its high cost, it needed to be repainted as time progressed. With Thailand expanding, and a great deal of railings would be used in all types of buildings, the transferor saw these as an opportunity to create a joint venture business in Thailand.

The bronze casting technology was presented as a necessary technology to transfer in order to take advantage of highly skilled and inexpensive labour in Thailand. Technology transfer would include training in the "lost-wax" process, retraining of personnel in order to correct poor foundry practices existing in the recipient foundry, know-how, casting process, and raw material. The recipient's industrial base would be expanded. The technology would allow Thailand to produce castings for export. Because of the skills of the Thais in producing labour intensive castings at reasonable cost, the transferor presented such factors as an economical source for reproducing sculptures. Lower casting costs would translate into more quality bronze sculptures present in the North American market. It would enable sculptures to be sold at affordable prices.

Technology transfer, as an aspect of the juice processing project, was presented as introducing modern technology in producing and extracting juice concentrate into the recipient country. The technology would allow Thailand to produce for and export to Canada under the initial contract. The technology, therefore, would upgrade the Thai industrial base. Furthermore, it would allow Thailand to earn hard currency through the export of juice concentrate.

Technology transfer and the animal husbandry sector

In complying with CIDA INC objectives, the Animal Husbandry projects, dairy management, and shrimp production projects, presented technology transfer as transferring advanced technology, management techniques, and experience as well as equipment and live animals, dairy cattle, into the recipient country. For the dairy management project, technology was essentially described according to each sector of technical assistance-maintaining and taking care of dairy cattle, herd health diseases, feeding, and milking. Since the breed of the transferred cattle, high producing cattle, was not native to Thailand, the raising and the management of dairy cattle, and the technology required for Thailand to develop a sustainable dairy industry all needed to be addressed in this transfer.

The transferor indicated to CIDA INC that the company has confidence that Thailand will eventually be a net exporter of

dairy production in Southeast Asia in the next ten to fifteen years. However, in reaching such end, Thailand needed the technology to manage such a task and this was where the firm's technology came in. In this case, the needs of Thailand fitted in well with the sample firm's expertise. The transferor was confident that this technology transfer would be a success. She saw Thailand had adapted imported technology to develop her pork industry and was able to succeed. Thailand is now a net exporter of pork in Southeast Asia. The transferor believed that Thailand would be able to adapt the firm's technology and succeed at managing a dairy industry, and would become a net exporter of dairy products in the future. With this endeavour, the technology would be transferred to the public sector in hope that it would be passed on to farmers through training.

As for the shrimp production project, the transferor presented to CIDA INC the needs of Thailand for her firm's technology. She stated to CIDA INC that although a number of plants in Thailand were currently being operated under the highest international standards, many plants still maintained comparatively low quality control during both processing and packaging activities. Furthermore, the drastic expansion of world farmed shrimp production had created a very competitive marketplace. As a result, product quality ought to be emphasized in order to remain competitive. This factor coupled with the fact that shrimp processing has become a

priority development area within the national industry of Thailand made it apparent that opportunities for the development of high quality processing facilities still existed. Accordingly, both software and hardware technologies, training, management skills, plant design, process, and equipment would be transferred to the recipient country to form a joint venture business with a local partner from the private sector. The production would mainly be for export. The concerned technology would help Thailand strengthen her animal husbandry industry further.

As can be seen from all aforementioned technology transfer aspects of all sample firms, technology transfer was described and presented in compliance with CIDA INC commercial and development objectives. Sample firms' further comments seem to indicate that technology transfer was included in such a way that was presented to CIDA INC because: 1) CIDA INC wanted help from the private sector in achieving both commercial and developmental objectives; and 2) realizing that both of the aforementioned objectives must be met in order to be considered for the INC funding, the sample firms, therefore, stressed both commercial and developmental aspects of their technology transfer projects to CIDA INC.

Perceived and Actual Economic and Social Benefits to the Host Country

The perceived economic and social benefits were also

presented by Canadian firms in their proposals to CIDA INC, since criteria for project selection required them to do so. Such benefits are outlined here in accordance with their respective sectors.

Respondents from the engineering sector indicated that the perceived economic and social benefits would be that their technologies would allow Thailand to further develop and extend her basic infrastructure services to the Thai population. Such infrastructures, of course, are essential. They would assist in the accomplishment of the overall development targets of the RTG's Sixth Plan. Basic infrastructures impact on the way people live and the things that they do. Such services would help the people and the country to pursue their everyday lives and their businesses more efficiently.

As for the manufacturing and the animal husbandry sectors, economic and social benefits were perceived to be long term. Foreign exchange generated from exports, penetration of Thai products, increases in production, gained skills, and employment generation, including job creation for women in non-traditional jobs were the perceived economic and social benefits to the recipient country. Employment generation resulting from the creation of skilled, technical, managerial, and professional jobs would significantly contribute to human resource development.

All sample firms were forthright about the benefits

actually achieved. In cases where the projects were only at implementation stage, they indicated that the perceived benefits had not been realized. They are, as in most development projects, long term benefits. Some of the actual benefits which had been realized are as follows. In all sample cases, present actual benefits were that many Thais, men and women, had received/were receiving training in Canada and in Thailand. Many Thais were employed in many different disciplines as a result of Canadian technology transfers.

Difficulty in and Drawback from Complying with CIDA INC Objectives

In complying with CIDA INC'S objectives, several respondents mentioned that they had lost several million/billion dollar-projects to Thailand, Vietnam, and Laos to European firms, which were also sponsored by their governments. These respondents consistently stated that CIDA INC'S demand for a great deal of paper work, and the back and forth signatures from the Canadian private sector's respective recipients to justify the significance and the existence of their projects was the cause of their losing projects well worth pursuing. They felt that because they were large firms and CIDA INC's primary focus was on small and medium firms, they needed to justify the needs for INC funding more. They stated that this should not be the case for two reasons: 1) CIDA INC should realize that large companies had the ability

to carry forward the projects until their completion while, sometimes, smaller companies used CIDA INC just as projects with no intention of ever going ahead, or lacked the money to go ahead until completion. This fact was certified by many large and medium sample firms; and 2) as mentioned in the last chapter, regardless of the company size, engineering/consulting firms stated that without the INC funding, their companies would not have been the technology transferrers of the INC projects since their technologies were to be transferred to the recipient's government, not the private sector. The projects, instead, would have fallen into another country's hand. The initial stage of these projects, the pre-feasibility study stage, had to be financed by the donor government in order for the consulting firms to offer the service on a free basis to the concerned departments of the recipient government. The recipient government would not be willing to provide any funding for the study stage since they knew that many donor countries would be willing to finance it in order for their country's companies to receive contract for the downstream work.

Hesitation in providing grants to large Canadian firms has resulted in sample companies losing well-worth pursuing projects. The drawback of CIDA INC requiring more and more paper work as time progressed are that: 1) the concerned recipient countries were left uncertain about the prospect of these Canadian projects; and 2) it became very costly for many

sample firms to apply for a grant. One sample firm indicated that it spent Can. \$25,000 to obtain \$100,000 grant. The fact that it needed to spend that much just to obtain the grant put a bigger restriction on the usefulness of the program. All kinds of requirements, letters, plans, declarations from clients to clients made the IC program difficult to access. When asked whether they would apply for INC funding in the future, these sample firms replied that they would think twice before going back to CIDA INC.

Theoretically, many may argue that large Canadian companies should be able to fund the study themselves, but such self-funding would further undermine their competitiveness. The international bidding for projects funded by multi-lateral institutions is very competitive. In many instances, Canadian firms have no particular advantage. Furthermore, when a country pays for a project from its own foreign exchange reserves, there usually is intense competition. In such instances, it has become quite customary for donor countries to support their private sector in seeking the project by providing a grant for free studies (Government of Canada, 1986). Therefore, if the Canadian private sector, regardless of its size, is to get its fair share of such work in developing countries, there must be a vehicle for providing free studies. This is where agencies such as CIDA INC can contribute.

The consequence of stringent requirements is that while

CIDA INC was at the stages of discussing and considering the application, the European governments approved the projects which resulted in their respective organisations winning the contracts for work in the concerned developing nations. Such losses would imply that in justifying the long term strategic position of the Canadian aid/trade strategy, the Canadians would be likely to lose some major potential projects to European countries because the "European Strategy" focuses more on short term ad hoc projects and less on long term strategic position. Under such a strategy, European aid projects, in the aid/trade component, relied primarily on financing as the key competitive weapon (Abonyi, 1985). Therefore, with such competitive weapon and a short time European governments took to approve projects, it would be likely that Canadian firms would continue to lose potential projects since the INC focused on long term strategic positioning in the recipient countries.

