

## **Health Sciences Division Statement**

International Development Research Centre

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## **Health Sciences Division Statement**

International Development Research Centre

October 1988

# Health Sciences Division Statement

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## Preface

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In 1986 the Health Sciences Division was presented with several challenges. The effects of the ten-week Management Seminar and Program Policy Reviews VII and VIII preoccupied management and staff. *Connectedness* and interdivisional collaboration, decentralization, *themes* and *thrusts* became important elements in the Centre's operations and planning. The Division was assimilating a new director (with new ideas) and making its first attempt at strategic planning; and it had to cope with its first IDDR.

The Division decided to consider these challenges as an opportunity to take a fresh look at many issues, together. This review was intended to assess the Division's activities and plans in respect to both its mission and objectives within IDRC, as well as its comparative advantages and constraints in working with developing countries. The exercise was also intended to provide a framework for the development and evaluation of Divisional programs, identify internal and external opportunities and constraints, and recommend policies and strategies enabling the Division to achieve its objectives. In other words, the Division decided to prepare its first *Strategic Plan*. This plan was to guide the evolution of the HSD programs over the next four to five years. An In-Depth Divisional Review (IDDR) began in March 1987. This strategic planning document serves as the Divisional statement for this review.

Division staff undertook the strategic planning process and participated in the Divisional review with skill, enthusiasm and almost unlimited patience, while continuing to carry out their normal activities. I thank all of them most sincerely for their efforts. Special thanks are due to Jim Chauvin, the chair of the Strategic Planning Group; and Robert Hertzog, who not only contributed to the work but also kept everybody and everything on track. After eighteen months of analysis and debate, the Division agreed upon the concept and plan presented in this document.

We believe the holistic, community-based approach to health using a variety of disciplines to help communities improve their health and well-being to be unique. The successful implementation of this approach is the challenge for the Division over the next five years.

Richard Wilson  
Director





## Executive Summary

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The *Health Sciences Division Statement*, Volumes I and II, and the appended position papers, document the strategic directions the Division intends to pursue over the period encompassed by the In-Depth Divisional Review; that is, from 1987/88 to 1991/92. This set of plans is the result of a strategic planning process initiated in September 1985. Although this process proved to be long and somewhat arduous, the end result is a document that should guide Divisional staff in laying the framework for activities to be undertaken by HSD during the next four to five years.

Volume I of the *Division Statement* presents the background information, assessments and analyses that were used in developing the strategic plan. A brief review of IDRC's mandate, mission and objectives, Centre themes and the mission and objectives of HSD is presented at the beginning of Volume I to clearly identify the premises underlying the HSD strategic plan. A short description of the Division's five programs as they existed until September 1987 is given to provide the reader with a sense of the strategies, approaches and programs from which the strategic plan evolved.

The Health Sciences Division's Strategic Planning Committee initially opted to use a traditional type of *demand and supply* analysis to identify gaps and opportunities in health research towards which the HSD strategic plan could be directed. A description of this crude analysis and the results of same are presented in Volume I, Chapter III, of the *Division Statement*. Two important conclusions arise from this analysis:

1. Health research activities tend to be discipline-bound and focus on only a few of the target population's symptoms of ill health. Few programs or projects follow a holistic approach and fewer examine causal factors that are not biomedical.
2. Behavioural health conditions and those related to social and economic circumstances are of increasing concern in developing countries.

Having identified the opportunities in health research, the next step in the strategic planning process was to attempt to determine how the HSD programs addressed these opportunities. To this end, a largely quantitative assessment of HSD support for health research in developing countries is included in Chapter IV of Volume I. While it is difficult to relate the results of the analyses undertaken in this chapter directly to the opportunities identified, it is apparent that certain gaps and inconsistencies exist. One of the objectives of the strategic plan is to address these areas.

In the last chapter of Volume I (Chapter V) several issues having a bearing on the HSD strategic plan, but not otherwise discussed in the preceding chapters, are raised. The Centre's explicitly stated goal of being responsive to priority concerns in developing countries, as identified by those countries, is mentioned as being one of the tenets of the strategic plan. Related to this is the requirement that research supported by the Division be of relevance to the Centre's beneficiaries. Another guiding principle is the need to strengthen or build research capacity in developing countries to permit relevant health research that addresses priority needs to be carried out. One final issue noted, and perhaps the most important one, is the need for research projects to elicit the active involvement of community members, recognizing that this involvement can take many possible forms, from community members

## Executive Summary

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being consulted in the planning and execution of a project, to communities generating and undertaking projects themselves.

The forward-looking portion of the *Division Statement*, in essence the Division's strategic plan, is presented in Volume II. The strategic plan is based on a decision by the Division to focus its research program on the community (where a community is defined as any identifiable geographic, social, cultural or political grouping of individuals with common interests and goals). The Division aims to create an environment within which the community, researchers and those responsible for the provision of health services work together to establish effective, sustainable systems of community health.

In defining its strategic plan, HSD decided to use a holistic model of health to determine areas of relative emphases for support for health research. This holistic model depicts the interrelationship between the primary factors that interact to determine the health of communities, namely the environment, behaviour, health systems and heredity. The first three of these form the basis for the three main programs established by HSD, **HEALTH AND THE ENVIRONMENT**, **HEALTH AND THE COMMUNITY** (initially called Health and Human Circumstances and Behaviour) and **HEALTH SYSTEMS**. The fourth area, which would involve research on genetic and inherited health factors, was assigned very low priority for a variety of reasons, for example, large capital investment required, lack of an IDRC comparative advantage, etc. and will therefore not be pursued.

The **HEALTH AND THE ENVIRONMENT** program is concerned with all factors present in the human environment that may affect health. It concentrates on the "harder" science aspects of health research. It will support research relating to the following themes:

- Water and Water Use (accessibility to potable water supplies and water quality);
- the Living Environment; and
- the Working Environment.

The **HEALTH AND THE COMMUNITY** program will identify and develop action-oriented, community-based research initiatives. Priority will be given to projects that examine how economic and social conditions and human behaviour affect health. The program will concentrate on a limited number of themes in the next few years, namely:

- Introduction and Use of Technologies;
- Behaviour and Transmission of Communicable Diseases;
- Methodologies to Promote Participatory Research;
- Women and Children in Child Promotion;
- Health Education; and
- Strategies to Improve the Nutrition of Women and Children.

The **HEALTH SYSTEMS** program links the community and its health needs to the health care systems and services that are available and that it requires. The program will also address the relationship between the different levels in the health care system and will focus on approaches to strengthening primary health care. While the range of activities that the program could support is broad, there are four major themes within which activities to be supported will fall. These are:

- Management and Delivery of Health Services;
- Health Services Planning;

- 
- Health Policy; and
  - Strengthening of the Research Capacity of Indigenous Institutions.

The three program areas overlap, forming a continuum that flows from research on health as perceived by community members to research on global health problems as perceived by national, regional or international experts. This overlap is designed to promote intra-divisional collaboration, but at the same time the structure should facilitate taking a multisectoral (interdivisional) approach to health problems.

There are many other issues of relevance, such as the HSD approach to strengthening indigenous research capacity and HSD regional strategies, that are not mentioned in this summary. For more information on these subjects the reader is encouraged to directly consult the *Division Statement* and the appended position papers. With the introduction of a formal strategic planning process in the Division, it is expected that this plan will become a rolling plan, updated every two years, which will continue to serve as the key Divisional document from which all HSD activities are derived.

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## Introduction

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*In the view of the Centre, development is a process for the benefit of people and should be consistent with human dignity, which is best fostered in conditions of adequate nutrition, sound health, independence of spirit, pride in indigenous culture and respect for human rights.*

(IDRC Board of Governors. B.G. 34/16, Delhi, March 1986.)

IDRC's Health Sciences Division (HSD) is guided by the Centre's mandate and mission, and the conviction that health is an integral part of development. The Centre's mission includes a "particular focus on the problems of poverty."<sup>1</sup> In keeping with the Centre's mandate and mission, HSD has increasingly focused its programs on research initiatives to break the self-perpetuating cycle of illness and poverty and on projects clearly aimed at improving the health and well-being of the rural and peri-urban poor.

Poverty impedes development. It manifests itself in many ways and "the nature of the inter-relationship among the various manifestations of poverty is such that one factor influences all others in both positive and negative synergistic effects."<sup>2</sup> Health and poverty are inter-related, interdependent, and complex: the health problems of the poor cannot be solved using a solely sectoral, disciplinary, or technical approach. research to improve health and reduce poverty must take into account the complexities of both and their interactions. These complexities have social, cultural, environmental, and economic dimensions which profoundly influence the health of communities, families, and individuals.

Development ultimately aims to eradicate poverty and establish equity. It cannot do so without health. L. Hendretta explains the relationship in this way:

*Health is just one element in the total development picture; accordingly, health problems cannot be tackled in isolation from the other elements. In other words, the attack on the problems of health should be mounted as an integral part of a broad frontal attack directed against the multifarious forms of poverty. There can be no hope for a significant and lasting improvement in health in the absence of a simultaneous improvement in all other sectors.<sup>3</sup>*

The Division shares this view. Health is not the absence of disease, nor can it be achieved solely by controlling disease. Numerous genetic, social, cultural, environmental, and economic factors interact to produce both health and illness. Health and illness, in turn, determine the physical, emotional, social, and economic state of individuals and the communities in which they live. Planners and policy makers must perceive health in its entirety and must consider it as part of the social and economic development of individuals, families, and communities.

The Health Sciences Division's research strategy, outlined in Volume II, incorporates these factors into its plans and programs.

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## Notes

1. Resolution of the Board of Governors. **Program and Policy Review VII**. IDRC, Ottawa, March 1986.
2. Community Development for the Improvement of Health. **Health Implications in the Development of the Physical and Social Environment of Human Settlements**. UN Conference on Human Settlements, Vancouver, 1976.
3. Hendretta, L. Health and Development: Review of Policy Options at the Grassroots Level. **The Future of Academic Community Medicine in Developing Countries**, W. Lathem editor. Praeger, New York, 1979, p. 59.

## **IDRC Overview**

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### **IDRC's Mandate, Mission, Objectives**

The Health Sciences Division is one of seven research divisions<sup>1</sup> within the International Development Research Centre (IDRC) of Canada. Established in 1970 by an Act of Parliament, IDRC's mandate is

*to initiate, encourage, support and conduct research into the problems of the developing regions of the world and into the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions, and, in carrying out those objects*

- (a) *to enlist the talents of natural and social scientists and technologists of Canada and other countries;*
- (b) *to assist the developing regions to build up the research capabilities, the innovative skills and the institutions required to solve their problems;*
- (c) *to encourage generally the coordination of international development research; and*
- (d) *to foster cooperation in research on development problems between the developed and developing regions for their mutual benefit.*

(The International Development Research Centre Act, paragraph 4)

The Centre has contributed to development through research and research-supporting activities, using a project mode of operation. It considers that research is a means to an end. Building research capacity, producing new knowledge, and creating linkages among researchers are perceived as essential components of its strategy. The projects it supports must contribute to improving the welfare and standard of living of the poor and disadvantaged who are the ultimate beneficiaries of the research. As stated in the *Program and Policy Review VII (PPR VII)*, "relative emphasis should be given to research, research-supporting and experimental development activities that have direct relevance to basic human needs" (p. 29).

All projects submitted for Centre funding are examined in light of the following criteria:

- the significance of the problems addressed;
- the effect on development in terms of growth, equity, and participation;
- the research potential;
- the Centre's comparative advantage.

## IDRC Overview

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### Reassessment of Centre Strategy

In 1986, the Centre embarked on a review of its strategies, structure and processes. This was dictated by the need to assess its overall focus and programs, in order to ensure that they reflected the world's changing physical, social and economic environments and that Centre resources were adequate and contributed effectively and efficiently to development. As part of the process, a ten-week Policy and Management Seminar for Centre Management took place from April to June 1986. This exercise was intended to develop a framework for the Centre's strategic plan. During the seminar, Centre Officers agreed that:

*if people are to benefit from IDRC's work, the Centre must endeavour constantly to ensure that the activities it supports reflect in one form or another the essential long-term goals of development as viewed from the perspective of the beneficiaries: sustainable growth, equity, and participation.<sup>2</sup>*

IDRC's ultimate objective must be that of the developing countries themselves: the creation of an indigenous capability to utilize science and technology for the benefit of their own societies; and, to identify and solve problems in a manner respecting individual human dignity.

The Centre's comparative advantages are described in *PPR VII*. The Centre's tradition of responsiveness to requests is one of its distinguishing features. The Centre's scientific credibility is one of its primary assets. At the same time, the Centre maintains a degree of political objectivity and promotes a relationship akin to true partnership between its program staff and developing-country researchers. Compared to most other donors, IDRC's operations are guided by development rather than political considerations; it offers untied assistance; recruits internationally; experiments and innovates; and provides small amounts of funding where immediately needed, a facility ironically beyond the scope of better endowed agencies (*PPR VII*, p. 21).

The Board and Centre staff noted, however, a shortcoming in the Centre's operational process: the apparent lack of coordination between the Centre's program divisions. The divisions have tended to pursue their own interests, and have established programs specific to particular disciplines with minimal linkages with those of other divisions. While recognizing that divisional autonomy has its advantages, the Board and the staff agreed that the Centre should follow a more coherent approach. As stated in *PPR VII*:

*Although IDRC's attention has always been largely devoted to development problems, it has been directly [sic] mainly through the medium of subject areas relevant to those problems, rather than holistically on the problems themselves. Supporting Third World scientists in various subject areas through relatively small projects and at the same time remaining sensitive to indigenous capabilities and aspirations, has resulted in a diversity in the Centre's programming that to a large degree merely mirrors the diversity in social, economic and research conditions. This responsive mode has been widely appreciated and generally effective. However, the separate actions of individual divisions have resulted in a very wide scatter of initiatives, with the concomitant risk of being insufficiently "responsive" to those occasions when the coordinated application of several disciplines could be more effective. One way of stimulating a more coherent approach and of taking account of regional variations would be to introduce both the "geographic" and the "development*



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*problem" criteria when defining a program. Researchable development problems specific to the people of particular regions could be defined and the various disciplines required to tackle them identified, together with the relevant institutions within the region and outside it with the capacity to do so.<sup>3</sup>*

PPR VII recommended that a thematic approach be used to identify program initiatives. Development "thrusts" would be identified in order "to provide a coherent approach to the resolution of problems common to a geographic region and/or a particular aspect of development" (PPR VII). These thrusts would be well-defined, focused activities carried out within a given time frame. Themes would be used to define long-term fields of interest for Centre programming.

To date five themes have been proposed and formally approved by the Centre<sup>4</sup>. Two have direct implications for health: physical well-being and food security. Centre-wide thrusts are currently being identified.

PPR VII also recognized the need for increased emphasis on the implementation of research results. As stated in the *Report of the Policy and Management Seminar*, "greater efforts should be made to ensure that, where promising technologies or approaches result from Centre-supported work, these be followed through the process of introduction and implementation" (p. 5). This means that thought should be given and resources provided to field-testing, introducing, promoting and — where appropriate and feasible — popularizing an appropriate technology or approach.

It would appear, therefore, that the Centre guidelines for program development are changing. There is a shift in emphasis from a vertical program focus within each program division to a modified matrix management process. In addition to pursuing conventional approaches to programming, divisional personnel are expected to participate in interdivisional teams that assist in developing proposals and administering projects dealing with Centre-defined themes/thrusts. The teams' operating mechanisms remain to be further defined.

The IDRC Board and Management have advised that strategic plans should be developed, refined and implemented in such a way as to exploit the Centre's advantages discussed earlier. The Health Sciences Division has developed its strategic plan within this framework. Recognizing that the Centre has undertaken a critical self-evaluation that has had an effect on its operations and programming, we have endeavoured to ensure that the programs and policies chosen are compatible with the Centre's.

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## Notes

1. The other six divisions are: Agriculture, Food and Nutrition Sciences (AFNS); Communications (COMM); Earth and Engineering Sciences (EES); Information Sciences (IS); Social Sciences (SS); and Fellowships and Awards (FAD).
2. *Report on the Policy and Management Seminar*, p. 1. Please refer to *PPR VIII 1987*, page 4, for definitions of these development criteria.
3. *PPR VII*, pp. 25-26.
4. The five themes are: skills enhancement, physical well-being, economic participation, food security, and technological choice. (*Final Report of the Themes Working Group*, March 1987.)

## **Health Sciences Division Overview**

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### **History of the Division**

The HSD was originally known as the Population and Health Sciences Division and it concentrated primarily on supporting research on methods of fertility regulation, demography and population policy, and the delivery of rural health care services.

The RURAL WATER SUPPLY AND SANITATION sector was created in 1973, following an interagency (IDRC, World Bank, UNICEF, WHO) initiative to identify research needs in the field of environmental health. This sector emphasized the development and field-testing of sanitation technologies. In 1974, HSD hired two program officers specialized in water supply technologies, specifically PVC handpumps. Projects' research focus shifted to cover the development and testing of innovative water supply and sanitation (WSS) technologies.

In 1976, the TROPICAL DISEASE sector was established to support research activities related to the recently-created UNDP/World Bank/WHO TDR program. That same year, the demography and population policy program was transferred from the Health Sciences to the Social Sciences Division.

In 1978, the Divisional Director formally reorganized the Division into four sectors:

- FERTILITY REGULATION METHODS;
- RURAL HEALTH CARE DELIVERY;
- TROPICAL DISEASE RESEARCH; and
- RURAL WATER SUPPLY AND SANITATION.

This was similar to structures adopted by other aid organizations. Research under the rubric of FERTILITY REGULATION METHODS related primarily to the development of contraceptive technologies. The RURAL HEALTH CARE DELIVERY sector concentrated on innovative means of delivering health services to rural areas of the Third World. The TROPICAL DISEASE RESEARCH sector, which later changed its title to COMMUNICABLE AND NON-INFECTIOUS DISEASES, focused on research into the epidemiology and control of sexually transmitted diseases. At the same time, emphasis within the RURAL WATER SUPPLY AND SANITATION sector shifted from the development of technologies to the acceptance and correct utilization of technologies.

The appointment of a new Director in 1983 brought further structural and program modifications. Some of these changes were cosmetic: the titles of the Communicable and Non-Infectious Diseases, Rural Water Supply and Sanitation, and Rural Health Care Delivery sectors were changed to TROPICAL AND INFECTIOUS DISEASES; WATER SUPPLY AND SANITATION; and MATERNAL AND CHILD HEALTH sectors. Research related to Fertility Regulation was de-emphasized and greater emphasis was placed on research on occupational health and environmental toxicology and on health services. The orientation of activities within each sector was largely left to the discretion of responsible Associate Directors.

From 1983-1985 there were no major changes to the HSD program and sectoral programs continued to evolve relatively independently. In 1986, however, the Division's five sectors began to focus their programs and activities directly upon the health needs of the rural and peri-urban poor. These programs are described in the following section.

## **Health Sciences Division Overview**

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### **Status of the Health Sciences Division (September 1987)<sup>1</sup>**

#### **Mission and objectives**

The Health Sciences Division's mission is to support research into all aspects of the development of effective community-based health systems that will contribute to improving the health and well-being of the rural and peri-urban poor.

Specifically, its objectives are:

1. To identify health-related needs and priorities in communities and develop appropriate health (care) systems to meet those needs (HEALTH SYSTEMS RESEARCH).
2. To develop and apply policies, programs and technologies to improve the health and well-being of women and children (MATERNAL AND CHILD HEALTH).
3. To develop new and improved methods of preventing, diagnosing and controlling communicable diseases (TROPICAL AND INFECTIOUS DISEASES).
4. To develop policies, practices and technologies to improve the physical environment of communities and the physical and social environment of individuals (WATER SUPPLY AND SANITATION, and OCCUPATIONAL HEALTH AND ENVIRONMENTAL TOXICOLOGY).

#### **Organization<sup>2</sup>**

As of September 1987, the Division was divided into five administrative sectors of which four functioned as distinct program units.<sup>3</sup> Although the Health Systems Research sector had its own budget allocation, its professional positions were vacant. It operated under the aegis of the MATERNAL AND CHILD HEALTH sector.<sup>4</sup>

**Maternal and Child Health (MCH).** The major initiatives undertaken by MATERNAL AND CHILD HEALTH were:

1. Support to perinatal health research, including research into risk factors. A transdisciplinary approach was encouraged. The Division hoped to strengthen the Latin American perinatal health network during the next two years and then gradually extend activities to other regions, especially Africa and, more specifically, Angola and Mozambique. Wherever possible, use was made of Latin American researchers' skills developed in previous perinatal health projects. The creation of networks of researchers remains one of the Division's important strategies.
2. In family planning, the sector promoted action research, especially in Africa where high growth rates and major health problems are associated with inappropriate or inadequate family planning. The approach was strictly within the health field, considering factors such as health and nutritional benefits. As a somewhat related topic, the Division will begin to support research into the behavioural aspects of the control of AIDS, especially in Africa.

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3. Activities supported in the nutrition area examined behavioural aspects and the health effect of nutrition. In addition, opportunities for research into educational interventions were pursued. Nutrition is an area of substantial interdivisional activity.
  4. Research into the reproductive health of women, including young adults, was supported. Emphasis was again placed on social and behavioural components.
  5. Promotion of improved health, in general terms, sought to improve the health of women and children. This included research into the relationship between women's work and the health of their families.

**Tropical and Infectious Diseases (TID).** The sector used two broad-based approaches in working with researchers: a problem-oriented approach; and an activity-oriented approach. These approaches are complementary in that activity-oriented support is associated with identified or perceived problems that may be a single disease or inter-related spectrum of diseases. This sector supported the following activities:

**Problem-oriented approach:**

- Infectious diseases;
- Vector-borne diseases;
- Sexually transmitted diseases, including AIDS.

**Activity-oriented approach:**

- Field research/application of diagnostic methods;
- Epidemiological studies in relation to possible interventions;
- Social and economic aspects of communicable diseases;
- Vaccine-related studies;
- Health effect of macro-development schemes including migration and refugees;
- Community-mediated preventive methodology initiatives;
- Integrated disease control strategies.

In following the activity-oriented approach, particular attention was paid to community-generated efforts aimed at self-sustained health maintenance or disease control measures. The proposals relating to the health effect of macro-development schemes, community-mediated preventive initiatives, and integrated disease control strategies reflect this special emphasis on community-based activities.

**Water Supply and Sanitation (WSS).** Reducing the incidence of environment-related diseases was the primary objective of the WSS sector. The sector sought to accomplish this by supporting research/demonstration projects that used appropriate interventions to improve the environmental health of disadvantaged populations living in either rural or peri-urban communities. The WSS sector addressed two community problems: lack of potable water and lack of adequate sanitation. It also placed priority on the long-neglected area of sanitary food-handling practices.

All WSS activities could be divided into two categories: research grants, and dissemination of research results. In carrying out these activities, the capabilities of individual researchers were strengthened through the experience they gained in planning and

## Health Sciences Division Overview

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implementing project activities. As well, institutions were strengthened through the training of personnel, the development of administrative capacity, and so on. The WSS sector's activities coincided with those of the International Drinking Water Supply and Sanitation Decade, and included five major areas:

1. **Technology development:** the development of new and improved water supply and sanitation technologies.
2. **Waste reclamation systems:** the recovery and/or reutilization of valuable resources from domestic and agricultural waste.
3. **Personnel development and training:** the development of innovative personnel training programs.
4. **Social and managerial studies:** studies on the social, economic and managerial aspects of water supply and sanitation programs (this includes studies to determine the nature and magnitude of environmental problems within rural communities).
5. **Sanitation effect studies:** biomedical/environmental studies which focus on evaluating how water supply and sanitation interventions reduce tropical and infectious diseases (this area created a bridge between HSD's environmental and biomedical research activities).

**Occupational Health and Environmental Toxicology (OHET).** The OHET sector encouraged research into ways of improving the physical living and working environments of the rural and peri-urban poor. Collaboration and input by colleagues from other sectors (notably WSS and MCH) and other Divisions (particularly AFNS and SS) were actively pursued.

The sector emphasized activities dealing with chemical contamination and poisoning of populations, with special reference to pesticides, other agrochemicals, heavy metals, organics and solvents. Projects relating to the occupational and environmental risks associated with pesticides, that is, through water and food contamination as well as misuse (inadequate storage, labelling and use), were accorded special attention. Activities supported in this area ranged from descriptive epidemiology to KAP (Knowledge, Attitude, Practice) studies - the latter especially at the rural community level - where major opportunities for joint endeavours with Social Sciences were expected. Research into intervention strategies was encouraged as a logical extension of the first two types of activities. Safer technologies, community education, communication support material and the formulation and enforcement of regulations were of primary interest. For example, an initiative undertaken with AFNS could result in a program to develop a safer portable pesticide sprayer. Alternate, less toxic methods of pest management were also of great interest. This would require collaboration with the TID sector (vector control) and AFNS.

OHET also promoted research into the industrial contamination of water resources, notably by heavy metals and organic residues. Parallel to this, baseline research on industrial chemical intoxication of workers by heavy metals and solvents was being supported. Whenever suitable, researchers were encouraged to concentrate on small-scale, community-based industries and to use participatory research methods.

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Because industrial accidents are major occupational risks everywhere, research on their prevalence, incidence, community significance and preventive measures was encouraged. In addition, research into non-communicable, dust-produced respiratory diseases was a priority.

**Health Systems Research (HSR).**<sup>5</sup> The Health Systems Research (HSR) sector was and is seen as the "bridging" sector in the Division, supporting research to develop appropriate health services and to identify particular opportunities for research likely to solve priority health problems. The sector exists mainly to study the operations and cost-effectiveness of health delivery systems in their particular socio-cultural, material, and political environments.

The HSR sector's program is closely tied to the Division's mission in that it supports research concerned with community-oriented health (care) systems. Projects involving the examination and evaluation of alternative health (care) systems, including health maintenance at the community level, are encouraged. Emphasis is placed on analyzing the cost-effectiveness and efficiency of the structures or systems, with particular attention to systems that are community-initiated and self-sustained.

As the Health Sciences Division moves toward placing greater emphasis on community health needs, it is expected that the HSR sector will assume an increasingly important linking role between the communities and the Division's other programs. HSR will also greatly assist in coordinating interdivisional support for community-initiated research activities with indirect links to health such as women's education and resource management.

The program also expects to support activities aimed at developing appropriate research methodologies in health services, identifying the health status of communities, and providing training in health systems research. Although not the primary focus of the program, these activities will be an important part of its operations.

**Special Initiatives (SI).**<sup>6</sup> Numerous benefits can be gained by jointly developing and funding projects and by coordinating the allocation of the limited funds available for health research. IDRC and the HSD must participate financially and technically in selected initiatives of this type. Because these activities do not readily fall into any of the existing sectors, the SPECIAL INITIATIVES sector was established in the 1986-87 fiscal year. It operates on a Divisional basis without specifically assigned staff.

SI has supported a number of activities, including the Independent International Commission on Health Research for Development; the revolving fund for the development of technology appropriate to rural health care; and the establishment of an information service and newsletter for Canadian researchers interested in international health research.

### **Project and program development**

The development of sectors and their programs depended on the expertise of sectoral staff; publications; research proposals; workshops and conferences; discussions with key informants; reports from regional offices, other funding/aid agencies and NGOs; and, information gathered by staff during field trips. No sector was a program unto itself. The development and administration of some of the proposals submitted to the Division demanded intersectoral collaboration while those with a multidisciplinary focus required collaboration with other divisions.

Within this framework of five sectors, the Health Sciences Division provided support for research projects which met the following criteria:

## Health Sciences Division Overview

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1. Acceptable scientific quality;
2. Relevance to the health problems of the country and/or region as indicated by crude indicators of health (IMR, MMR, LE, GNP)<sup>7</sup>;
3. National and regional priority of the problem addressed;
4. Absorptive capacity of the national health research system and the proposing institution(s);
5. Relevance to HSD program priorities;
6. Potential for the results being adopted by the health system within a reasonable period and the potential effect on the health of the poor;
7. Agreement with IDRC's mandate and philosophy.

As the HSD program evolved over the years, so did its structure in order to enable it to pursue established program directions. Structural changes during the past few years were basically incremental. The most notable was the creation of a HEALTH SERVICES RESEARCH sector with two professional and one support staff positions.

Figure 1 presents the Division's structure until 30 September 1987.

