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INFORMATION FOR DEVELOPMENT: A CANADIAN PERSPECTIVE

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Canada's relationship with developing countries is characterized by long-standing and diverse linkages. From the Quebec missionaries travelling to parts of sub-Saharan Africa long before Confederation, to the influx of Chinese labourers who built the Canadian Pacific Railway during the 1880s, to Canadian participation in setting up the Colombo Plan (1950) for economic assistance to Commonwealth countries in Asia, Canada has had significant connections to the South (Head, 1991). More recently, Canada's principal involvements in the Third World have been as peacekeeper, trading partner, and, subsequent to the Colombo Plan, as a major participant in the field of international development. Since its creation by the Parliament of Canada in 1970, the International Development Research Centre (IDRC) has been an innovative part of Canada's development assistance program.

IDRC: A UNIQUE DEVELOPMENT AGENCY

IDRC has been described as "Canada's most imaginative initiative in the development field" (Lyon and Ismael 1976). IDRC's mandate is to assist the developing countries in utilizing science and technology, broadly defined, for the benefit of their populations. The international climate during the formative years of IDRC in the later 1960s was one of increasing recognition that, despite two decades of post-war international effort, the gap between developed and developing countries was widening. Moreover, it was recognized that there was a great imbalance between the amount of development-related research being done in the industrialized countries and the tiny amount carried out in the poorer countries, even though the latter had produced great dividends, e.g., the high-yield varieties of wheat and rice developed in Mexico and the Philippines.

In 1969, Lester B. Pearson, Prime Minister of Canada (1963-68), served as Chair of the World Bank Commission on International Development,¹ which undertook a reappraisal of approaches to international cooperation. The Commission identified the need for developing countries to lessen their dependence on technologies "conceived and produced outside their

¹ Subsequently, Pearson served as the first Chair of the IDRC Board of Governors. IDRC's Board is an independent, international body which sets the Centre's policies, and which, over the years, has attracted numerous distinguished scientists and development experts. Presently, eleven of the 21 members of the Board, including the Chair, are Canadian.

borders and without reference to their special needs" (Pearson 1969). The creation of IDRC was, therefore, a novel response to this challenge - a donor agency dedicated to stimulating and supporting research, especially research that would be designed and managed by the developing countries themselves in keeping with their own priorities and undertaken for their own benefit. The approach taken by Canada through its IDRC is still unique among the donor community.

In pursuit of its objectives to support development research and to strengthen indigenous research capacity, the most frequent mechanism adopted by IDRC has been the provision of cash grants to institutions in developing countries in support of specific projects. Since 1970, IDRC has allocated almost CAD 1 billion in support of over 5,000 research-related projects, i.e., applied, problem-oriented activities that have clearly identified their objectives, users, beneficiaries, methodology, timetable, outputs and future sustainability on conclusion of IDRC funding. Research projects are usually identified, designed, conducted, and managed by developing-country scientists in their own environments. This process ensures that the research undertaken and the solutions applied are appropriate for the circumstances of the countries, and that the experience and competence gained through the research activity benefit local researchers and remain in the country. Moreover, IDRC does not offer contract research; rather, it responds to requests for financial support from institutions that have identified a specific development problem and a methodology for addressing it, and are anxious to carry out the work. This distinction is significant as the concept of "ownership" by the developing-country institution is important for complying with local priorities, providing adequate local inputs, and helping to ensure that there will be local interest and follow-up. The role of IDRC may be as catalyst, facilitator, monitor, or co-financier; seldom is it the executor or supervisor of the projects it supports.

IDRC's funding is drawn largely from an annual grant provided by the Canadian Parliament. In 1993-94, this grant to IDRC was CAD 115 million. During the past several years, the grant has declined in real terms. Increasingly, however, IDRC is diversifying its financial base primarily by reinforcing and expanding linkages with other development-financing organizations in order to "leverage" project funding. Increased revenues will also be generated from publications, patents, software royalties, and by contracting out Centre staff and services. There may also be opportunities for private sector funding of commercialization phases arising out of successful research work.