Reality indicated that "one wins some and loses some". Although, Canadians may have lost potential projects with the CIDA INC strategy, the positive effect of this strategy could be that aid projects pushed in the aid/trade context with a long term strategic positioning could prepare and provide the basis for commercial linkages between the donor and recipient countries. As stated by Abonyi (1985), countries following the "European Strategy" seemed to have limited sensitivity to and understanding of the recipient's environment and had not

been very effective in recipient countries since their aid projects were often not well selected in terms of the recipients' needs and priorities. Their commercial linkages through the aid/trade program had very limited success, although their strategy has created a competitive environment that is very aggressive especially in the use of financing as a weapon.

Further comments from company respondents provide evidence that in complying with CIDA INC objectives, quite a few firms had difficulties in complying with and fulfilling CIDA INC specific requirements, especially in terms of women in development and environmental issues. Respondents generally agreed with CIDA INC that these two issues are very important and should definitely be promoted. However, they should do so only when and where they are applicable. Many sample firms stated that it is unfortunate that CIDA INC does not have flexible guidelines in a valuable program such as this. The lack of flexibility is a problem. They expressed their concern not because they were against women in development and environmental issues but because in many recipient countries, their clients saw these two issues as interference in their affairs when donors stated that they would only give these recipient countries money if these countries did things according to the donors' way as far as the environment was concerned and as far as how they treated their women.

The company respondents' view was that development itself would bring about improvements to the environment and in the role of women. It should not be the transferor's role to tell people how to live their lives. For example, now in Thailand, the recipient-the public sector and the public were upset at foreign environmentalists who came in and tried to stop the project to develop energy. The recipient saw this as interference with their attempts to develop their country which needed energy to fuel development, and needed that development to raise the standard of living of the people. Without raising the standard of living of the people, the country would not be able to improve the role of women and the environment since the country would not have the luxury to do so.

Sample firms stated that recipients saw foreign environmentalists and, unfortunately, CIDA INC in the same role, the interference role. As guests, transferor should go into the developing countries to help the recipients with their development, not anything else, and not to interfere with their societies and how they were organized. The company respondents further stated that the environmental issue is important and, sometimes, very often is overlooked by the developing countries. It should be brought to their attention but it should be up to them to decide. It would be very wrong for donors not to bring such issue to their attention but donors should not make a decision for the recipients because

they are within their homelands. Of course, if they wanted to destroy their homelands, donors should not help them to do so. It is and should be donors' duties to show them, but this issue should not be imposed as an impediment right from the start as in the case of IC program.

Unfortunately, CIDA INC is, sometimes, seen by the recipient countries's development sector as interfering with their societies. Moreover, with respect to the women in development issue, some sample firms had difficulty in pinpointing specific impact on women in development. For example, an engineering project may not have any women involved as women engineers would be rare in developing countries. To particularly pinpoint direct benefits to women from their technology transfer in an infrastructure project would, at times, be impossible since the recipient of their technology in such case would be the public sector. The transferor, therefore, could not be selective in providing training to women.

One respondent remarked, "CIDA (INC) has nice programs, good ideas, but they put so many impediments on them that the positive effects are just quickly destroyed by the other impediments they put in the programs." The presentation in this subsection is by no mean the researcher's criticism of the IC program. The researcher is merely presenting the point of view of the majority of respondents with regard to such issues and their effect on the Canadian private sector and the

IC program as a whole.

THE RTG'S "TO IMPROVE THE QUALITY OF LIFE" OBJECTIVE

Economic development is defined as a sustainable increase in living standards which encompass material consumption, education, health, and environmental protection (World Bank, 1991). Analysis of the secondary data on the recipient government's social objective-"to improve the quality of life" seems to indicate that the RTG followed such a definition.

During the Sixth Plan period, the RTG's objective was to raise Thailand's level of development at the same time as working to solve poverty, unemployment, and fiscal imbalance. Appendix 2 summarizes the programs of the Sixth Plan. Specific to the social objective, the emphasis was placed on "the development of human quality so as to enable progress in social development and to create peace and equality" (Government of Thailand, 1986). As such, social development was to be consistent with and support the overall development process of Thailand, while improving the urban and rural physical quality of life to meet the standards for basic necessities (Government of Thailand, 1988). To this end, the RTG assigned the tasks of: 1) improving and up-dating social indicators used to measure "quality of life"; 2) pretesting; and 3) collecting and analyzing the "quality of life" data to the Development Studies and Information Division of the National Economic and Social Development Board (Government of

Thailand, 1990).

"Quality of life" social indicators were to reflect the impact of the Sixth Plan programs on quality of life improvement for the Thais in various aspects, such as demography, public health, education, economy, society, social welfare, labour, employment, safety in life and property, and family institutions. Social indicator data were to be collected from each household across the country and/or from each municipal government in order to account for the total population. The social profile was aimed at presenting the tendency of social changes during the Plan period. In so doing, social indicators were utilized as "the basic data for analyses" (Government of Thailand, 1990). Appendix 5 outlines The RTG's eight social indicators and thirty sub-indicators.

The fact that the RTG used her own social indicators to measure the impact of her initiative on "quality of life" seems to indicate that the RTG believed that regional differences in income and prosperity within the country are significant. An increase in per capita income alone would not be a good proxy for other attributes of development (World Bank, 1991). Variations in income or output per capita originating from region to region are substantial and usually apparent in developing countries. Furthermore, the weakness of income growth as an indicator is that it may mask the real changes in welfare for large parts of the poor population. GNP per capita is insensitive to the distribution of wealth

by class, and to the quality of life (Staudt, 1991). Improvements in meeting the basic needs for food, education, health care, equality of opportunity, and environment protection could not be captured by statistics on income growth alone (World Bank, 1991).

Attempts were made to locate relevant figures on basic indicators for 1987 and 1991, and measure the closeness of the RTG's social indicator targets to reality during the Sixth Plan period. The intention was to ascertain the effectiveness of the RTG's programs and to see whether the RTG's targets were actually achieved. The researcher has consulted the 1987 to 1992 World Development Reports to search for 1987 and 1991 basic indicators and their respective growth rates. However, figures for the years 1987 and 1991 were not available. Moreover, the RTG's Sixth and Seventh Plans did not specify any growth rate except for the economic growth rate itself. Therefore, it was not possible to measure the impact of the RTG's programs on the basic indicators.

Furthermore, the impact of the Canadian private sector's technology transfer on quality of life cannot be analyzed in this research due to lack of relevant data. Data, as outlines in Appendix 5, must be collected on the Thai population in all regions where the Canadian technology was transferred to in order to fully analyze such impact. Nevertheless, the findings from this research provide evidence that the Canadian private sector's technology transfer had a positive impact of

labour and employment. The transfer not only helped to create jobs but also helped to reduce the rural migration into Bangkok. Moreover, many sample projects impacted on education by way of training and providing grant to the recipient country's nationals to further their education in Canada.

IMPACT OF THAI POLITICAL EVENTS UPON INVESTORS

With regard to the political events which took place in May 1992, a series of Thai Board of Investment (BOI) round table discussions with executives from a wide range of foreign companies operating in Thailand revealed that most investors suffered only temporary setbacks (Government of Thailand, 1992). The majority expressed confidence that Thailand was still moving forward both politically and economically. Referring to the dramatic growth of the Thai economy in recent years and the discrepancy between economic and political development, the Secretary-General of BOI stated that Thailand is like a man with one leg shorter than the other, "He may stumble and fall once in a while. But Thailand has proven in the past to be very good at getting up and moving ahead again" (Government of Thailand, 1992).

BOI further reported that the rapid liberalization of the Thai economy in trade, production, and services over the past decade, which was greatly accelerated during the interim government's first administration, has already had an irreversible effect on the Thai political scene (Government

of Thailand, 1991). With the opening up of foreign exchange markets, restructuring of the tax system and introduction of more transparent decision making from the public sector, the power of government has been reduced and the monopolistic element removed. The government could now support the initiatives of the private sector and concentrate on its role of formulating and implementing policies to support such initiatives (Government of Thailand, 1991). Thai policymakers, therefore, are now focusing on Thailand's longer-term problems of inadequate infrastructure and skilled manpower (Government of Thailand, 1992).