### Management and administration

Several groups and committees discharged specific responsibilities within this framework and will continue to do so under the new structure. These include:

1. **Projects Review Committee.** This committee screens all proposals that are to be presented to the Board for approval. The Committee is made up of the Director, Deputy Director and Associate Directors.
2. **(Associate) Directors Group.** The Associate Directors meet at least once per month to discuss policy issues as well as program and administrative matters.
3. **Professional Staff and Staff Committees.** The Ottawa-based professional staff meet at least quarterly to discuss substantive and administrative matters. Support staff meet at least monthly to discuss Division operations. Regional office staff participate in meetings when they are in Ottawa. Meetings of the entire professional staff, including Ottawa-based support staff, are held once a year, usually for a two week period. This annual meeting is highly organized and focuses on the operation of the Division at the Regional Office level, inter-Divisional collaboration, and important administrative matters such as communication and appraisals.
4. **Publication Committee.** This committee was established to promote the publication of research results from HSD supported projects. The committee, which meets a few times a year, reviews the publication pipeline as well as requests for publication and monitors the allocation of the publication budget. The committee coordinates Divisional collaboration with the Communications Division with respect to both publications and films.
5. **Strategic Planning Committee.** This Committee was formed to draft a strategic plan for consideration by the Division's professional staff and to oversee the



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preparation of the related *Division Statement* for the IDDR. The committee will revise and modify the plan biennially and as required.

In addition to these intradivisional groups, HSD participates in many interdivisional groups or committees. For example, HSD staff are members of the working group struck to develop integrated, multi-disciplinary approaches to problems relating to pesticides, women in development, nutrition and support for the Bharatiya Agro-Industries Foundation (BAIF) at Pune, India. Moreover, HSD staff frequently exchange opinions and expertise with colleagues in other divisions. They also participate in numerous Centre administrative committees; for example: EDP, LINK, and administration. Although much of this collaboration is informal, it is extensive and is seen as an important part of all officers' responsibilities, contributing significantly to their workload.

### **Need for a Divisional Strategic Plan**

The evolutionary process leading to the HSD's present program focus, activities and structure can best be described as incremental. A number of factors influenced this process, including the preferences of each divisional Director, the establishment of major program thrusts by collaborating funding agencies, and the experience and expertise of individual program staff.

Each Director decided on overall program emphasis and priorities while research initiatives and scope of activities within each sector were largely left to the discretion of the Associate Directors in consultation with sector staff. This has contributed to what has been described as a scattered or "shot-gun" approach to supporting health-related research.

The arrival of a new Director in May 1985 sparked interest in reassessing the Division's objectives and *modus operandi*. At both the September 1985 and May 1986 staff meetings, there was agreement in principle that HSD should focus its program and that the Division's program should be an integral part of the Centre's. However, it was not clear how this could be accomplished, whether all the necessary information was at hand to identify a possible focus or theme, and what Divisional structure was necessary for achieving the objectives. (HSD Annual Staff Meeting. Minutes of the Plenary Session, 26 May 1986, p. 2.)

Through PPR VII and the Policy and Management Seminar, the Centre was moving in a similar direction. Therefore, the Division decided to give highest priority to the establishment of a rolling four to five year strategic plan. This plan was to be based on the concepts described in PPR VII and PPR VIII. The organization and operation of the Division was to be based on the conceptual framework of its strategic plan. The plan would be reviewed and updated every two years and would include mechanisms for reviewing, evaluating, and updating both content and schedule.

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## Notes

1. While the Division's organization remained the same from 1983 to mid-1985, the mission, objectives and focus of its programs were refined to better coincide with the Centre's (see *PPR VIII*, pp. 41-47).
2. A comprehensive analysis of appropriations by program sector, the types of research and recipient groups supported, geographic distribution, and the subject of research projects to date is presented in chapter IV of this document.
3. In October 1987, the Division implemented the structure described in Chapter VI. This structure reflects the strategy adopted by the Division following its analysis of the health situation in developing countries; the opportunities for research; the mandate and role of IDRC; and non-IDRC health research strategies, activities and support. Ongoing divisional activities as well as "pipeline" proposals have been continued as planned and will be incorporated into the new structure. The 1988/89 *PWB* was drawn up according to the new plans, programs and organization. Figures 1 and 2 show the Division's old and new structures.
4. Two of the three professional posts in the HEALTH SYSTEMS RESEARCH Program were filled by 1 October 1987, after the Division's reorganization. The Associate Director of the Program (the third position) joined the division in January 1988.
5. The Health Services Research sector has become the HEALTH SYSTEMS program under the new divisional structure. The new Systems program focus includes the activities described in this section.
6. Special Initiatives will continue to exist within the new organizational structure.
7. 

IMR:	Infant Mortality Rate
MMR:	Maternal Mortality Rate
LE:	Life Expectancy at Birth
GNP:	Gross National Product

## **Assessment of the Existing Health Research Situation**

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The health research needs assessment was intended to provide background information that would enable us to determine the priority health research needs in LDCs, activities underway and needed, and the resources invested in this area. To do so, we divided the health research needs assessment into three components:

1. The *demand assessment* identified priority areas for health and health-related research in developing countries. By studying the trends in recent demographic and health indicators it should theoretically be possible to identify priority concern areas and those requiring research.
2. The *supply assessment* provided information on the nature and quantity of health research and/or the health problems in developing countries. In addition to inventorying projects and their distribution, this required the study of the content and orientation of ongoing research, of means of setting priorities, and of the relationship between health research and needs.
3. The *needs assessment* analyzed the relationship between present health research efforts and the identified health research priorities.

Our analysis uses a traditional approach, dependent on standard definitions and reasonably valid data. The issue becomes more complex when demand emanates from a number of groups and/or levels of decision-making, from a sick individual to the Ministry responsible for national health services for example. In addition, demand can be based on costs and/or consequences. These are not necessarily the same and may not even correlate. Similar problems arise with attempts at a needs assessment. Finally, even if agreement was reached on demand and needs, the available data are woefully deficient.<sup>1</sup> The methodology and data used by the HSD Strategic Planning Committee were the best that could be arrived at in the time allocated for the study. Interestingly, the committee identified the same conceptual framework and broad priority areas as the Independent International Commission on Health Research for Development (IICHRD) planning meeting.

The IICHRD study will take some three years to complete and cost 1.5 million USD.

### **Demand Assessment**

Three categories of health indicators are most commonly used for comparing the health status of different countries: infant mortality rates, birth weight, and life expectancy at birth. Most of the data available must be used with caution, however, because many developing countries lack valid health information. International comparisons of morbidity and the frequency of certain illnesses are often more comparisons of the effectiveness of the particular disease-reporting system. Also, comparisons of crude death-rates in different countries are often indications of the different age distributions in the populations.

## Assessment of Existing Health Research Situation

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### Indicators of health status

The one most frequently chosen indicator for health status comparison is the *infant mortality rate* (IMR). By definition it gives no indication of what occurs in other age groups, especially if the infants later die of malnutrition, gastrointestinal infection, measles, or of other causes. The available data for 1986 show that 79 countries report an infant mortality rate of 50 per 1000 live births or higher, with 47 of them exceeding 100 per 1000. These countries are unevenly distributed in various regions, although 32 countries with an IMR at or over 100 per 1000 are located in sub-Saharan Africa.

*Life expectancy at birth* is a useful indicator when reliable information exists to support its calculation. It takes into account the newborn's chances of survival in subsequent age cohorts. It is worthwhile noting that over a third of countries and of total world population have a life expectancy at birth of lower than 60 years: 38 African countries fall within this category, most of them having life expectancies of 50 years.

The third indicator of health status is *birth weight*. This provides an indication of the health status of mothers and young children, and is often used for further analysis in conjunction with geographic and socio-economic criteria. Unfortunately, this indicator is not widely available and/or accurate in those countries where the proportion of newborns weighing less than 2500 g is highest. In 1986, it was estimated that 17% of newborn infants had a birth weight of less than 2500 g, with a significant proportion of them being at or below 2000 g.

### Indicators of coverage by primary health care services

Four sub-indicators are commonly used to measure the proportion of people having at least minimal coverage by Primary Health Care (PHC) services. They are:

- safe water supply and sanitary facilities;
- immunization coverage of children at one year of age;
- availability of local health care; and
- presence of adequately trained health personnel for maternal and child health services.

As defined by WHO, the availability of *safe water supply* means that a percentage of the population has access to safe drinking-water within 15 minutes' walking distance; the availability of adequate *sanitary facilities* is determined by adequate facilities in the home or immediate vicinity; and, the availability of *local health care*, the possibility of obtaining at least 20 essential drugs within one hour's walk or travel. These indicators do not incorporate any measure of quality or appropriateness of the facility or service or indication of whether they are maintained and/or sustained over time.

Most countries provide data on immunization of children during the first year of life for the target diseases of the Expanded Programme on Immunization (EPI): diphtheria, tetanus, whooping cough, measles, poliomyelitis and tuberculosis. For DPT-Polio, the percentage coverage for the African Region<sup>2</sup> is between 28-30% of all registered births, while the rates are approximately 40% and 50% in the Southeast Asian and American regions respectively. There are, however, substantial variations in the coverage rates among countries within the same region.

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Data are not available about the portion of populations covered by local health services for almost a third of all countries, containing approximately half the world's population. According to available data, local coverage exists in approximately 48% of the African region, compared to 71% and 73% for Asia and the Middle Eastern countries respectively, and over 85% for Latin America. However, more than two-thirds of countries do not provide data on the presence of adequately trained health personnel for MCH services. The accuracy of these data varies substantially, making country comparisons difficult.

Some socio-economic indicators relate directly to health and health policy, for example the percentage of GNP spent on health, and the percentage of the health expenditure devoted to primary health care. These data, although available in many instances, usually include only public sector expenditures. Indicators such as adult literacy rate, in particular the female literacy rate, the proportion of the population below the poverty line, etc. could give useful indirect health information if analyzed in association with data on health systems and primary care services.

Table 1 provides data on several health indicators for 49 countries. The countries included are those for which data were reported for all the health indicators. The general situation underlying the information conveyed in this table is well-known:

- overall, the standard of living in developing countries is low;
- fewer services and lower coverage are the norm for rural and for low-income urban areas in comparison to the urban middle- and upper-class areas;
- despite increased investments in "health", sustained and significant improvements to health and well-being for the majority of developing country inhabitants remain to be demonstrated; and
- the natural growth rate of the populations in these countries is not declining and outstrips the rate of growth of expenditures for PHC programs.

Table 2 provides data on age specific death rates for six *International Disease Classification* categories which consistently register the highest rates:

- infectious and parasitic diseases (IDC codes 01-07);
- meningitis (IDC code 22);
- respiratory diseases (IDC codes 31-32);
- two diseases which rank high in developed countries: malignant neoplasms (IDC codes 08-14) and acute myocardial infarction (IDC code 270); and
- accidents (IDC codes E47-E53), included because of the reported high death-rates.

Data were collected for 11 less-developed countries and for Canada to enable comparisons of the reported figures. The choice of countries was based again on the availability of data. A comparison of the data in Tables 1 and 2, particularly IMR, percentage coverage for water supply and sanitation in rural areas, and the age/sex-specific death rates for infections and parasitic diseases, respiratory diseases, and meningitis, indicates a possible correlation between these parameters.

## **Assessment of Existing Health Research Situation**

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### **Canadian emphasis on health research ODA**

Despite the calls for more technical assistance to develop and implement programs aimed at improving health status, little information exists on priority areas for health research to identify such programs. Although accurate figures are not available, it is clear that health research is a small component within development assistance programs. An indication of the relative share of Canadian official development assistance (ODA) to health research is that as per Table 3, in fiscal year 1986/87, total disbursements on health research in developing countries by IDRC accounted for only 0.44% of Canadian ODA. Disbursements on health research in developing countries were 14.1% of Canada's 1986/87 health-related ODA.

### **Other demand factors**

Lack of published information on the priority areas for health research in developing countries made us turn to alternate sources of information. These include analyses by HSD Regional Representatives, a LARO-initiated report entitled *The Distribution and Characteristics of Health Research in Colombia* by Dr. Beatriz Elena Gonzalez, and a study commissioned by the Strategic Planning Committee on priority areas for health research in developing countries. This study had three main components:

1. a survey of 15 experts identified by IDRC, in order to solicit their views on perceived priority areas for health research in developing countries;
2. a survey of 10 Canadian-based non-governmental organization (NGOs); and,
3. a limited review of annual reports, conference proceedings and other publications from bilateral and multilateral government aid agencies, foundations, etc., to ascertain their priorities in health research.

These studies highlight the following issues:

1. The health status of communities and development are increasingly interdependent.
2. Despite the efforts of funding agencies and national governments, reported infant mortality remains unacceptably high in many developing countries.
3. Most research focuses on documenting and/or solving a health problem such as a disease, but often neglects to investigate its causes and to consider the development and testing of strategies to alleviate the effect on people afflicted.
4. It is difficult to plan and perform research projects in such a way that the results are implemented: do we bridge the gap between research and action programs?
5. Health is influenced by many factors including housing, food security, basic water supply and sanitation services, employment and education — in essence, by the equitable distribution of resources within a society. Each of these elements tends to be treated as a separate area for research, however. The creation of a more holistic approach to understanding the determinants of health, research on intersectoral strategies and their effect is a priority. This multisectoral research is of particular importance at the micro or community level.

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6. Primary health care is an accepted strategy for improving health and well-being. Significant levels of capital resources have been invested in developing, implementing and evaluating the effect of this approach. But the apparent poor performance/effect of PHC programs may be due to a lack of management expertise in their development and implementation. The question is not what services to deliver, but rather how they can be most effectively delivered.
  7. Environmentally-related health conditions, including infectious diseases, have perhaps the greatest effect on morbidity and mortality in the LDCs. But environment is not restricted to housing and basic service conditions. Occupational health and safety is of increasing concern in these countries, as evidenced in part by an increase in morbidity and mortality statistics related to accidents and substandard working conditions. Related to this is the subject of child labour and its effect on the well-being of future generations. The effect and misuse of pesticides and industrial effluent is also a growing concern. Research into possible means of preventing environmental health threats is of great importance.
  8. Communities constitute a system, whether they are permanent or temporary, legal or illegal. Social, organizational and political structures and processes evolve over time in response to needs identified and articulated by the community. A component of this is the way community members address health-related issues. Yet most development-related health programs, be they disease control or immunization, are imposed. Community members become subjects. If resources are to be invested in the communities and the well-being of members improved, the recognition and analysis of existing structures and processes that deal with health-related problems should be supported.
  9. Non-communicable diseases, particularly drug, tobacco and alcohol abuse, are becoming topics of concern in developing countries. Although some European and North American countries now report a levelling off, even a modest decline in alcohol consumption, the global trend is still one of growth. Developing countries record the steepest rise in cigarette consumption. Moreover, available figures do not include the consumption of home-made and locally manufactured cottage-industry cigarettes.<sup>5</sup> Because cigarettes in developing countries often have far higher yields of tar, nicotine, and carbon monoxide than those consumed in developed countries, the potential smoking hazard is comparatively greater.
  10. Rapidly declining morbidity and mortality rates as well as declining natality rates, particularly in Asia, will result in an aging population. Many families will be multigenerational and problems of dependency will arise. The aged in developing countries are still cared for by the extended family. With rapid social change, especially urban migration, this will change, however. The implications of older, dependent populations and changes in health profiles will have to be examined, as will their consequences for health and social services.
  11. The past three decades have witnessed the unprecedented growth of cities in LDCs. This trend is expected to continue. By 2000, it is estimated that 75% of the Latin American population will live in cities, most in peri-urban slum and squatter settlements. Asia is projected to become the most urbanized region of the world. By 2025, approximately 60% of the African population is expected to live in cities. Priority areas of research will include questions related to the

## **Assessment of Existing Health Research Situation**

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allocation and distribution of health and social services, problems related to high density living conditions, overcrowding and poor environmental conditions, and the management of community services.

It is clear that priority research areas cover a wide range of topics, both disease-specific and thematic. Needs vary from country to country, even between regions within countries, but the poor quality of data available makes it difficult to carry out micro-level analyses of health research priorities. Two trends are emerging, however for health research in developing countries. First, conditions of ill-health other than the traditional "tropical diseases" are of growing importance. Second, it is recognized that more research must be carried out on management aspects of health care delivery and on new strategies for developing and for promoting the diffusion, acceptance and utilization of health services and other technologies designed.

### **Supply Assessment**

Although organizations such as the Pan-American Health Organization (PAHO) and the Organisation for Economic Cooperation and Development (OECD) have completed inventories of research projects supported by major funding agencies, little information is available on the process used to select research projects. Moreover, many of the projects listed reflect the funding agencies' priorities and are directed by expatriate researchers. Information on LDC government financial and human investments in health research is seriously lacking.

Because of the limited time available to complete this study, we decided to restrict our supply analysis to preparing an overview of the content and focus of the health research activities supported by 32 major multilateral, bilateral and non-governmental organizations, foundations, research centres, councils, institutes and programs. As summarized in Table 4, we divided health and health-related issues into 11 broad areas or topics regardless of the type or focus of the research. A literature search was carried out to obtain information on health research policy and on on-going activities and fields of interest. We did not include support for the delivery of health programs and health development.

Table 4 also provides an overview of the organizations' major health research interests. Because no information was available on the amount and source of development assistance for medical and health research, we could not indicate the amount of support provided in each category. The data did not indicate where the research is taking place; in fact, much of it is conducted in developed countries and that part carried out in developing countries may not be performed by developing country scientists. This practice does little to provide training and research opportunities for local scientists or to bridge the gap between research and the implementation of research findings.

The data do show that research on Tropical and Infectious Diseases is supported by many, while few organizations fund research into Occupational Health or Traditional Medicine. Biomedical Research appears to receive only limited support, but this may be due to the fact that it can be subsumed under a number of different headings, including diarrhoeal diseases, population, etc. Although the organizations studied have very different operating styles, policies and objectives, some comments can be made about the operating modes and methods of setting priorities of some major health research funders.



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**USAID:** Washington-based and field staff of the U.S. Agency for International Development work with developing country scientists and ministries to define specific research questions appropriate to the needs, institutions, and resources of each participating country. The parties then design and organize a collaborative research program drawing on the facilities and expertise of developing country, U.S., and international institutions. Some activities, such as research on abortion and on certain contraceptives, are not supported, however, because of U.S. policies.

**PAHO:** Individual countries within the PAHO region are encouraged to develop their own national health research policies, priorities, and strategies based on health determinants, health status indicators and identified health problems. PAHO has also identified a number of research areas that would yield critical information for the analysis of country health situations and that could be used to set regional health research priorities. The process is not functioning well at the moment.

**SAREC:** The Swedish Agency for Research Cooperation with Developing Countries develops bilateral research projects in developing countries on problems of great importance to the country concerned as well as in areas where the results or research affecting their development can be transferred and implemented. This leads to a different operating style than in the foundations and WHO Special Programmes, where multidisciplinary groups of scientists advise on the setting of scientific and technical priorities. According to SAREC's 1985/86 *Annual Report*, 50% of SAREC's commitments went to international research programs. The largest part of SAREC's budget went to the WHO Special Programmes.

It appears that much of the health research funded and/or implemented by these organizations is disease- or condition-related. While there may be a variety of topic areas or focus within each broad category — the development and diffusion of an innovative intervention strategy, for instance — the research tends to be problem-oriented, segmented, and top-down. Researchers often carry out extractive studies in which community members are subjects. A relatively small number of studies are devoted to examining the root causes of identified ill-health conditions. The input of LDC community members — their attitudes, perceptions and means of relating with and resolving the ill-health conditions they identify as priorities — is seldom recognized. Systematic analysis is rarely used as a basis for formulating more effective strategies and identifying priorities.

### **Comparative Analysis of Demand and Supply**

The IDRC Regional Director's *Report on Activities For LARO (1984)* states: "Although the Pan American Health Organization has carried out a comparative analysis of available information on health research in 11 countries in the region, the scale on which the analysis was carried out makes it difficult to relate the research activities with health problems." This situation is widespread: no sufficiently sensitive reports or articles exist to correlate the importance or relevance of health problems, the level of investment, and the content and focus of health research in LDCs to allow for a comprehensive analysis of the situation.

The same can be said of this analysis. But the information collected and our experience makes it possible to provide a crude comparative analysis.

First, although health research activities reflect available morbidity and mortality data, they tend to be discipline-bound and focus on only a few of the target population's conditions of ill-health. Few programs or projects follow a holistic approach and fewer still concern

## **Assessment of Existing Health Research Situation**

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themselves with identifying or examining other than biomedical causal factors. This fragmented approach concentrates on one segment of health problems without recognizing that health is a human condition. And even when effective strategies and approaches are developed, their effect is limited. This situation is analogous to the all-too-common problem of physicians dealing with diseases rather than people.

Second, changing socio-economic and political conditions in the LDCs are resulting in different morbidity and mortality problems. Increased urbanization and crowding can only serve to exacerbate already poor environmental conditions and the consequent profile of ill-health of communities. The situation will not be improved by simply providing services. The organization and management of these services and interventions, both by the communities themselves and the health care systems that must support community efforts, are priorities. They do not, however, seem to attract much attention.

Third, behavioural and/or lifestyle-related health conditions, particularly sexually-transmitted diseases (notably AIDS), smoking, alcohol and substance abuse are of increasing concern in LDCs. Statistics indicate that both morbidity and mortality rates related to these factors are increasing at an alarming rate. However, few health research resources appear to have been invested in developing strategies to modify behaviour and/or eliminate circumstances facilitating the onset of these conditions. Little research is being carried out on the social and economic pre-conditions for community awareness, acceptance and action, although this is critical to the development and application of appropriate interventions.

The priority identification and setting mechanism appears to strongly determine the focus and content of health research. Many international organizations are structured along disciplinary lines: their secretariat and consultant experts decide the focus and content of health research. Problems are discussed and defined from the expert and/or funding agency perspective. Decisions on strategies to be pursued, research methodologies and indicators of success are usually taken without consulting subject populations. Health problems and research priorities are determined globally or regionally on the basis of disease, discipline or subject.

Research projects therefore tend to follow a top-down approach and are carried out with little input from the intended beneficiaries — even when there is input, it usually takes the form of voluntary labour for the construction of facilities. The limited improvements, if any, in community health would seem to indicate that such approaches are successful only in dealing with technological aspects of diseases or health problems. The gap between technological solutions (vaccines, for example) and their effective and sustained application (the adoption of immunization as part of community behaviour) must be closed. This will require a great deal of research.

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## Notes

1. The HSD is promoting and supporting the Independent International Commission on Health Research for Development (IICHRD) to examine these issues. A background paper by Richard Feachem, *et al*, entitled *Identifying Health Problem and Health Research Priorities in Developing Countries* was presented to a July 1987 three-day IICHRD planning meeting which included some 47 senior professionals. It summarized the methodological and data-related problems in this area. This document is available from the HSD.
2. This refers to the six WHO Regions in Africa.
3. *World Health Statistics Annual*, WHO, 1986, p. 17.



## Health Sciences Division Program Assessment

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This section analyzes the evolution of the HSD program, particularly its direction, content and composition as well as the resources — capital and human — at its disposal. A comparison of this information with that in the previous section will allow us to identify the program's strengths and deficiencies.

### Program Analysis

#### Funding patterns

**Regular program appropriations.** Table 5 provides a breakdown by fiscal year of HSD regular program appropriations. From this table, it is possible to see how the HSD programs and the emphasis placed thereon have evolved. For information purposes, an inflation-adjusted table of regular program appropriations has also been provided (see Table 6). This table illustrates that although there appears, in nominal dollars, to have been a considerable increase in support to certain programs, in *real* dollars support has remained relatively flat, or in some instances has actually tapered off.

**Research institutions.** Table 7 provides a breakdown by fiscal year of HSD appropriations,<sup>1</sup> the number of research groups funded, the average grant per group, the percentage share of the appropriations, and each type of research group's percentage of the total research groups funded.

For purposes of this analysis, we have divided the research groups into six types:

- IDRC;
- non-governmental organizations (NGOs);
- international non-governmental organizations (INGOs);
- universities;
- international governmental organizations (IGOs); and
- national governments.

*NGOs* are non-profit, development-oriented agencies staffed principally by developing country nationals. *INGOs* are non-profit, development-oriented groups working in several developing countries, but headquartered in a developed country. Their research teams can include developing country nationals and/or expatriates. *IGOs* are groups related to the United Nations or other international government-sponsored organizations or research centres. The *national government* category can include research groups within ministries or those based in agencies and institutes reporting directly to a ministry. *IDRC* is listed as separate category since it approved three projects to itself: in 1975 and 1977 for consultancies, and in 1980 to underwrite the cost of a major workshop on water supply and sanitation in Africa.

From 1971 to the end of the 1986 fiscal year, HSD provided grants to 617 research groups; that is, institutions responsible for performing the project, whether or not they were the recipients of the funds. Of these, approximately 13% received more than one grant. The average value of a HSD grant to a research group was 130,940 CAD. Additional information on the average size of HSD grants is provided in Table 8.

## Health Sciences Division Program Assessment

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Figure 3 summarizes total grants to recipients by category and compares allocations. One major trend is a drop in appropriations to INGOs. This reflects a decision by the Division's management to decrease the number and scale of grants for groups such as the Population Council which are based in developed countries.

National government-based research groups and universities jostled for position during these same periods (Figure 4). During the 1983/86 period, university groups received the largest proportion of grants (39.3%), perhaps indicating the improved capacity of developing country academic institutions to propose and undertake good, relevant research in the health field. This could also indicate a change of emphasis within the Division toward recognized health research institutions, HSD staff's greater ability to contact the researchers, and the researchers' willingness to work with IDRC.

National government-based groups received 33.3% of total appropriations in 1983/86; NGOs received 12.5%; IGOs received 8.2%; and INGOs received 6.7%.

The number of research groups supported in each category follows similar trends (Figure 3). University and national government-based research groups ranked first and second respectively in all study periods. The number of NGO research groups increased significantly, from six in 1971/76 to 32 in 1983/86.

Comparing the geographical share of appropriations also reveals some interesting trends. For example, although more universities in South and Southeast Asia received grants than in any other region, universities' share of grants in this region decreased slightly over the entire period (Figure 5). The same is true in Africa and the Middle East. Only in Latin America did appropriations to university research groups grow consistently. The reverse is true for appropriations to national government research groups. In Latin America, their share of appropriations decreased during the period, while it increased in South and Southeast Asia. The share of allocations to government research groups in Africa and the Middle East dropped slightly in 1977/82 but returned to its former share — about 35% — in 1983/86.

For the 1971/76 period, 80% of appropriations directed to NGO research groups went to Latin America; the remainder went to South and Southeast Asia. This was reversed in 1977/82 and 1983/86 when NGO-based researchers in South and Southeast Asia received the largest proportion of appropriations. The most significant growth in percentage share of appropriations occurred in Africa and the Middle East: by 1983/86, this region accounted for 21.9% of total appropriations to NGO-based research groups.

This review of appropriations by research institution shows that the mixture of institutions supported varies from region to region. A more detailed review of appropriations by type of research institution in each region is available from the HSD.

**Recipient institutions.** A review of the number and amount of grants by recipient institution also provides some useful information. As can be seen from Table 9, a limited number of recipient institutions (17 in total) account for 27% of the total number of grants made since the inception of the Division and 40.0% of the total regular program appropriations. The largest number of these institutions (five) are in Southeast Asia and Latin America. This probably reflects several factors:

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- the relative emphasis placed on these regions in the past by HSD;
  - HSD staffing patterns, as relate to regional office positions; and
  - the relatively high quality of institutions in these regions.

This analysis also illustrates that there has been a concentration of support for a relatively limited number of institutions, even though the HSD has never explicitly adopted an institution strengthening policy targeting specific institutions for coordinated support. In fact, an interesting dichotomy appears to exist. As per the detailed listing of recipient institutions supported by HSD (copy available in the Division), a very large number of institutions have received only one grant; whereas the 17 institutions identified in Table 9 have each received five or more grants. The emphasis on these 17 institutions appears to be due to the relative degree of sophistication of these institutions and other incidental factors, such as proximity to IDRC regional offices, whereas the scatter among many other institutions can be attributed, at least in part, to the division's overall responsiveness and a lack of coordinated approach to institution support.