"EMPOWERMENT THROUGH KNOWLEDGE": IDRC'S RESPONSE TO A CHANGING WORLD

During the past few years, the concept of global development has changed drastically in the context of tremendous transformations in international economic, social and political relations. These include factors such as a dramatically changed political environment (notably the collapse of communism and the end of the cold war); growth in social demands and consumption levels; the globalization of economic affairs; the content and direction of international trade (particularly the shift away from commodities toward high-technology services and manufactured products); the emergence of new technologies; and global shifts in socio-cultural value systems (Bezanson 1993). And, inevitably, interwoven throughout these transformations are the problems and opportunities presented by the evolving information society.

In an attempt to respond to these global changes, IDRC undertook, starting in 1990-91, a major review of how it could most effectively contribute to development in the 1990's. This process involved an examination of development trends and issues, the research priorities and infrastructure in developing countries, the pattern of donor funding of research for development, and the "comparative advantage" that IDRC might possess as derived from its mandate, structure, experience and resources. Emerging from this is IDRC's new mission, encapsulated as "Empowerment through Knowledge". It is predicated on the explicit relationship between knowledge and development, and in the conviction that empowerment, through creation and use of knowledge, is the key element in the development of nations, peoples, communities and individuals. Research provides the means for the generation and acquisition of appropriate knowledge and, hence, for development action.

IDRC AND THE EARTH SUMMIT

The United Nations Conference on Environment and Development (UNCED), or "Earth Summit", held in Brazil in June 1992 had a particularly significant impact on IDRC. One of UNCED's major achievements was the adoption of Agenda 21, an action plan on sustainable development as formulated by 178 developing and donor countries. It represents the first attempt to define a framework for global action to promote policies that are socially desirable, economically viable, and ecologically sound, thereby recognizing the profound interconnections between the economy, environment, poverty and development.

As one of its principal responses to Agenda 21, the Canadian government expanded the mandate of IDRC so that it might become one of the world's leading organizations in making sustainable development a reality. In the year following UNCED, IDRC underwent a programming shift in order to sharpen the focus of its strategy, and to respond effectively to the imperatives of Agenda 21. IDRC's range of programs was modified to strengthen the ones that promote sustainable and equitable development. In order to emphasize the environmental concerns, IDRC introduced six core themes directly linking environment and development: **Information and Communication for Environment and Development; Biodiversity; Food Systems under Stress; Health and Environment; Integrating Environmental, Social, and Economic Policy; and Technology and the Environment.** In addition, IDRC will provide support in several areas related more generally to sustainable and equitable development, including **Information Policy Research, and Information Capacity Building.** Already a number of significant UNCED-related information activities have been funded by IDRC; these include publication of the "Earth Summit CD-ROM (the first time this technology has been used to capture a UN conference), initiation of work on a multimedia "Electronic Atlas" to describe major Agenda 21 topics (in partnership with the Canada Centre for Remote Sensing), and a pilot project on a sustainable development information network (in partnership with UNDP).

IDRC implements the research programs through an organizational structure which combines geographical and disciplinary strengths. Head Office is located in Ottawa, but authority is also delegated to a network of seven regional offices located in Cairo, Dakar, Johannesburg, Montevideo, Nairobi, New Delhi, and Singapore. This regional presence permits a more sensitive response to the variety of needs and characteristics of the different regions of the world. At the same time, program staff in Ottawa are grouped into five specialist divisions: Environment and Natural Resources, Health Sciences, Social Sciences, Corporate Affairs and Initiatives, and Information Sciences and Systems. This helps ensure there is effective in-house technical expertise to review and monitor projects and programs.

IDRC AND INFORMATION FOR DEVELOPMENT

From its inception in 1970, IDRC has maintained a comprehensive approach to tackling development information problems, an approach that is still quite rare within the donor community. The mission statement for the Information Sciences and Systems (ISS) Division is "to stimulate measurable social and economic advancement by facilitating equitable, timely and

efficient access to scientific, technical and other knowledge, and by promoting its effective application to the problems of development." The program objectives of the ISS Division are presented in Figure 1.

Figure 1.