Further comments from company respondents, interviewed after the events, seem to support the evidence from the secondary sources. They indicated that they did not have any worry about the political situation there and presumed that it had been stabilized. For sample companies that had been operating in Thailand for more than five to twenty years, they retained their confidence in the fundamental strengths and sound management of the Thai economy. They also believed that all elements would work together for the good of Thailand.

RECIPIENT POLICIES AND THEIR INFLUENCE ON TECHNOLOGY TRANSFER

Generally most Canadian firms were aware of the

developmental needs of the recipient country, Thailand¹. They were informed of Thailand's needs from the Sixth Plan and/or through the Thai BOI. This fact was further confirmed by the government respondent who indicated that the Canadian private sector was responsible for providing justification that their technologies were indeed relevant to the needs of the concerned developing countries. Accordingly, Thai government policies had quite a strong influence on the Canadian private sector's technology transfer contents, with regards to the types of business collaboration, operation, and/or the location of its operation.

Respondents that were aware of the Sixth Plan all stated that the Plan played a full role in their projects particularly in the justification of the initial stages of the projects. These respondents that were aware of the Plan were mainly in the engineering/consulting businesses. To them, keeping track of the actual development policies and monitoring the upcoming needs of the recipient countries that they were doing businesses with or were interested in doing businesses with were extremely important particularly when

¹. Chi square Tests were done to establish whether the responding firms were aware of the Board of Investment and the Sixth Plan. The chi square statistic for the Sixth Plan was .333 with a significance level of .56. The high level of significance indicate that the null hypothesis that they were aware cannot be rejected. However, the test on the Board of Investment could not be computed because two of the cells had values of less than 5 (see Sidney Siegel, 1956, p. 110).

their technology recipients were in the public sector. It was vital for them to provide services/ products that fit in with the recipient countries' development priorities, otherwise they would not get support from local governments or the local ministries concerned. This would seem to indicate that it was essential for these firms to make sure that they addressed local policies and took advantage of the recipient's priorities as these policies came about. Furthermore, such indication points to the direction that the Sixth Plan had quite a strong influence on the Canadian private sector's technology transfer.

With regard to the BOI and its influence, all sample projects that were qualified for BOI incentives indicated that BOI had a direct and powerful influence on the contents of their technology transfer projects, regardless of its attractiveness. These sample firms were very concerned as to how taxation would apply to the projects, particularly when they were importing equipment and/or machinery into the recipient country. One project relocated its manufacturing plant in order to take advantage of additional tax exemptions for operating within a specified investment zone. Based upon the advice from BOI, another project formed a separate manufacturing company as well as forming a survey company and chose to locate both in the North of Thailand in order to qualify for further tax exemptions. The concerned respondent stated that in doing so, BOI had allowed them to bring in a

greater amount of technology than they would have otherwise. In this case, BOI allowed the map production to be classified as manufacturing. The respondent believed that such flexibility was a stretch on the part of BOI. Under such flexibility, a significant portion of the technology was brought into the recipient country to help with the much needed development of the mining industry through geophysical surveys at lower costs to the transferor.

The majority of the qualified sample projects considered the BOI incentives attractive. The respondents concerned stated that with the BOI incentives, they were able to reduce a great deal of costs involved with the transfer because of the tax privileges, and could more easily obtain work permits for Canadians. In addition, BOI privileges had allowed these sample firms to own properties in Thailand. This factor could be considered very important for several reasons. Under Thai laws, aliens are not allowed to own properties. Property values in Thailand are now higher than many developed countries. During the Sixth Plan period, property values drastically increased. This trend will likely be continue in the future. Therefore, to own a property in Thailand is a great investment in itself. Furthermore, the fact that manufacturing sample firms could bring in machinery and equipment duty free or with only a 10% import tax was almost necessary since the import tax would be extremely high without the BOI incentives. The tax free/lower tax made it easier

and less risky for the concerned sample firms to consider investing in Thailand since they were never certain how efficient their operations would be in the beginning. Initially, the tax free policy gave them additional leeway. The limited partnerships policy along with the criteria for granting tax and duty privileges for promoted projects, established in 1989, also attracted many sample firms to enter into joint venture businesses in Thailand, and/or relocate their operations/businesses in the investment zones because of the added incentives.

It seems that the BOI could be very influential in every step of the way on some large sample projects. In such cases, respondents saw BOI as a political machine. They stated that once BOI had decided on certain tax privileges and restrictions applicable to particular projects, BOI would tend to stand firm on its decisions. One sample company requested further tax privileges which, so far, BOI had refused to consider. Another sample firm stated that BOI set up privileges that would allow its joint venture business to get started by reducing the duties on components of the whole product but did not reduce the duties on a complete product. This influenced the sample firm to set up its assembly operation in Thailand. However, during the first year of its operation, the joint venture business produced a product not up to the sample firm's standard. Consequently, the product produced in Thailand could not be exported. At the initial

stage, the production was for both the domestic and foreign markets. On such terms, BOI had agreed to give duty reduction if the joint venture business exported a certain amount of its product. When the sample firm discovered that the quality was not at the level it required, it stopped the export until the quality could be controlled. BOI was hesitant to change the terms when the operation did not exactly go the way that the sample firm and its joint venture partner initially thought it would go. In general, BOI incentives were certainly an influential factor on technology transfer. Specifically, BOI was seen as a good facilitator by many firms to get the operation started but a somewhat inflexible authority when the project did not go as planned.

ASPECTS/FACTORS OF THE RECIPIENT PLAN RELEVANT TO THE CANADIAN PRIVATE SECTOR'S TECHNOLOGY TRANSFER

The Sixth Thai Plan played quite an important role in the Canadian private sector's technology transfer. Specific to the Sixth Plan, the Canadian private sector was involved in the RTG's strategies to increase efficiency in development, and to improve production and the market system.

The majority of Canadian projects were involved in the efficiency-development strategy to assist in overall developmental targets, particularly in transportation, communications, and the management of natural resources. The rest of the technology transfer sample projects were involved

in economic activity-strategy that would increase efficiency, improve quality in production, and/or facilitate export market and promotion.

The RTG's Strategy: Increase Efficiency in Development

Under the increase efficiency in development strategy, programs in which Thailand received involvement from the Canadian private sector during 1987-1991 were: 1) Natural Resources and Environmental Development program, 2) Science and Technology Development program, specifically for the transfer of technology and human resource development from the state to the private sector; and 3) Basic Service Development program. Within these programs, the Canadian private sector provided technology and technical assistance in environmental management, mineral exploration, animal husbandry, transportation, communications, and power and energy projects (see Table 5 in Chapter VII).

Natural resources and environmental development program and the Canadian private sector

The Sixth Plan linked natural resources with those of the environment in the context of social and economic development. The aim was to improve efficiency in the use of existing natural resources, to reduce conflicts over the use of natural resources, and to conserve natural resources. Major issues concerned with natural resources were: land and forestry

resources, water resources, mineral resources, fisheries resources, and the environment. Of these five issues, the Canadian private sector was involved in all but one area, water resources. Projects from the Canadian private sector within the Natural Resources and Environment Development program are as outlined below.

With respect to the Canadian geophysical survey technology, the technology played a significant role to the development of Thailand's natural resources. The RTG's high priority in organizing for continuous expansion in the exploration and development of natural resources, especially by completing aerial geophysical surveys across the country and beginning underground exploration, was matched by Canadian private sector's work. The statement from the respondent concerned confirmed that this technology was in great need. The BOI gave so much leniency to the project and allowed so many more privileges than anticipated.

Continued loss of forest land, threatening the country's abundance of watershed areas, was regarded by the RTG as the most serious natural resources and environmental problem facing Thailand. Illegal encroachment by landless farmers and hilltribes, illegal logging of the mangrove plantations for charcoal and fuelwood production, construction materials, wood distillation, tannin extraction and medicine, and unsafe chemicals used in aquaculture within the mangroves or the areas converted from the mangrove forest contributed

to deforestation in Thailand. A Canadian consulting firm from the private sector was directly involved in two projects: the coastal zone management along the northern end of the Gulf of Thailand, the Eastern Seaboard region of the Gulf, and the Andaman seacoast region; and the shrimp culture technology. This first project covered the management and the preservation of forestry and fisheries resources. It also determined appropriate economic zones suitable for conversion to urban and industrial development. The second project from the same Canadian firm focused on introducing new technologies in managing aquaculture, maintaining and monitoring the mangrove area used in the shrimp culture, and techniques in shrimp production.

