



# IDRC

Annual report  
1989 - 1990



**Head Office**

IDRC, PO Box 8500, Ottawa, Ontario, Canada K1G 3H9

**Regional Office for Southeast and East Asia**

IDRC, Tanglin PO Box 101, Singapore 9124, Republic of Singapore

**Regional Office for South Asia**

IDRC, 11 Jor Bagh, New Delhi 110003, India

**Regional Office for Eastern and Southern Africa**

IDRC, PO Box 62084, Nairobi, Kenya

**Regional Office for the Middle East and North Africa**

IDRC/CRDI, PO Box 14 Orman, Giza, Cairo, Egypt

**Regional Office for West and Central Africa**

CRDI, BP 11007, CD Annexe, Dakar, Senegal

**Regional Office for Latin America and the Caribbean**

CIID, Casilla de Correos 6379, Montevideo, Uruguay

Please direct requests for information about IDRC and its activities to the IDRC office in your region.

The cover reflects the global theme of this annual report through the faces of Africa, Latin America and the Caribbean, Asia, and Canada.

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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE  
CENTRE DE RECHERCHES POUR LE DEVELOPPEMENT INTERNATIONAL

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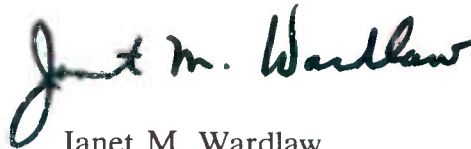
July 14, 1990

The Rt. Hon. Joe Clark, P.C., M.P.  
Secretary of State for External Affairs  
Lester B. Pearson Building  
125 Sussex Drive  
Ottawa, Ontario  
K1A 0G2

Dear Minister:

In accordance with Section 22 of the International Development Research Centre Act, I have the honour to transmit herewith the Annual Report of the International Development Research Centre for the fiscal year ending March 31, 1990 which includes the financial statements of the Centre and the Auditor General's report thereon.

Yours sincerely,



Janet M. Wardlaw

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PO Box 8500, Ottawa, Ontario, Canada K1G 3H9

IDRC, Ottawa CA

IDRC-003/90e,f  
IDRC annual report 1989-1990. Ottawa, Ont., IDRC, 1990. 94 p.: ill.  
/Annual report/, /IDRC/ — /development research/, /research projects/.

UDC: 338.001

ISBN: 0-88936-561-X  
ISSN: 0704-7584

A microfiche edition is available.

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## Annual Report 1989–1990

### International Development Research Centre

The International Development Research Centre (IDRC) is a public corporation created by the Parliament of Canada in 1970 to stimulate and support scientific and technical research by developing countries for their own benefit.

The fields of investigation to which IDRC gives its financial and professional support include: farming; food storage, processing, and distribution; nutrition; forestry; fisheries; animal sciences; environment; tropical diseases; water supplies; health services; education; population studies; economics; communications; urban policies; issues relating to women in development; earth and engineering sciences; and information sciences.

Although IDRC is funded by the Canadian Parliament, its operations are guided by an international 21-member Board of Governors. Under the IDRC Act, the chairman, vice-chairman, and 9 other governors must be Canadian citizens; currently, 7 of the remaining 10 governors are from developing countries.

The programs that the Centre supports help developing countries build the scientific competence of their institutions and researchers so that these countries can work to solve their own problems. Research projects supported by IDRC are, therefore, identified, designed, conducted, and managed by developing country researchers in their own countries, to meet their own priorities.

IDRC helps to create and supports international networks through which developing countries can learn from each other, share common experiences, and conduct similarly designed studies in areas of mutual concern. The Centre also promotes cooperation between researchers in developing countries and their counterparts in Canada.

IDRC has its headquarters in Ottawa, with regional offices in

- Cairo, Egypt (Middle East and North Africa);
- New Delhi, India (South Asia);
- Nairobi, Kenya (Eastern and Southern Africa);
- Dakar, Senegal (West and Central Africa);
- Singapore (Southeast Asia, East Asia, and the Pacific); and
- Montevideo, Uruguay (Latin America and the Caribbean).