**Appropriations by region.** It is somewhat difficult to discern trends in HSD appropriations by region. As Table 10 illustrates, appropriations per region fluctuated significantly in several regions during the 1971/76 and 1983/86 periods. Two points are nonetheless worth noting: first, the percentage of appropriations in the LARO region has remained relatively constant; second, combined appropriations to Africa (MERO, EARO and WARO) have increased from 18.5% in 1971/76 to 24.2% in 1983/86. Trends are also difficult to discern during the period 1983 to 1986 (Table 11) except for an increase in appropriations in East Africa and decreases in Asia, Latin America and the Caribbean.

**Appropriations by country.** While the analysis of the distribution of appropriations by region does not provide much useful data, a summary of appropriations by country does reveal some interesting information. The Health Sciences Division has funded 20 or more projects in seven countries (see Table 12). Together these countries account for 31.2% of the total number of grants made by HSD and 23.5% of the dollar value of grants made since the inception of the Division. Four of these seven countries are in Southeast Asia. Support to countries in this region has been particularly strong because the Health Sciences Division has had a permanent Regional Representative in ASRO since 1978 and also because research institutions in these countries are relatively well established.

At the opposite end of the scale, of the 72 developing countries having received HSD grants to date, 25 countries have received three or less grants. This also gives some indication of the degree of scatter in HSD support (the so-called *shot gun* approach), which again can be attributed to the Division's overall responsiveness and a lack of coordinated country-level support, both at the division and Centre level.

In Table 13, we have grouped the countries in which HSD grants have been made into country categories used by the World Bank. It is very interesting to note that the largest portion of HSD support (38.4% of the total number of grants and 31.7% of the total amount of appropriations) has been provided to countries in the *lower middle-income* category. A considerably smaller number of grants has been made to the *low income* countries. This may reflect the relative weakness of research institutions and the extent of practical difficulties encountered in performing research in these countries.

In looking at Table 13, one also observes that HSD appears to have provided a considerable degree of support to institutions in developed countries. This is somewhat misleading, however, as explained in notes 3, 4 and 5 in the table.

## **Health Sciences Division Program Assessment**

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### **Project focus**

A subject analysis of the research supported by the HSD indicates that, until recently, most projects were unidimensional and problem (subject or discipline) oriented. For the purposes of this review, each project was assigned a set of *themes* to describe its principal focus. The Project Information System (PINS) abstracts for each project were used to draw up a list of 11 themes:

1. **Technology/intervention development:** development of a technology and/or intervention under controlled conditions.
2. **Descriptive epidemiology studies:** studies that define prevailing health status and health services in the field.
3. **Clinical epidemiology trials.**
4. **Managerial aspects of HSD interventions:** actual means of managing a situation — for example, how communities collect and use water — or a study that recommends how a situation can be better managed.
5. **Socio-economic/cultural aspects:** a study that examines how these parameters affect a health condition or the transfer/implementation of a technology or intervention.
6. **Evaluation of interventions:** field testing of a technology or intervention (measuring its technological performance).
7. **Environmental assessment:** study of baseline environmental conditions and/or changes that have taken place as a result of an intervention.
8. **Health impact:** the effect of the technology or intervention on health. This also covers studies examining the effect of prevailing conditions on health.
9. **Research-building capacity:** a project that aims, explicitly or implicitly, to increase the ability of the research team or institution to plan and carry out research.
10. **Training:** a project that gives individuals formal training.
11. **Other:** a project that cannot be classified in the categories above.

A member of each sector reviewed and assigned themes to each project. Although the classification of projects is subjective, particularly for earlier projects that predate current staff, the PINS abstracts provided enough information to classify most projects fairly accurately.

The number of themes per project in each sector is presented in Table 14. It is clear that, except for TROPICAL AND INFECTIOUS DISEASES, the focus of projects has tended to broaden: the number of themes per project has increased over time. This finding is corroborated by the data presented in Table 15 which show the total number of projects by number of themes.



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While the number of unidimensional projects has increased since the Centre's creation, the percentage of one-theme projects decreased from 56% to 29%. In comparison, the percentage of projects covering three or more themes increased from 10% to 38%.

The primary focus of projects also changed (Table 16) from period to period. At 24%, themes 1 and 6 — *technology/intervention development* and *evaluation of interventions* — for example, are cited most often for projects supported during 1971/76. *Descriptive epidemiology* is the next most popular at 14% of the total, followed by *managerial aspects of HSD interventions* at 9%. The projects tended to be highly concentrated: the first three themes account for 62% of the total number of themes assigned.

For the projects supported in 1977/82, *descriptive epidemiology* is the most frequently assigned theme at 18% (N=392), followed by *technology/intervention development* at 16%, and *evaluation of interventions*, also at 16% of the total. These three themes account for 50% of the total, a decrease from the previous period.

For the 1983/86 period, the ordering of themes had again changed. *Evaluation of interventions* now ranked first at 18% of the total (N=553), followed by *descriptive epidemiology* at 16%, and *managerial aspects of HSD interventions* at 13%, for a total of 47% of the total number of classifications. These data highlight the following trends:

- The first and second ranked themes for the TROPICAL AND INFECTIOUS DISEASES (TID) and the WATER SUPPLY AND SANITATION (WSS) sectors remained constant: *descriptive epidemiology* and *evaluation of interventions* for TID; and *technology/intervention development* and *managerial aspects of HSD interventions* for WSS. In both cases, however, the share of these themes declined over the study period, from 65% to 51% for TID and 83% to 43% for WSS, indicating that the projects' focus had broadened to include other themes.
- For OHET, three themes were consistently ranked first (*descriptive epidemiology*, *evaluation of interventions*, and *environmental assessment*), although the order of ranking changed during the two study periods for which data are available. The total share of these themes decreased only from 80% to 70%, indicating that the vast majority of projects in this sector still covered these themes, although they increased in scope.
- The order of themes changed markedly for the MCH/HSR sector, although *evaluation of interventions* placed in the top three during the three study periods. Projects in this sector seem to have shifted emphasis from the development and field testing of technologies and interventions to studies concerned with socio-economic aspects of interventions. The concentration of the three highest ranking themes also declined from 66% to 57% between the first and third study periods.

This analysis shows that HSD projects have broadened their focus over time, and that the Division as a whole has shifted its focus from technology/intervention development and field testing to an evaluation of these technologies and interventions, the development of health profiles, and the examination of the management aspects of interventions.

To summarize, a concerted effort has been made to support projects with broader frames of reference. The tendency, however, is to support single-subject (although perhaps multiple-theme) projects as one-time events with research groups that often do not receive

## Health Sciences Division Program Assessment

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subsequent research grants. There are many reasons why these groups may not submit further research proposals, but the fact remains that many of the projects supported by the HSD are one-shot affairs. Because development is a long-term process, this tendency may impede the build up of a critical mass of research resources needed to bring about real improvements in the health and well-being of communities.

### Assessment of Available Resources

The major resources available to the Health Sciences Division in carrying out its mandate are the budget and staff; this is, person-years.

#### Budget

A summary of the overall HSD budget since the inception of the Division, broken down into regular program, cooperative program, DAP, technical support and division management components, is provided in Table 17. This table illustrates that HSD's combined program budget (regular programs and COOP) has grown rapidly since the 1980 fiscal year. However, during this same period, technical support and division management combined appropriations, as a percentage of the total program budget, have decreased from 24.8% to 21.6%. It is also interesting to note that the total HSD budget, as a percentage of the total Centre budget, decreased considerably in 1976 with the transfer of the DEMOGRAPHY AND POPULATION program to the Social Sciences Division. The HSD share of the total Centre budget then remained at this lower level for nine years and began to gradually increase, at the Board's encouragement, in 1985.

For information purposes, an inflation-adjusted table of the HSD budget components has also been provided (Table 18). It shows that although there appears, in nominal dollars, to have been a considerable increase in the regular programs budget, in "real" dollars, 1987 regular program appropriations are at approximately the same level as in 1975.

As far as HSD's budget for the next four years is concerned, in conjunction with the preparation of *PPR IX*, HSD was requested to submit first-order and second-order budget estimates for the 1988/89 to 1991/92 period. In these estimates, first-order figures for 1988/89 were calculated as being the previous year's budget less 10%; these figures were then increased by 5% for each following year. Second-order figures were calculated as being equal to the first-order estimates plus 20% (Tables 19 and 20).

Table 21 presents a "best guess" of funds available through to 1991/92. This best guess is based on the following premises:

- The 1987/88 regular program budget allocated to HSD by President's Committee was originally 12.437 million CAD, an amount exceeding the division's second-order boundary. However, this was based on an overall grant reference level of 108.1 million CAD. We subsequently learned that the overall grant level for 1987/88 will be 105.9 million CAD. The HSD regular program budget for 1987/88 was consequently reduced by 185,000 CAD to 12.252 million CAD.
- The last figures obtained from Treasury Board showed that the IDRC grant would increase by almost 8% in 1988/89 and by 7% in the following year. In light of the

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recent scale-back in the Centre's projected 1987/88 grant increase and generally tight budget constraints, we based our best guess projections on an overall 4% per annum increase in the Centre's grant subsequent to 1988/89.

The best-guess figures fall roughly near the second-order boundary estimates originally calculated in 1986 for *PPR VIII*. It is interesting to note that although the HSD overall budget will increase by a nominal 22.4% over this period, assuming a 4% rate of inflation, the real rate of growth will be approximately 5.4%. This should result in a slight increase in the HSD share of the total Centre budget. As per the indicative planning figures provided in *PPR IX* (p. 40), the HSD share of the Centre's total program budget (excluding DAPs and the Centre reserve) should increase from 15.6% in 1987/88 to 16.0% in 1991/92.

A breakdown of the projected HSD program budget by program for the period 1987/88 to 1991/92 is provided in Table 27, in Chapter XI of this document.

#### **Person years**

The number of person-years (PYs) available to HSD in relation to the program budget (one indicator of workload) is depicted in Table 22. As can be seen from this table, appropriations per person-year have increased continuously since the inception of the Division until now and will continue to increase at a rapid rate until 1991, assuming a continuing freeze on person-years. This table also shows what the appropriations per person-year would be during the next four years if additional person-years that will be requested by HSD are approved. In the event that these additional person-years are approved, appropriations per person-year should eventually level off by 1989.

Given the overall staffing freeze in the Centre, it is thought that the Division is not likely to be given many new PYs over the next five years. Table 23 shows the actual number of HSD positions and the desired number of positions for the next few years. Despite the anticipated Centre-wide restrictions on PYs, we hope that a limited number of additional PYs will be made available to the division in the near future to better cope with the increasing workload, as evidenced by the increasing level of program appropriations. A breakdown of the desired staffing levels, by program and regional office, is provided in Table 24, in Chapter X of this document.

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**Note**

1. As per the Centre's PINS database, which shows the 1971-1976 HSD DEMOGRAPHY AND POPULATION appropriations as belonging to the Social Sciences Division. For this reason, these DEMOGRAPHY AND POPULATION projects have been excluded from this analysis.

## **Operational and Strategic Issues**

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The previous sections have reviewed the Health Sciences Division's program and resources, in light of changes occurring in the Division and in IDRC's policy and programming. An attempt was also made to identify priority health research needs in developing countries. Taken together, this information provides a basis from which to assess and, if necessary, reconstruct HSD's program and operational structure. This chapter highlights some issues that need to be considered in planning the content of the Division's program and its complementary organization.

### **Responsiveness and the Hands-On Approach**

The Centre's responsiveness is its most important feature. It must continue to influence the Divisional programs and govern how research proposals are developed. This assumes that the research proposals submitted to IDRC for funding reflect priority concerns in developing countries. In theory, this mode of operation assumes that IDRC staff do not control the content and execution of projects, but, rather, play a supportive role. In actual fact, this assumption is not always valid. How proactive should the Centre become in influencing the nature and direction of research proposals? How much should staff become involved in project development? Centre staff must decide if the proposal addresses a local priority, is relevant to the Division's objectives, of high quality, and can be carried out by the research group. The principal investigator must direct the development and conduct of the research project, however. Insistence on these criteria is one of the features which sets the Centre apart. In applying these criteria, IDRC uses a hands-on approach with researchers in project development. This carries the danger that the researcher will respond to IDRC rather than vice-versa. The close working relationships between IDRC staff and researchers appears to be effective, if labour-intensive.

### **Capacity Building**

Another important issue is the role IDRC projects play in building research capacity. On many occasions IDRC program officers are called on to assist members of the research project team increase their project management skills. This is time-consuming but important in helping researchers in LDCs address major health research issues.

### **Project Size**

The Centre is as willing to develop small projects as large ones, realizing that their payoff may be equal. When dealing with research capacity-building, a small project is usually a first step. Using the hands-on approach, however, it takes staff as long to develop small projects as large ones: available staff time therefore becomes a major constraint.

## **Operational and Strategic Issues**

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### **Relevance to Beneficiaries**

The relevance of research efforts also influences the nature of a Divisional program. This not only refers to the "marketability" of project output (whether tangible products or strategies for service development and delivery), but, more important, the relevance of the research to meeting basic human needs. *PPR VII* highlights this concern. It states: *Relative emphasis should be given to research, research-supporting and experimental development activities that have direct relevance to basic human needs.* This central tenet of IDRC philosophy must be reflected in the Health Sciences Division's program.

### **Professional Staff**

The Centre's comparative advantage depends to a large extent on the expertise of HSD professional staff. With the wide focus of the Centre's overall program, this broad range of in-house expertise permits a significant degree of flexibility in considering non-conventional problems or themes. The Health Sciences Division's organization and staff should reflect this.

### **Evaluation**

The Division should be more involved in evaluating the output and effect of its projects on the beneficiaries, on national health policies and programs, and on the development process. It could thus ensure that its program remains responsive to the most urgent health research needs. The present system of looking at numbers of projects and appropriations levels, as embodied in the *PWB* and other Centre documents, is inadequate for this task. An analysis that summarizes data from all *Project Completion Reports* (PCRs) written since the inception of the Division has been prepared, but the information obtained from this analysis is also not particularly useful in evaluating effect and program planning. (A copy of this analysis is available in HSD.) An alternative means of measuring performance, output, and effect must be found if the Division is to meet Centre objectives.

### **Program Strategy**

The review of the Health Sciences Division's current program highlights several weaknesses and strengths, which should assist in reorganizing the Division and its program.

1. The geographic spread of HSD projects has been wide but thin (see Chapter IV, p. 53). Projects have been approved in almost every LDC (with significant exceptions in the MERO and WARO regions). Moreover, only 13% of research institutions supported have received more than one grant. If the Division is to focus a significant portion of its resources on improving the capacity of indigenous researchers to develop, implement and manage research projects, a commitment must be made to support research at specific institutes or organizations over an extended period. One-shot projects do not necessarily strengthen research capabilities enough to ensure subsequent self-reliance.
2. Most research projects approved have focused on narrow, unrelated, disciplinary areas. This has prevented us from learning by experience. A theme or cluster approach could more effectively respond to the emerging holistic perception of

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development. A Division-wide theme, for example, might be the role of health education in changing health-related behaviour. This would include evaluating the strategies used to design and deliver health education programs. Projects encompassing the same theme might be supported in several developing countries, creating a network through which researchers could discuss their experiences. The Division has substantial experience in the *network* approach.

3. Although the Division supports community-based projects, the question arises as to whether a significant portion of our resources should be devoted to *community-driven* research. The research strategies and methodologies used are critical factors. They range from *community-extractive* methods, whereby the community members are passive subjects, to *community-interactive* methods, whereby the community members are involved in planning and executing the project, to *community-generated* and executed projects. The methodology used depends on the problem to be studied. Projects supported by the HSD must focus on priority health research issues, actively involve community members wherever possible, and benefit disadvantaged people.
4. Given the resources available, the present Division objectives are very broad. A narrower focus would perhaps be desirable, such as on diseases or conditions. This would entail supporting a research topic from the design of the intervention to field-testing, modification, evaluation, and application. Most health research funding agencies follow this policy. In spite of its obvious appeal, it is a top-down concept. Moreover, very few, if any, topic-related health interventions are effective in the field if they neglect other factors. This has been clearly illustrated by the WHO smallpox eradication program, the expanded program of immunization, the onchocerciasis control program, and so on. Effective technologies do exist, but their existence does not guarantee better health for the poor.

The issue of longer term support for a research concept should receive serious consideration. The Division has stimulated and supported many research networks but these are usually horizontal. If the Division is to follow a priority research problem from identification to application of results, it should narrow the scope of its program.

The central concept underlying the Divisional program is the need to address priority health research issues from a broad, multidisciplinary perspective. The Division must support the development of technologies and strategies to improve health and well-being, as well as research which addresses the critical factors affecting their success or failure in the community.

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## Research Strategy

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The strategic analysis carried out by the Division in 1986 and 1987 reaffirmed the complex relationship between health and poverty as well as the need to evolve a research strategy framework to embrace it. As illustrated in Figure 6, HSD decided to focus its research programs on the *community*. It defines a community as any identifiable geographic, social, cultural and/or political grouping of individuals with common interests and goals. It is here that the multiple elements responsible for health and prosperity, or for illness and poverty, interact. It is also where the effect of policies and programs is felt.

The framework of the Division's research strategy aims to create an environment within which the community, researchers, and those responsible for the provision of health services can work together to create *effective* and *sustainable* systems of community health. These systems include services and care as well as the community members' knowledge, behaviour and practices. The roles of the three framework components are as follows.

Three interdependent elements provide the framework for the Health Sciences Division's research strategies: the community, the national health care systems, and national researchers (Figure 1).

1. The community is the fundamental unit upon which the research efforts are focused. The determination of the social and economic dynamics of communities and the determination of community health needs and priorities is a major intermediate research objective. A key element of such research is the methodology, which can vary from participatory action research to more traditional survey-based research, both involving the community. Results of community-based research frequently lead to innovative interventions by the community itself, either within the health sector or in other sectors that directly or indirectly affect community health.
2. Health status and problems at the national, sub-national (provincial) and community levels also can be determined by researchers working with national health care systems, using epidemiological and other research methodologies. Health problems and priorities established at this level can be analyzed and correlated with the community-determined needs and priorities. Appropriate interventions at all levels emerge from these analyses.
3. National researchers form the critical bridge between the national systems of health care and the community. They develop appropriate methodologies enabling the community to carry out or participate in the research required to determine its needs and priorities and take appropriate action. At the same time researchers must work with national health sector professionals to identify the most cost-effective systems to meet national, provincial and community health care priorities. Resource allocation must be based on appropriate analyses of health issues at all levels, and not be driven by single-interest groups.

The strategic analysis also led the Division to adopt a holistic model of the ecology of health and development in planning its research programs (Figure 7). The model embraces the multiple factors and their interactions influencing health. These are placed in respect to their effects on the community and its members.<sup>1</sup> Our model accords low priority to research

## Research Strategy

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on genetic and inherited health factors because they fall largely outside IDRC's mandate and the Division's objectives and receive substantial attention and financial support from research programs in the industrialized countries. We believe this model of the ecology of health and development not only facilitates the design and planning of health research programs and projects, but also stimulates intersectoral and interdivisional collaboration, both within and outside IDRC. The model enables us to create a dynamic, relevant and justifiable Divisional planning process and to establish appropriate priorities.

The Health Sciences Division's model identifies three major influences on the health of communities: the environment; human circumstances and behaviour; and health systems. These are the basis for HSD's three research programs: **HEALTH AND THE COMMUNITY**; **HEALTH SYSTEMS**; and **HEALTH AND THE ENVIRONMENT**.

These three interdependent and interactive programs share the goal of the research strategy: the creation of effective and sustainable systems of community health (Figure 6). Because of the critical role the environment plays in a community's health and its profound effects upon a community's needs and priorities, the program centred on the environment is a key element of the strategy. The three research programs enable the Division to elaborate and examine potential alternative systems of community health, their effectiveness, costs, sustainability and replicability. Figure 9 illustrates the interactions between the programs.

HSD chose the three programs for a number of reasons. First, they require a holistic and multisectoral approach to health. Second, they should encourage innovative cooperative research endeavours in order to obtain new knowledge (at both the macro and the micro levels). The approach, we believe, is both timely and unique, and will take full advantage of IDRC's multisectoral concept of development. Third, the three programs will encourage intra- and inter-divisional collaboration in the regions and in Ottawa and will promote and catalyze interdisciplinary initiatives amongst researchers at the national and international levels. Finally, the strategy and programs present a challenge and an opportunity to IDRC.

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## Note

1. This model is adapted from one presented by H.L. Blum in *Planning for Health*, Human Sciences Press, 1974, page 3 (Figure 8). Blum's model placed health in the context of the individual and included heredity among its casual health factors (see Figure 7).

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## The Research Programs

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**HEALTH AND THE COMMUNITY, HEALTH SYSTEMS, and HEALTH AND THE ENVIRONMENT:** the three research programs which guide HSD activities and operations focus explicitly on people and their communities. In choosing these programs, we recognized that the Division's previous subject- or discipline-based structure could be oriented towards people and communities. Indeed, the Division had been doing this. However, we believe that the new organization and its more explicit and precise focus will enable us to carry out our mission more effectively and to develop a balanced set of activities that could contribute directly to improving the health and well-being of the underprivileged in developing countries.

The three research programs cover all aspects of health and health-related conditions. They overlap, forming a continuum that flows from research on health as perceived by community members to research on global health and related problems as perceived by national or regional experts. Program priorities are set in accordance with the Division's mission and objectives (Volume I, Chapter II). All activities must be justified on this basis.

The HSD programs are multidimensional (Figure 10). The holistic model of the ecology of health and development will stimulate the Division to develop multidimensional groups of projects linked to each other and to other groups of projects, all focused on improving community health and well-being. Thus, projects relating to decision-making in health would cover the spectrum from the family to national ministries of health, finance and education. Projects in one region dealing with a specific subject or theme would relate to those in other regions, creating the possibility of multiple overlapping and interactive networks. Regional and national needs and research opportunities will determine specific research themes, such as health economics, and research subjects, such as pesticide intoxication and AIDS. In this way a mosaic of divisional and interdivisional groups of projects will be assembled.

The three programs form the outline of this mosaic and focus the Division's activities. They will also determine the Division's *responsiveness*.

The new programs have absorbed the projects in the old program sectors — WATER SUPPLY AND SANITATION, TROPICAL AND INFECTIOUS DISEASES, MATERNAL AND CHILD HEALTH, OCCUPATIONAL HEALTH AND ENVIRONMENTAL TOXICOLOGY, and HEALTH SERVICES RESEARCH — but projects within the new programs will continue to be classified according to these and other subjects, disciplines and themes. Projects dealing with specific subjects such as malaria, could, therefore, fall within any of the three research programs.

In keeping with the Centre's and the HSD's objectives, each program seeks to assist developing countries to strengthen and maintain indigenous research capabilities. To achieve this, the Division will promote and support divisional and interdivisional capacity-building initiatives<sup>1</sup>.

## **The Research Programs**

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### **Health and the Community**

This program was initially called **HEALTH AND HUMAN CIRCUMSTANCES AND BEHAVIOUR**. This rather awkward (although appropriate) title was changed to the more easily understood and remembered **HEALTH AND THE COMMUNITY**.

History shows that when people have the knowledge and means to alter their environment in order to reap economic benefits, reduce effort and stress, and increase comfort, they also have the power to inadvertently change their environment and lifestyles in ways that can improve or damage their health and well-being. It is increasingly evident that the technical approach to development is not adequate to achieve sustained improvements in health. Behaviour, influenced by cultural traditions, economics and political policies, plays an important role in increasing or reducing susceptibility to disease and in fostering or eliminating those conditions that put people at risk.

Changes in the demographic profile of populations also create conditions that may alter patterns of illness. Health and well being and the demand for basic services, including health care, are influenced by a number of factors:

- rural/urban migration in search of employment and improved quality of life;
- forced migrations due to drought, civil unrest and war;
- over-population or the crowding of fragile environments; and
- uncontrolled fertility, at the community and family level.

It is becoming evident that if the health status of disadvantaged populations is to be significantly improved, the rural and urban poor must be motivated, educated and empowered to make choices and take action.

The concept of community participation in health care is not new, particularly in developing countries. In 1978, the *Alma Ata Declaration* stated that all communities and individuals have the right to participate in planning and implementing health care programs. The extent to which community members participate in decisions that effect their health and well-being, and the nature of their involvement in the making of these decisions, is usually not emphasized or analyzed, however.

It is also not fully recognized that people, in and as communities, have a body of empirical knowledge that they use in attending to their health and disease problems. Such knowledge needs to be researched, analyzed and applied as an important component of any health system.

IDRC's unique mandate permits the development and funding of community-based initiatives that can help disadvantaged populations to gain knowledge as well as examine and choose culturally and economically suitable solutions for overcoming the conditions that reinforce the cycle of poverty and illness.

#### **Scope and priorities**

The **HEALTH AND THE COMMUNITY** program will identify and develop action-oriented, community-based research initiatives. Priority will be given to projects that examine how economic and social conditions and human behaviour affect health. These will be

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complemented by projects examining strategies for improving the health of individuals, families, and communities by involving them in possible solutions.

The research supported by the HEALTH AND THE COMMUNITY program will involve the community in its own social, economic, and environmental organization. (See below for an expanded description of possible program themes). Areas to be explored are:

- The factors (social, cultural, economic) that influence a community's acceptance or rejection of information about behavioural traits which improve, maintain, or impair the health of its members.
- Ways of effectively conveying health information and knowledge, and of introducing technologies that influence community health, as well as the ways and means of stimulating communities to correctly and consistently apply information or properly use and maintain the new technologies.
- An examination of the types of community organizations that should be involved, and the methods that can be employed, in order to allow these organizations to identify health needs and priorities and to initiate public action on means of addressing these needs.

The HEALTH AND THE COMMUNITY program links and interacts with the HEALTH SYSTEMS program through research on the means of establishing effective, affordable, and sustained programs with the providers of health services. It also links with the HEALTH AND THE ENVIRONMENT program through the improvement or development and testing of the technologies that accompany a desired intervention, and studies that focus on solving specific disease problems. Epidemiological studies will be developed and supported jointly with the HEALTH AND THE ENVIRONMENT program in order to provide the statistical information needed to choose and test the most appropriate solutions.

The multidisciplinary nature of the problems to be addressed stimulates the support of projects developed and funded in collaboration with other IDRC program divisions. Special attention will be paid to:

- projects that examine strategies for introducing new and improved health-related technologies to communities;
- projects that include innovative approaches to health education; and
- those that promote self-reliance as a means of influencing attitudes and behaviour.

The goal is the communities' adoption of strategies for promoting sustainable behaviour leading to improved health and well-being. Other projects will examine the role community groups such as indigenous non-governmental organizations and women's organizations can play in identifying priority health problems and in promoting change. Projects will stress the process through which communities are motivated to participate in their own development and in ways of improving their health. Community-directed health care initiatives and their evaluation will be encouraged. Whenever possible, these will involve participatory processes.

The poorest suffer most from population increases and economic pressures causing unemployment, currency devaluation, etc. The inequities between rich and poor lead to frustrations manifested in civil unrest and increased alcoholism and drug abuse. The HEALTH AND THE COMMUNITY program will allocate a small percentage of its resources to assessing

## **The Research Programs**

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problems related to alcoholism and substance abuse and to developing and evaluating programs that seek culturally appropriate solutions to these problems.

### **Themes**

Over the next five years, the **HEALTH AND THE COMMUNITY** program will develop and/or coordinate a number of overlapping themes in collaboration with the other Health Sciences programs, other IDRC divisions, and other agencies. These include:

1. strategies for introducing and effectively using appropriate technologies;
2. developing and evaluating methods for assessing how behaviour affects the transmission of communicable diseases, in collaboration with the Social Sciences Division;
3. developing methodologies that promote participatory research and analyze community dynamics, in collaboration with the Social Sciences and other Divisions;
4. women and children in health promotion within the family and community, in collaboration with the Social Sciences Division;
5. new and improved techniques for exchanging and using health-related information (health education), in collaboration with the Communications and Social Sciences Divisions;
6. strategies for improving the nutritional well-being of the family, in particular of women and children, in collaboration with the Nutrition Group.

**Introduction and use of technologies.** Support will be provided for developing a Phase III network of projects in handpump technology (the utilization phase) in collaboration with HSD's programs on **HEALTH AND THE ENVIRONMENT** and **HEALTH SYSTEMS**. The goal will be to establish self-reliant, and self-sustaining manufacturing units in one or more developing countries. It is expected that this process will serve as a generic model for the introduction and utilization of other health-related technologies. These may include:

- water supply and sanitation technologies;
- test kits for water quality monitoring;
- contraceptive technologies such as the Norplant;
- the PATH container kit for primary health care programs; and
- diagnostic tests being developed through the Health and the Environment program.