The Canadian private sector and science and technology development program

Science and technology became increasingly important for development in the Sixth Plan. Involved with this program in two aspects/measures, the Canadian private sector transferred the dairy management technology to the concerned department of the RTG. One aspect/measure was with the RTG's priority in encouraging science and technology to play an increasing role in the development of the country. The dairy management technology was aimed at forming the base for future development of the dairy industry in Thailand. Staff from the public sector was trained in this technology who will, in

turn, train and transfer such technology to the Thai farmers. The other aspect/measure of the RTG's program that this project was involved with was the development of human resources in science and technology. The transferor firm, after having seen the potential of two Thai women among the trained staff, decided to sponsor the two Thais in postgraduate work in embryo technology in Canada.

Basic services development program and the Canadian private sector

In the Sixth Plan, the RTG introduced a new "urban management policy" to facilitate the growth of the Bangkok Metropolitan Region (BMR). This required an integration of physical planning and infrastructure investment measures in order to influence land use and bring about more orderly growth for Bangkok and adjacent provinces. The RTG anticipated that this new policy, particularly in urban transport and traffic management, flood protection, and water supply networks, could influence the future spatial growth pattern and land use in the BMR towards more orderly growth. The Canadian private sector responded to the priorities of Thailand particularly in transport and traffic management. They were, and in some projects, are presently, involved directly with major BMR projects-public transit system, railway, and expressway projects.

Communications was a sector of continuing high priority

under the Sixth Plan. It also requires high capital investments. Within the realm of the Sixth Plan, the Canadian private sector undertook a "sector update" to identify what project opportunities existed for Canadian involvement, assessed projects in terms of their requirements, the likelihood of their implementation, and the competitive environment. In doing so, they were able to be a part of the contribution to the development of Thailand. The two projects which had Canadian private sector involvement were a BMR project, and a high priority project focused on fibre optics communications for the whole country.

Energy remained one of the most important issues in the Thai economy. During the past few decades, the increase in the energy demand has been attributed to many factors including general economic expansion, industrial growth, increase in population, expansion of the urban sector and distribution of energy supply to various regions of Thailand. Foreign assistance was expected to play an active role in: helping to strengthen government machinery in regulating private sector activities in the energy sector; providing technical and financial support in reforestation projects for rapid-growth wood; providing technical know-how in the development of alternative sources of energy such as biomass, geothermal and solar energy; and monitoring and revising the implementation of the Sixth Plan concerning energy policy. Of the four aforementioned areas, the Canadian private sector

was present in the first three areas. Among these areas, the Canadian presence was in petroleum, lignite-mineral exploration, and electricity sub-sectors.

The objective of the Basic Services Development program was to improve and expand the basic services of the country, to support the development of the production, marketing and export systems while dispersing prosperity into regional and rural areas. The RTG stated that land transportation and telephone services of the country were still of low quality and insufficient supply. Such problems must be dealt with in the Sixth Plan. Canadian projects, therefore, went to help Thailand to raise the quality level of basic services, essential to the structural adjustment of the economy, trade, tourism, and to the expansion of urban and rural communities and the new economic zones. Such services were to act as a catalyst to the dispersal of economic activity and growth to regional and rural areas.

The RTG's Strategy: Improve Production and Market System

Fitted with the RTG's strategy to improve production and market system is the Production, Marketing, and Employment Development program. This program was designed to strengthen the production and marketing structure of the country and had the related objective of alleviating the main economic problems of the country, unemployment, and poverty among the rural population.

Technology transfer projects from the Canadian private sector which fell into this program were mainly in manufacturing with a few in the animal husbandry sector, and consultancy services that had to do with production. Canadian technology transfer projects impact on many elements of the program: employment creation; promotion of diversification of agricultural products; increased income for farmers; slow the flow of rural migration into Bangkok; improve quality standards; and export promotion and earnings, nevertheless with certain market restrictions (see Table 7 in Chapter VII).

All manufacturing projects, including the animal husbandry-shrimp production project, located their operations in the designated economic/investment zones. Quite a few firms chose to locate in certain investment zones due to the attached incentives. This actually helped to slow down rural migration into Bangkok. More importantly, many firms created employment for the rural poor and young university graduates of Thailand to work in manufacturing plants and in administrative positions, respectively. With respect to the impact on exports, the majority of products made in Thailand from Canadian technologies were for export with some domestic distribution. This would contribute to export earnings of Thailand in the long run. However, because of certain market restrictions as presented in Table 7, Chapter VII, Thailand would remain subordinate to Canada with regards to the use of the technology transferred to its full potential and

advantages.

IMPACT OF DONOR AND RECIPIENT POLICIES

In the context of the research hypotheses, quantitative and qualitative results are compared with the hypotheses. The relationship between technology transfer and the donor's and the recipient's policies was explored using regression analyses. Two separate models were developed to test each of the hypotheses. The variables utilized in both models were measured in Part B of the interview schedule. Respondents were asked to rate factors influencing each of their technology transfer projects on a scale of 1 to 5, where 1 represents no influence, 2 and 3 represent uncertain, and 4 and 5 represent full influence. The average ratings were calculated for each of the variables concerned, and for each sample firm. Regression analyses were employed using these numerical data.

Project Delivery and Policies Reflection

With respect to the first regression model developed to test hypothesis 1, "Project delivery is related more to policies of the donor country than those of the recipient country", the dependent variable was the number of project implemented, and the independent variables were CIDA policies, and Thai policies. The regression model and its results are as follows:

$$T_t = \beta_0 + \beta_1 T_p + \beta_2 C_p;$$

where T_t = technology transfer
 T_p = influence of Thai policies
 C_p = influence of CIDA policies

TABLE 1
 SUMMARY OF REGRESSION RESULTS FOR HYPOTHESIS 1

Variables	Coefficient	Standard Error	Significance
THPOL	.651	.294	.0547
CIDPOL	-.853	.303	.0203
Constant	1.733	1.297	.2144
$R^2 = .55$	$F = 5.64$	Signif $F = .025$	$n = 12$

The regression results, as outlines in Table 1, indicate that the major variable influencing the transfer of technology is the policies of the recipient country. The results do not support the hypothesis that project delivery is related more to policies of the donor country than those of the recipient country. Summary of regression results indicates that recipient policies are the driving force of technology transfer (significance level of Thai policies .0547). The results further indicate that Thai policies have a positive effect on the Canadian private sector project delivery (coefficient .651). Although CIDA policies showed significant contribution to project delivery (significance level of CIDA policies .0203), they, at the same time, have a negative

effect on the Canadian private sector project delivery (coefficient $-.853$). Due to the aforementioned results, the hypothesis, is rejected. However, due to the small data set used in this analysis, these results should be interpreted cautiously. The only way to establish whether these results are indeed so is to repeat the study with a different or larger data set. Nevertheless, qualitative analysis does lend support to the thesis that the transfer of technology is influenced more by Thai policies or incentives. As indicated by government respondent and discussed in previous section, the Canadian private sector was required to prove the merits of their INC project and the developmental impact that their project would bring about in order to receive financial assistance. Donor policies were presented as "reactive" policies responding to the needs of the recipient country. As for non INC projects, company respondents indicated that their projects had to be responding to the immediate needs/priorities of the recipient country in order to get support from the recipient government. Policies of the recipient country cannot be ignored. Majority of sample firms monitored the needs of the recipient country at all times to see whether their firms' capabilities matched with the needs of the recipient country. They regarded recipient policies as the factor that influenced their technology transfer projects the most.

The negative effect of CIDA policies on project delivery,

evident in the regression results, can also be supported by qualitative analysis. As presented in the preceding chapter, several sample firms stated that they had difficulty in complying with all of the CIDA INC objectives. The negative effect of CIDA INC policies on project delivery is, perhaps, better explained by one respondent's comment. He maintained that the stringent requirements and conditionalities imposed by CIDA INC "just quickly destroy the positive effects of the program".

Impact of the Recipient's Incentives

The impact of the recipient country's incentives on technology transfer was assessed using the following regression model:

$$T_t = \beta_0 + \beta_1 B_{inc}i$$

where T_t = technology transfer
 B_{inc} = influence of BOI incentives

The dependent variable was the number of projects implemented and the independent variable was the BOI incentives. The results of this regression analysis is presented in Table 2.