The objectives of the ISS program are to promote:

- **Better Access and Use of Information** – to bring about more equitable access to knowledge needed for development research and change through design and operation of sustainable information and communication systems, services, and networks that fully meet the needs of users.
- **Improved Collaboration** – to stimulate cooperation and coordination in development research and action by promoting exchange of information and experience.
- **Capacity-Building** – to build human and technical capacity within developing countries for effective management of information and application of knowledge.
- **Information Innovations** – to enable developing countries to benefit from applied research into problems of sharing and using knowledge for development, and on ways to improve and adapt appropriate systems, methods, and technologies.

Information is the basis of knowledge, and knowledge is the key to many of the complex challenges facing developing countries. Yet despite the familiar references to the emergence of the "information society" and its powerful impact in today's world, information problems and opportunities in developing countries remain relatively neglected. The challenge for IDRC is to enable developing countries to take full advantage of the information resources that are available – whether locally, nationally, or globally. They must have more equitable access and the opportunity to participate more effectively in the design and operation of information and communication systems and technologies that serve their needs. Investment in the information infrastructure of developing countries is directed not only towards information technology – the hardware and software – but also the human resources and skills, the policies and institutions, and the systems and services needed to manage, communicate, and use the information.

Over the years, the ISS Division has provided more than CAD 142 million of support to 662 projects in almost 100 countries. Most of the funds spent on information-related activities in earlier years were in direct support of sectoral research programs (e.g. education, cropping systems, water supply and sanitation), specialized information centres and libraries, communications networks, publications, and training; in addition, there was a small program

of research on information technologies and systems. A special compendium of papers describing different activities supported by the ISS Division was published on the occasion of IDRC's 20th anniversary (Akhtar 1990).

Certainly, there is still much to be done in these fields. However, the reviews undertaken by IDRC in recent years concluded that the impact of its funding could be increased by adopting a more focused approach that was more in keeping with IDRC's research mandate. Consequently, greater emphasis is now given to innovative projects that will research specific information problems, are likely to influence policy decisions, will involve developing countries more actively in technology research, can demonstrate direct positive effects on target groups, and provide selective capacity-building for institutions and individuals. Recent projects include, for example, research into the impact of information on development, studies on the sustainability of information services, linkages between indigenous knowledge and natural resources management, decentralized two-way information flows with rural populations, use of multimedia for presenting development issues to policy analysts, and designing geographical information systems to meet the needs of developing countries. Some additional projects are described in Figure 2. Projects such as these are expanding IDRC's horizons more systematically into development communications, gender research, expert systems and computer-based modelling, information technology policy research, and other areas that previously were seldom pursued. Criteria for project funding are summarized in the Annex.

In order to achieve its objectives while delivering support in IDRC's six core themes plus related programs, the ISS Division is organized into four groups. The **Information and Communication Technologies** group enables developing countries to carry out and/or benefit from applied research on new information and communication technologies. It supports the development, assessment, adaptation, testing, and transfer of technological innovations, as well as research on the social, economic, and political dimensions of their introduction. The **Information and Communication Systems and Networks** group supports innovations that will strengthen the ability of individuals, communities, and institutions to capture, process, communicate and use knowledge more effectively for sustainable development. The **Software Development and Applications** group builds capacity within developing countries to manage the software development process, and to provide an effective mechanism for increasing the availability of software products of practical application in the developing world. The **Program Coordination and Development** group is designed to strengthen overall integration of ISS

Figure 2. Illustrative projects funded by IDRC

GLOBESAR Radar Technology in Developing Countries (RADARSAT)

Canada is undertaking innovative research in remote-sensing imaging radar technology. This project, involving the Canada Centre for Remote Sensing of Energy, Mines and Resources Canada, will introduce this technology to several countries of Africa, the Middle-East, and Asia. The project will prepare the technological base necessary for the utilization and processing of data from the Canadian RADARSAT satellite. Research activities will cover the use of the technology for the assessment, monitoring and management of natural resources in fragile environments, an important concern for many developing countries. A significant feature of this project is that it enables these countries to have meaningful input into the development of the new technology.