Research on the introduction of such technologies will be supported jointly by the **HEALTH SYSTEMS** and the **HEALTH AND THE COMMUNITY** programs to ensure their appropriateness and cost-effectiveness.

**Behaviour and the transmission of communicable diseases.** Several projects will be developed to examine disease-transmission behaviour and promote strategies that enable communities to make choices affecting transmission cycles. Of particular interest are sexually-transmitted diseases, vaccine-preventable childhood diseases, and environmentally-related disease. Research initiatives that deal with the AIDS pandemic will be considered



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within the framework of the Centre's strategy. Formal and informal networks will be created to enhance utilization of research results and facilitate the sharing of results. Methodologies will be evaluated and documented to promote the adoption of successful ones through the Health Systems program.

**Methodologies to promote participatory research.** The community plays an important role in health promotion, primary health care planning, management, and evaluation. Although researchers recognize that traditional societies have systems for handling new situations, they have largely neglected ways of incorporating new knowledge and practices into existing infrastructures. The program will stimulate projects designed to test methodologies for examining community health dynamics. An attempt will be made to assess the effectiveness of community actions in introducing self-sustaining, culturally and economically appropriate solutions. Participatory research and community self-management of projects (community involvement) will be encouraged.

To develop economic and culturally acceptable health promotion strategies, support will be given to the examination of traditional health beliefs and practices as well as to social, cultural and economic factors that influence how families and communities identify and solve health problems. The evaluation of proposed strategies will be crucial. The three HSD programs accord high priority to health problems associated with teenage pregnancies and refugees. These are two foci for research on methodologies to analyze community dynamics and promote participatory research.

**Women and children in health promotion.** Projects to study and promote the roles of women and children in health promotion, environmental improvements, oral rehydration therapy (ORT), and maternal and child health issues will have high priority. An international seminar will take place in April 1988, in the Philippines, to discuss research priorities, identify projects that involve women, and to assess women's effect as project/program managers, researchers and change agents. The Women in Development (WID) unit and the Communications Division are cooperating in the management of the seminar. For details on HSD's contribution and relationship to the Centre's WID unit, see the Annex to this document.

**Health education.** Projects to develop and test socially and culturally sensitive techniques for the transfer of information to and from countries and communities will receive high priority. The effectiveness of such methodologies will be evaluated in collaboration with the Office of Planning and Evaluation (OPE). It is anticipated that a multidisciplinary working group will be formed, composed of education, health and communications specialists. This group will help define future research directions and will assist in project development. Further information and details on a proposed research agenda are provided in the annexed *Health Education* position paper.

**Strategies to improve the nutrition of women and children.** The focus will be on using known data to adapt and promote traditional practices that provide adequate nutrition for the family, particularly mothers and children. During the next five years, several projects will be undertaken to identify and assess traditional beliefs and behaviour linked to nutrition. These projects will demonstrate that much can be learned by studying the food habits of traditional cultures. This theme will also examine hygiene practices in the home, particularly as they relate to the safe storage, preservation and preparation of foods. Community projects that deal with major nutritional syndromes such as protein-energy malnutrition, anemias, and iodine and vitamin A deficiency will be supported. The interdivisional working group on

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nutrition will strengthen the nutritional program theme throughout the Centre. For further information and recommendations see the *Nutrition* position paper in the attached Annex.

### **Program profile**

Projects developed under the **HEALTH AND THE COMMUNITY** program will have many components that involve the social sciences. Communications strategies, information systems and evaluation methodologies will be incorporated as appropriate. For these reasons, formal and informal linkages with these Centre divisions are being established. Committees will be formed to review proposals, establish program priorities and assist in project development. Projects that are jointly funded and monitored will be encouraged to facilitate the utilization of research results by researchers, decision-makers and the intended beneficiaries.

Effective and efficient collaboration using the multidisciplinary, holistic approach to health takes time to establish and manage. This is true both within IDRC and with potential grant recipients. As a result, the planned **HEALTH AND THE COMMUNITY** program may not be fully implemented until 1990. To complement health sciences expertise, assistance will be sought from the behavioural sciences, sociology, anthropology, economics, biostatistics, demography, computer sciences, communications and education.

The **HEALTH AND THE COMMUNITY** program will promote and support regional initiatives, i.e., special projects and/or networks that are designed to meet regional needs, priorities and research opportunities. HSD regional representatives (in collaboration with colleagues from other divisions) will identify these initiatives, many of which will have major research capacity-building components. The African region, particularly West Africa, will be a focal point for support.

The program budget will be allocated to projects that fall within the above themes. Projects that examine introduction strategies, noted in (1) above, and projects that deal with participatory research and community dynamics, noted in (2), will take time to develop and may be expensive and of long duration. Initially, projects of this type will be few. By 1993, however, they will likely account for much of the project allocations. The program will also have a high percentage of projects that include training and/or institution strengthening. The Fellowships and Awards Division will collaborate in these aspects. When fully operational, the **HEALTH AND THE COMMUNITY** program will account for approximately 30% of HSD appropriations.

### **Health Systems**

Because *health systems* and *health systems research* are relatively new phrases in the health sciences lexicon, their boundaries are still the subject of debate. The following are working definitions:

- health systems: those activities and variables, including (but not exclusively) the formal health services, that are implicated in health care.
- health systems research (HSR): the study of problems in health care. The purpose of HSR is to ensure that health care is optimally planned and organized, and that programs are carried out efficiently and effectively.

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The HEALTH SYSTEMS program of the HSD links the community and its health needs to the available health care systems and services. It evolved from the former HEALTH SERVICES RESEARCH sector but will assume a much wider focus. The change was necessitated by the emergence of the *Primary Health Care* model endorsed by the WHO at Alma Ata and subsequently adopted by many developing countries. It is now recognized that the model has many deficiencies in:

- the coordination of the total spectrum of health care delivery;
- the allocation of resources across the health system;
- the formulation of health care policies and services related to demonstrated need for care; and
- the collection of information on which such policy can be based and tested for effect.

The special contribution of health systems research is to improve the understanding of the structure and functioning of the whole health system, and to identify gaps between health care delivery and the health needs of the population. It is anticipated that research results will provide a basis for future primary health care policy formulation and planning in many developing countries.

#### **Scope and priorities**

The health care system has three levels:

- primary: the first point of contact between an individual and the health system;
- secondary: referral and support;
- tertiary: specialized services;

The HEALTH SYSTEMS program will address the relationship between these different levels and will focus on approaches to strengthening primary health care. It will also be concerned with exploring ways in which the community and the health system can work together to solve health problems.

Considering the diversity of health problems, from malnutrition and infectious diseases to environmental pollution, the HEALTH SYSTEMS program will interact and collaborate extensively with HSD's HEALTH AND THE COMMUNITY, and HEALTH AND THE ENVIRONMENT programs.

There will also be collaboration with other divisions such as Agriculture, Food and Nutrition Sciences, and Information Sciences whose development activities can have a major effect on health.

The scope of possible research is vast, extending from the Ministry of Health and tertiary care facilities to health dispensaries and traditional village health services. The HEALTH SYSTEMS program activities will include research on health services, appropriate health care providers, training curricula, and on infrastructures required to support and manage the health care systems. Due emphasis will be given to developing indigenous institutional research capacity.

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### **Themes**

Because health systems research encompasses such a wide variety of issues in health care, it is helpful to define its relationship to the planning process and to delineate priority areas. To organize the subject material and to give a clearer perspective of the mandate of the HEALTH SYSTEMS program, discussion here will centre on four major themes:

1. management and delivery of health services;
2. health services planning;
3. health policy; and
4. strengthening the research capacity of indigenous institutions.

The HEALTH SYSTEMS program will encourage research into all aspects of the development of a health care system, from needs assessment, through evaluation of existing and new programs, to studies of decision-making and management of health services. All these areas are very much policy related. It should therefore be noted that although *health policy* is listed as a separate theme, it cuts across all HEALTH SYSTEMS activities.

The health information systems and research methodologies that provide basic support and are an integral part of each of the major research themes listed above will also be noted. Details and specific projects are presented in the following sections.

### **Management and delivery of health services**

**Management processes and systems.** In the past, national health service programs have been implemented without sufficient thought being given to the human resource capacity required to deliver and manage them efficiently and effectively and the related decision-making and delegation of authority processes. The HEALTH SYSTEMS program will therefore promote research on existing management processes and the development and evaluation of modified systems.

For example, the program funds the Palestine Red Crescent Society (3-P-87-0245: *Evaluation of Administration/Management of Health Services*) which will examine its own management and administrative procedures in the planning, operation and assessment of its health care system for the dispersed Palestinian people.

The evaluation of specific interventions had previously accounted for a large portion of the HEALTH SERVICES RESEARCH sector's budget. Such projects will increasingly become part of the HEALTH AND THE COMMUNITY, and HEALTH AND THE ENVIRONMENT programs and will be of less interest to the HEALTH SYSTEMS program.

**Delivery of health services.** Health care delivery systems must respond to changing conditions. For example, large influxes of refugees are taxing the limited resources of several countries for providing health and social services to both refugee and indigenous populations. Drought is also responsible for the massive migration and resettlement of people within and across national borders. This has prompted some national governments to carry out functional analyses of their health care delivery systems and of the effect of migration on the health of

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both migrants and host populations. Two such projects, 3-P-86-0215: *Drought and Resettlement (Ethiopia)*, and 3-P-87-0238: *Evaluation of Health Services in a Refugee Affected Area (Sudan)*, are expected to form part of the proposed interdivisional (HS/SS) program on Refugee Studies. There will doubtless be many more opportunities for similar studies in other parts of the world.

The HEALTH SYSTEMS program anticipates that by 1992 about 20% of its research funds will be directed to studies concerning the management and delivery of health services.

### Health services planning

This is perhaps the most direct extension of the more traditional focus of health services research—planning and evaluation and includes what has traditionally been labelled "manpower studies".

Studies directed toward the optimal use of resources and the development and application of health technologies are an integral part of health services planning. Both developed and developing countries are increasingly concerned about the proportion of national resources spent on health services, often with few controls and little evaluation of their efficiency, relative effectiveness, or benefit to those served.

**Resource allocation.** The achievement of *Health For All by the Year 2000* would require significant increases in the amount and efficient use of resources being made available to the health sector. Resource constraints in the developing world mean that the ability to provide even a minimum level of adequate health care is severely limited, however. The many underlying reasons relate to both national and international factors.

In most developing countries, for example, health care costs have been rising faster than the general cost of living. The complex reasons include rising rates of utilization of health services stemming from increased expectations, improved accessibility and increasing populations; the use of costly medical technologies and interventions; and a lack of incentives for cost containment. At the same time, the problem is exacerbated by:

- inefficiencies in the use of resources such as medical personnel;
- the construction and use of inappropriate facilities and equipment; and
- poor management and administration.

There is also a lack of basic information on health costs, expenditures from the household through to the national level, and financing schemes. Consequently, it is impossible to determine whether resource allocation patterns match health priorities at the various levels of the health system, and particularly whether communities can support the operation and maintenance of local primary health care services.

Difficult choices have to be made about what resources will be available to the health sector in general compared to specific vertical health programs. Studies are therefore required in such areas as the relative cost-benefit of allocating already scarce resources to new programs; for example, AIDS diagnosis, control, and prevention, versus the maintenance or expansion of other health-related programs.

A great challenge also exists for researchers to develop workable methodologies for establishing both the absolute and relative benefits from resources invested. Data on the effect of investment in the various levels of the health system is needed. For the HEALTH

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SYSTEMS program this translates into a need to ensure that cost-benefit, cost-utility, and cost-effectiveness concepts are used appropriately in project formulation; that projects will produce information that is relevant to the decisions to be made, and that such information is transmitted "up the line" and "across lines" to decision makers.

The program will also promote studies examining how needs for service are determined and how new models of health services delivery are implemented and evaluated at the community level. As an example, a new project 3-P-87-0249: *Hepatitis B Immunization/PATH (China)*, being carried out jointly with the Program for Appropriate Technology in Health (PATH), is noteworthy since it is the first HSD project to examine the managerial effectiveness of a number of different approaches to vaccination against Hepatitis B of high risk groups within communities, particularly mothers and newborn infants. This study has evolved out of a number of previous projects in HEALTH AND THE ENVIRONMENT which examined the efficacy of particular Hepatitis B vaccines in protecting against the disease and the effectiveness of various vaccination schedules. This part of the research process has now been completed and the present study focuses on field implementation of a vaccination program. The next phase could very well be a project under the aegis of the Health and Community program involving community participation and control of vaccination.

In addition to studies of the allocation of financial resources, there is also a need to examine the relative merits of alternative personnel deployment strategies. The objective should be to determine the most appropriate mix of health-related personnel as well as the capability of non-medical personnel (such as community members) to operate and maintain basic services. To date many health personnel evaluation projects funded by the former HSD program have focused on determining the effectiveness of singular deployment schemes; for example, 3-P-83-0312: *The Primary Care Nurse (Dominica)*, 3-P-84-0148: *The Community Health Practitioner (Korea)*, 3-P-85-0155: *The Mobile Nursing Clinic (Philippines)*, and 3-P-87-0172: *Evaluation of PK Nurses (Indonesia)*. The HEALTH SYSTEMS program will now encourage a broader focus and will look at the appropriateness of alternative personnel deployment strategies.

**Development and evaluation of the application of health technologies.** Health planners are increasingly interested in the use of health technologies, not only in their cost, but also in their effectiveness in improving the delivery, utilization and effect of health programs. The HSD program therefore supports research into the development and evaluation of innovative equipment. The current 3-P-86-0028: *Containers for Primary Health Care (Kenya)* project exemplifies this theme. Several organizations have developed portable health-care containers to carry medical equipment and supplies to the field, with varying success. In the current project, researchers will develop prototypes, field test them, and make appropriate modifications. The aim is to transfer the container production technology to one or more developing countries. Given the prevailing emphasis on primary health care, the HEALTH SYSTEMS program will not concern itself with high technology products and processes. In situations where these have been acquired, their effect on the availability of resources for other necessary undertakings will be studied. Since the HEALTH SYSTEMS program attaches much importance to health services planning, it envisages that 30% of its annual appropriations will be devoted to research on this theme by 1992.

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## Health policy

The role of policy in the planning and operation of the health system is important for PHC effectiveness and efficiency. The *Alma Ata Declaration* established a set of guidelines for PHC which was adopted as health policy by many developing countries. The degree to which such policy statements are translated into action programs varies between countries. It was believed that the PHC model would offer a means of organizing and operating health services efficiently and effectively through more rational policy development and program planning. But the degree to which rational planning is understood is not constant: what is rational to one nation, regional government or service institution may be irrational or irrelevant to others (Crichton, 1981).

To date the effect of policy on the development and operation of national health care delivery systems has been subject to little study. Inherent in these concerns is a determination of the likely effect, both positive and negative, of proposed changes in policy.

The HEALTH SYSTEMS program is supporting, and is in the process of exploring, several research initiatives related to the development of health policy and its relationship/translation into action-programs. Examples are 3-P-86-0008: *Primary Health Care in Sabah Province (Malaysia)* and 3-P-87-0037: *Health Management of the Urban Poor in Four Asian Cities (Asia)*. The Systems program will encourage the submission of other proposals in this area. Clusters of projects and networks will be established.

Also of interest in the health policy sphere is the lack of linkage between researchers and policy-makers. It has been suggested that policy is the "science and art of governing". For the policy analyst (and actionist) the art may be at least as relevant as the science. One hopes that the researcher, cognizant of the art, brings the science to the endeavour. WHO is currently promoting initiatives to foster such linkages and IDRC has been asked to collaborate. The HEALTH SYSTEMS program sees a great potential for developing and supporting research projects addressing the relationship between research and policy-making. There are possibilities for collaboration with WHO and with other interested groups such as the International Health Policy Programme, Washington.

A third potential health policy area of interest relates to the dynamics of decision-making. What, for example, are the information needs and other factors that affect decision-making? Can predictive models be developed to assist planners and policy-makers in evaluating the implications of decisions? This initiative merges well with the encouragement of innovative research models. Although there is little background information, such studies will be increasingly relevant for those responsible for health care planning and the operation of services in developing countries. Research in health policy is expected to produce important knowledge about the progress of policy formulation and its translation into programs. Although the HEALTH SYSTEMS program will support *ex-post* evaluations of existing health policy, it will not restrict itself to this narrow field. To complement the Social Sciences Division's ECONOMICS AND POLICY ANALYSIS PROGRAM, the Health Systems program will support research into:

- the nature and content of health policy;
- the types of information needed and their use in developing relevant policy;
- the effect of public policy on the nature, scope and effect of the health system; and
- the testing of different policy options and their implications.

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Given this parallel interest between the two divisions, it is expected that there will be substantial collaboration between the two programs, as well as with other external funding agencies interested in health policy research.

The program expects that 20% of its appropriations will be directed towards health policy research studies by 1992.

### **Strengthening research capacity of indigenous institutions**

IDRC's objective is to support research of direct relevance to and of demonstrable potential for Third World development with relative emphasis on poverty problems and, in pursuit of that end, to assist developing countries to build and maintain indigenous research and research-supporting capacity, mainly at the national, but also at the regional level and mainly in terms of human resources (*PPR IX*). For the HEALTH SYSTEMS program, capacity strengthening activities involve training for health systems research.

In response to a need for such training, HSD and FAD have collaborated since 1985 in sponsoring a pioneering course at the University of Toronto, *3-P-87-0200: Health Care Evaluation and Management Skills Course*. The course is designed to enhance the managerial and evaluation skills of developing country researchers. A key feature of the course is flexibility and ability to adapt quickly in response to the needs of the student researchers.

A project currently under way between McGill University and the Ministry of Health of Ethiopia also seeks to strengthen *Community Health Research (3-P-86-0283)*. The project aims to develop a strong research component in a Master's program in community health and to train well-qualified researchers. The HEALTH SYSTEMS program will remain alert to such situations, with a view to participation.

Training will increasingly take place at a regional or country level and be focused on development. Whenever appropriate, it will use the analysis of relevant research projects. Collaboration with other HSD programs and with FAD is essential. Some initiatives in this direction are already under way.

Over the years, it gradually became apparent to agencies funding health research that researchers often needed assistance in writing proposals for applied research. In 1976 IDRC funded at the University Centre of Yaounde, Cameroon, the first workshop ever held in Africa on the methodology of applied research as related to health services. One year later, a similar workshop was organized in Singapore for Asian nurses. As a result of the Cameroon workshop, and at the request of the WHO Regional Office for Africa, a number of short courses in applied research methodology were organized in Central and West Africa through the Boston University Project for Strengthening Health Delivery Systems (SHDS). These courses were prepared for anglophone and francophone health personnel in health posts, ministries and educational institutions.

Since 1983, IDRC has funded similar international workshops in Liberia, Mali, Zimbabwe and Swaziland using basically the same materials. From the outset, a conscious effort was made to prepare facilitators from various African countries to direct the workshops, and to train health workers to write research proposals based on priority health problems, to carry out projects, and to present and disseminate results to decision-makers.



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The Division is currently evaluating the continuing relevance of these workshops to the needs of researchers and other health professionals in the developing countries. The goal of training independent researchers will not change, but there will likely be changes in the training methods and the context in order to meet the need for a systems approach in health care delivery. The HEALTH SYSTEMS program will be closely involved.

Another capacity strengthening initiative with important implications for health systems is the *Small Grants Program on Health Services Research in Africa (3-P-87-0265)*. One of the main goals of this program is to maintain and develop the capacity to undertake health systems research in identified priority areas. An important aspect is the provision of technical backup to the researchers in elaborating and carrying out research proposals, in order to enhance the dissemination and eventual utilization of results. Ten grants of up to 10,000 CAD will be available for operational research projects focusing on research issues related to primary health care implementation.

In October 1987, HSD and FAD, in collaboration with the Kenya Medical Research Institute and the University of Nairobi, co-sponsored the first IDRC computer workshop in East Africa. The activity was considered a great success: 30 scientists were trained in computer skills and data analysis. In response to the large number of requests, a second workshop was held for the region in September 1988. This is another important example of strengthening research capacity.

Strengthening the research capacity of indigenous institutions in several ways will become increasingly important to the HEALTH SYSTEMS program. It is expected that 30% of allocations will be directed to this research activity by 1992.

The development and evaluation of health information systems and development of appropriate research methodologies must also be considered.

#### **Other issues**

Inherent in all the preceding research themes is the need for manageable, relevant, and valid information systems, and for research methodologies to carry out applied health systems research projects.

**Development and evaluation of health information systems.** Information is required in order to:

- estimate the relative need for health programs and personnel requirements;
- monitor the provision of services, including costs;
- measure the effect and efficiency of both the structure and process of these programs; and
- feed back into the policy-making process.

However, the collection of such data is rudimentary and haphazard in many developing countries and the data are rarely used for health policy and program planning and evaluation. Yet, information is the crux of the system. The HEALTH SYSTEMS program will pay greater attention to studies evaluating data collection, management, analysis and utilization as they relate to health systems; and to the development and evaluation of improved and innovative health information systems. Collaboration with IDRC's Information Sciences Division and experts from the Canadian health system will be essential.

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**Development of appropriate research methodologies.** Health system planners and researchers in developing countries are increasingly aware of the need for appropriate and practical methods of measuring the effectiveness of health programs, service modes and the quality of care. The Health Systems program is currently supporting two projects that include the development and testing of data collection instruments and indices for measuring the degree of accessibility and coverage of health services, their appropriateness to perceived and real health needs, and the quality of care (3-P-86-0247: *Evaluation of Primary Health Care [Mexico]*, and 3-P-86-0345: *Quality of Health Care [Chile]*). The Health Systems program will also support the development of appropriate methodologies for examining the management and administration of health systems, an area requiring more broadly-based techniques than are found in the conventional operational audit.

It is expected that initiatives in this area will be carried out in close collaboration with the other two HSD programs as well as with the Social Sciences Division.

### **Future directions**

The HEALTH SYSTEMS program, the successor to the former HEALTH SERVICES RESEARCH sector, was officially initiated in September 1987. In January 1988 it was fully staffed for the first time. The HSD's evolution to embrace a holistic approach to health makes the strengthening of the HEALTH SYSTEMS program timely. The program recognizes the importance of liaising with the Division's regional representatives in order to identify priority areas, special initiatives for research and institutional support, and possibilities for the development of project networks. In terms of program resources allocation, efforts will be made to ensure that particular regional initiatives are identified and supported, while attempting to ensure that the Division's global strategy framework is respected.

The program's activities are projected to expand over the next five years from their present 22.2% of the Division's budget to approximately 30%. By 1992, the number of professional staff assigned to the HEALTH SYSTEMS program should increase from three to four.

### **Health and the Environment**

The HEALTH AND THE ENVIRONMENT program is concerned with all factors in the human environment that can affect health (Figure 7). Its purpose is to respond to opportunities for assisting and supporting researchers' efforts to identify and evaluate environmental factors deleterious to health, to develop and implement appropriate control measures, and to strengthen the capacity of groups and/or institutions in developing countries.

The program incorporates many of the research projects originally supported by the TROPICAL AND INFECTIOUS DISEASES, WATER SUPPLY SANITATION, and OCCUPATIONAL HEALTH AND ENVIRONMENTAL TOXICOLOGY sectors. Whereas the sectors were inclined to operate as discrete vertical program entities, the Division's new orientation has allowed the integration of these activities into a broadly-based multidisciplinary and interconnected program.

The HEALTH AND THE ENVIRONMENT program will mainly support the "harder" science aspects of health research. In many instances, ENVIRONMENT supported studies, such as baseline studies, will represent the first phases of further intervention projects in the HEALTH

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**SYSTEMS** program, or community acceptability and education projects in the **HEALTH AND THE COMMUNITY** program.

As a result of the regrouping of projects and proposals, the **ENVIRONMENT** program will, at the outset, be the largest of the three in HSD. It is expected to remain a prominent Divisional program area. By 1991-92, the program will receive approximately 40% of Divisional project appropriations, representing a slight decrease from the current figure of 42%.

### **Scope and priorities**

The **ENVIRONMENT** program's potentially vast scope encompasses all adverse physical, biological and chemical factors in the environment. Contaminated water and food, inadequate and unsanitary housing/living conditions, as well as communicable and parasitic diseases (their vectors and reservoirs), remain priority areas for investigation.

The adverse consequences of the transfer of the newer chemical and industrial technologies from the industrialized nations to the developing world is adding a new dimension to environmental problems. This process has accelerated during the past two decades, significantly increasing the complexity of environmental problems and possible interventions.

As a result of agricultural run-off and uncontrolled industrial emissions and effluents, air, water and soil have been contaminated by an increasing array of highly toxic agricultural and other chemical substances. The health of vulnerable groups in developing country communities — women, children, the sick and the malnourished — has been particularly jeopardized. The physical, social and economic effect of these technologies on morbidity and mortality remains to be measured.

### **Themes**

To promote a better understanding of health-related environmental factors and the nature of the interplay between communities and their environments, the **HEALTH AND THE ENVIRONMENT** program will encourage discussion and research along the following interrelated themes:

1. water and water use, emphasizing accessibility to potable water supplies, water quality, and waste-water treatment;
2. the living environment, encompassing the biological and physicochemical factors encountered in both the outdoor and indoor environments; and
3. the working environment, related to both rural and urban industries and enterprises.

In the pursuit of these themes, special attention will be given to the development of integrated approaches for identifying environmental health risks: epidemiological investigations of the interaction between environmental factors and community health status, the involvement of communities in research, human resource development, the strengthening of institutional research capacity, and the development of appropriate health technologies.

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The ENVIRONMENT program will take the lead in adapting existing technologies as well as developing new technologies such as: diagnostic kits, appropriate water provision devices, and water testing and purification equipment. The program will also encourage research into safer industrial and agricultural work practices (with special emphasis on agrochemicals), and the prevention/control of vector-borne diseases, with increasing emphasis on the manipulation of environmental factors. In all these cases, initiatives will be planned to include studies of community acceptability, changes in behaviour and modification of health services whenever these are indicated.

### **Water and water use**

The importance of water as a life sustaining and often scarce commodity has been reflected in the number of projects supported by the Division in the past. Fifty percent of the current budget allocation to the ENVIRONMENT program is devoted to activities covered by the *water and water use* theme. This prominence is likely to continue for the next five years. Special attention will be given to studies dealing with water accessibility/water-quality monitoring. Projects will also concentrate on water purification and waste-water treatment/re-use, and water-resources contamination.

**Water accessibility.** The pollution of water tables and streams by the indiscriminate disposal of industrial, agricultural and domestic wastes has underlined the importance of water-quality research. To this end, a number of different aspects of water management are being explored. These include:

- Water quality monitoring. Current projects aim to develop rapid and sensitive microbiological water-quality tests for field use, particularly field kits. These will initially be intended for the authorities responsible for water-quality monitoring but the aim is to make them available at low cost to communities. It is hoped that they will lead to safe and sustainable community water supplies.
- The health-related aspects of the contamination of crops and fish by heavy-metal uptake, pesticide residues, and other contaminants from untreated and partially treated waste-waters. As well, support will be given to the investigation of effective treatment methods of these waste-waters prior to their use for irrigation or aquaculture.
- The development of databases on the contamination of water sources and the potential effects on riverine communities. The data and their analyses will serve water policy formulation and strengthen national water-quality control capacities.
- Water pumping and provision devices with a potential for supplying communities with potable and domestic water. These will continue to receive support, albeit on a reduced level. The practical applicability of such devices as hydraulic ram pumps, solar liquid piston pumps, and others will be investigated. The utilization of rain-water catchment technologies will also be of interest.

Studies pertaining to water accessibility offer considerable potential for collaboration with the WATER IN THE ENVIRONMENT program of the Earth and Engineering Sciences Division. One such jointly-funded project has recently been approved.

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**Water purification.** The objective of this research is to develop village-level treatment technologies applicable to a wide range of water-quality problems. These technologies will include solar disinfection and defluoridation as well as water-filtration devices manufactured locally from agricultural by-products.

The use of natural plant products as water clarifiers will also be investigated.