TABLE 2
SUMMARY OF REGRESSION RESULTS FOR HYPOTHESIS 2

Variable	Coefficient	Standard Error	Significance
BOIIN	.677	.272	.0322
Constant	.245	.847	.7779
$R^2 = .38$	$F = 6.17$	Signif F = .0322	n = 12

Hypothesis 2, "The incentives aspect of the Thai plan has a positive impact on the Canadian private sector's decision to transfer its technology to Thailand", is clearly supported by the regression results in Table 2 (significance level .0322). Qualitative results also lend support to this hypothesis.

As discussed in the preceding section, the majority of respondents that were eligible for BOI incentives indicated that BOI incentives positively impacted their decision to transfer. The respondents concerned stated that BOI incentives helped reduce the costs involved with the transfer a great deal in addition to allowing them to own properties in Thailand. The tax concessions made it easier and less risky for sample firms to consider investing in Thailand since they were never certain how efficient their operations would be in the beginning. Initially, the tax incentives gave them added leeway. Qualitative results further indicated that the limited partnerships policy along with the 1989 investment-zone policy attracted the majority of sample firms to invest

in Thailand, and/or relocate their operations/ businesses in the investment zones because of the added incentives.

IX. CONCLUSIONS

Conclusions will be presented followed by benefits and limitations of the research. Implications of the research for the donor and the recipient governments, the donor country's private sector, and researchers will be discussed at the end of the chapter.

Two hypotheses and specific research questions were developed to examine the extent to which donor's and recipient's national policies affect technology transfer in terms of the recipient's developmental needs and priorities. The results of the research provide evidence to conclude that technology transfer projects from the Canadian private sector have relevance to the needs/priorities of the recipient country. Moreover, in accordance with the objectives of the Economic Agreement between the donor and the recipient countries, the collaborations between the Canadian private sector and the recipient organizations can be beneficial to both sides.

As evident in this research, the overall Canadian aid strategy is reflected in CIDA INC's strategy, that of an aid cum trade approach. The CIDA INC's development objective is, therefore, coupled with trade objective. Nonetheless, CIDA INC's development assistance proves relevant to the recipient country's needs. Notwithstanding the relevance of CIDA INC's development assistance, improvement can be had. The Canadian private sector has expressed its opinions concerning the

stringent requirements and the stiffness of specific developmental issues. These ought to be looked into if Canada is to compete with other donor countries in getting its fair share.

Evident also is that the direction of technology, trade, and investment exchanges are undeniably and heavily influenced by government policies. These national policies directly determine the type, scope, and trend of technology transfer in one way or another. Specific to the extent to which national policies affect technology transfer, results indicate that: 1) donor's policies influence technology transfer by way of financial support; and 2) recipient policies play a powerful and influential role in the transfer.

Although the donor's policies mainly influence technology transfer by way of financial support, results further indicate that CIDA INC funding, nevertheless, is necessary. The majority of projects would have been cancelled entirely without the INC funding because the Canadian private sector could not have afforded to bear the total costs alone due to its limited funds in the case of small- and medium-size firms. In the case of engineering firms, they would lose their ability to successfully compete with other donor countries' firms without the INC funding.

With respect to the powerful role of the recipient's policies and the relevance of Canadian technology to the recipient's needs, as evident in this study, results

demonstrate that in order to get support from either the recipient government in cases of non-INC projects, or both the donor and the recipient governments in cases of CIDA INC projects, the Canadian private sector takes the immediate needs/priorities of the recipient country into full consideration when drawing up its proposals/business plans. Relevance of Canadian technology transfer to the needs of the recipient country does not come by chance. Such relevance, as a matter of fact, comes from the Canadian private sector's initiative in matching Canadian capabilities with the recipient country's development priorities, which are spelled out in the Sixth Plan, and the BOI investment guide.

The results of this study further indicate that the incentives aspect of the Thai Plan has a positive impact on the Canadian private sector's decision to transfer its technology on Thailand. The BOI incentives helped reduce the costs involved with the transfer which, in turn, made it easier and less risky for the Canadian private sector to consider investing in the recipient country. Not only does the incentives have a positive impact, the BOI incentives can also dictate the location of operation and the scope of the technology transferred to Thailand.

At present, Thailand has now achieved her NIC status. This, however, does not mean that Thailand no longer needs assistance from the developed countries. The new NIC status is evident only in Bangkok and a few major cities.

Unemployment and poverty still persist in many regions of Thailand (Government of Thailand, 1991). Physical infrastructure, still, is much needed to facilitate the growth of the country. Moreover, CIDA Bilateral program for Thailand will soon cease. And, Canada has the technology and capabilities that match the recipient's needs. These factors provide all the more reason for the Canadian government to focus its attention on CIDA INC program for Thailand at least during the Seventh Plan period.

In conclusion, national policies of both the donor and the recipient countries play significant, however individualistic, roles in technology transfer. With the influence of government policies, Canadian technology has indubitably assisted the recipient country in her path to achieve the Newly Industrialized Country status.

BENEFITS AND LIMITATIONS

Kiggundu (1989) asserts that studies within development administration often lack local focus, since most of the authors do not have a direct connection with the developing country where the studies were conducted. Kiggundu (1989) defines such studies as extractive research. Jorgensen et al. (1986), after having classified ninety-one articles in the area of development administration according to the author's name and institutional affiliation, discovered that three-fifths of the coded articles did not have direct connections

with the developing countries. From such an assertion, potential extractive research problems are evident: 1) regarding their needs and interests, the studies offered little or no direct benefit to developing countries (Kiggundu, 1985); and 2) little evidence suggested that results of the large sample of studies were fed back to the participating organizations or countries (Kiggundu, 1989).

The proposed research attempts to examine the direct impact/outcome of the transfer of technology upon the developmental needs of a developing country, and, in the process, hopes to overcome extractive research problems. At a theoretical level, the research will contribute to development literature as it takes the needs of the developing country into consideration which the literature has often overlooked. Moreover, CIDA INC has expressed interest in the research and is eager to see the results. Therefore, at a practical level, the study evaluates directly the impact and the outcome of Canadian transfer of technology on the developing country's needs.

The major limitation of this study is believed to be the non-random selection of participants. This study focuses only on companies transferring their technologies through the CIDA INC program. The selected sample nevertheless is deemed relevant since Canadian involvement has been predominantly based on Canada's provision of official development assistance programs (Rahman and Balcome, 1987). While recognizing that

other companies in the private sector were potential participants of this study, time and financial constraints did not permit investigating companies that had not received the INC funding.

Another limitation is that this research is restricted to just Thailand and Canada. Generalizations which can be drawn for other developing countries are limited to those countries which have similar development plans, provide similar tax incentives as Thailand does, and are eligible to receive Canadian assistance. The object of the study, however, is not to establish its generalizability to other situations, but to study the developmental impact/outcome of the transfer of technology in one particular developing country setting.

IMPLICATIONS

Implications for the Donor and the Recipient Governments

The findings from this research add insights into the type and nature of support that can be further provided by the governments to foster development and business linkages between Thailand and Canada.

As evident in this research, the CIDA INC-IC program proved to be effective in fostering business linkages at the same time as helping the recipient country with her transition from an agricultural to a newly industrialized nation. The

Canadian government has played a catalytic role in providing momentum to the Canadian-Thai economic cooperation. However, the present supportive role of the donor government, that of a financial supporter, can be further increased to include an informative role as well. The majority of respondents, as first time technology transferrers, indicated that their business negotiations took a great deal of time. They all attributed this difficulty to a lack of knowledge concerning the recipient's business culture. This is where CIDA INC should act as an informant and provide further support to the Canadian private sector. At present, CIDA provides briefings concerning cross-cultural communication and an introduction to business culture specific for each recipient country to Canadian businessmen and officers in CIDA Bilateral programs. This type of briefing or at least a brochure with some "do's and don'ts" for each recipient country, as an introduction to the recipient's business culture, can be useful to the CIDA INC-IC program as well. The dissemination of information may seem an onerous task for CIDA INC. This information, however, would help speed up the negotiation process, and decrease the Canadian private sector's likelihood of aborting the project, should communication problems persist too long.

With respect to the implications for the recipient government, the findings indicate that incentives of the Thai Board of Investment have an influential effect on the Canadian private sector's decision to transfer its technology to

Thailand. Further investigations indicate that: 1) the private sector usually has to resort to the BOI one stop centre in Bangkok to obtain information; and 2) although there are investment officers located at the Royal Thai Embassy in Ottawa, and at a separate Office of the Thai Commercial Counsellor in Ottawa, should there be any specific investment question and/or inquiry, the Canadian private sector is directed to the Thai Board of Investment in New York. This is due to the fact that the two RTG's representatives do not have direct authority in investment matters, although one has the title of "investment officer", and the other, "commercial officer".