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## Introduction

The Parliament of Canada created the International Development Research Centre (IDRC) 20 years ago in a display of unanimity that was as rare as was the enthusiasm with which the Members of Parliament approached this task. Parliamentarians were aware that never before had a country of the Organisation for Economic Cooperation and Development (OECD) created — and agreed to finance entirely — an international institution, agreeing in the process to relieve it of the burden of domestic bureaucratic constraints. The mechanism they chose for this *léger de main* was an international Board of Governors, selected on the basis of their scientific accomplishment and developmental experience.

In the span of two decades, this Board has attracted a richness of talent and acclaim unsurpassed elsewhere; it has been composed throughout of individuals whose names and accomplishments are legend. The developing countries have been well served by them, as have all Canadians whose future is increasingly dependent upon a wholesome environment, upon economically buoyant trading partners, and upon socially responsible and politically stable members of the international community.

At the first gathering of the Governors, in 1970, the potential of IDRC was well understood, as was the burden that rested upon it. The observations made then were years ahead of the popular perspective:

- Northern technologies were seldom of immediate advantage to countries in the South, it was said, even if transfers were possible;
- Energy-dependent, environmentally damaging activities were to be discouraged;
- The errors and failures associated with alien, top-down development approaches must be understood and avoided;
- Local cultural and societal traditions must be observed and respected;
- The role of women must be studied and the well-being of women and children bettered;
- Discarded northern practices and products must not be passed off on developing countries; and, above all,
- The research activities supported by IDRC must be undertaken by developing-country scientists within their own institutions because

only in this way can competence be enhanced and problem-solving emerge.

For 20 years, IDRC's staff has endeavoured to remain constant to these visionary directions and to keep pace with succeeding waves of brilliant interpreters of the world scene who serve on the Board. These men and women have emphasized that development is a qualitative exercise, not a quantitative one, that quality of life and individual human dignity are the appropriate goals, that science and technology are the servants of humans, not the reverse, and that development in its broadest interpretation is the only effective path to sustainable security.

Twenty years and 2 000 research projects later, IDRC is proud of its record, is touched by the cascade of awards and citations it has received, and is warmed by the realization that it has contributed to the betterment of life in many places. IDRC has changed constantly during that period, endeavouring always to be more responsive, to be most effective. It seeks to make a difference. However, its Board of Governors always insists that its role is subsidiary — to help the developing countries help themselves.

In an era when financial resources are constrained, when all-too-many Canadians seem to be preoccupied by the narrowest of self-interest, and when the ineptness of inappropriate technologies serves as a disincentive to research support, IDRC will endeavour to deserve in the future, as it has in the past, its reputation as an innovative, intellectually honest, and human-oriented organization. In the pages that follow, IDRC reports to Parliament, as its statute demands, on its activities in the past fiscal year.

## Divisional summaries

### Agriculture, Food and Nutrition Sciences

The Agriculture, Food and Nutrition Sciences Division (AFNS) helps ensure access to food and other basic necessities for the individual through the sustainable use of renewable resources. The Division strives to achieve stable and sustainable increases in productivity while maintaining environmental integrity and to increase income and employment opportunities. Ensuring that the benefits of research serve the most disadvantaged groups is explicitly emphasized. Support is designed to strengthen the capacity of research institutions in developing countries to address these objectives.

Support to research is organized under six programs and two units:

- Animal Production Systems Program,
- Crop Production Systems Program,
- Fisheries Program,
- Forestry Program,
- Post-Production Systems Program,
- Agricultural Economics Program,
- Environment and Sustainable Resource Management Unit, and
- the Centre-wide Nutrition Unit.

During the past year, the Division's program structure has been partly changed as a way of improving its ability to address nutritional and environmental concerns. The Environment and Sustainable Resource Management Unit was created to help improve the integration of environmental concerns in the work of other programs. The Nutrition Unit is an IDRC-wide unit housed in the Division. The programs can be visualized as a matrix, with the Post-Production Systems and Agricultural Economics programs along with the newly created Environment and Sustainable Resource Management and Nutrition units interacting across the commodity-oriented programs.