### The living environment

Infectious and parasitic diseases are still the major health risks in developing country environments. The importance of the sexually-transmitted diseases has increased with the rapid spread of HIV infections. The ENVIRONMENT program will focus on epidemiological aspects of AIDS. The hazards associated with exposure to toxic chemicals and wastes in the environment are gaining in importance while the adverse effects of poor indoor air quality factors require further elucidation. These issues will be addressed through the provision of appropriate research support in the following areas:

**Infectious and parasitic diseases.** Program activities in this area will include:

- **Primary Health Care Diagnostic Methods.** With the growing importance of community health workers, their referral system, and field epidemiology, important deficiencies have been recognized in diagnostic methodologies appropriate for field and community levels. Projects will include research on the development and field testing of peripheral and village level diagnostic and epidemiologic tools with potential to promote improved health status of developing country communities in a sustainable manner.
- **Specific Disease Studies (Dengue, Leishmaniasis, Hepatitis B., Yellow Fever, Malaria, etc.).** Support for these studies will be assessed in terms of the disease's relative importance, of developing country priorities, and the opportunities of effecting major reductions in disease incidence. Projects on sexually-transmitted diseases, including the epidemiological aspects of AIDS, require continuing support. Prevalence and incidence studies that will form the basis for the development and evaluation of specific interventions are included in these groups of projects. Operational research on vaccination programs, that is, delivery mechanisms as well as the transfer of vaccine technology, will continue to be supported.
- **Control of Vectors and Animal Reservoirs of Human Disease.** Ecological approaches to the control of disease vectors, including basic sanitary measures, will be addressed in a variety of geographic locations. Projects dealing with integrated vector control at the community level will be supported jointly with other divisions such as Social Sciences, Agriculture, Food and Nutrition Sciences, and the BUILDING INDUSTRY, MATERIALS AND TECHNOLOGIES program of Earth and Engineering Sciences. Biological and botanical vector-control methods that can be used safely, efficiently and sustainably by the community will be sought. The toxicity of potential indigenous plant vector-control agents, such as the molluscicides *Endod* and *Damsissa*, will be further investigated before large-scale trials. Research into the interaction of people with wild and domestic animal reservoirs of infection in its relation to health of communities (zoonoses) will also be supported. Consideration will also be given to the effects of macrodevelopmental schemes upon the ecology and health.

## **The Research Programs**

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It is expected that 25% of the ENVIRONMENT program activities and appropriations will be directed to research on infectious and parasitic diseases during the next five years. This level of support is in addition to that accorded related activities in the *water and water use* theme.

**Solid waste disposal.** The problems associated with solid waste relate both to vector control and to pathogenic and toxic wastes. Multidisciplinary projects on solid-waste management intended to control disease vectors, other disease-causing agents and health hazards will be encouraged. As incentives for waste management, projects to generate cash income by transforming solid wastes into usable products will also be considered. It is expected that 5% of annual appropriations over the next five years will be directed towards these activities.

**Indoor environments.** Indoor cooking over an open fire in poorly ventilated areas, as often happens in many developing countries, produces airborne particulate matter and a range of irritating gases such as the oxides of nitrogen and sulphur and the asphyxiants carbon monoxide and carbon dioxide. Exposure to these contaminants and their possible association with higher incidences of acute respiratory infections (ARI), particularly among infants and young children, will be investigated. Projects to develop improved cooking equipment and/or better ventilation in homes will also be supported in collaboration with the HEALTH AND THE COMMUNITY program and the INDUSTRY, MATERIALS AND TECHNOLOGIES program of Engineering and Earth Sciences. This research will stress the community's understanding and acceptability of improved devices.

Exposure to agricultural pesticides figures prominently as a potential health risk in the indoor rural environment. In most instances, ignorance about the toxicity of these chemicals and inadequate knowledge of safe handling and storage procedures are to blame. Improper re-use of pesticide containers and the consequent disastrous contamination of foods, as in the case of methyl mercury poisoning in Iraq, has caused much illness and death. The investigation of the knowledge, attitudes and practices of rural communities' use and storage of agrochemicals and the required health intervention studies present further opportunities for collaboration with the HEALTH AND THE COMMUNITY program and other divisions.

During the next five years, 10% of ENVIRONMENT appropriations will be allocated to projects dealing with the contamination of the living environment by chemicals, including the indoor environment.

### **The working environment**

Most workers in developing countries toil under adverse climatic conditions and in uncontrolled and/or unsafe working environments. They are therefore exposed to an increasingly large number of highly toxic substances, noxious dusts of mineral (silica, asbestos, coal) and vegetable (cotton, grain, wood) origin, allergens and mycotoxins, in addition to the physical hazards of radiation, noise, vibration, and unsafe equipment.

**Agro-based industries.** Agro-based industries are essential to the development of many countries, but it is increasingly evident that the agricultural environment seriously endangers the health of farm workers, particularly women and young children. This will be a very important area of investigation. Research will be promoted in a number of areas such as:

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- studies of particular health risks; for example, those associated with duration and types of work, including exposure to toxic chemicals such as pesticides and herbicides;
  - the development of appropriate technologies, for example, safer hand-held agricultural chemical sprayers, protective equipment and improved protective clothing; and
  - the effect of mechanization on the health and safety of farm workers in order to develop better safety measures and equipment.

**Other industries.** The ENVIRONMENT program will continue to support some research on hazards present in workplaces such as mines, factories and small industries. To strengthen the capacity of countries to deal with occupational health problems, research will be encouraged in the following areas:

- Baseline surveys of working conditions and the health status of workers, as a prerequisite for policy formulation and program development.
- Information systems or data banks related to: occupational diseases and accidents; the effects and treatment of exposure to toxic chemicals; other work hazards and their control; standards and legislation; etc. The collaboration of the Information Sciences Division and the Secretary's office will be important.
- Development of training activities in collaboration with the Fellowship and Awards Division, and the Information Sciences and Communications Divisions, either as integral parts of projects or as discrete activities related to human-resource development and research-capacity strengthening. Activities to be explored in this connection include workshops on research methodology and epidemiology related to occupational health and environmental toxicology.
- Longitudinal epidemiological studies of occupational groups to elucidate the longer-term or chronic effects often associated with sustained exposure to low levels of noxious substances or agents.

*Working environment* research projects are expected to require approximately 10% of the ENVIRONMENT program appropriations by 1992.

### **Summary**

The ENVIRONMENT program will work very closely with other programs in the Health Sciences Division and in other IDRC divisions in order to develop integrated approaches for identifying environmental health risks, evaluating risk perception and attitudes, developing risk management and other interventions, and strengthening the capacity of communities and countries to safeguard the health and safety of their people. An appropriate emphasis will also be placed on the development of information systems in support of these activities. Many of the projects being considered will provide ideal opportunities for jointly supported and/or developed projects. The development of appropriate village-level technologies will be emphasized.

It is expected that between 30 and 40% of total ENVIRONMENT appropriations will be taken up by research in the area of appropriate technology on a joint program or theme basis.

## **The Research Programs**

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In the past year, a number of projects involving participatory research have been funded. The field of occupational health offers obvious opportunities for the application of this methodology. However, the Division will support the application of this methodology only following the close examination of social, political and ethical issues.

The ENVIRONMENT program will take an active part in the development and subsequent support of regional initiatives related to projects and/or networks designed to meet special regional needs and priorities. The HSD regional representatives will take the lead in identifying such initiatives. The African and Asian regions will present the best opportunities for this type of networking during the next five years (1988-1993).

### **Special Initiatives**

The Division will continue to support a limited number of initiatives that do not fall readily into one of the three research programs, but relate directly to the Division's mandate and objectives and effectively utilize the Centre's comparative advantage. The Independent Commission on Health Research for Development (ICHRD) and the International Health (Research and Training) Communications Network (Canada) are examples. Like many projects of this type, they are funded jointly with other agencies from Canada or other countries.

Through these endeavours, the Health Sciences Division plays a leading role in fostering innovative approaches to stimulate and support appropriate health research in developing countries, strengthen the research capabilities of these countries, and find unique solutions to some of the problems faced by communities attempting to improve their health and well-being. Special initiatives will frequently be developed at the regional level.

Over the next five years, the increased involvement of Canadian researchers and institutions in health research of high priority to developing countries will continue to receive strong emphasis. This may include longer term institutional partnerships with Canadian institutions in order to strengthen national institutions, thus enabling them to carry out research on national development issues rather than simply on traditional areas of concern to faculties and disciplines. Most special initiatives will continue to be supported jointly with other IDRC divisions or other agencies. Funding for special initiatives will not exceed 5% of total research appropriations and will be subject to normal IDRC review procedures.



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**Note**

**1. Please see:**

- Chapter VIII;
- *Discussion Paper on Approaches to Strengthening Research Institutions*, MC 87-54, Office of Planning and Evaluation, IDRC; and
- *Building Research Capacity in Development Countries* position paper annexed to this document.

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## **The Strengthening of Indigenous Research Capacity<sup>1</sup>**

Assisting developing countries to build, strengthen and maintain indigenous research capacity for development is an integral part of each of the Division's research programs. Historically, health research and the building of indigenous capacity for health research in developing countries evolved through four distinct stages. The first was characterized by classical "safari" research. Scientists from colonial powers came to discover the causes and modes of transmission of tropical diseases that were devastating troops and settlers. The causative agents of filariasis and malaria were thus discovered and the role of mosquitoes in the transmission of disease was identified.

Brazil and some other Latin American countries were exceptions to this pattern, however. Here, health research was conducted by national scientists, usually under the auspices of national universities. In this setting the Brazilian physician Carlos Chagas discovered the infectious agent of the disease which bears his name.

Prior to World War II, many colonial powers established research institutions in Africa and Asia, largely staffed by expatriate scientists working within colonial career structures. After the war, the newly-independent nations of the developing world were often left with empty research institutions and few adequately trained scientists to staff them. Even Latin American national institutions were hampered by inadequate science policies, resources and staff.

National authorities and assistance agencies strove during the 1950s and 1960s to build health research institutions modeled on those of the developed world. Medical schools with research facilities were constructed, focusing on the same disciplines, methodologies and problems as those in developed countries. There was often little contact between the health authorities attempting to deal with overwhelming health problems and the medical researchers in the new schools.

Since the mid 1970s, the lessons of the previous 30 years have been applied to new endeavours to strengthen the health research capacities of developing countries. Health researchers and their institutions are being stimulated to focus on the health problems of their countries and encouraged to take their place within the national development process.

Soon after its inception, IDRC realized that the project mode could not alone fulfil its mandate. It was increasingly perceived that this approach had deficiencies and limitations, both for the recipients and for the Centre. It was further noted that, in practice, other research-supporting activities were being covered by the project umbrella. The evolution of Centre thinking over the years has given full legitimacy to the idea of building research capacity in developing countries. It has also been acknowledged that IDRC should not only try to ensure that the main outcome of its research activities is development, but that development should benefit people. Implicit in this is the recognition of the need in developing countries for the capacity to carry out research for development, and of the Centre's need to support the strengthening of this capacity.

Because IDRC has limited resources, it should perhaps focus its support carefully, with coordinated, planned interdivisional inputs and with particular attention to regional/geographic needs. One vehicle to achieve this is the Integrated Support for Research Institutions (ISRI), applied on a selective basis.

## **The Strengthening of Indigenous Research Capacity**

The international institution building efforts carried out since the World War II are described in document MC87-54, *Discussion Paper — Approaches to Strengthening Research Institutions*, prepared by IDRC's Office of Planning and Evaluation in October 1987. The Health Sciences Division endorses this document's conclusions and policy recommendations. In fact, we believe that creating and maintaining health research institutions, scientists and infrastructure, linked to national development programs, are the most critical elements in a country's endeavour to improve and maintain the health and well-being of all its people. In this respect, the Division will follow closely the work and recommendations of the Health Research Capacity Task Force of the Independent International Commission on Health Research for Development.

The strengthening of health research capacity will not become a separate program within the Division. The staff of each program and the regional representatives constantly keep the need for training and strengthening of institutions in the forefront of project planning and development. Individual training is built into projects, into groups of projects, and into networks of projects. Group training and special, tailored training initiatives will be developed within divisional programs, amongst divisional programs, and amongst the Health Sciences Division, the Fellowship and Awards Division, and other IDRC divisions. HSD will also promote and support interdivisional capacity-building initiatives such as ISRI. Over the next five years, 60-70% of the Division's capacity-building endeavours will be inter-divisional, regional and/or Centre-wide with the primary focus on sub-Saharan Africa. Division-specific institution-strengthening activities also focused on Africa will use about 30-40% of the Division's capacity building resources over the next five years. The type, level and duration of institutional support will vary, but inevitably it will be longer (5 to 10-year) term. On occasion, national health and health research planners will be encouraged to evolve new configurations for existing institutions, to focus specifically on national health and development needs. Such efforts will receive Divisional and, probably, Centre support.

Over the next five years, the Division's initiatives in research training and institutional support will be analyzed and evaluated as part of the Centre's activities in this area. Health research training and institution strengthening will form an umbrella over all Divisional programs, themes and activities. It is planned that by fiscal 1992/93, approximately 30% of the Division's activities will fall within this area.

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**Note**

1. A more detailed document on *Research Capacity Building and Strengthening* is included as an annex.

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## Regional Strategies<sup>1</sup>

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The Health Sciences Division's regional strategies are based on the concept that global Divisional strategies in the health sector will evolve from analyses of strategic plans from each region and other IDRC divisions. It is anticipated that each regional office will document regional health-related needs, problems, research opportunities, and IDRC's comparative advantage as part of its strategic planning process. HSD will formulate the global Divisional plan after aggregating and analyzing these health needs and research opportunities, together with an analysis of the health-related components of other divisions' plans. This plan will incorporate the Division's three research programs as well as the various Centre and divisional research themes (Figure 10).

Each region will use HSD's global plan, modified to suit its particular needs and opportunities, to develop regional priorities and carry out regional programming in the health sector. This iterative process will facilitate the biennial review and modification of global and regional health research plans and programs. As noted in the introduction to this document, HSD's planning framework is multidimensional, following sectoral, regional, program and theme bases. This permits the aggregation and disaggregation of plans and activities according to the dimensions of the strategic planning framework.

HSD's activities will emphasize Africa south of the Sahara and the poorest countries. Networks and groups of projects related to themes of high priority to these countries also will have high priority, as will groups of projects with links to a poor country or region, such as collaborative intersectoral projects in one country, or projects at institutions receiving ISRI support. Institutions in the so-called *emerging countries* will be supported only if their projects are part of a high priority group or network, or represent a unique approach to a problem of high priority in the poorest countries.

To operate this dynamic system of planning and programming, the Division aims to have at least one senior Divisional representative (a professional with specialist qualifications and experience as well as wide general experience in the health sector) responsible for health-sector planning and programming in each region. This senior representative will work closely with the Regional Director and other regional-office staff to analyze regional development needs, priorities and opportunities for research, with particular emphasis on health research and research capacity-building (see Chapter VIII). The regional representative will also be responsible for HSD and interdivisional activities in her/his region.

The planning and management processes at the global, regional, thematic, and community levels are complex, not only in respect to health-sector activities, but even more so for intersectoral activities. Significantly more time is needed to plan and implement the latter activities than activities in a single discipline. Thus, over the next four years, it is planned that the Health Sciences representative at each regional office will be joined by at least one additional professional with complementary expertise. The regional office staffing plans are shown in Table 24. Additional support staff will also be required for this increased level of activity (see Chapter X for staffing details).

When fully implemented, the regional strategy will result in a substantial measure of decentralization of the planning and operation of Division's programs. The regions will also be accorded increased financial authority through the Program Officer Delegated Authority (PODA) mechanism. Decisions relating to the funding of research proposals will remain with

## **Regional Strategies**

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the programs, at headquarters, until appropriate mechanisms for scientific, program, and ethical review and evaluation, as well as methods of setting global and multisectoral priorities, have been established for each of the regional offices and amongst regional offices.

The Division's research programs, groups of projects, networks of researchers and individual projects all fit into its multidimensional planning and management matrix (Figure 10). This will maximize the value of each project although it presents substantial challenges to management and requires more resources than a single sector- or discipline-oriented approach.

The Division's three research programs facilitate the support of projects covering the spectrum of health research, from the ministerial level to individual communities within a country and/or region. Such groups of country-focused research activities will create unique opportunities for evaluating the effects of research on health systems as well as their effect on communities. In the same way, groups of similar research initiatives — research on cost-effective resource allocation for health services, for example — will be carried out across a number of regions. Such trans-regional initiatives will create opportunities for evaluating related activities under different circumstances in different parts of the world (see also Chapter XIII).



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**Note**

1. A more detailed position paper is included in the Annex to this document.

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## Staffing

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IDRC is renowned for its *hands-on* method of work. The Division's reorganization will not affect this method of working with national researchers in the conception, development, implementation and management of programs and projects. The Division recognizes that this approach is labour intensive, but it is greatly appreciated by researchers not familiar with the development and management of research programs and projects. The Division also believes that IDRC's involvement is essential to strengthening the research capacities of developing countries.

The hands-on approach is not required or even helpful, however, when dealing with the many developing country institutions that are highly experienced in health research. The Division has therefore decided to choose the most appropriate approach early in the development of a proposal. Researchers with little or no experience in proposal development will require substantial IDRC staff input. Others will need less assistance, while proposals from institutions requiring minimal assistance need only be subject to peer review and evaluation.

This assessment of involvement in proposal development will reduce staff workload and, more important, will provide information on the institutions' and researchers' needs for training in research design, methodology and management, as well as identify institutions for possible ISRI support.

The interdisciplinary nature of the Division's organization is in accord with the policies of greater *connectedness* and greater emphasis on intersectoral (interdivisional) activities within the Centre. However, because of deteriorating national research establishments in many developing countries, complex interdisciplinary and multisectoral projects place additional pressures on national researchers and IDRC staff. Division staff devote increasingly more time to working with national research institutions and researchers to maintain institutional viability while, at the same time, stimulating and promoting interdisciplinary and intersectoral initiatives. The growing regional dimension of the Division's organization and operation further increases the complexity of program and project development and management. All of these activities place further demands on the Division's staff at a time when they are already more than fully occupied.

The increasing number of multidisciplinary projects within the Division, the growing number of interdivisional initiatives and projects, the regional and country focus of groups of projects, and the increasing level of appropriations greatly increases the Divisional staff's workload. This continues to grow in spite of streamlined administrative procedures, improved office automation, and the careful allocation of staff resources. The complement of Ottawa professional staff form the minimal critical mass necessary for the Division's effective scientific and technical operation.

Additional staff will be required in the regional offices if IDRC's hands-on method of work is to be continued and the Division's multidimensional and regional strategies are to be implemented. HSD's level of staffing is amongst the lowest, if not the lowest, within the Centre's research divisions using almost any comparative parameters. The Division believes that it could function efficiently and effectively if one additional professional staff position were made available in five of the six regional offices by fiscal year 1991/1992.

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This increase in professional staff must be accompanied by an appropriate increase in support staff to deal with the complex system of management advocated by the Centre and proposed by the Division. Table 24 shows the proposed staffing levels for HSD from 1987/1988 to 1991/1992. Tables 25 and 26 compare both projected appropriations and number of active projects to staffing levels from 1986/87 until 1991/92.

## **Budget**

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An analysis of the Health Sciences Division's budget from IDRC's inception until 1991/92 is presented in Volume I, Chapter IV of this document (Tables 17 to 21). The analysis includes the Division's "best guess" projections for budget levels from 1987/88 to 1991/92 (Table 21).

In Chapter VII the funding levels are outlined in percentage terms for project activities by program. Table 27 presents the numeric breakdown amongst the three programs and special initiatives using the best guess levels noted in Table 21 of Volume I. These figures correspond to the percentages noted in the description of the programs.

Chapter VIII states that maintaining and strengthening indigenous research capacity is an integral part of each of the Division's programs and that approximately 30% of the Division's project appropriations will fall within the scope of such activities by 1991/92. Of this amount, it is anticipated that 30% will involve integrated support for research institutions, 25% will be devoted to training (individual training, tailored training programs and training courses and workshops), 25% will be devoted to building and maintaining collaborative networks amongst developing country institutions, and 20% will go to creating and maintaining linkages between two institutions. Such linkages will include both South/South and South/Canada institutional arrangements.



## Division Management

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The principal functions of Division Management are to plan, organize, guide and control the operations of the Health Sciences Division. The structure of the Division Management group has evolved over the years to facilitate the carrying out of these functions. The group is made up of:

- the *Division Director*, who has overall responsibility for all facets of HSD operations;
- the *Deputy Director*, who coordinates the evolution, elaboration, implementation and evaluation of the Division's scientific and technical programs, that is, technical-related matters; and
- the *Associate Director, Management*, who is responsible for management functions such as budgeting, financial and staff management, administration, evaluation of the effectiveness of Division operations, and supervision of the Operations and Information Units.

### Operations

The HSD Operations Unit handles all project-administration activities on behalf of the Ottawa-based program staff. The unit is made up of a *Senior Operations Assistant*, an *Operations Assistant* and an *Operations Clerk/Secretary*. For many reasons, notably a lack of HSD professional and support staff in the regional offices, a large percentage of HSD projects are Ottawa-administered (approximately 2/3 of active HSD projects as at 31 March 1988).

With the eventual posting of HSD Regional Program Officers to the regional offices, a larger percentage of HSD projects will be regional-office administered, assuming that additional support-staff resources are provided by the regional offices. This gradual decentralization of responsibilities should help improve the efficiency of project administration. In absolute terms, however, a large and growing number of projects will continue to be administered by the HSD Ottawa-based Operations Unit, as the regionally-based HSD professional staff will have a limited capacity to handle projects. Given this anticipated increased workload in Ottawa, the Division's aim is to obtain an additional staff member for the Operations Unit and assign one Operations Assistant to each of the 3 HSD programs. This will enhance coordination between program and operations staff, while permitting operations staff to develop a better knowledge of the projects. This in turn is expected to also have a beneficial effect on the quality of project administration.

### Information

The HSD Information Unit's main task is to provide effective, timely and accurate information to Division Management and program staff. In so doing the Unit works with Centre-wide systems such as PROMIS and PINS, and develops and maintains other Divisional-level applications required to meet Division-specific needs. These Centre-wide and Division-level applications, when taken together, form the Management Information System for the Health Sciences Division (MISH).

## Division Management

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The HSD Information Unit is made up of a *Manager, HS Information Systems*, and an *Information Clerk*. Since its inception just over two years ago, the demands placed on the HSD Information Unit have grown appreciably. This is in large part a reflection of the importance that Division Management places on information and its analysis in the planning of HSD programs, their execution and the assessment of Divisional performance.

Perhaps the most noteworthy product generated by the Information Unit to-date is the Division's Pipeline System for research proposals under development. This application has expanded from a single report on program appropriations to a catalogue of nine reports that provides a wealth of information on program appropriations, DAP appropriations, activities by region, the status of projects being developed, etc. These reports are used to plan project-development activities, monitor the project-development process and manage the program appropriations and DAP budgets.

Another area in which the Information Unit has played a key role is in the development of a series of tailored reports, taken from the Centre-wide PROMIS database, that are essential to project management. Moreover, the Information Unit continues to work closely with the Centre's EDP Services Unit to ensure that PROMIS II, the database being developed to replace PROMIS and PINS, will meet Divisional requirements. Whereas information from PROMIS has been used to date mainly for project management, Division Management hopes to be able to make much greater use of the PROMIS II database to provide information necessary for analytical purposes. Such information is critical for the effective management of the Division.

The HSD Information Unit is currently working on several Division-specific information systems that are at various stages of development. These include:

- a Project Databook, intended to neatly summarize all information, required by program staff, related to active projects;
- a contacts database, which is to be integrated with PROMIS II, as appropriate.
- a system for recording data from *Project Completion Reports* that will permit the generation of aggregate information and various analyses; and
- a Divisional travel-planning database, used for coordinating Divisional staff travel, which will be integrated with the Centre's existing travel database and other travel management and control databases being developed for the Centre by EDP Services.

An additional area in which the Information Unit is expected to be extensively involved is in office automation within HSD. The Division received an additional six microcomputers in 1988/89, meaning that a total of ten microcomputers are now available. Initially these microcomputers are being used primarily as word processors and also for a limited number of other functions; for example, the preparation of project budgets. HSD intends to examine the nature of the paperflow in the Division, however, and then determine how the microcomputers can be used to alleviate paperburden. One step in this direction is the use of local area networks to transmit information from one staff member to another. The Division will work with EDP Services in establishing appropriate local area networks, with the first such network to be set up by the end of the 1988/89 fiscal year.



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Given the steadily increasing demands being made on the Information Unit, the Division foresees that an additional staff member, who will primarily handle data-entry and filing, will eventually be required for the Unit. The growth in the workload in this unit will render this position necessary by the 1990/91 fiscal year at the very latest.

### **Other Division Activities**

Ensuring the efficient and effective use of Divisional resources is a major objective of HSD Divisional Management. The Division has taken and intends to take several steps to attain this objective. One series of activities to which a considerable amount of time is devoted is the proposal development and review process. Suggestions to streamline the proposal development process are discussed in Chapter X. At the same time, the Division has examined the proposal-review process in place and has implemented several changes designed to make it more effective and simple. It is hoped that these changes will offer a timely response to the increased workload of program staff and to the increased signing authority limits recently introduced in the Centre.

Another area where effectiveness is a major concern is the posting of professional staff. To develop its professional staff, and in so doing to make the most effective use possible of this resource, HSD proposes rotating its professional staff between Ottawa and the regional offices. This would involve posting Program Officers or Senior Program Officers who have spent 2-3 years in Ottawa to a regional office as HSD Regional Representative for a 3-4 year period. During the initial 2-3 year period in Ottawa the Program Officer would be expected to develop a good understanding of the Division's programs and operations, taking on an increasing level of responsibility during this period. Upon being posted to the regional office the officer would assume the Regional Representative role, that of a generalist acting on behalf of the entire Division. At the end of the 3-4 year posting it would be expected that the Regional Representative would return to Ottawa in a senior capacity. This rotation of staff over relatively long periods of time would be complemented by short-term secondments, that is, for periods of 3-6 months, of Ottawa-based program staff to the regional offices. The first such secondment, which will be made on a trial basis, will take place in 1988/89. In addition, once the Division begins to establish a cadre of Regional Program Officers, consideration will be given to temporary postings of these regional-office-based staff members to Ottawa.

HSD has taken a number of steps to help make the most efficient use of program staff time. Many matters related to project administration have been delegated to Operations staff. The Information Unit has been working with program staff to provide information that meets program needs. One means of further improving staff productivity, however, would be to make use of research assistants to gather background information, prepare papers, review reports, etc., in project-and program-related activities. Much of this is now being done by program staff.

In summary, the Division will continue to streamline its operations to attain as high a degree of efficiency and effectiveness as possible. Every effort will be made to maximize the use of existing resources, but limitations to the activities that the Division can reasonably be expected to undertake will have to be recognized in the absence of additional professional and support staff resources.

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## Evaluation<sup>1</sup>

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The HSD increasingly stresses the evaluation of its activities. Some evaluation procedures are being implemented and additional ones are being designed within the framework of the *Evaluation Procedures Manual* produced by the Centre's Office of Planning and Evaluation.

Evaluation is intended to provide feedback on performance that can be used in planning and policy formulation. Possible users of this information include the IDRC Board of Governors, Centre Management, Division Management, and Program Staff. We assume that the latter two groups will be the primary users of information generated by evaluations undertaken by HSD itself. The Board of Governors and Centre Management will also benefit from such evaluations but their needs, in most instances, will be the focus of Centre-wide evaluations that fall within OPE's responsibility.

Except where otherwise noted, the HSD uses a definition of evaluation proposed by OPE in its January 1988, draft paper on evaluation planning: "evaluation is a retrospective examination of IDRC experience." This definition assumes that, before an evaluation is carried out, some thought has been given to why the information is required and how it is going to be obtained and used.

We use Rundall's five possible dimensions of performance for evaluating health programs: relevance, progress, effectiveness, impact, and efficiency.<sup>2</sup>

*Relevance* evaluation refers to activities designed to determine whether a program is needed.

*Progress* evaluation refers to efforts made to assess the extent to which implementation complies with a pre-established plan. (*Nota bene:* for our purposes this definition has been expanded to include an examination of the *process* involved in the program or project undertaken; that is, it includes consideration of what was learned while undertaking the activity that can be applied in similar future activities.)

*Effectiveness* evaluation involves looking at whether a program or project meets predetermined objectives.

*Impact* evaluation considers long-term outcomes of a program or a series of programs.