Poisons Information Package for Developing Countries

In 1987, an IDRC-funded project involving World Health Organization, in collaboration with the Canadian Centre for Occupational Health and Safety in Hamilton and the Centre de Toxicologie du Québec in Quebec City aimed to develop an information package for the diagnosis and treatment of toxic substances. It comprised: a generic substances database containing monographs on chemicals, pharmaceuticals, plant and animal poisons; formats for producing national product files of chemical substances and poisoning case data files; and a list of basic reference documents for use in poisons information centres. Between 1987 and 1992, a network of approximately 30 collaborating national institutions was established. In September 1992, the initial version of the INTOX software was released; this software provides the capability for poisons information centres to create, update, and consult files on poisons and their management. A second phase of this project will promote the use of the INTOX software in developing countries, with a view to strengthening the capabilities of these countries to respond to poisoning by chemicals. The project will also address issues related to the long-term maintenance of the package on a commercially viable basis, i.e., marketing, dissemination, and cost-recovery.

HEALTHNET

A project entitled "HealthNet: Satellite Communications Research for Development" was developed to test, demonstrate, and evaluate the use of packet radio and satellite communication techniques in support of health information flows and networking. A central concern of this project is to carry out research on the use of this technology and various information access modalities for strengthening the health research sector. It provides the opportunity to demonstrate to telecommunication authorities in developing countries a cost-effective, interim (10-20 years), technology which could solve some of the current infrastructure problems experienced in developing countries, especially in Africa. Major partners along with IDRC in this project are Memorial University, Newfoundland, which is a leader in telemedicine and has substantial experience in a number of projects involving developing countries, and SatelLife, a non-profit organization based in Cambridge, Massachusetts, set up to service health communication and information needs in developing countries. As of June 1993, licenses for carrying out research within this project have been obtained in Canada, Kenya, Tanzania, Zambia, Mozambique, Ethiopia, Uganda, Malawi, Sudan, Cameroon, Ghana, Congo, Cuba, Brazil, UK, USA, Russia, and the licensing process is under way in others.

activities through coordination of program planning, implementation, and evaluation, as well as supporting special program initiatives that cut across the Division.

THE CANADIAN DIMENSION

IDRC's mission of "Empowerment through Knowledge" specifies that partnerships with Canadian organizations will be strengthened and diversified. This collaboration should look beyond the traditional concept of North-South technical assistance, and focus instead on the mutual interests of Canada and developing countries.

Cooperative projects with Canadian institutions

A recent review of IDRC-supported activities involving Canadian institutions (AUCC 1993) observed that:

- IDRC allocates about 18% of its annual program budget to cooperative projects, including joint research projects between Canadians and developing country institutions.
- In 1992-93, IDRC allocated \$15.5 million to cooperative projects
- Every year, about 200 developing country researchers working in IDRC-sponsored projects do graduate studies at Canadian institutions.
- IDRC's Canadian Partnerships program aims to strengthen links with the universities, learned societies, non-government organizations, indigenous peoples, granting councils, professional associations, and private-sector bodies. The program also supports human resources development to develop Canadian expertise in international development through administering training awards financed by the Centre research programs, as well as the Young Canadian Researchers Award, the Gemini and PÉriscoop internships in journalism, Centre internships and Pearson Fellowships.
- Apart from involvement in cooperative projects, Canadian researchers also play a useful role through other opportunities, e.g., use of Canadian expertise in assessment and evaluation of projects; secondments; and training of developing country researchers.

In a review of the participation of Canadian schools of library and information science on the international scene, Lajeunesse (1993) describes some of the accomplishments and points out that, because of Canada's position in international affairs, the schools have a valuable opportunity to become involved in cooperative projects. IDRC shares this assessment, and extends it to the broader information community in Canada.

IDRC has provided more than CAD 6.3 million in grants to Canadian institutions (universities, government, non-government, and private) to assist in the implementation of 44

information-related projects in developing countries (see Figure 3). As these collaborative projects are intended to draw upon existing Canadian expertise, it is not surprising that over 50% of them are located in two categories - geomatics (i.e. mapping, remote sensing, geographic information systems) and industrial information services (see Figure 4). Many of these collaborative projects have successfully utilized Canadian resources in the development of information systems, services, and technologies. They have also contributed to capacity-building through the transfer of skills and expertise that were not readily available in developing countries. Such efforts have also cultivated an interest and sensitivity within Canadian institutions to Third World problems, and an awareness of mutual benefits from North-South interaction. The ISS Division hopes to encourage this collaborative research approach. For example, IDRC is well-positioned to bring together the interests of Canadian and development country researchers at the early stages of the design and introduction of new information and communication technologies. This process can bring benefits to all parties. On the Canadian side, it helps establish global research linkages, new applications, and potential markets; on the developing country side, it promotes capacity building and the development of solutions to local information problems, and it can also give developing countries an early say in the direction of the technology agenda (e.g. research and development policies, pricing policies, test applications, commercial aspects, etc). Similar opportunities exist throughout the information field.