Moreover, the Canadian private sector has little knowledge about the two aforementioned representatives. The thesis provides evidence that the Canadian private sector has capabilities that match the needs of Thailand. The RTG should make more efforts to further foster Canadian technology transfer. The RTG's commercial and investment representatives in Ottawa should act as BOI representatives as well.

Implications for the Canadian Private Sector

The findings and discussions in this thesis may provide benefits to the Canadian private sector. First, the results capture the Canadian private sector's presence in the Thai economy, and discuss the imperative of Canadian presence in Southeast Asia, particularly within the Indochina region, in

this decade and the decade to come. These findings may serve as an encouragement to the business community to follow suit.

Second, respondents, particularly first time transferrers, and/or those from small and medium size firms, have requested research results. Some had difficulty in their business negotiation and they wish to find out how others went about in their transfers. Therefore, this research could be helpful to the business community in pointing out potential pitfalls in technology transfer. This research provided answers to questions that the Canadian private sector often asked concerning: the type of business collaboration with the recipient country which would be best suited to first-time technology transfer project; and the success factors of technology transfer project activities.

Third, the research places Canadian capabilities into sectors and programs of the recipient's national plan. This clearly shows recipient programs that: 1) are relevant to Canadian capabilities; and 2) will continue to receive support from the recipient government in the Seventh Plan (1992-1996). As a matter of fact, infrastructure and labour shortages, and too little expansion of the agricultural sector continue to trouble the Thai economy in the Seventh Plan (Government of Thailand, 1991). The recipient's priorities in alleviating the aforementioned problems, as apparent in this research, match well with Canadian technology and capabilities.

Implications for Further Research

This thesis attempted to examine the extent to which donor's and recipient's national policies affect technology transfer, and the relevance of such transfer on the needs/priorities of the recipient country. As such, much insight has been gained into the impact of the donor's and the recipient's policies, as well as the contribution made by the donor country's private sector with regards to development. Nonetheless, due to the objectives of this study and the small sample size used in this research, further research involving large sample size should be undertaken. Other donor government's programs which involved the private sector should be explored. A large scale of study is necessary if one is to capture the complete picture of the impact of the donor's involvement in the recipient country, Thailand.

Moreover, in order to capture a complete picture of the impact of donor policies, further research should: 1) cut across countries that are eligible for the donor country's assistance; 2) explore other donor programs involving technology transfer; and 3) consider the long-term impact of technology transfer projects.

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APPENDIX 1: IC PROGRAM CRITERIA

From the Canadian perspective

1. The capacity of the Canadian private sector to carry out a project, and the appropriateness of the activity to the long-term interests of the Canadian economy. Priority attention will be given to sectors in which Canada has, and must maintain, competitive standing internationally.
2. All types of business collaborations in developing countries which entail ongoing, mutually beneficial involvement by both sides. These will include, inter alia, joint ventures, direct investments, management contracts, licensing arrangements, and production sharing agreements, excluding marketing arrangements for the sales of Canadian produced goods in overseas markets.
3. Where possible, Canadian involvement will be long-term. Short-term activities may include the possibility of long-term relationships and related activities.
4. The program is available to Canadian business and industry defined as businessmen, proprietorships, partnerships, and limited companies subject to Canadian law. The primary focus of the program will be on medium and smaller Canadian firms, with preference given to companies which beneficially owned in Canada. Non-Canadian companies seeking assistance will be required to explain in detail the long-term benefits to Canada which would evolve from the program activity.
5. The program will not benefit directly interests of other developed countries, except in cases where the benefits to Canada are significant enough to warrant such action.

From the LDC perspective

The following factors are used as a guide in selecting projects in order to ensure that the help given is according to the LDC's expressed needs and plans, and that such projects have developmental value:

1. increase and strengthen the productive capacity of the country and encourage self-reliance;
2. be economically and technically viable;
3. be as labour intensive as possible, reflecting the employment policies of the recipient country;

4. contribute to the upgrading of technical and managerial skills;
5. make the greatest use of local raw materials;
6. cater to the widest domestic market;
7. contribute to the balanced growth of industry; and
8. have export potential.

Source: Government of Canada, 1986, Annex A, pp. 5-6.

APPENDIX 2: THE SIXTH PLAN

Two Objectives/Targets

- I. Economic: at least 5% growth to absorb 3.9 million new labour force.
 - II. Social: improve quality of life.
-

Three Strategies

- I. **INCREASE EFFICIENCY IN DEVELOPMENT USING VARIOUS TOOLS AND MECHANISMS AND RATIONALIZE THE ROLE OF PUBLIC AND PRIVATE SECTORS IN DEVELOPMENT**

6 PROGRAMS:

1. **Overall Economic Development Program**
Financial management to ensure growth and stability, improve tax structure, mobilize savings and encourage development of high priority areas through fiscal and monetary measures.
2. **Human and Social Development Program**
Improve the quality of life and develop human resources through the promotion of private sector and community participation as well as increasing the cost-effectiveness of the government's social services.
3. **Natural Resources and Environmental Development Program**
Integrated approach in the management of natural resources and environment to ensure efficient and appropriate development, and minimizing conflict.
4. **Science and Technology Development Program**
Strengthen science and technology capability as a basis for future competitiveness. Utilize science and technology to support development by developing an efficient program for research and development, transfer of technology, and human resource development.
5. **Development Management and the State's Role**
Develop and improve the management system of government programs and tools: information; law; and government services to facilitate private-sector-led development. Emphasize close co-operation between public and private sectors.
6. **State Enterprise Development Program**
Increase efficiency in operations and encourage privatization. Diversify production and market in line with market demand and resource endowment as well as improve development management system to be more fully

integrated.

II. RESTRUCTURE PRODUCTION AND MARKET SYSTEM/QUALITY OF SERVICES

2 PROGRAMS:

1. **Production, Marketing, and Employment Development Program**
To reduce risks and production costs and to increase income and foreign exchange through the restructuring of production and marketing system.
2. **Basic services Development Program**
Maximize the utilization of existing infrastructures, and develop new infrastructure and basic services, particularly the "missing link" to facilitate development. Design new development program in line with the overall financial constraint by promoting the role of private sector in providing basic services.
To distribute propensity to the regional areas and create fairness in society giving emphasis to the efficient management of urban and rural areas.

III. DISTRIBUTION OF INCOME AND PROSPERITY

2 PROGRAMS:

1. **Urban and Special Zones Development Program**
Efficient management in the development of the urban and specific zones/areas to absorb population and urban growth, and to become the catalyst for future development by using infrastructural programming as a framework for urban expansion. Rationalize the role of the central government, local government, and private sector.
2. **Rural Development Program**
Improve rural management system to cover all rural areas, aiming at the alleviation of rural poverty, improve quality of life, create employment, and ensure security in line with specific problems and opportunities in each area. The development system will be an integrated effort between the public sector, the private sector, and the local community to lead to a more self-help basis.

APPENDIX 3: COMPANY INTERVIEW SCHEDULE**PART A: CANADIAN COMPANY & RECIPIENT COMPANY INFORMATION**

1. Name of company/organization (Canada)

2. Address and Telephone no. of company

Tel. () _____
3. Type of business

4. Title and functional specialization of interviewee

5. Current CIDA INC project type (Please select)
 1. Canadian Technology Transfer Facility (CTTF)
 2. Canadian Project Preparation Facility (CPPF)
 3. Canadian Project Support Facility (CPSF)
 4. Technical Support
 5. Project Support
 6. Seminars/Workshops and Meetings
 7. Information Analysis and Dissemination
 8. Canadian Renewable Energy Facility (CREF)
 9. Industrial Development Services
 10. Other (Please specify) _____
6. What type of technology has been transferred to the recipient company in Thailand? _____
7. What type of business collaboration do your projects fall under? _____
8. Name of recipient company in Thailand

9. Address and telephone no. of recipient company

Tel. _____
10. Type of recipient business

11. Primary contact name of recipient company

PART B: CIDA INC PROJECT AND ITS DEVELOPMENTAL IMPACT

12. When was the current CIDA INC project for Thailand signed/approved? _____
13. Has the current transfer of technology project been completed? Yes _____ No _____
 If **yes**, specify date of completion _____
 If **no**, specify expected completion date _____
14. Between 1987-1991 how many transfer of technology projects to Thailand have resulted from the your initial INC funding?
 Also, specify type of technology and type of business collaboration for each project.
- 1987: _____ projects
 Technology type: _____ & Business type: _____
- 1988: _____ projects
 Technology type: _____ & Business type: _____
- 1989: _____ projects
 Technology type: _____ & Business type: _____
- 1990: _____ projects
 Technology type: _____ & Business type: _____
- 1991: _____ projects
 Technology type: _____ & Business type: _____
15. Was the current project supported by CIDA INC a riskier venture than most other transfer of technology project for your company?
 Yes _____ No _____
- Your reason for the CIDA INC funding was: (Please select & explain briefly)
1. lead time
 2. front-end costs
 3. probability of success
 4. unfamiliarity with Thailand
 5. large scale of project for your company
16. Would you have proceeded with the current project without the INC funding? (Please select and explain the reason)
 1. Yes, proceeded 2. No 3. Undecided
 Reason _____
17. Without the INC funding, you would:
 (Please select one)
1. cancelled the project entirely;
 2. proceeded in part at a smaller scale;
 How much smaller in percentage terms?
 Enter percentage (eg. 75%) _____%
 3. proceeded according to the approved project;
 4. proceeded with this project but scaled down your

other business opportunity identification ventures
in developing countries.