*Efficiency* evaluation attempts to relate the results obtained from a specific program or project to the resources used.

Although each of the five types of evaluations may be appropriate at all levels of Divisional activity, certain types are more important at each level and for each use of information.

The impact of the Division's or the Centre's activities on the health and well-being of its beneficiaries is usually far removed in time and substance from the research to which it relates. Therefore, although we may most want to measure the impact of a Divisional program, it is extremely difficult to do so reliably.

## Evaluation

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Relevance should be a major focus of evaluation at the HSD program or theme level. A comparative analysis of the demand for and supply of health research is presented in Volume I. This analysis is then combined with an assessment of how each program relates to the areas identified as needing further support. This type of evaluation could be performed on a cyclical basis, every 3–4 years, perhaps best in conjunction with the In-Depth Divisional Review. Reviews that examine the state of world research on specific health and/or health-related topics could be included in these evaluations.

Effectiveness evaluations, in which results are compared to objectives, are appropriate at virtually all levels. Here the scope could be relatively short term, for example, assessing whether the project proponents attained their stated objectives; or longer-term, for example, reviewing whether a program has been successful in achieving its stated goals.

Progress evaluations could also be undertaken at all levels, but would be particularly appropriate at the project level. In the context of IDRC operations, they are included in the *Project Completion Report* prepared for each project. *PCRs* can be used to identify lessons learned in undertaking a project and to assess how to better manage the portfolio of research projects funded by the Division.

Efficiency has not been a major focus of evaluation in the Division. *PCRs* do, however, look at the efficiency of the process followed in carrying out the project: to a limited extent, efficiency is considered at this level. It should be noted that efficiency defined in these terms is likely to interest the recipient more than HSD. This also does not address the larger question of the cost-benefit of activities funded by a HSD program. This is much more difficult to tackle, because benefits cannot be precisely defined and are not readily quantifiable. Measurement of costs and/or benefits also must take place over a long time.

Although many cost-effectiveness models have been suggested in the literature on evaluation in the health field, these models are very difficult to extend to health research. For example, models such as the one proposed by Shepard and Thompson attempt to relate net costs of interventions to net health effects.<sup>3</sup> Costs must be measured over a long period and it is difficult to link health research with the health impact over such a long period because of many intervening variables.

Efficiency will therefore not be the primary focus of evaluations at the program level. Efficiency is addressed, however, through the Division's management processes and activities such as internal audit.

### Hierarchy of Evaluation

In preparing an evaluation plan one must consider what types of evaluations are being performed by the Centre and what other evaluations are required at the divisional level to complement them. At present *stripe* evaluations of issues of Centre-wide concern are performed under the auspices of OPE. A key element in the Centre's evaluation system is the In-Depth Divisional Review of each program division, performed every four or five years. At a more micro level, *Project Completion Reports*, which are a review of the history of a project, are prepared for all completed projects. In addition, program-staff review of technical reports from HSD-funded projects includes an informal evaluative component. Projects, groups of projects, networks or unique program initiatives are only evaluated by in-house or outside peer groups on an *ad hoc* basis.

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It is apparent that the Centre's strategy does not address evaluations between the macro level IDDR/stripe evaluations and the micro level PCRs. Divisional level plans should therefore focus on these middle-level evaluations, including the evaluation of programs, themes, groups of projects, methods and selected individual projects. A Divisional evaluation hierarchy, which is a modified version of the one proposed by OPE for Centre evaluation, is presented in Table 28. It shows how each proposed middle-level evaluation fits into the overall framework.

### **Stripe evaluations**

In its January 1988, draft paper entitled *Evaluation Planning: Framework of Policy Issues*, OPE suggests that division-specific studies could sometimes be carried out to fill gaps in knowledge about Centre-wide (stripe) issues. The Division will continue to work closely with OPE in identifying policy areas of interest and in carrying out the appropriate parts of these reviews.

### **Division-level evaluation**

The IDDR is the formal review of the Division's mission, objectives, strategic plan, and overall performance. It is undertaken by a Board panel. Although impact is of paramount interest in considering the Division's performance, because of the difficulties in assessing impact, the IDDR primarily considers other dimensions of Divisional performance, such as relevance and effectiveness. The IDDR is essentially oriented toward policy- and program-related matters. Management issues are reviewed on an ongoing basis by Centre and Division Management and are considered in the internal audit, which takes place every four years and is complementary to the IDDR.

### **Program-level evaluation**

A distinction must be made between prospective evaluations and the retrospective type of evaluation usually performed in the Centre. For prospective evaluations to be of value, HSD programs must ensure that their objectives are expressed in a manner that will facilitate measurement. This type of evaluation would be most concerned with effectiveness, but would also assess progress to the extent that the success of the strategies selected is assessed (preferably on an on-going basis). Program evaluations might be carried out by groups of external peers.

Retrospective program-level evaluations could be envisaged after the HSD programs are firmly established and have had sufficient time to implement their themes, probably during the next IDDR cycle.

### **Evaluations of themes**

Themes such as *Health Education*, *Nutrition*, the *Role of Women in Community Health*, and *Health Systems Decision-Making* could be considered partly as stripe evaluations involving a number of Centre divisions and/or as sub-program evaluations. These evaluations would focus on relevance, progress (process), and short- to intermediate-term outputs and effect. OPE, the division involved and external peer groups would carry out such evaluations.

## Evaluation

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### Evaluations of groups of projects

Projects can be linked into many different types of groups, each of which can be evaluated prospectively and/or retrospectively. The groupings include:

- networks linking institutions and researchers.
- projects relating to a specific problem, for example Hepatitis B;
- projects focusing on a specific geographic region, for example a rural area in a country or the Sahel;
- projects with a specific organization or group of organizations, for example NGOs, UN agencies, etc.;
- projects involving innovative methodologies, for example participatory research.

These evaluations may be prospective, when looking at a type of methodology or a specific region, for example, or retrospective, as in the case of projects with NGOs. The terms of the evaluation, the mechanisms used and the choice of evaluators will vary with the questions being asked.

### Evaluations of projects

Project evaluation begins with the proposal review and ends with the *Project Completion Report*. The monitoring of projects may identify issues that require additional study and evaluation, such as unique application of methodology, important results or major problems. Projects with special features, such as pilot or demonstration projects, multi-component projects, multiphase projects and projects with very large budgets, may require special evaluations. We will build systems of evaluation into most of these projects prior to funding approval.

These intra-project evaluation systems frequently use outside consultants and give information on lessons learned, opportunities for additional research, and mechanisms for the use of research results.

### Project Completion Reports

The *Project Completion Report* is a review of the outcome of a project, comparing original objectives with the results. *PCRs* serve the objectives of corporate accountability and corporate memory. They are prepared for all completed projects. The *PCR* attempts to answer at least six questions:

1. What was achieved, and did project activities and results follow project objectives and methodology?
2. Did the project result in building institutional, managerial or individual scientific capability, if this was one of the project's objectives?
3. What publications have been produced, and other means of dissemination of results implemented?
4. What lessons were learned which would allow IDRC to develop better projects in the future?

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5. What follow-up action is required?

6. Was the project worthwhile?

The Division will review the *PCR* format to ensure that they are comparable and as useful as possible.

### **Resources Required**

Significant staff time is taken up in reviewing reports and in project management. We propose that consultants be used extensively in evaluations.

### **Conclusions**

Evaluation includes multiple parameters and covers different periods of time. The Division will work within the Centre's system of evaluation to assess its activities with respect to five parameters over different time periods. HSD activities will be arranged into a hierarchy extending from a single project to the entire Division. Many projects, groups of projects, and networks will have built-in evaluation systems. Evaluations of themes, networks, subject areas or programs will require terms of reference to specify:

- the questions to be answered and the information required;
- the time period: short, medium or long-term;
- the mechanisms to be employed to obtain the information;
- how frequently the information will be required; and,
- the individual or group who will obtain the information.

It is expected that information generated from evaluations will help the Division in the periodic revision of its strategic plan. In the same manner that the Division's strategic plan will be updated on a rolling basis, the evaluation plan will be periodically reviewed and modified in order to best meet its and the Centre's requirements.

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## Notes

1. See also the *Evaluation in the Health Sciences Division* position paper included in the Annex.
2. Rundall, T.G. **Evaluation of Health Services Programs: Public Health and Preventive Medicine**, 17<sup>th</sup> edition, pp. 1831-1847.
3. Shepard, D.S. and Thompson, M.S. First Principles of Cost-Effectiveness Analysis in Health. **Public Health Reports**, Vol. 94, No. 6, November-December 1979.



## **Figures and Tables**

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The figures and tables for Volumes I and II appear on the following pages.

# HEALTH SCIENCES DIVISION (1983–1987)

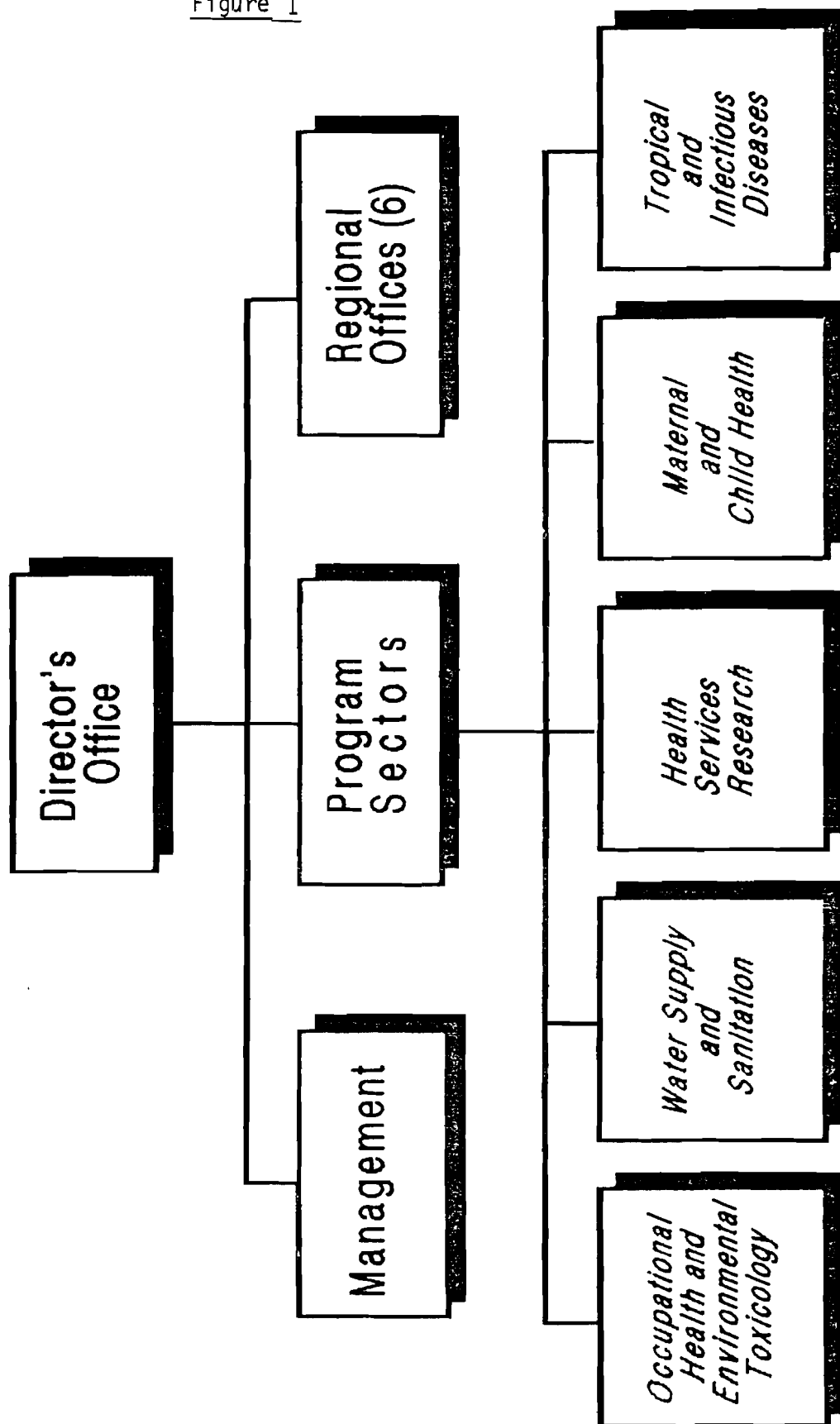
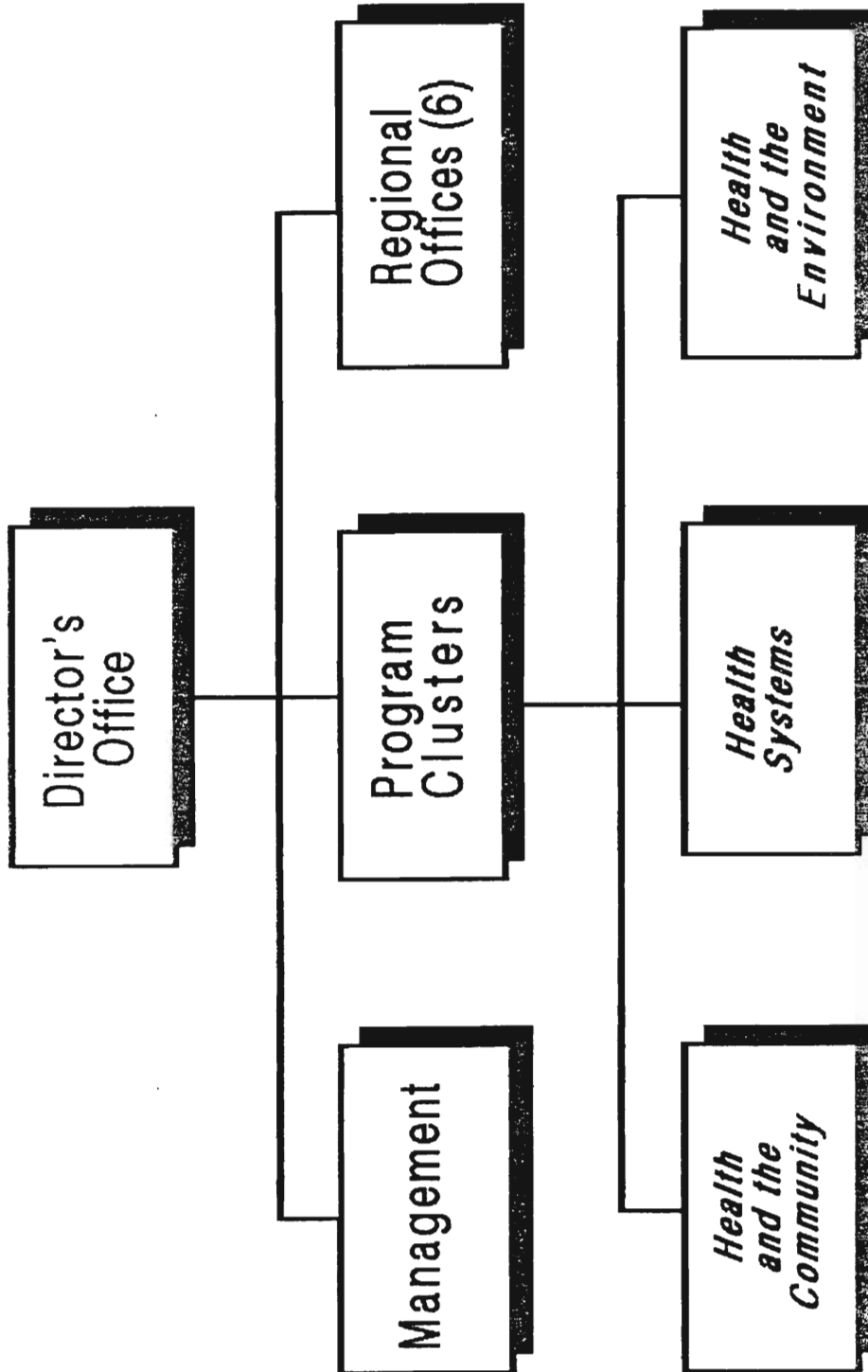


Figure 1

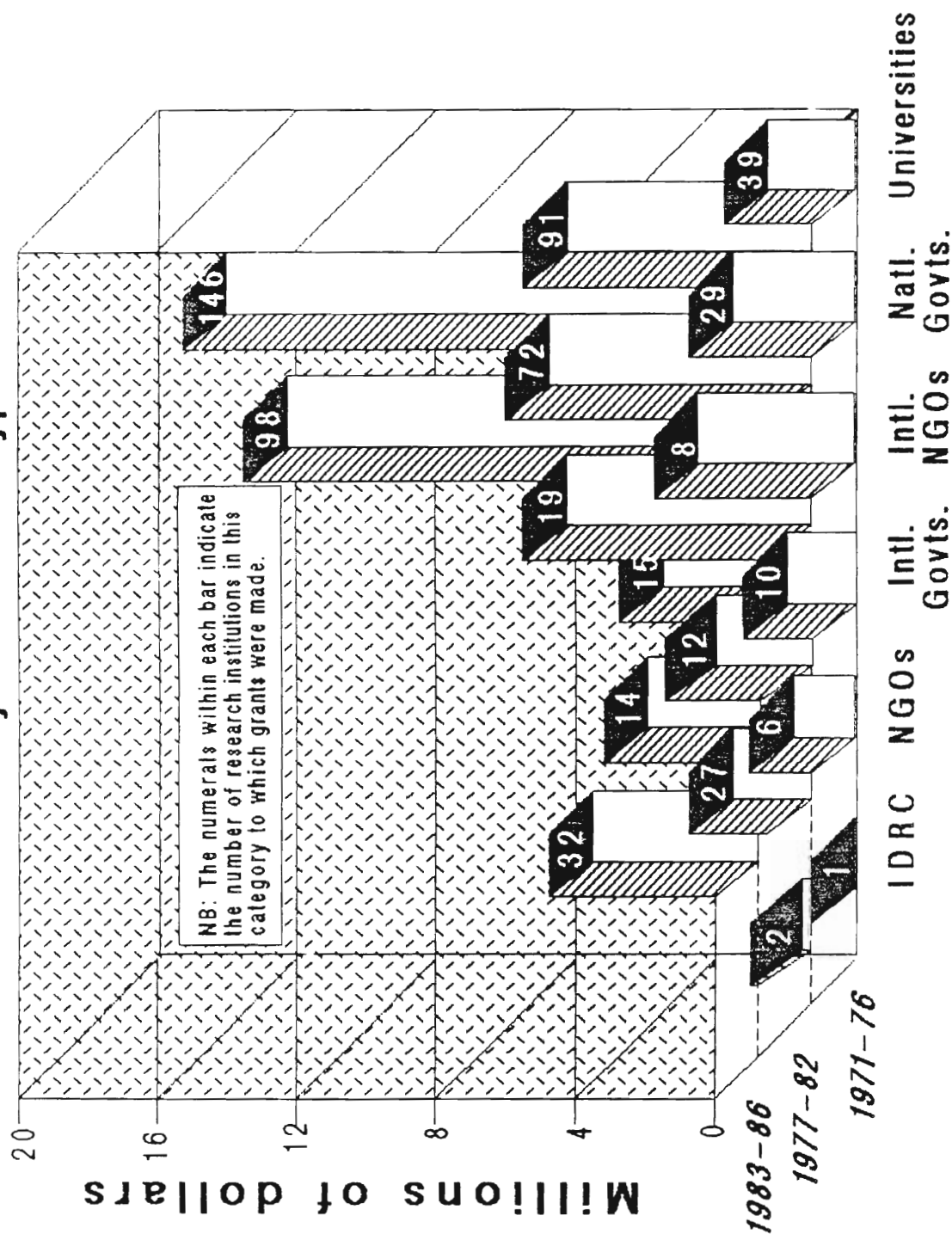
# HEALTH SCIENCES DIVISION (1987 – 19..)

Figure 2



# Health Sciences Appropriations

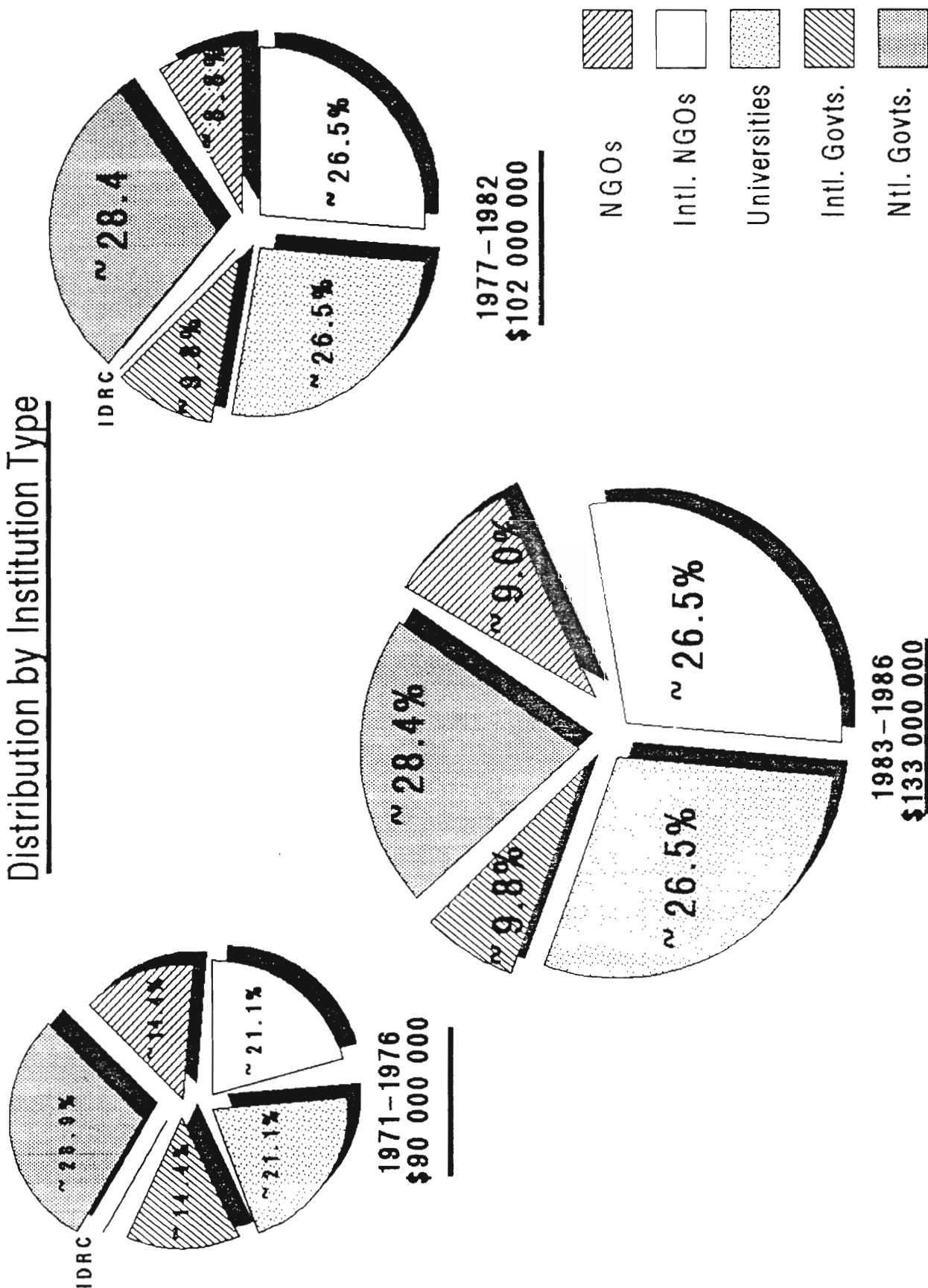
## Grants by Institution type



# Health Sciences Appropriations

## Distribution by Institution Type

Figure 4



# Health Sciences Appropriations

## Distribution by Region / Institution type

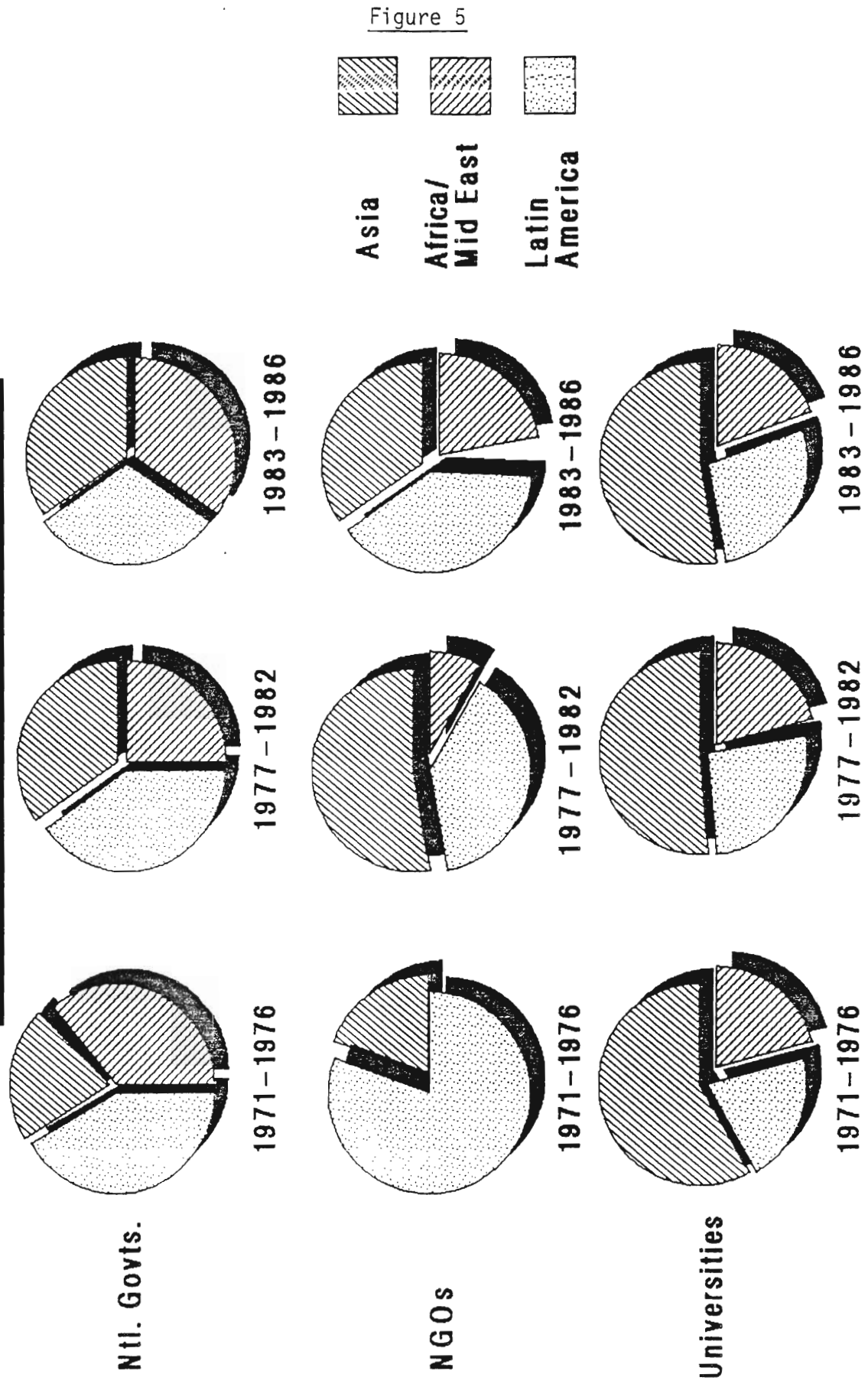
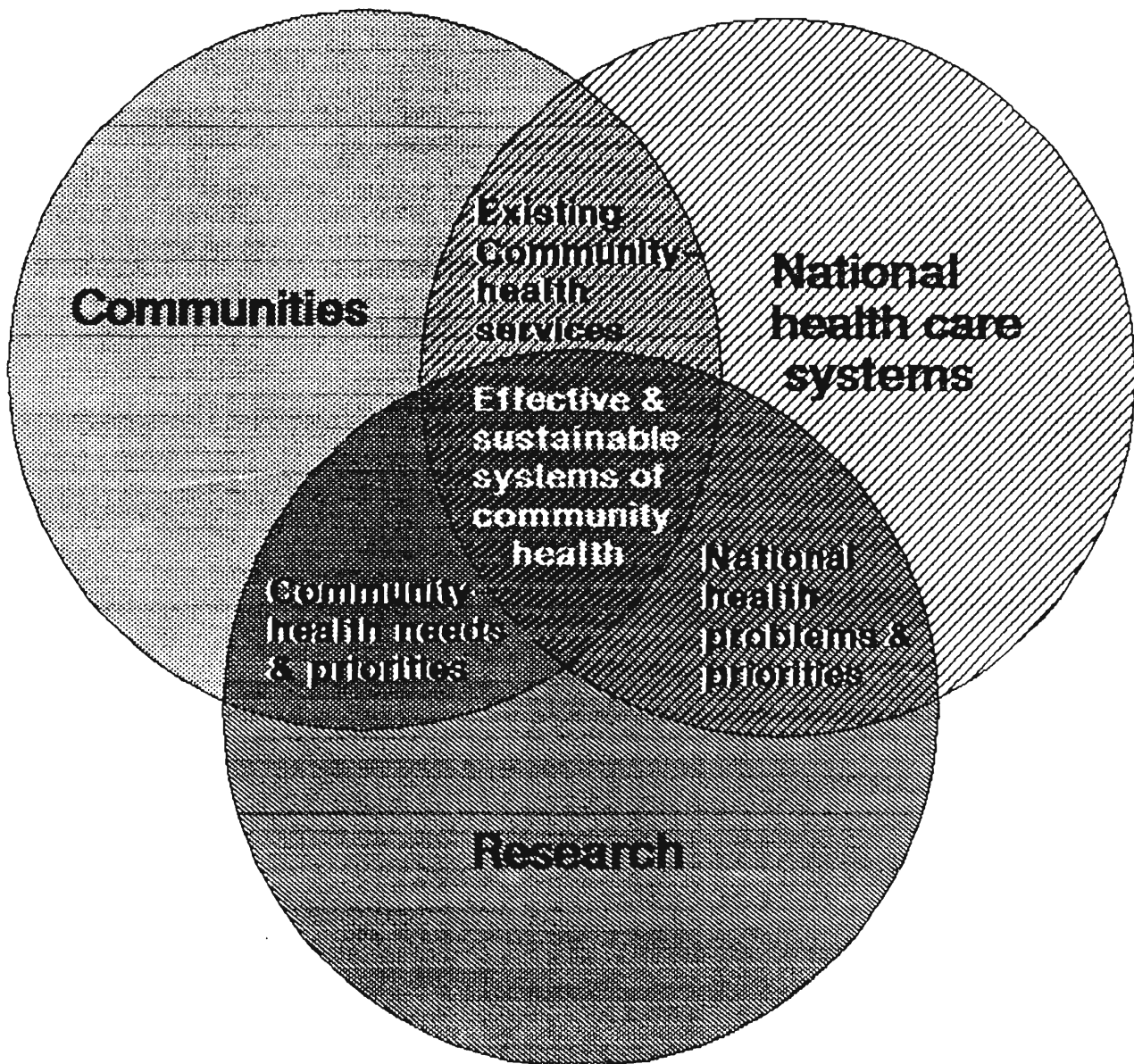