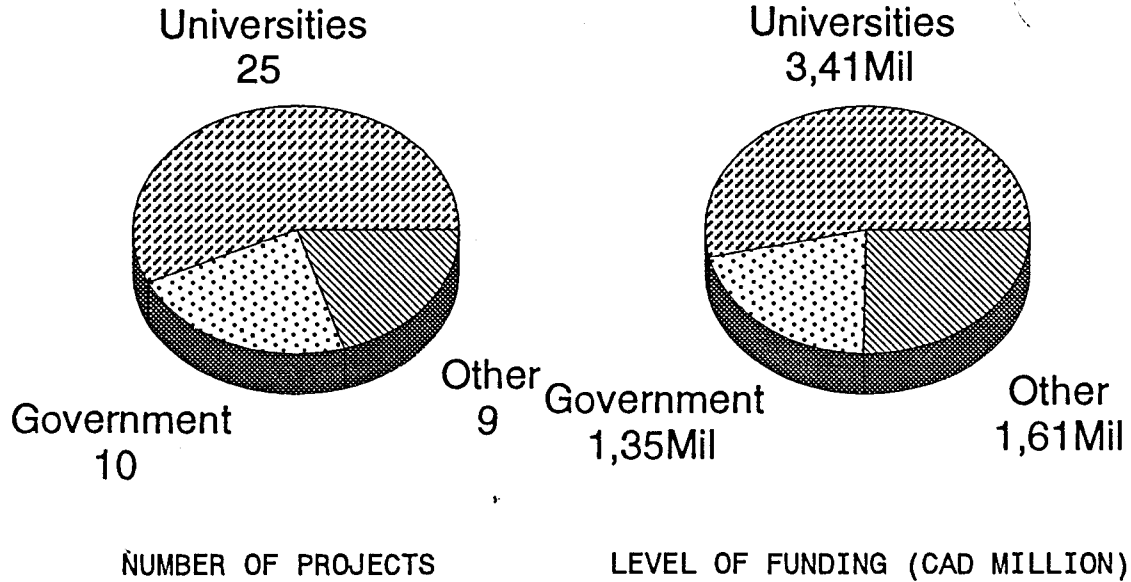
It should be pointed out that the preceding statistics on Canadian collaboration refer only to formal projects. In addition, there have been many smaller activities supported in Canada. The majority of these are consultancies to assist with feasibility studies, to undertake evaluations of projects and larger programs, to give technical advice within a project, to provide training, and to provide specialized services (eg. CD-ROM software development and production). This constitutes a significant, but less visible, component of the ISS Division's support for Canadian involvement in international development.

INFORMATION SERVICES FOR CANADIANS

While the focus of IDRC's information program is directed towards the needs of the developing countries, several of the ongoing information activities may be of practical interest to the Canadian community.

Figure 3

IDRC information projects with Canadian institutions



UNIVERSITIES

- Collège Lionel-Groulx
- McMaster University
- Memorial University of Newfoundland
- Queen's University
- Université Laval
- Université de Montréal
- Université du Québec à Chicoutimi
- University of British Columbia
- University of Saskatchewan
- University of Waterloo

GOVERNMENT

- Canada Centre for Remote Sensing
- Centre de recherche industrielle du Québec
- Consumer and Corporate Affairs, Canada
- Energy Mines and Resources, Canada
- Public Administration Encyclopedia