18. What are the main factors which have affected the success or lack of success of the current project activities? (Please elaborate)
19. For the current project:
 1. the average amount of the INC funding is Can\$ _____;
 2. the average expense incurred, including the INC funding is Can\$ _____.
20. At the time of your application for INC funding, how large was your organization in terms of:
 - * total employment
 - no. of full time employees _____
 - no. of part time employees _____
 - * annual dollar sales
 - Can \$ _____
21. What would you say is CIDA INC development objective for Thailand? (Please explain)
22. How does your company's transfer of technology help CIDA INC attain its development objective? (Please explain)
23. In your proposal, how did you present technology transfer as an aspect of your project, how was it describe and why did you include it in this way? (Please explain briefly)
24. In your proposal, what are the perceived economic and social benefits to the host country from your transfer of technology? (Please explain)
25. What benefits have actually resulted for Canada and Thailand? (Please explain)
26. How much influence did each of these factors have on your technology transfer projects? (Please select and comment)

	no influence	uncertain	full influence	
a) CIDA INC's policies	1	2	3	4 5
b) Thai policies	1	2	3	4 5
c) penetration into Thai market	1	2	3	4 5

d) sales of your technology	1	2	3	4	5
e) low labour cost in Thailand	1	2	3	4	5
f) Thai BOI's pricing incentives	1	2	3	4	5

27. For your projects, what developmental outcome(s) for Thailand has/have resulted from your company's transfer of technology and to what extent? (Please select and fill in appropriate ones)

- 1) Create temporary or permanent employment for Thais, temporary _____ / permanent _____
- 2) Reduce production costs, by how much?
Can \$ _____ & in percentage term _____ %
- 3) Generate foreign exchange through export promotion, how much? Can \$ _____
- 4) Support Thailand's resource development
- 5) Allow efficiency in the management of natural resources and/or environment (e.g.) ecological impact)
Type of impact _____
- 6) Diversify production and market in line with market demand and resource endowment
Type of production _____
Type of resource _____
- 7) Maximize the utilization of existing infrastructure
Type of infrastructure _____
- 8) Develop new infrastructure
Type of infrastructure _____
- 9) Conserve energy or replace imported energy supplies
- 10) Establish or develop industry which form the base for further stages of industrial development
- 11) Develop science and technology base and/or provide education for a more technically-based economy
- 12) Locate operation within one of the following zones:
 - a) Zone 1 - Bangkok, Samut Prakarn, Samut Sakhon, Nakhon Pathom, Nonthaburi, or Pathum Thani;
 - b) Zone 2 - Samut Songkhram, Ratchaburi, Kanchanaburi, Suphan Buri, Ang Thong, Ayutthaya, Saraburi, Nakhon Nayok, Chachoengsao, or Chon Buri;
 - c) Zone 3 - Laem Chabang or Map ta Phut Industrial Estates.

PART C: THAI POLICY

28. Are you aware of Thai National Policy, specifically the Sixth National Economic and Social Development Plan?

(Please select one)

1. Yes
2. No
3. Uncertain

If your **answer** is either 1 or 3, to what extent does the Sixth Plan play a role in your transfer of technology?
(Please select)

Play no role	Uncertain	Play full role
1	2 3	4 5

If your scale ≥ 3 , please explain how does the Plan play the role? _____

29. Your technology transfer projects fall into which of the following industries? (Please select)

- a) agriculture
- b) animal husbandry
- c) fishery
- d) mineral exploration and mining
- e) manufacturing
- f) service sector

What type of service does your technology belong to?

30. Are you aware of Board of Investment of Thailand (BOI)?
(Please select one)

1. Yes
2. No
3. Uncertain

If your **answer** is 1 or 3, in what way did BOI criteria for approving investment promotion and providing tax privileges influence the technology transfer content in your project?
(please explain) _____

If the **answer** = 2, go to question 32.

31. What type of incentives offered by BOI attracted you to invest in Thailand? (Please specify)

32. Which of the following BOI criteria for investment relate to your projects?
(Select as many as you deem applicable)

Criteria for Investment Promotion:

- 1) size of the market demand for product, commodity or service;
- 2) low production cost;
- 3) use of modern machinery and production processes and new equipment;

Criteria for Joint Ventures:

- 4) production is mainly for domestic distribution;
- 5) investment project either in agriculture, animal husbandry, fishery, mineral exploration and mining or in the service sector;
- 6) at least 50% of the output is for export;

Criteria for Investment Promotion Zones:

- 7) location of operation within either zone 1, 2 or 3;

Criteria for Export-oriented Projects:

- 8) Is your project mainly producing for export?
 Yes _____ No _____
 How many percent of your production is for export?
 _____ %

33. What were your reasons for selecting Thailand other than other ASEAN and SOUTHEAST ASIAN countries as a recipient of your technology?

PART D: AGREEMENT BETWEEN CANADIAN & RECIPIENT COMPANIES

34. Please select **yes** or **no** to the following restrictions:

a) market Restrictions		
absolutely no export of product	Yes ___	No ___
export to certain countries only	Yes ___	No ___
export allow on permit only	Yes ___	No ___
other	Yes ___	No ___
b) sales agents selected by owner of technology	Yes ___	No ___
c) price of output set by owner of technology	Yes ___	No ___
d) selling of intermediate product needs permit from owner of technology	Yes ___	No ___

- e) prohibition of partners producing competing products Yes ☐ No ☐
- f) machinery can only be bought from owner of technology Yes ☐ No ☐
- g) raw materials and intermediate products must be bought from owner of technology Yes ☐ No ☐
- h) the technology must be kept secret Yes ☐ No ☐
35. Do you have any other comment concerning the INC program, the policy of the Thai government and/or investing in Thailand?

End of interview. Thank participant.

APPENDIX 4: GOVERNMENT INTERVIEW SCHEDULE

PART A: CIDA INC PROJECTS

1. Which type of projects do transfer of technology to Thailand under, and what are the minimum and the maximum INC contributions under each type of projects?
(Select as many as you deem applicable)
 - 1 Canadian Technology Transfer Facility (CTTF)
Min. Can \$ _____ Max. Can \$ _____
 - 2 Canadian Project Preparation Facility (CPPF)
Min. Can \$ _____ Max. Can \$ _____
 - 3 Canadian Project Support Facility (CPSF)
Min. Can \$ _____ Max. Can \$ _____
 - 4 Technical Support
Min. Can \$ _____ Max. Can \$ _____
 - 5 Project Support
Min. Can \$ _____ Max. Can \$ _____
 - 6 Seminars/Workshops and Meetings
Min. Can \$ _____ Max. Can \$ _____
 - 7 Information Analysis and Dissemination
Min. Can \$ _____ Max. Can \$ _____
 - 8 Canadian Renewable Energy Facility (CREF)
Min. Can \$ _____ Max. Can \$ _____
 - 9 Industrial Development Services
Min. Can \$ _____ Max. Can \$ _____
 - 10 Starter Study
Min. Can \$ _____ Max. Can \$ _____
 - 11 Viability Study
Min. Can \$ _____ Max. Can \$ _____
 - 12 Other (please Specify) _____
Min. Can \$ _____ Max. Can \$ _____
2. What types of technologies are transferred to Thailand?
3. What types of business collaborations do technology transfer projects through the INC funding fall under?
4. What types of businesses are Canadian private sector that received the INC funding from?
5. During the 1987-1991 period, how many transfer of technology projects to Thailand have been submitted?
And how many were approved? _____
6. How many of those approved projects (in question 5) have been completed? _____
7. How many incomplete projects (in question 5) are expected to be completed by the year 1992? _____