Figure 6

## HEALTH SCIENCES DIVISION Research Strategy Framework

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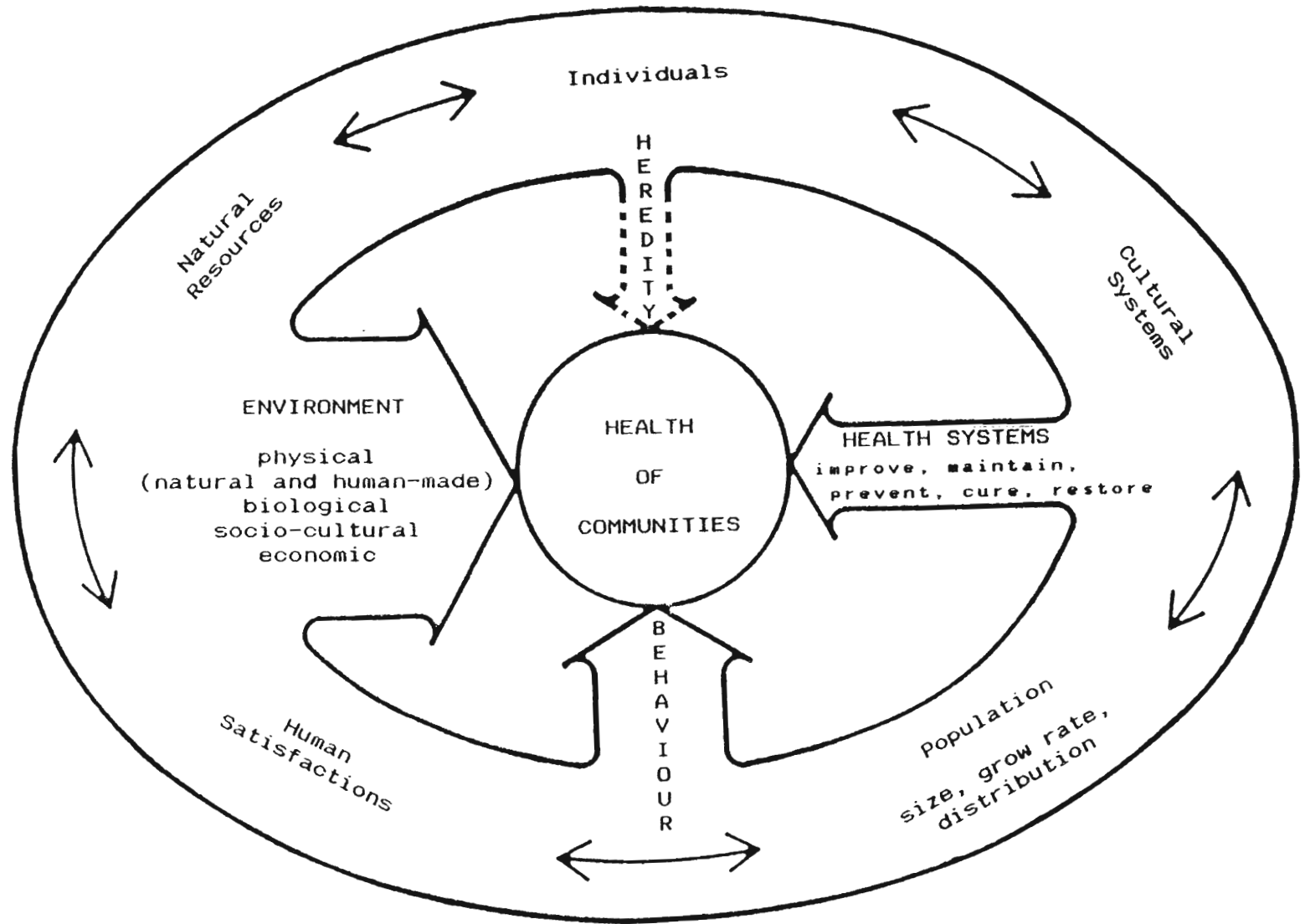


Figure 7

The width of the four ... input-to-health arrows indicates ... assumptions about the relative importance of the inputs to health (Blum, 1974, p 3)

Adapted from H.L. Blum, *Planning for Health* Human Sciences Press, 1974, p



INPUTS TO HEALTH

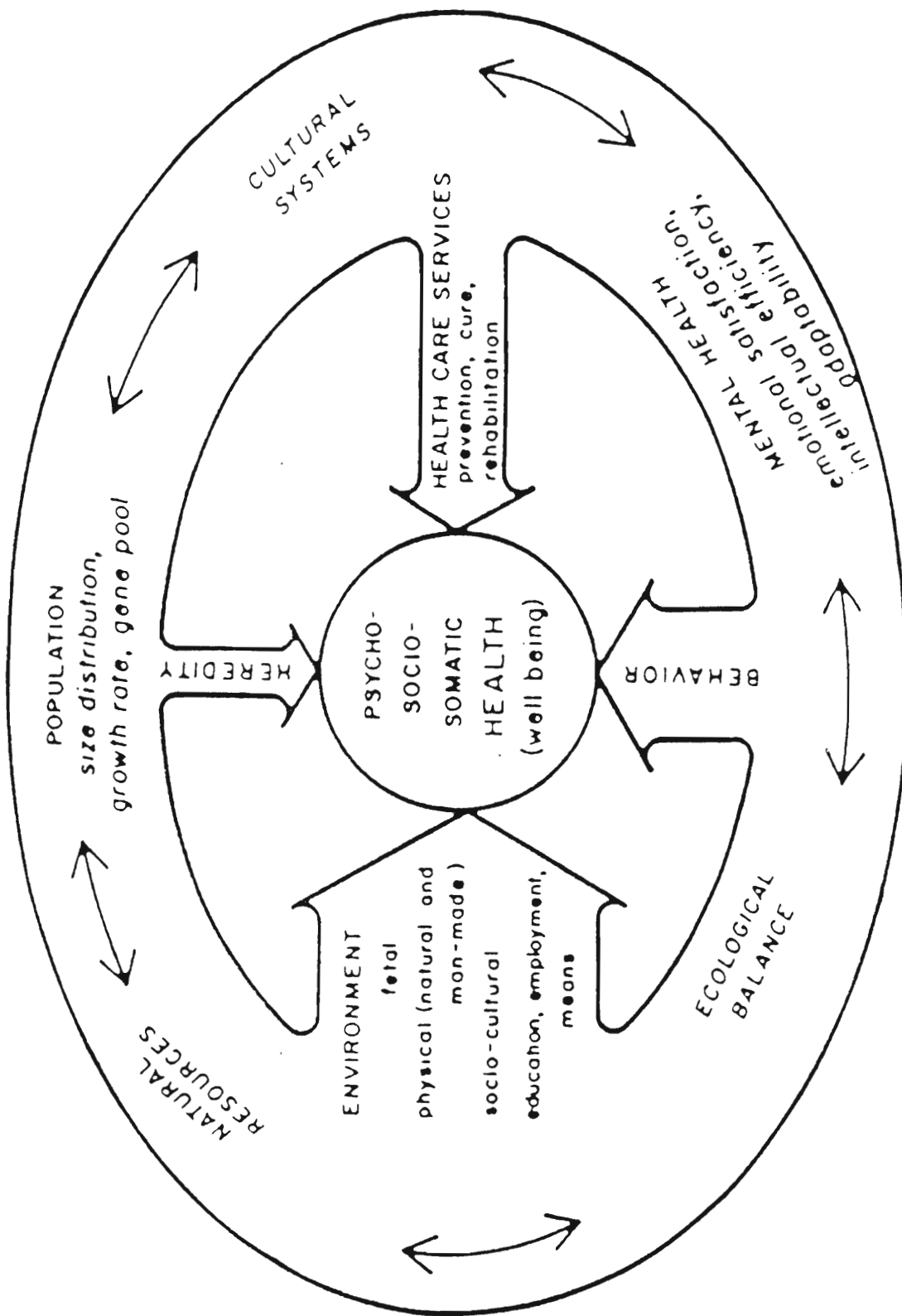


Figure 8

From H.L. Blum, *Planning for Health*, Human Sciences Press, 1974, p 3.

## HEALTH SCIENCES DIVISION Research Programs

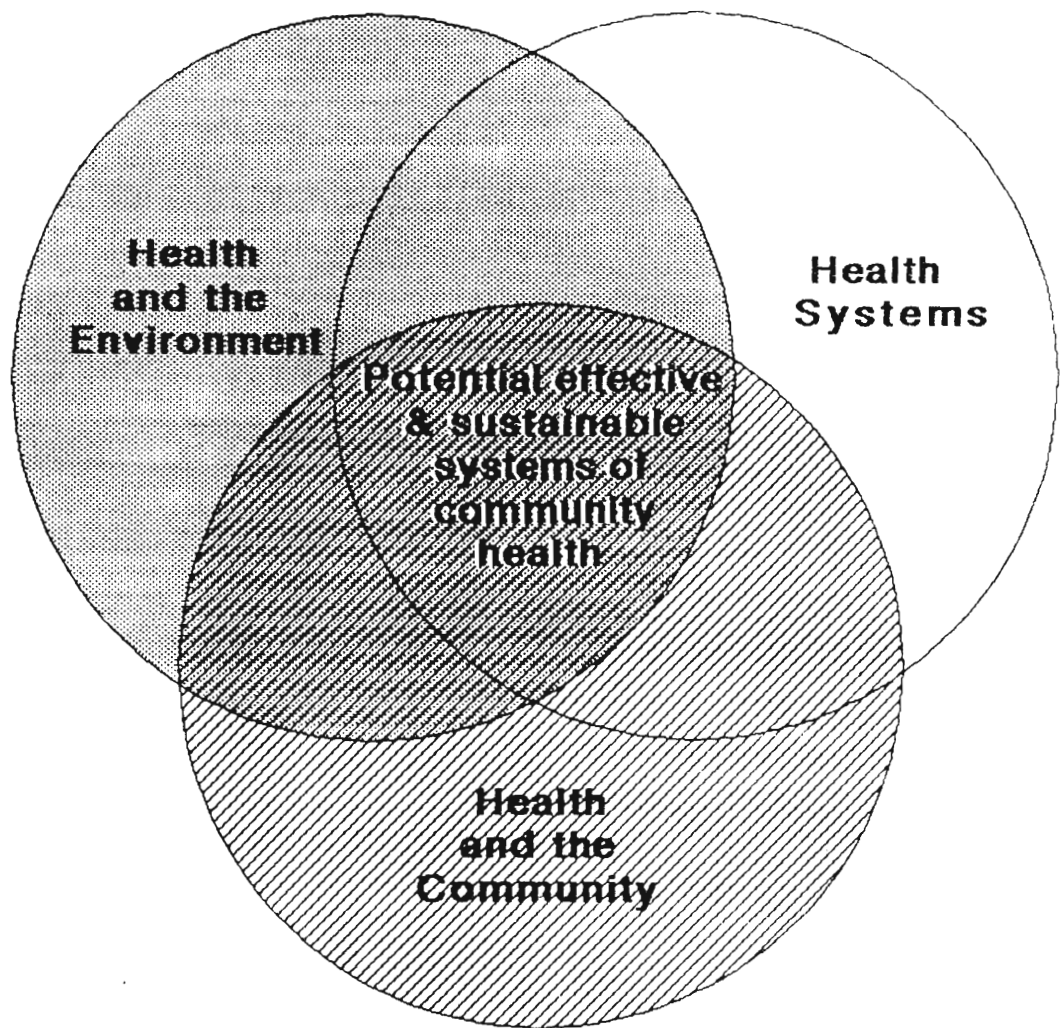






Table 1

## Health indicators for selected LDCs

	IMR	% COVERAGE SAFE WATER		% COVERAGE SANITATION	% LOCAL HEALTH CARE	% NATURAL INCREASE
		<u>Urban/Rural</u>				
<u>EAST AFRICA</u>						
Burundi	130	33	22	52	45	2.8
Ethiopia	144	93	42	-	44	2.6
Kenya	87	(61)		21	-	4.1
Lesotho	130	37	14	12.4	50	4.1
Malawi	151	82	54	55	54	3.2
Mozambique	159	82	2	10	40	2.5
Uganda	130	45	12	13	42	3.3
Tanzania	137	85	47	78	73	3.5
Zambia	105	70	32	47	70	3.3
Zimbabwe	85	100	10	26	71	3.5
<u>WEST AFRICA</u>						
Burkina Faso	149	50	26	8	70	2.8
Gabon	114	75	34	50	80	1.6
Gambia	198	100	33	77	90	1.9
Ghana	97	72	39	26	64	3.2
Liberia	150	50	24	21	35	3.1
Mali	149	58	20	21	20	2.8
Sierra Leone	158	58	8	21	36	1.8
Senegal	116	(63)		27	-	2.6
<u>MIDDLE EAST/NORTH AFRICA</u>						
Egypt	73	93	61	70	99	2.7
Morocco	99	(57)		46	-	2.5
Somalia	163	60	20	17	20	2.5
Sudan	140	(40)		5	70	2.9
Tunisia	60	98	79	46	91	2.8
Yemen	173	100	21	12	25	3.0
Yemen Dem Rep	149	73	39	45	75	3.0

World Health Statistics Annual WHO, 1986, pp 36, 38, 41.

Table 1 (Cont.)

## Health indicators for selected LDCs

	IMR	% COVERAGE SAFE WATER		% COVERAGE SANITATION	LOCAL HEALTH CARE	% NATURAL INCREASE
		<u>Urban/Rural</u>				
<u>LATIN AMERICA</u>						
Bolivia	124	78	12	24	-	2.8
Chile	22	100	18	83	94	1.6
Colombia	52	100	76	68	87	2.3
Costa Rica	18	93	86	76	95	2.8
Cuba	15	(61)		31	-	1.2
Dominican Republic	63	85	33	27	-	2.5
Ecuador	77	98	21	45	-	1.7
Guatemala	80	90	26	36	59	3.1
Haiti	124	73	25	19	-	2.7
Honduras	81	91	55	44	-	3.4
Mexico	35	90	40	56	51	2.7
Nicaragua	75	98	9	28	-	3.5
Peru	127	73	18	35	-	2.6
<u>SOUTH ASIA</u>						
Bangladesh	128	29	43	4	45	2.3
India	114	80	47	8	75	2.2
Nepal	152	71	11	2	-	2.3
Pakistan	90	70	10	19	64	2.8
Sri Lanka	34	76	26	66	90	1.8
<u>SOUTHEAST ASIA</u>						
Indonesia	98	40	32	30	-	2.0
Malaysia	19	(71)		75	-	2.4
Papua New Guinea	72	54	10	10	93	2.1
Philippines	58	(64)		56	-	2.3
Thailand	45	70	70	45	-	1.6

Table 2

## Age Specific Death Rates/100,000 Population for Selected IDC Categories

COUNTRY (YEAR)		ALL	INFECTIOUS/ PARASITIC DISEASES (01-07)	MALIGNANT NEOPLASMS (08-14)	MENINGITIS (22)	ACUTE MYOCARDIAL INFARCTION (270)	RESPIRATORY CONDITIONS (31-32)	ACCIDENTS (E47-E53)
CANADA	T	699.3	4.0	178.2	0.3	110.1	20.2	37.5
(1984)	0-1	811.1	10.6	3.2	4.5	--	12.5	20.2
COSTA RICA	T	396.5	17.4	77.9	1.8	32.2	16.3	27.1
(1983)	0-1	1,864.2	201.5	6.9	31.5	--	34.5	23.0
HONDURAS	T	479.3	80.9	14.9	1.6	3.2	13.5	53.9
(1981)	0-1	2,296.0	747.7	2.5	11.8	--	116.8	8.1
GUATEMALA	T	1,009.6	336.1	28.5	5.6	6.6	89.8	35.8
(1979)	0-1	7,393.0	2,068.9	3.0	49.9	--	730.9	16.5
DOMINICAN REPUBLIC	T	462.9	48.5	27.7	4.5	19.5	12.2	21.6
(1982)	0-1	3,213.6	667.2	10.2	78.3	1.0	129.0	26.1
PERU	T	520.1	100.1	35.3	2.1	10.8	74.9	30.3
(1981)	0-1	2,908.2	642.3	0.6	14.2	--	478.8	17.4
EGYPT	T	996.1	24.2	18.5	1.2	0.5	64.6	19.8
(1980)	0-1	7,601.7	298.0	5.1	8.2	--	988.8	15.9
SRI LANKA	T	617.2	49.1	27.9	5.0	12.9	20.5	31.8
(1980)	0-1	3,439.8	356.1	12.2	70.8	3.8	248.6	29.4
THAILAND	T	504.2	40.3	24.7	1.4	0.8	8.9	34.6
(1981)	0-1	1,252.5	162.1	3.1	11.2	--	96.1	10.9

1 Ref. Who 1983-1986 Annual Reports.

Table 3

**Disbursements on health-related Canadian ODA**

	<u>1984/85</u>	<u>1985/86</u>	1986/87
CIDA			
- Health	25.4	29.3	49.5
- UNICEF (Note 1)	8.0	8.0	8.7
Health & Welfare Canada - WHO	7.1	7.4	9.6
External Affairs - PAHO	4.2	4.8	4.6
IDRC	9.0	13.0	11.9
Total Health-related Canadian ODA	<u>53.7</u>	<u>62.5</u>	<u>84.3</u>
Total Canadian ODA	1,810	2,170	2,700
IDRC Health-related ODA as a percentage of total Health-related Canadian ODA	16.8%	20.8%	14.1%
IDRC Health-related ODA as a percentage of total Canadian ODA	0.50%	0.60%	0.44%
Health-related ODA as a percentage of total Canadian ODA	2.96%	2.88%	3.12%

Source: CIDA Health Unit

Note 1: This figure represents the 60% of CIDA's total contribution to UNICEF that reflects UNICEF's spending on health.



Table 4

## Bilateral, Multilateral and Non-Governmental Agencies Providing Support for Health Research

1. Tropical and infectious diseases	2. Health services	3. Diarrheal diseases
<ul style="list-style-type: none"> <li>- AORB (schistosomiasis)</li> <li>- AID (US)</li> <li>- AMREF (malaria, hydatid disease)</li> <li>- BOSTIP (mosquito vector field studies, malaria, arboviruses, rapid epidemiologic assessment, ARI)</li> <li>- JICA</li> <li>- KEMRI (tuberculosis)</li> <li>- PAHO</li> <li>- Rockefeller (malaria, hookworm, schistosomiasis)</li> <li>- SAREC</li> <li>- Wellcome Trust (leishmaniasis, malaria)</li> <li>- WHO/TDR (malaria, schistosomiasis, filariasis, trypanosomiasis, leishmaniasis, leprosy)</li> </ul>	<ul style="list-style-type: none"> <li>- AID (US)</li> <li>- Joint Meeting of Belgian, Dutch and German Tropical Medicine Societies</li> <li>- PAHO</li> <li>- PAHO</li> <li>- SAREC</li> <li>- UNICEF (operational research re vaccines, ART delivery)</li> <li>- WHO</li> </ul>	<ul style="list-style-type: none"> <li>- TCDOR, B</li> <li>- PAHO</li> <li>- Rockefeller</li> <li>- SAREC</li> <li>- Wellcome Trust Research Unit, Vellore, India</li> <li>- WHO/CDO</li> </ul>
4. Vaccine trials and chronic diseases (including HIV/AIDS-related diseases)	4. Occupational health	5. Traditional medicine (including medicinal plants/medical anthropology)
<ul style="list-style-type: none"> <li>- AORB (schistosomiasis, leishmaniasis, leprosy)</li> <li>- AID (US)</li> <li>- AMREF (malaria, hydatid disease)</li> <li>- BOSTIP (mosquito vector field studies, malaria, arboviruses, rapid epidemiologic assessment, ARI)</li> <li>- JICA</li> <li>- KEMRI (tuberculosis)</li> <li>- PAHO</li> <li>- Rockefeller (malaria, hookworm, schistosomiasis)</li> <li>- SAREC</li> <li>- Wellcome Trust (leishmaniasis, malaria)</li> <li>- WHO/TDR (malaria, schistosomiasis, filariasis, trypanosomiasis, leishmaniasis, leprosy)</li> </ul>	<ul style="list-style-type: none"> <li>- KEMRI (occupational respiratory diseases)</li> <li>- PAHO</li> <li>- SAREC</li> </ul>	<ul style="list-style-type: none"> <li>- IFS (medicinal plants)</li> <li>- Joint Meeting of Belgian, Dutch, and German Tropical Medicine Societies</li> <li>- SAREC</li> </ul>
6. Vaccine trials and chronic diseases (including HIV/AIDS-related diseases)	7. Maternal and child health (including child survival)	8. Population, family planning and human reproduction
<ul style="list-style-type: none"> <li>- AORB (schistosomiasis, leishmaniasis, leprosy)</li> <li>- AID (US)</li> <li>- AMREF (malaria, hydatid disease)</li> <li>- BOSTIP (mosquito vector field studies, malaria, arboviruses, rapid epidemiologic assessment, ARI)</li> <li>- JICA</li> <li>- KEMRI (tuberculosis)</li> <li>- PAHO</li> <li>- Rockefeller (malaria, hookworm, schistosomiasis)</li> <li>- SAREC</li> <li>- Wellcome Trust (leishmaniasis, malaria)</li> <li>- WHO/TDR (malaria, schistosomiasis, filariasis, trypanosomiasis, leishmaniasis, leprosy)</li> </ul>	<ul style="list-style-type: none"> <li>- AID (US)</li> <li>- Carnegie Corporation of NY</li> <li>- Ford Foundation (child survival)</li> <li>- KEMRI</li> <li>- PAHO</li> <li>- UNICEF (child survival, immunization, ART)</li> </ul>	<ul style="list-style-type: none"> <li>- AORB</li> <li>- AID (US)</li> <li>- Ford Foundation (population-related matters)</li> <li>- Population Council</li> <li>- Rockefeller</li> <li>- UNFPA</li> <li>- WHO/Human Reproduction Program</li> </ul>
9. Nutrition and food hygiene	10. Biomedical research (may form a part of other categories such as TDR, HRP, nutrition, etc.)	11. Water supply and sanitation
<ul style="list-style-type: none"> <li>- AORB (food habits)</li> <li>- Joint Meeting of Belgian, Dutch and German Tropical Medicine Societies</li> <li>- Ministry for Development Cooperation (Belgium)</li> <li>- ODA (UK)</li> <li>- PAHO</li> <li>- SAREC</li> </ul>	<ul style="list-style-type: none"> <li>- TDR</li> <li>- KEMRI</li> <li>- MRC (UK)</li> <li>- Wellcome Trust</li> </ul>	<ul style="list-style-type: none"> <li>- AORB</li> <li>- AID/WASH Project</li> <li>- GATE</li> <li>- IFS (rural technology including housing)</li> <li>- PAHO</li> <li>- SAREC</li> <li>- UNDP/World Bank Project</li> </ul>

HS Appropriations  
(000s omitted)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fertility Regulation Methods/ Maternal & Child Health	345	361	594	909	3,000	1,073	756	1,901	1,183	1,121	2,545	1,877	3,310	2,985	3,529	3,090
Family Planning Action Research	292	240	425	391	468	14	--	--	--	--	--	--	--	--	--	--
Demography & Population (Note 1)	156	616	1,055	900	490	45	--	--	--	--	--	--	--	--	--	--
Rural Health Care Delivery	47	604	1,050	963	310	995	889	351	394	539	795	918	--	--	--	--
Environmental Health & Disease Prevention			280	498	723	1,933	43	5	--	--	--	--	--	--	--	--
Tropical Disease Research/ Communicable & Non-Infectious Diseases							1,049	745	840	1,970	1,889	1,833	2,348	2,061	2,195	2,475
(Rural) Water Supply & Sanitation							1,087	1,043	874	59	235	690	1,245	1,773	1,531	1,590
Occupational & Environmental Health											506	433	963	726	333	743
Health Services Research														471	1,149	1,675
Special Initiatives																642
Total Regular Programs	833	1,821	3,404	3,661	4,996	4,070	3,824	4,045	3,291	3,739	6,910	5,801	6,346	8,006	6,740	10,421

Note 1: Transferred to Social Sciences Division effective 1976/77.

Table 6

**Inflation Adjusted HS Appropriations (Note 1)**  
(000s omitted)

Division Statement		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	Fertility Regulation Methods/ Maternal & Child Health	338	344	527	727	2,166	724	470	1,035	614	532	1,091	715	1,151	1,051	1,150	967
	Family Planning Action Research	292	229	377	313	338	9	--	--	--	--	--	--	--	--	--	--
	Demography & Population	156	588	936	720	354	30	--	--	--	--	--	--	--	--	--	--
	Rural Health Care Delivery	47	576	932	770	224	668	553	200	206	260	335	350	--	--	--	--
	Environmental Health & Disease Prevention			248	398	526	1,302	27	3	--	--	--	--	--	--	--	--
	Tropical Disease Research/ Communicable & Non-Infectious Diseases							652	425	439	935	797	717	842	705	716	774
	(Rural) Water Supply & Sanitation							676	595	457	26	99	263	448	617	499	498
	Occupational & Environmental Health											214	165	347	251	106	233
	Health Services Research															163	375
Special Initiatives																	10
	Total Regular Programs	833	1,737	3,020	2,928	3,608	2,733	2,378	2,304	1,721	1,775	2,536	2,210	3,004	2,766	3,456	3,364

Note 1: Actual appropriations figures have been adjusted by an inflation factor as measured by changes in the Consumer Price Index as reported by Statistics Canada for the period 1971-1987.