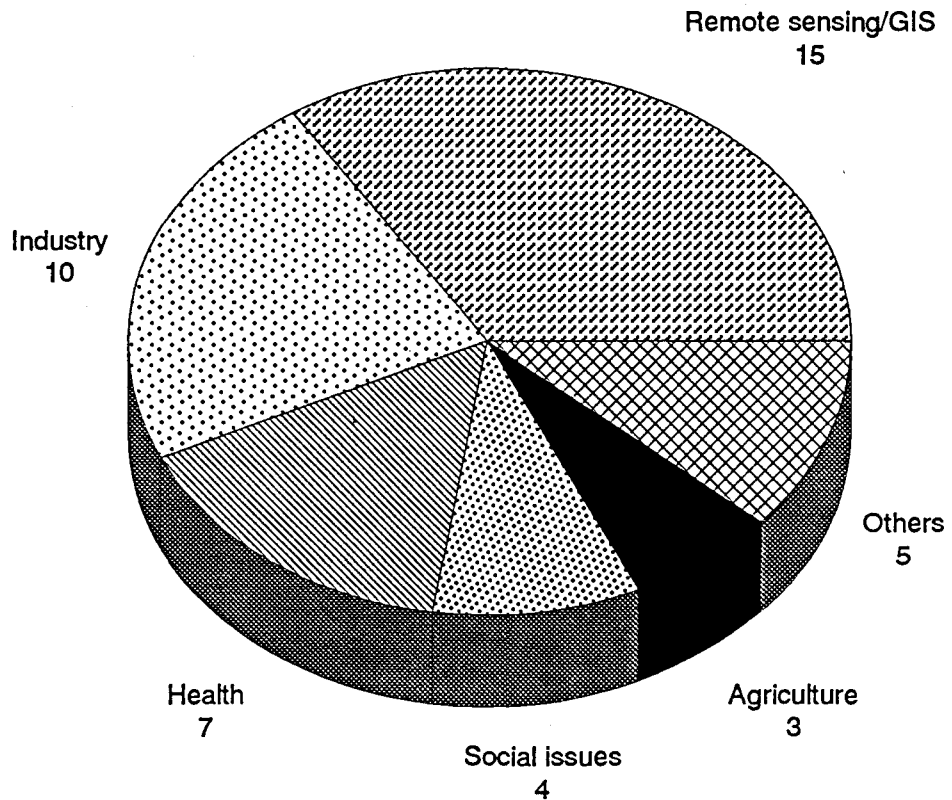
OTHERS

- Canadian Centre for Occupational Health and Safety
- Canadian Organization for Development through Education
- Disabled Peoples' International
- International Agency for Small Scale Mining
- NIRV Community Resource Centre

(As of January 15, 1994)

Figure 4

Sectoral distribution of information projects with Canadian institutions



(As of January 15, 1994)

The Library at IDRC

The IDRC Library provides IDRC staff, recipients of IDRC grants and others involved in international development with an extensive collection of reference and research materials. More than 65,000 books and reports, 1,500 journal titles, newspapers, microfiche, audio-visual materials, and CD-ROMs cover the international spectrum of economic development, environment, gender and development, health sciences, information systems, social policy, science and technology policy, sustainable and equitable development, and technology transfer. The Library also carries special collections for reference including the **Brundtland Collection** (the original documents and tapes of the World Commission on Environment and Development, 1983-87); **Corporate Archives** (IDRC supported publications, material written by Centre staff, publications about the Centre and its activities, and final reports of IDRC projects); and **InfoQuest** (a collection of files describing 2,500 organizations, research centres, and government departments located in Canada and abroad, whose activities relate to IDRC interests). The Library also offers search services for staff and project recipients on hundreds of databases produced outside IDRC. The **Development Data Bases Service** offered by IDRC provides direct on-line access to the collection of the IDRC Library (BIBLIOL); development activity information of IDRC and several other donors (IDRIS); technical research and development materials produced by the USAID (AID); documents produced by or for FAO, ILO, UNESCO, UNIDO and WHO; and an invaluable database of acronyms related to the development field (ACRONYM).²

MINISIS

Developed in-house at IDRC, MINISIS is an information management software package with multilingual capacity. The MINISIS software has been extensively applied to developing country institutions through IDRC projects. As well, MINISIS resource centres have been established in several countries (e.g. China, Egypt, India) to provide support services to national and regional institutions. Currently running on Hewlett-Packard mini-computers, a new version of MINISIS has recently been designed for use on IBM-compatible microcomputers, and will be released in 1994. MINISIS has been used in several Canadian institutions for various