#### Africa

By far the most important economic activities in Africa are in agriculture. The region is marked by widespread poverty, intermittent famine, and the world's highest population growth rate. Although

population densities are still relatively low (compared with Asia), pressure on the land is rapidly increasing. Traditional farming systems are unable to meet the increased demands for food. The transition to more intensive farming is causing major problems in many areas as lands with high potential become fragmented and marginal lands are brought into intensive production despite the risk and low returns. Many countries have seen rapid deterioration of the basic infrastructure on which most traditional development plans are built. The terms of trade for Africa's commodities have worsened. Structural adjustments have had a negative effect on services provided by governments, compounding problems in certain areas with institutions that are already weak.

Protecting the resource base is of fundamental importance in Africa. Several recent Divisional projects tackle this problem directly. Three interprogram-interdivisional projects focusing on the degradation of the North African rangelands (*Pastoral systems of the Maghreb*) in Algeria, Morocco, and Tunisia examine production and sustainability of agropastoral systems in the Maghreb steppe. These projects will design and test a series of agronomic, pasture, and livestock management technologies to improve and stabilize production systems. As well, the Division continued its long involvement with the development of promising agroforestry techniques with *Farm forestry* in Malawi and *Agroforestry systems* in Cameroon. These projects respond to the need to support sustained agricultural production. The second phase of *Fuelwood plantations* in Botswana directly addresses the increasingly acute shortages of fuelwood that affect most of the continent.

The Division also supported a wide variety of research initiatives aimed at improving productivity: the other side of the sustainability equation. The Crop Production Systems Program supports component research for important staple crops — roots, sorghum, grain legumes, and bananas — as well as regional initiatives in direct partnership with national programs, other IDRC programs and divisions, and international agencies. A second phase of the *Root-crops Network* in eastern and southern Africa will continue successful root-crop improvement programs, training activities, and some very encouraging linkages of stronger national programs with weaker ones. A similar effort in oilseeds, the *Oilseeds Network*, facilitates the exchange of information, research results, and germ plasm among national programs



in eastern Africa and between these programs and those of India and other South Asian countries that are active in sesame, sunflower, and brassica research.

The improvement of animal production through improved pastures and use of agricultural by-products is being addressed by the second phase of the *Trifolium rhizobia* project in sub-Saharan Africa and *By-products* in Nigeria. *Rabbit production* in Uganda seeks to improve the production of high-quality food from small stock. Given the importance of livestock in West Africa, a Program Officer for animal sciences was placed in the West African Regional Office to increase IDRC's support in this area.

Marine and inland fisheries resources on the continent are substantial, but development has been limited. Research has an important role to play, but institutional research capabilities are generally weak. Support to fisheries research has been focused in two high-potential topics: inland artisanal fisheries in the African Rift lakes plus small dams and reservoirs, and aquaculture with particular emphasis on optimizing traditional systems. New projects this year have focused mainly on the inland artisanal-fisheries sector through *Small-scale fish systems* in Kenya and *Small dams* in Côte d'Ivoire.

Efforts continue to enhance food availability, security, and nutritional value through improvements to postharvest systems, small-scale milling systems, edible oilseed-processing systems and equipment, and drying and storage systems. A second phase of *Soybean utilization* at the International Institute of Tropical Agriculture will continue and expand a research and dissemination activity that has been very successful in promoting greater local production and use of soybeans. The complementary *Soybean threshers* in Nigeria addresses an identified bottleneck to wider soybean use. This approach to problems from a systems perspective was extended with the new *Sorghum and millet food-feed system* project in Kenya. A concerted multidisciplinary effort went into defining priority commodity and food systems as well as the methodology for doing this effectively. Several projects included experimentation with rapid rural appraisal techniques for better defining beneficiaries' problems and analyzing the policy environments for introducing technical change.