TABLE 7

APPROPRIATIONS/RESEARCH INSTITUTIONS SUPPORTED  
HEALTH SCIENCES DIVISION - FISCAL YEARS 1971 - 1986\*

FISCAL YEARS**	TYPE OF INSTITUTION						TOTAL
	IORC	MGO	IMGO	UNIVERSITY	INT'L GOV'T	LOCAL GOV'T	
1971 and 1972							
Appropriation (\$)	-	-	152,000	428,922	461,740	807,334	1,849,996
Number of Research Institutions Supported	-	-	2	3	2	8	15
Average Grant/Institution (\$)	-	-	76,000	142,974	230,870	100,917	123,333
% Grant/Total Grant by Institution Type	-	-	8.2	23.2	25	43.6	100
% Institutions/Total Institutions	-	-	13.3	20	13.3	53.3	100
1973 and 1974							
Appropriation (\$)	-	1,041,385	770,000	915,640	163,900	1,176,797	4,067,722
Number of Research Institutions Supported	-	2	3	9	3	6	23
Average Grant/Institution (\$)	-	520,693	256,667	101,738	54,633	196,133	176,857
% Grant/Total Grant by Institution Type	-	25.6	18.9	22.5	4	28.9	100
% Institutions/Total Institutions	-	8.7	13	39.1	13	26.1	100
1975 and 1976							
Appropriation (\$)	48,000	847,600	3,359,084	1,541,558	1,167,673	1,880,144	8,844,059
Number of Research Institutions Supported	1	4	2	28	5	15	55
Average Grant/Institution (\$)	48,000	211,900	1,679,542	55,056	233,535	125,343	160,801
% Grant/Total Grant by Institution Type	0.5	9.6	38	17.4	13.2	21.3	100
% Institutions/Total Institutions	1.8	7.3	3.6	50.9	9.1	27.3	100
1977 and 1978							
Appropriation (\$)	69,100	435,000	2,496,000	1,682,743	513,488	1,984,390	7,180,721
Number of Research Institutions Supported	1	8	5	28	4	22	68
Average Grant/Institution (\$)	69,100	54,375	499,200	60,096	128,372	90,200	105,599
% Grant/Total Grant by Institution Type	1	6.1	34.8	23.4	7.2	27.6	100
% Institutions/Total Institutions	1.5	11.8	7.4	41.2	5.9	32.4	100
1979 and 1980							
Appropriation (\$)	108,100	727,900	1,089,862	2,146,670	1,382,615	2,330,180	7,785,327
Number of Research Institutions Supported	1	9	6	32	5	21	74
Average Grant/Institution (\$)	108,100	80,878	181,644	67,083	276,523	110,961	105,207
% Grant/Total Grant by Institution Type	1.4	9.3	14	27.6	17.8	29.9	100
% Institutions/Total Institutions	1.4	12.2	8.1	43.2	6.8	28.4	100
1981 and 1982							
Appropriation (\$)	-	1,132,040	3,456,170	2,974,870	830,949	3,314,905	11,708,934
Number of Research Institutions Supported	-	10	8	30	3	29	80
Average Grant/Institution (\$)	-	113,204	432,021	99,162	276,983	114,307	146,362
% Grant/Total Grant by Institution Type	-	9.7	29.5	25.4	7.1	28.3	100
% Institutions/Total Institutions	-	12.5	10	37.5	3.8	36.3	100

\*\*For purposes of this analysis we have broken down the reported information into 2 (fiscal) year blocks of time. For example the 1971-72, which run from April 1, 1971 to March 31, 1972 and from April 1, 1972 to March 31, 1973 respectively.

TABLE 7

APPROPRIATIONS/RESEARCH INSTITUTIONS SUPPORTED  
HEALTH SCIENCES DIVISION - FISCAL YEARS 1971 - 1986\*

FISCAL YEARS**	TYPE OF INSTITUTION						TOTAL
	IDRC	NGO	IN6C	UNIVERSITY	INT'L GOV'T	LOCAL GOV'T	
1971 and 1972							
1983 and 1984							
Appropriation (\$)	-	2,959,990	626,840	6,341,338	1,169,270	5,705,577	16,803,015
Number of Research Institutions Supported	-	10	5	55	7	50	135
Average Grant/Institution (\$)	-	161,444	125,368	115,297	167,039	114,112	124,467
% Grant/Total Grant by Institution Type	-	17.6	3.7	37.7	7	34	100
% Institutions/Total Institutions	-	13.3	3.7	40.7	5.2	37	100
1985 and 1986							
Appropriation (\$)	-	2,677,374	1,295,725	9,184,236	2,054,037	7,335,435	22,549,909
Number of Research Institutions Supported	-	13	9	92	7	46	167
Average Grant/Institution (\$)	-	205,953	144,303	99,826	293,434	159,466	135,029
% Grant/Total Grant by Institution Type	-	11.9	5.9	40.7	9.1	32.5	100
% Institutions/Total Institutions	-	7.8	5.4	55.1	4.2	27.5	100
TOTAL							
Appropriation (\$)	225,200	9,821,289	13,246,681	25,216,079	7,743,670	24,534,760	80,789,680
Number of Research Institutions Supported	3	64	40	277	33	197	614
Average Grant/Institution (\$)	75,067	153,456	331,167	91,033	235,100	124,546	130,940
% Grant/Total Grant by Institution Type	0.3	12.3	16.4	31.2	9.6	30.4	100
% Institutions/Total Institutions	0.5	10.4	6.5	44.9	5.4	31.9	100

\*Includes pending appropriations budgeted to March 31, 1987

Average Size of HS Grant (Note 1)  
(000s omitted)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Total Program Appropriations (Note 2)	3,324	4,045	3,291	3,739	5,043	6,120	9,324	8,024	10,111	11,405	12,450
Number of Projects	35	27	26	38	37	29	62	58	60	72	83
Average Grant Size	109.3	149.8	126.6	98.4	163.3	211.0	145.5	138.3	168.5	158.4	150.1

Note 1: For comparative purposes, we have only looked at the period beginning with the 1977 fiscal year. The projects in the Demography and Population program from 1971-1976 (subsequently transferred to SS) distort the ratio and make comparisons difficult.

Note 2: Includes regular programs and COOP.

Table 9

**Recipient Institutions with  
five or more HS Grants**

<u>Recipient Institution</u>	<u>Number of Grants</u>	<u>\$ Value of Grants</u>
Centro Nacional de la Familia (CENFA) Chile	5	976,905
Chulalongkorn University - Thailand	6	360,682
Fundacion para la Educacion Superior (FES) Colombia	9	3,090,110
Kenya Medical Research Institute (KEMRI)	7	1,033,350
Mahidol University - Thailand	13	783,405
National Institute of Immunology - India	5	3,262,093
PAHO	10	1,555,899
Population Council	18	7,680,504
PATH/PIACT	14	1,920,762
Universidad de Chile including Instituto de Nutricion y Tecnologia de los Alimentos (INTA)	9	898,125
University of Alexandria - Egypt	9	972,845
University of Hong Kong	5	231,165
University of Malaya	13	3,572,535
University of Nairobi	11	908,095
University of the West Indies (UWI)	8	1,280,562
WHO (1)	15	4,129,000
Yonsei University - Korea	9	561,339
<hr/>		
Total for Recipient Institutions with five+ grants	166	33,217,376
HSD Total to October, 1988	615	82,940,198
TOTAL FOR RECIPIENT INSTITUTIONS WITH FIVE+ GRANTS AS A PERCENTAGE OF HSD TOTAL	27.0%	40.0%

Table 10

**Health Sciences Division  
Appropriations by Area**

	1971 - 76		1977 - 82		1983 - 86	
	\$	%	\$	%	\$	%
ASRO	1,650,202	11.3	5,380,864	20.1	8,896,751	22.6
SARO	4,354,517	29.7	2,921,585	10.9	3,854,479	9.8
LARO	4,288,825	29.3	6,729,078	25.1	11,883,408	30.2
MERO	641,282	4.4	1,539,800	5.7	1,868,805	4.7
EARO	415,492	2.8	1,636,160	6.1	5,612,865	14.3
WARO	1,650,403	11.3	856,335	3.2	2,061,145	5.2
HEAD/GLOBAL	1,651,336	11.2	7,721,810	28.9	5,186,162	13.2
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	14,652,057	100.0	26,785,632	100.0	39,365,615	100.0



Table 11

**Health Sciences Division  
Approved Projects by Region**

	1983/84		1984/85		1985/86		1986/87					
	#	\$	%(of\$)	#	\$	%(of\$)	#	\$	%(of\$)			
ASRO	34	3,540,375	44.8	19	1,972,497	23.3	18	1,992,626	19.7	17	1,529,754	13.4
SARO	1	214,720	2.7	5	236,645	2.8	6	513,949	5.1	5	1,281,345	11.3
LARO	14	2,071,140	26.2	14	2,587,755	30.7	23	4,824,556	47.7	21	2,413,896	21.2
MERO	4	553,540	7.0	1	59,840	0.7	6	487,845	4.8	4	676,180	5.9
EARO	5	611,250	7.7	13	2,201,905	26.0	5	349,475	3.5	21	2,723,628	23.9
WARO	2	226,820	2.9	6	654,585	7.7	4	167,145	1.7	5	698,845	6.1
HEAD/GLOBAL	5	683,130	8.7	3	745,675	8.8	5	1,775,244	17.5	9	2,081,211	18.2
TOTAL	65	7,900,975	100.0	61	8,458,902	100.0	67	10,110,840	100.0	82	11,404,859	100.0

Table 12

**Countries having Received 20 or more  
HS Grants**

<u>Country</u>	<u># of Grants</u>	<u>Total Grant Amounts</u>
INDIA	21	4,024,460
KOREA	23	1,730,184
MALAYSIA	25	3,340,810
KENYA	26	3,053,779
PHILIPPINES	27	2,075,051
INDONESIA	32	2,010,333
THAILAND	38	3,282,085
<hr/>		
TOTAL FOR COUNTRIES WITH 20+ GRANTS	192	19,516,702
HSD TOTAL	615	82,940,195
COUNTRIES WITH 20+ GRANTS AS A PERCENTAGE OF HSD TOTAL	31.2%	23.5%

Table 13

**HSD Grants by Country Category  
1971 - 1987 (Note 1)**

	<u>Number of Grants</u>	<u>\$ Value of Grants</u>
<b>1. <u>Low-Income Countries (LICs)</u> - (Note 2)</b>		
Bangladesh	5	696,375
Burkina Faso	2	372,244
Burma	1	160,350
Central African Republic	1	87,860
China	6	837,280
Ethiopia	7	1,055,010
Gambia	1	54,850
Ghana	4	308,798
Haiti	4	589,115
India	21	4,024,460
Kenya	26	3,053,779
Malawi	1	28,900
Mali	6	1,080,047
Mozambique	1	52,550
Nepal	4	362,172
Pakistan	1	270,300
Senegal	4	426,510
Sierra Leone	5	693,525
Sri Lanka	12	1,679,749
Sudan	7	665,495
Tanzania	5	595,222
Togo	2	100,720
Uganda	4	420,980
Zaire	4	751,613
Zambia	6	868,018
	<hr/>	<hr/>
Total Low-Income Countries	140	19,235,922

Table 13 (Cont'd)

**HSD Grants by Country Category  
1971 - 1987**

	<u>Number of Grants</u>	<u>\$ Value of Grants</u>
<b>2. <u>Lower Middle-Income Countries (LMICs)</u> - (Note 2)</b>		
Bolivia	6	518,240
Botswana	5	595,450
Cameroon	2	252,385
Chile	19	2,740,549
Colombia	18	4,361,720
Costa Rica	5	1,109,640
Cuba	3	459,950
Dominica	2	149,566
Dominican Republic	4	334,890
Ecuador	6	582,630
Egypt	17	1,523,087
Guatemala	5	591,020
Guyana	1	275,500
Honduras	7	723,341
Indonesia	32	2,010,333
Jamaica	8	1,191,022
Lebanon	1	31,000
Lesotho	1	217,000
Liberia	2	177,820
Mauritius	1	28,965
Morocco	1	72,100
Nigeria	6	273,105
Papua New Guinea	1	118,600
Paraguay	3	453,200
Peru	6	1,057,085
Philippines	27	2,075,051
Swaziland	1	90,200
Thailand	38	3,282,085
Tunisia	4	310,930
Zimbabwe	4	647,275
<b>Total Lower Middle-Income Countries</b>	<b>236</b>	<b>26,253,737</b>

Table 13 (Cont'd)

**HSD Grants by Country Category  
1971 - 1987**

	<u>Number of Grants</u>	<u>\$ Value of Grants</u>
<b>3. <u>Upper Middle-Income Countries (UMICs)</u> - (Note 2)</b>		
Algeria	1	118,500
Argentina	10	949,444
Brazil	13	1,410,140
Hong Kong	6	260,405
Iran	2	291,200
Israel	3	427,755
Korea	23	1,730,184
Malaysia	25	3,340,810
Mexico	19	1,530,940
Panama	4	386,930
Singapore	17	2,700,013
Trinidad & Tobago	5	990,590
Venezuela	2	54,900
	<hr/>	<hr/>
Total Upper Middle-Income Countries	130	14,191,811
 <b>4. <u>Other Countries</u></b>		
Belgium	3	386,829
Canada (Note 2)	42	4,649,505
Switzerland (Note 3)	16	4,139,000
United Kingdom	3	159,300
USA (Note 4)	45	13,924,092
	<hr/>	<hr/>
Total Other Countries	109	23,258,726
	<hr/>	<hr/>
Total all Countries	615	82,940,198

Table 13 (Cont'd)

**HSD Grants by Country Category  
1971 - 1987**

Note 1: Includes grants from 1971 to October, 1987.

Note 2: For purposes of grouping countries, we have used the World Bank classification system as per the World Bank's 1987 World Development Report, pp. 202-203. This report groups countries according to GNP per capita, as follows:

LICs - 1985 GNP per capita less than \$400 US  
LMICs - 1985 GNP per capita between \$400 - \$1,600 US  
UMICs - 1985 GNP per capita between \$1,600 - \$7,500 US

Note 3: Most projects in Canada are in fact the Centre-Administered portion of research projects, often multi-country projects. Actual Canadian projects include a series of activities with the University of Waterloo in the preliminary stages of handpump design, epidemiology training for Chinese researchers in Canada and health research and management courses for developing-country researchers given at McMaster University and the University of Toronto.

Note 4: Grants in Switzerland are HS grants made to WHO, i.e. primarily to the WHO Human Reproduction, Tropical Disease Research and Diarrheal Diseases Control Programmes.

Note 5: Grants to the United States include grants to the Population Council, PATH, etc. In these instances, because the recipient organization is in the United States, the grants are nominally shown as US grants, but in most cases the funds were actually provided for research to be performed in developing countries. The \$13,924,092 shown as US grants includes grants to the Population Council relating to Norplant and the development of an Anti-Conceptive Vaccine, as well as grants to PAHO. In total, to date the Division has invested \$6.1 million in the development of Norplant and \$5.3 million in the development of the vaccine.

Table 14

**Number of Themes/Project  
by Period and Sector**

	<u>71-76</u>	<u>77-82</u>	<u>83-86</u>	<u>AVERAGE</u>
MCH/HSR	1.55	2.06	2.24	2.02
TID	2.11	2.11	2.02	2.07
WSS	1.21	1.94	2.73	2.21
OHET	-	2.77	3.35	2.73
AVERAGE	1.37	2.07	2.40	2.28

Table 15

**Total Number of Projects by Period  
According to Number of Themes**

<u>NUMBER OF THEMES PER PROJECT</u>	<u>FISCAL YEARS</u>			
	<u>71-76</u>	<u>77-82</u>	<u>83-86</u>	<u>T</u>
1	45	62	67	174
2	27	73	75	175
3	7	32	41	80
4+	1	22	47	70
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
T	80	189	230	499



Table 16

**Order of Themes  
by Sector and Fiscal Year**

	<u>RANK</u>	<u>THEME NO.</u>		
		<u>71-76</u>	<u>77-82</u>	<u>83-86</u>
MCH/HSR	1	6	8	6
	2	1	6	2
	3	2	4	5
TID	1	2	2	2
	2	6	6	6
	3	1	1	9
WSS	1	1	1	1
	2	4	4	4
	3	9,5	9	7
OHET	1	-	6	2
	2	-	2	7
	3	-	7	6
DIVISION	1	1,6 (24%)	2 (18%)	6 (18%)
	2	2 (14%)	1 (16%)	2 (16%)
	3	4 ( 9%)	6 (16%)	4 (13%)

Table 17

HS Appropriations  
(000s omitted)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Regular Programs	833	1,821	3,404	3,661	4,996	4,070	3,824	4,045	3,291	3,739	6,010	5,801	8,356	8,006	8,740	10,421	11,563
Coop Program											33	319	668	18	1,371	984	895
DAPs	68	240	369	552	351	242	176	46	141	76	155	171	301	409	381	630	687
Technical Support									667	712	823	1,015	1,105	1,500	1,541	1,795	2,163
Division Maint.	207	303	571	926	1,058	708	816	764	206	214	231	339	334	385	575	683	782
Total HS	1,108	2,364	4,344	5,139	6,405	5,020	4,816	4,855	4,305	5,683	7,252	7,645	10,764	10,317	12,608	14,512	16,090
Total HS as a % of Total Centre	19.6%	17.6%	19.2%	15.9%	16.8%	12.8%	11.2%	11.3%	10.3%	11.4%	11.9%	10.3%	11.5%	10.0%	12.3%	12.5%	13.4%
Total IDRC	5,650	13,432	22,581	32,313	38,102	39,150	43,016	42,948	41,783	49,892	60,784	74,394	93,517	102,778	102,196	116,310	120,127

Table 18

Inflation Adjusted HS Appropriations (note 1)  
(000s omitted)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Regular Programs	833	1,737	3,020	2,928	3,608	2,733	2,378	2,308	1,721	1,775	2,536	2,210	3,009	2,765	2,849	3,262	3,491
Coop Program											14	122	241	6	447	308	270
DAPs	68	229	327	442	253	163	109	26	74	36	65	65	108	141	124	197	207
Technical Support									349	338	347	387	398	518	502	562	653
Division Mgmt.	207	289	507	741	764	475	507	436	108	102	96	129	120	133	187	214	236
Total HS	1,108	2,255	3,854	4,111	4,625	3,371	2,994	2,770	2,252	2,251	3,058	2,913	3,876	3,563	4,809	4,543	4,857
Total HS as a % of Total Centre	19.6%	17.6%	19.2%	15.9%	16.8%	12.8%	11.2%	11.3%	10.3%	11.4%	11.9%	10.3%	11.5%	10.0%	12.3%	12.5%	13.4%
Total IDRC	5,650	12,817	20,026	25,850	27,510	26,293	28,613	26,095	23,031	24,759	25,658	28,341	33,675	35,490	33,310	36,392	36,270

Note 1: Actual appropriations figures have been adjusted by an inflation factor as measured by changes in the Consumer Price Index as reported by Statistics Canada for the period 1971-1987.

Table 19

**Health Sciences Division Projections 1987/88 - 1991/92**  
**\$000**

**A) First order boundaries (1)**

	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Regular Program	10,070	10,550	11,075	11,600	12,200
Cooperative Program	905	975	1,000	1,100	1,150
DAPs					
Regular	500	525	570	590	600
Coop	50	50	60	60	70
Technical Support	1,842	1,934	2,030	2,130	2,240
Division Management	555	583	610	645	675
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	13,922	14,617	15,345	16,125	16,935

(1) 1987/88 Budget = 1986/87 Budget less 10%. Budget is increased by 5% in each following year.

Table 20

**Health Sciences Division Projections 1987/88 - 1991/92**  
**\$000**

**B) Second order boundaries (1)**

	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Regular Program	12,000	12,625	13,200	13,900	14,690
Cooperative Program	1,180	1,235	1,360	1,430	1,500
DAPs					
Regular	590	600	620	630	650
Coop	60	60	60	60	70
Technical Support	2,255	2,320	2,435	2,555	2,600
Division Management	620	700	735	770	800
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	16,705	17,540	18,410	19,345	20,310

(1) First order boundaries + 20% (in total)

Table 21

**Health Sciences Division Projections 1987/88 - 1991/92**  
**\$000**

**C) Best Estimate**

	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Regular Program	12,252	13,463	14,000	14,560	15,140
Cooperative Program	1.150	1,200	1,250	1,300	1,350
DAPs					
Regular	570	570	590	615	640
Coop	60	60	60	65	70
Technical Support	2,057	2,066	2,150	2,235	2,325
Division Management	710	924	960	1,000	1,040
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	16,799	18,283	19,010	19,775	20,565

Table 22

Appropriations Vs Staffing Levels

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Program Appropriations, Regular Programs & Coop.	1,221	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403	1,403
Approved Person-years	N/A	14	21	26	35	26	22	21	20	20	21	24	26	34	34	35	35	36	36	36	36
Appropriations per Person-Year (Assuming continuing freeze on person-years)	130.7	162.1	140.8	140.8	142.7	156.5	173.3	177.6	164.6	187.0	287.8	255.0	347.1	236.0	297.4	325.9	355.9	407.3	423.6	440.6	458.1
Person-Years to be Requested by FY																		36	40	43	46
Appropriations per Person-Year (Assuming gradual increase in person-years over the 1988/89-1991/1992 period)																		407.3	381.3	368.8	353.5

Table 23

**Health Sciences Division Desired Staffing Levels  
1987/88 - 1991/1992**

	<u>1987/88</u> (A)	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<b>Division Management</b>					
Executive and Professional	4	4	4	4	4
Support	7	7	7	7	7
<b>Technical Support</b>					
Professional					
Ottawa	12	12	12	12	12
Regional Offices(B)	6	7	8	10	11
Support (C)	6	6	9	10	12
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	35	36	40	43	46

(A) 1987/88 actual.

(B) Assumes one Regional Representative per regional office in 1988/89. All subsequent new professional staff positions would be in regional offices.

(C) Includes secretarial, program-related operations and research assistant support, but does not include R.O. support staff assigned to HSD professional staff in the regional offices.



Table 24

**Health Sciences Division Desired Staffing Levels  
1987/88 - 1991/1992**

	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
<b>Division Management</b>					
Director	1	1	1	1	1
Deputy Director	1	1	1	1	1
A.D. - Management	1	1	1	1	1
Research Assistant	-	-	1	1	1
Info. Unit					
Manager, HS Info Systems	1	1	1	1	1
Info Clerk/Coordinator	1	1	1	1	1
File/Input Clerk	-	-	-	1	1
Ops. Unit					
Senior Ops Asst	1	1	1	-	-
Ops Asst	1	1	-	-	-
Junior Ops Asst	-	-	-	-	-
Ops Clerk/Secretary	1	1	1	1	1
Secretaries	3	3	3	3	3
Total Division Management	11	11	11	11	11
<b>Technical Support</b>					
<b>SYSTEMS</b>					
Associate Director (AD)	1	1	1	1	1
Senior Program Officer (SPO)	1	1	1	1	2
Program Officer (PO)	1	1	1	1	1
Junior Ops Asst	-	-	1	1	1
<b>COMMUNITY</b>					
AD	1	1	1	1	1
SPO	1	1	1	1	1
PO's	2	2	2	2	2
Senior Ops Asst	-	-	-	1	1
<b>ENVIRONMENT</b>					
AD	1	1	1	1	1
SPO's	4	4	4	3	2
PO	-	-	-	1	1
Operations Asst	-	-	1	1	1
Research Assistant	-	-	-	-	1
Secretaries	6	6	7	7	8

*Division Statement*

Table 24 (Cont.)

**Health Sciences Division Desired Staffing Levels  
1987/88 - 1991/1992**

	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Regional Representatives					
ASRO	1	1	1	1	1
LARO	1	1	1	1	1
EARO	1	1	1	1	1
WARO	1	1	1	1	1
SARO	1	1	1	1	1
MERO	-	1	1	1	1
Regional Program Officers					
ASRO	1	1	1	1	1
LARO	-	-	-	1	1
EARO	-	-	1	1	1
WARO	-	-	-	1	1
SARO	-	-	-	-	1
MERO	-	-	-	-	-
Total Technical Support	24	25	29	32	35
Total HSD	35	36	40	43	46

Assumptions:

- 1) Starting in 1989/90 the Ops Assistant positions will be assigned directly to a program and will therefore be charged to Technical Support.
- 2) Of the two Research Assistant positions to be requested over the period, one will be assigned to Division Management and the other to Technical Support.
- 3) Regional Program Officers, primarily relating to a specific HSD program, will be assigned to regional offices. These RPO's will be selected on the basis of the needs of the region and the skills required to complement those of the Regional Representative.
- 4) As Regional Program Officers are assigned to the regional offices where HSD does not currently have Phase C projects, responsibility for administering some of these projects will be transferred to these offices, providing that local Program Assistants are made available to HSD R.O.-based staff. This should slow the growth in the number of projects administered by HSD Ottawa, although in absolute terms the number of Ottawa-administered projects will continue to grow.

Table 25

**Health Sciences Division  
Program Appropriations Per Person Year**

	<u>1986/87</u>	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Program Appropriations	11,405	12,458	14,663	15,250	15,860	16,490
Requested Staffing Level	35	35	36	40	43	46
Appropriations Per Person Year	325.9	355.9	407.3	381.3	368.8	358.5

N.B.:

It is projected that the appropriations budget will increase by 44.6% over this five-year period. If the number of requested person years is approved, the Division's staffing complement will increase by 31.4%, still less than the rate of increase in appropriations.

Although comparative tables are not presented in this paper, in 1988/89 the HSD appropriations-to-person-year ratio, including regional office support staff directly assigned to the Division in the regional offices, is approximately 31% higher than the average for the other program divisions. This is indicative of the extremely heavy workload of HSD staff.

Table 26

**Health Sciences Division  
Active Projects Per Person Year**

	<u>1986/87</u>	<u>1987/88</u>	<u>1988/89</u>	<u>1989/90</u>	<u>1990/91</u>	<u>1991/92</u>
Active Projects	264	301	343(1)	391(1)	446(1)	508(1)
Requested Staffing Level	35	35	36	40	43	46
Active Projects Per Person Year	7.5	8.6	9.5	9.8	10.4	11.0

N.B.:

Even if the requested number of person years is approved, the estimated number of active projects per staff member is expected to increase substantially over the five-year period.

- (1) Assumes average rate of increase in no. of active projects equal to average for the two preceeding years. This assumption is reasonable given that the HSD appropriations budget is expected to increase steadily until 1991/92.

Table 27

**Health Sciences Projections by Program  
1987/88-1991/92 (note 1)  
\$000**

	1987/88 \$	%	1988/89 \$	%	1989/90 \$	%	1990/91 \$	%	1991/92 \$	%
Health Systems	2,057	16.8	3,000	22.2	3,615	25.8	3,990	27.4	4,390	29.0
Health & the Community	3,600	29.4	4,300	31.8	4,245	30.3	4,320	29.7	4,390	29.0
Health & the Environment	5,995	48.9	5,663	42.1	5,640	40.3	5,750	39.5	5,860	38.7
Special Initiatives	600	4.9	500	3.9	500	3.6	500	3.4	500	3.3
Total Regular Programs	12,252	100	13,463	100	14,000	100	15,560	100	15,140	100
Cooperative Program(2)	1,150	--	1,200	--	1,250	--	1,300	--	1,350	--
Total Program Appropriations	13,402		14,663(3)		15,250		15,860		16,490	

Note 1: The above program appropriations projections are based on the "best estimate" appropriations figures for program appropriations in Volume 1, Table 21.

Note 2: The allocation for cooperative projects is to be integrated into the regular program budgets beginning 1988/89

Note 3: Per 1988/99 HS Program of Work and Budget submission.

Table 28

**HSD Evaluation Framework Hierarchy  
Level of Evaluation**

Centre-Wide Policy Issues

Health Sciences Division

Program:	Health Systems (SYS)	Health & the Community (H&C)	Health & the Environment (H&E)
Themes:	Currently being defined/refined by the programs.		
Groups of Projects:	Networks Group of projects relating to a specific health problem Projects with international governmental organizations and international NGOs Projects involving innovative methodologies		
Projects:	Pilot projects Multi-component, large-scale projects Projects with several phases Large-scale institution capacity strengthening projects Large projects that are significant by themselves Projects with built-in evaluation components		
Project Completion Reports:	Completed for all projects		