² The IDRC Library is located on the 9th floor of IDRC's Head Office at 250 Albert Street (P.O. Box 8500), Ottawa, Ontario, K1G 3H9. For more information about the services provided by the Library, please contact the Reference Desk by phone (613) 236-6163 Ext. 2578, or fax (613) 563-9463.

database management and library applications. Some of these organizations include the Canadian Centre for Occupational Health and Safety, the Canadian International Development Agency, the Department of National Defence, Centre de Recherche Industrielle du Quebec, Health and Welfare Canada, Labour Canada, Geological Survey of Canada, and the Canadian Centre for Architecture. Other international users include the Senate of France, the Singapore Tourist Promotion Board, the World Bank, and the J. Paul Getty Museum.³

Development information on CD-ROM

In order to make development activity information widely available to developing country governments and donor organizations, an ongoing project managed by IDRC has collected development activity information from several sources and published it on CD-ROM. The second edition, which was produced in 1993, contains more than 88,000 records of activities of more than 200 agencies working in the field of international development, including United Nations agencies and other international and regional organizations, bilateral donor agencies, and NGOs. A third edition of this CD-ROM will be available in April 1994.⁴

ISS Expert Data Base

IDRC maintains an in-house database of information specialists who are interested in working in the various fields of "development information". To this end, IDRC is always interested to learn of well-qualified people who wish to participate in information-related activities. The EXPERT database includes individuals who may be available for a short-term or a longer-term assignment. The work may vary from testing of a new information technology and organizing a special training program, to project advisor or program evaluation. Individuals are encouraged to send a detailed resume to the ISS Division if they wish to be included in this database.

CONCLUSIONS

- Information is a powerful and reusable resource for development.

³ For more information on MINISIS, please contact MINISIS Outreach, Information Sciences and Systems Division, IDRC.

⁴ For more information, please contact the Coordinating Unit for the International Network for Development Information Exchange (INDIX) at IDRC.

- The role of information and its associated technologies does not receive as much recognition in the developing countries as it does in Canada and elsewhere in the North, yet the potential benefits are enormous.
- Despite the constraints, there are many competent individuals and institutions active in the information field in the developing world.
- Canadians have been involved in several successful collaborative information activities with institutions in the South.
- There are several fields where Canadian and developing-country expertise could usefully be combined in collaborative research.
- IDRC has over 20 years of experience in supporting information activities in the developing countries.
- IDRC provides a number of development information products and services that may be of interest to Canadians.
- IDRC is a potential source of financing for innovative research proposals involving collaboration between partner institutions in Canada and the South.

ANNEX

Criteria for Project Funding

IDRC funds research and capacity-building projects in the broad field of "information for development", encompassing a range of disciplines and interests.

In order to be eligible for financial support from the ISS Division, proposals for information-related projects and activities involving Canadian organizations should be consistent with IDRC's objectives and underlying philosophy as presented in this paper. In particular, they should comply with the following considerations:

- o The proposed activity must ***focus on a practical aspect of sustainable and equitable development***. The activity should meet a clearly defined local need, or address a more global development problem. It should demonstrate how specific target groups are expected to benefit from the projects. The proposal should have attainable goals and objectives, and a well-defined, effective methodology that takes into account the views of users and beneficiaries.
- o The proposed project should serve to ***strengthen national or regional capacities***. Capacity building is an important element in enabling developing countries to become more self-reliant, able to identify and rank their information needs, locate sources, manage information, and repackage and disseminate it to clearly-defined user groups. This requires the development and management of human and technical resources, and measures to ensure that the activity will be sustained after donor support ends.
- o The proposal must be a ***joint effort between collaborating institutions*** in Canada and the developing world. Both groups must play an active role in project design and implementation.
- o The ***potential impact of the project should be described***. Information systems and services should aim at disseminating research results with a view to long-term practical applications of outputs, thus contributing to socio-economic change. This requires that the activity directly or indirectly satisfies the needs of the target groups of users and, ultimately the intended beneficiaries. Direct linkage of project outputs to policy-making could also increase the impact.

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