Systems for monitoring the effects of economic deterioration at the household level are of particular concern. The Nutrition Unit has contributed to a Health Sciences Division project in rural Kenya that will assess patterns of seasonal

hunger and coping strategies. In West Africa, three related projects (*Rural development and nutrition* in Bénin, *Food security and nutritional status* in the Congo, and *Nutrition and agriculture* in Nigeria) confront issues of community food security, agricultural change and nutritional status, nutrition of infants and children, and the effects of structural adjustment policies on nutrition.

Increased support is being given to scientists to work directly with the people involved in production and utilization systems for renewable natural resources. This contributes to a better understanding of the total systems and enables researchers to focus on those aspects of the systems most likely to lead to sustainable increases in income and employment opportunities. *Vegetable*



*oil-protein systems — phase III* in Kenya, *Local organizations support* in West Africa, and *West African farming systems research network — phase II* are all multidisciplinary participatory research projects that bring various stakeholders and the intended beneficiaries into the research process while the problem is being defined.

### Latin America and the Caribbean

This region is characterized by a rapidly growing population, considerable natural-resources potential, and a great diversity of agricultural production environments and products. It is also highly urbanized with consequent market economies and demands. Income distribution is highly skewed. The destruction of lowland humid ecosystems through inappropriate production systems is a major concern.

A major research thrust in this region involves efforts to improve the living conditions of artisanal fishing communities. Fish protein is a critical nutritional source for some segments of the population and the fishery is an important source of income and employment, particularly in coastal areas. Support is broadly focused under two large regional networks: Artisanal Fisheries Network and the Regional Aquaculture Network for Latin America. Under the former network, continued support has been provided under the regional *Integrated coastal development* project. Several projects linked to the aquaculture network received support, including *Aquaculture development thrust (Latin America)*, *Invertebrates-seaweeds (Chile) — phase III*, *Marine larvae production (Latin America)*, *Fisheries development (Chile) — phase II*, and *Fisheries training seminar (Latin America)*.

Expansion of the agricultural frontier in the low-lying, humid tropics of Latin America and the Caribbean requires careful management. Projects such as *Silvipastoral systems* and *Nitrogen-fixing trees* in Costa Rica aim at developing technologies that combine the use of multipurpose leguminous trees and grasses to improve animal production while protecting the environment. Other projects, such as *Amazon piedmont systems* in Peru and *Watershed management* in Colombia, explore further the potential for the use of multipurpose trees and the motivations of farmers to use trees more effectively in their management systems.

Degradation of the productive resource base in the Andes is a major factor leading to widespread poverty and out-migration to the larger cities. The Division is addressing this through the Andean development thrust by support for farming systems

and germ-plasm maintenance and improvement of high Andes crops.

Nutritional decline resulting from recent, severe, economic depression in the region is evident: conditions at the household level must be better understood. IDRC's concerns for nutrition are development of a methodology for problem identification, nutritional surveillance at the household level, and promotion of interdisciplinary research. These concerns are addressed by building nutritional objectives into IDRC-supported agricultural research projects and through specific projects such as *Health and nutrition impact on plantation workers' families* in the Dominican Republic.

The Division has also been able to link programing directly to employment and income generation and satisfaction of basic human needs. Major emphasis has been given to developing small-scale enterprises to serve market demands, creating rural and peri-urban income opportunities, and improving availability of better quality food and other biomass-based products. A network of nongovernmental organizations (NGOs) promoting small agroindustry processing enterprises has been initiated. Projects approved in this vein include the third phase of *Rural food processing* and the second phase of *Cassava processing* in Colombia, *Rural enterprises (Latin America)*, and *Tree-crop processing (Peru)*. Some of these projects, as well as others such as *Credit analysis* in Colombia and the third phase of the regional *Nitrogen-fixing trees* project, encourage the participation of national agricultural economists in working on the problems of the rural poor and developing research methodologies that increase the efficiency of scientists' work.

The Division pursues opportunities in underutilized and under-researched plants and animals. *Guinea pig-production systems — phase II* in Peru aims at improving the production of high-quality protein foods. *South American camelids — phase III*, also in Peru, aims at improving the income of highland peasants, one of the poorest strata of the rural population of Latin America, through the production of alpaca.