8. In each of these provinces, please state the number of companies these provinces that are involved with transfer of technology projects to Thailand during the 1987-1991 period:
British Columbia:	no. of companies	_____
Alberta:	no. of companies	_____
Saskatchewan:	no. of companies	_____
Manitoba:	no. of companies	_____
Ontario:	no. of companies	_____
Quebec:	no. of companies	_____
New Brunswick:	no. of companies	_____
Nova Scotia:	no. of companies	_____
Newfoundland:	no. of companies	_____
Yukon:	no. of companies	_____
9. In most cases, what were two major reasons for companies applying for the INC funding to transfer their technologies to Thailand?
10. In most of the INC funded projects for Thailand, had Canadian companies been involved in business collaboration(s) with Thai companies before the initial INC project?
 Yes _____ No _____
11. In percentage term, what is the proportion of the IC funding for Thailand to the total IC funding available in each of these years?
1987	_____ %
1988	_____ %
1989	_____ %
1990	_____ %
1991	_____ %

PART B: DEVELOPMENTAL IMPACT

12. What is CIDA INC development objective for Thailand?
 (Please explain)
13. How does CIDA INC development objective for Thailand fit in with CIDA's stated aim/objective - "to help the poorest of the poor"? (Please elaborate)
14. Do you believe Canadian private sector has helped CIDA INC attain its development objective? (Please select and elaborate)
 Yes _____ No _____

15. Do you believe Canadian private sector's transfers of technology have actually resulted in developmental and social benefits for Thailand as indicated in their INC proposals in most cases? (Please select and elaborate)

Yes _____ No _____

Do you have any other comments regarding development impact/objective?

PART C: THAI NATIONAL PLAN

16. Are you aware of Thai National Policy, specifically the Sixth National Economic and Social Development Plan?

Yes _____ No _____ Uncertain _____

If **yes**, does the Sixth Plan play a role in CIDA INC strategy with regards to its development objective for Thailand,

Yes _____ No _____ Uncertain _____

in what way? (Please elaborate) _____

17. CIDA INC transfer of technology projects during the 1987-1991 period fall under the following industries:
(Select as many as you deem applicable)

- a) agriculture;
- b) animal husbandry;
- c) fishery;
- d) mineral exploration and mining;
- e) manufacturing;
- f) service sector

18. Do CIDA INC technology transfer projects consider the investment and tax privileges criteria of Board of investment of Thailand (BOI)?

Yes _____ No _____

If **yes**, do BOI criteria for approving investment promotion and providing tax privileges in line with the Sixth Plan impact on CIDA INC transfer of technology projects?

Yes _____ No _____

In what way? (please explain) _____

19. Which of the following impacts stated by the BOI policy is/are relevant to CIDA INC development objective for Thailand?
(Select as many as you deem applicable)

CIDA INC transfer of technology projects:

- a) significantly strengthen the balance of payments, especially through export production;
- b) support Thailand's resource development;
- c) substantially increase local employment;
- d) locate operations within the investment promotion zone
- e) conserve energy or replace imported energy supplies;
- f) establish or develop industries which form the base for further stages of industrial development; and/or
- g) are considered important and necessary by the Thai government.

20. How much influence did each of these factors have on CIDA INC technology transfer projects? (Please select and comment)

	no influence	uncertain		full influence	
a) CIDA INC's policies	1	2	3	4	5
b) Thai policies	1	2	3	4	5
c) penetration into Thai market	1	2	3	4	5
d) sales of your technology	1	2	3	4	5
e) low labour cost in Thailand	1	2	3	4	5
f) Thai BOI's pricing incentives	1	2	3	4	5

Do you have any other comment concerning: the IC program and its developmental impact on Thailand; and the IC program and the Canadian private sector involvement?

End of interview. Thank participant.

APPENDIX 5: THAI GOVERNMENT'S SOCIAL INDICATORS

The following social indicators were used during the Sixth Plan (1987-1991) to measure and analyze the impact of the RTG's programs:

1. **Population**
 - 1.1 Birth rate (per 1,000 population)
 - 1.2 Death Rate (per 1,000 population)
 - 1.3 Natural population increase (%)
 - 1.4 General fertility rate (per 1,000 productive women)
 - 1.5 Dependency rate (%)
2. **Public Health**
 - 2.1 Maternal Mortality rate (for 1,000 livebirths)
 - 2.2 Death rate of children under 5 years of age (per 1,000 population in specific age group)
 - 2.3 Death rate from preventive diseases (per 1,000,000 population)
 - 2.4 Malnutrition rate in infants and pre-school children aged 0-5 years
 - First degree (%)
 - Second degree (%)
 - Third degree (%)
 - 2.5 Mental disorder patients (persons)
 - 2.6 Rate of suicide (per 100,000 population)
3. **Education**
 - 3.1 Enrolment and school-age population ratio
 - Primary (%)
 - Secondary (%)
 - Higher education (5)
 - 3.2 Percentage of population finishing education higher than compulsory level (%)
 - 3.3 Uneducated (%)
 - 3.4 Transitional rate to 1st year secondary (%)
4. **Socio-economic**
 - 4.1 Percentage change of Consumer Price Index (%)
 - 4.2 Per Capita Gross Regional Product (GRP) at current market prices (Baht)
 - 4.3 Rate of households with television set (%)
5. **Social Welfare**
 - 5.1 Number of clients receiving all kinds of welfare assistance (million persons)
 - 5.2 Number of low income patients receiving free services from government hospital (million persons)

- 6. **Labour and employment**
 - 6.1 Labour force (million persons)
 - 6.2 Unemployment (%)
 - 6.3 Rate of employed persons in agricultural sector (%)
 - 6.4 Rate of employed persons in non-agricultural sector (%)
- 7. **Safety in life and property**
 - 7.1 Offenses against criminal code (per 100,000 population)
 - 7.2 Offenses against all Act (per 100,000 population)
- 8. **Family institution**
 - 8.1 Number of family (million)
 - 8.2 Population per household (persons)
 - 8.3 Legitimate divorce rate (couples)

Source: Government of Thailand, 1990.

APPENDIX 6: LETTER CONFIRMING RESPONDENT PARTICIPATION

April ..., 1992

Respondent name
Address

Dear ...:

RE: Interview on Technology Transfer

With reference to our telephone conversation on April ..., 1992, the personal interview is scheduled on May ..., 1992 at ... a.m. at your office. Enclosed please find: 1) a copy of the interview schedule; and 2) an informed consent form. Since you may wish to prepare for the interview, I have taken the liberty to send you the interview schedule in advance. The informed consent form is sent as part of Carleton University and the Faculty of Graduate Studies and Research's formality. Kindly read through the informed consent so that you will be familiar with your rights as a participant of my research.

Your invaluable participation, time, and kind consideration are greatly appreciated. It was very nice to speak to you on the telephone. I look forward to meet you on the interview date.

Yours sincerely,

Natthinee (Nat) Dhanarajata

APPENDIX 7: INFORMED CONSENT FORM

Dear sir/madame:

I would like to take this opportunity to express my appreciation for agreeing to participate in my research. Please be informed that my research is a thesis requirement for the Master of Management (M.M.S.) program in the School of Business at Carleton University, and should you wish to contact me and/or my thesis supervisor, Professor David Cray, in the future, please feel free to do so at the following telephone numbers:

Natthinee (Nat) Dhanarajata	Tel. no.
Professor David Cray	Tel. no.

With regard to the interview, please be informed of the followings:

- 1) the duration of the interview will be approximately 1 to 1 1/2 hours;
- 2) questions posed are related to your transfer of technology project(s) to Thailand and CIDA INC funding;
- 3) you have the right to refrain from answering any questions you wish;
- 4) a complete confidentiality of your response will be maintained;
- 5) your response will be used only in an aggregate form for the thesis;
- 6) you have the right to access the summary of results of my thesis. Should you wish to obtain such summary, you may do so by contacting me at the above telephone number.

As a researcher, I acknowledge that you, the participant, will be treated in accordance with the ethical guidelines of Carleton University and the Ethics Committee and, hereby, provide you with the right of informed consent and the protection of anonymity in any use of the data.

Yours sincerely,

N. Dhanarajata
Researcher

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FIN