### Asia

In many parts of Asia, and particularly Southeast Asia, the problem is shifting from one of production to one of distribution. With relatively strong research systems and government support in many countries, the Division's focus has, therefore, shifted somewhat toward program support designed to benefit those people who have been left out or



marginalized by the development process. Population density in Asia is a major factor guiding resource allocations in the region. Land restriction emphasizes the need for improved efficiency of production as well as large increases in rural employment opportunities. Environmental pressures are extreme in many areas, and the need for sustainable resource management and alternative pest control is strong.

The Division is responding to the need for improved efficiency and focus on the poor by directing support to research on small animals, especially those able to use less costly feeds. For this reason, research on small ruminants is given high priority. Sheep and goats require lower capital investment than larger ruminants and are more flexible in terms of feed requirements, making them a particularly valuable resource for small-scale farmers and the landless. The *Small Ruminants Network* will help strengthen the research capacity of national programs in Asia. Likewise, the second phase of *Duck feeding systems* in Indonesia aims at improving the production of high-quality meat by the more efficient use of existing feed resources at the village level.

Improved fish production is another viable strategy in the push for increased food production. Asia has large, but now limited, fishery resources, as well as a long tradition in aquaculture, and it is in this area that the greatest potential for improvement lies. Research interventions by IDRC have primarily focused on understanding the traditional systems and assisting in optimizing them. Most support is focused under a series of disciplinary aquaculture networks on fish health, genetics, nutrition, and socioeconomics.

Sustainable production and participatory approaches to research and development have been priorities in the region. Development and institutionalization of farming systems research in many countries has been a major accomplishment, as has been the encouragement, technical back-stopping, and financial support to integrated pest management; a new project on this topic is *Botanical pesticides* in Thailand. Dissemination of the results of these initiatives is carried out largely through the sustainable-agriculture newsletters. These were originally the direct responsibility of IDRC staff, but are now in the able hands of NGOs.

Cropping systems remain an important focus in Asia. The needs of two of the region's smaller countries are being addressed by the second phases of *Rice farming systems* in Bhutan and *Grain legumes* in Nepal.

The importance of agroforestry systems as a means of improving sustainability is also being increasingly recognized in Asia. Projects supported include *Agroforestry* in India and *Fruit trees* in Thailand. The great, but previously unresearched, potential for generating increased income and employment offered by bamboo and rattan remains a major component of the forestry program. *Farm forestry* in China and *Bamboo mat board* in India continue this focus.

Asia is home not only to large numbers of people but also to some of the oldest traditions and technologies for biomass use and conservation. The need to produce, conserve, and distribute large volumes of food and to provide employment opportunities has led the Post-Production Systems Program to several problem foci. One is

improvements to grain handling, drying, and marketing systems to increase efficiency and grain quality and to reduce losses. Projects approved in these problem areas include the second phase of *Aflatoxins in maize* in the Philippines and *Passive crop dryer* in Indonesia. A second focus is on fruit and vegetable handling and marketing principally as a source of income. For example, *Banana postharvest technology* in the Philippines aims to reduce losses that are currently estimated at 50% of bananas shipped by small-scale producers.

Nutritional adequacy among Asian populations is variable. Despite achieving self-sufficiency in food production, the Indian subcontinent contains the greatest numbers of malnourished people. Poor access to food because of sociocultural factors and inequities in distribution and consumption are key determinants of nutritional status in the region. Young women and infants are especially prone to malnutrition. To assist this important sector, support has been provided to the Nutrition Foundation of India to develop and test models for effective nutrition training of adolescent girls (*Nutrition education for young women*). In northeast Thailand, an interinstitutional project has been developed to formulate and implement appropriate nutrition programs for the region. A nutrition component is also included in the large *Farm forestry* project in China to permit the effects of forestry programs on the nutritional status and well-being of the poor to be assessed.

## Global

In addition to the program activities described, several divisional activities over the past year are worthy of note. The Division circulated a paper that proposes an innovative approach to improving control of pesticide hazards where national regulatory capacity is weak. It outlines the role that an external "hazard auditor" might play in certifying industry's adherence to accepted standards of health and environmental protection, much as a financial auditor does with respect to accounting principles. Options for the establishment and operation of a hazard audit unit are outlined. More than 130 copies were distributed to representatives of industry, developing-country regulatory agencies, researchers interested in pesticide issues, and to a number of NGOs. The response has been very encouraging, and the Division plans to convene a workshop around the middle of next year to move the idea forward.

In a second undertaking, the Division prepared a background paper that discusses the concept of plant breeders' rights, and of plant patents, and

highlights some of the major potential ramifications of legislation in this area. This was circulated to a select group of scientists and research managers both in Canada and in developing countries. The Division is now considering the next step in light of the useful feedback it received and in light of the significant, recent developments on this topic. It sees its role as ensuring that developing-country scientists participate in the international debate of this important issue.

The Division has also been actively involved in efforts currently under way to incorporate forestry research within the mandate of the Consultative Group on International Agricultural Research and in discussions to improve international fisheries research.

## Communications

The primary business of the Communications Division is to seek ways of having the results of IDRC-supported research used. In these endeavours, the Division supports both research and practice to ensure the communication of research results that will have a positive effect in the lives of people in the developing world. The scientific community is but one constituency to be reached through communication experimentation and practice. Other equally important constituencies are policymakers, government leadership, intermediary- and community-level agencies and organizations, and individuals.

The Division is also responsible for the overall coordination of public education, media and government liaison, and publications strategies designed to respond to and encourage requests for information by key publics. A proactive approach is applied in the Division's activities to educate people on research and development issues. The Division publishes opinion documents, project reviews, brochures, etc., on a host of development-related issues; organizes news conferences, media seminars, and weekly news services; and funds other special projects and national exhibits for better understanding by Canadians.

The Division has participated in several television documentaries and information programs to bring Canadians up to date on Third World issues and the role of science. They include the television series "North-South," a coproduction with the British Broadcasting Corporation (BBC) on the environment, and a new series on IDRC-supported research projects in Africa, Asia, and South America called "Changing Worlds."

To ensure that the results of IDRC-funded

projects are disseminated within the developing and developed world, in 1989-90, the Division published 56 monographs, technical studies, proceedings, and manuscript reports (these are listed on page 78). Of these, 17 resulted from African projects, 5 from Asian, and 7 from South American; 3 dealt with Canadian issues and 24 had a global focus. The Division also supports the publishing activities of project recipients, especially when the activity can stimulate book production in the developing world. In 1989-90, 31 such books were produced: 3 stemming from African research, 11 from Asian, 8 from Latin American, 1 from Canadian studies, and 8 of a global nature.

The Communications Division's choice of tools and methods focused on end users and

beneficiaries. These tools included market appraisal and social marketing; extension methodology; commercialization strategies; communication flows among communities, institutions, and policy-makers; educational media; nonformal education; and the design, production, and testing of print and audiovisual materials.

A large part of the Division's project funding, related to practical application of research results and building of indigenous capability in using research results, was undertaken in collaboration with other divisions or was related to results of the research projects that had been funded by other divisions. This close relationship applies to all the program divisions of IDRC. Last year's reduction in the program budget limited the Division's ability to participate in multidivisional project development; however, a positive aspect of this has been increased consultation with other divisions and closer monitoring of projects by the program staff.

### Africa

The decade of the 1990s is a key turning point in Africa's future. Although social demands are greater than ever in most countries, threats to socioeconomic survival have reached an unprecedented intensity. Development indicators have undergone drastic changes fueled by internal disarray and external factors. Political instability, infant mortality, drought, famines, and socio-ecological disruptions dominate the African scene. In such conditions, efforts to develop communication projects have been rather difficult in most cases.

In the past year, the Division's efforts to improve West Africa's research and development abilities have focused on *Improving communications between research institutions and extension services* through the African Association of Science Editors and assisting the Togolese scientific research bodies in assessing and *Disseminating research results* on a national level.

In East Africa, a public-awareness campaign will be carried out to disseminate oral-hygiene findings from a project previously funded by IDRC. In another effort to ensure that the results of IDRC-funded research are used, the Division is funding the design of a video production and a nontechnical workbook on the monitoring and management of water supply in a semi-arid area of the Kibwezi community in Kenya. Recognizing the impact of the mainstream media, particularly news agencies, in disseminating scientific innovations, the Division will assist the All Africa Press Service



to disseminate the results of research throughout Africa.

In North Africa, a project with the Centre for Development Communications in Cairo is concerned with the delivery of complex health messages to illiterate and semi-illiterate people through television soap operas. The result of this work could assist health-education and health-delivery systems in countries with a high density of television receivers.

### Latin America and the Caribbean

The debt crisis and inflationary pressures, experienced by most countries of the region, have affected or limited support to research, especially to the NGO community. The Division's efforts in Latin America have tried to lessen the effects of this lack of support. Projects have been supported to facilitate transfer of research findings from the laboratories to manufacturing-sector and community-level institutions with the aim of assisting employment generation. The Division has also responded to proposals arising from the problems of increasing drug abuse and incidents of sexually transmitted diseases.

A project in Chile is promoting the transfer of an improved baking technology that emanated from two projects of the Agricultural, Food and Nutrition Sciences Division. Another project in Colombia, *Communication and technology transfer*, aims at strengthening the technology-transfer activities of agricultural research institutions in Latin America as well as the effectiveness of their technology transfer officers. A project in Costa Rica will produce and pretest an integrated training package on community participation in introducing and promoting water-supply and sanitation technologies.

In the case of drug-abuse prevention and in sexually transmitted diseases (STDs), two projects have been supported, one in Colombia and the other in Peru. The first, *STD and AIDS prevention for adolescents*, will prepare a video tape with supporting material for use in a health-education program in the Andean region. The second, *Communication strategies for drug-abuse prevention*, will develop and evaluate a community model for training on drug-abuse prevention.

### Asia

Asia is a continent that includes several newly industrializing countries, with relatively sophisticated scientific research and development institutions, as well as some of the poorest countries in the world with little capability to divert resources

for scientific investigations. The Division's efforts have, therefore, been targeted on the needs of individual countries rather than on a strategy for the continent. In general terms, however, the projects supported could be grouped under "Community participation processes," "Communication systems and technologies," and "Dissemination and application of research results." The following are some examples of projects supported by the Division in South and Southeast Asia.

The second phase of *Science popularization* will experiment with participatory audiovisual techniques to develop innovative approaches for identifying needs and solving problems in isolated mountain communities of Nepal. Another project, *Women's radio*, in the Philippines will initially train women in development broadcasting, interpersonal communication, and leadership skills and then evaluate the effect of women's involvement in participatory radio programing.

The Division has supported activities in South and Southeast Asia in evaluating communications systems and technologies most appropriate for a development activity. In adult education, the Division is funding a preliminary study to pretest a pilot television program that may form the basis for a television series aimed at meeting the literacy needs of illiterate communities in India. In Thailand, the Division supported a project to determine the effectiveness and appropriateness of current programing of a national television channel in delivering educational services to the population. The project will also develop viewer profiles so as to identify the information needs of the audience.

A significant number of projects in South and Southeast Asia were funded by the Division either in collaboration with other divisions or on its own in the area of dissemination and utilization of research results.

A project to promote the use of a jab-seeder aims to help in its fabrication and marketing by selected manufacturers in northeastern Thailand. A project in collaboration with Health Sciences Division will promote safe use of pyrethroid pesticides in China. Another project funded in collaboration with the Agricultural Food and Nutrition Sciences, Social Sciences, and Fellowships and Awards divisions will bring 11 Asian countries together in a network to strengthen and improve production of small ruminants. Two projects, one in India and another in Thailand, were funded in collaboration with the Nutrition Unit and several other Divisions. In the Indian project, aimed at nutrition education of young women, the Division's support will be directed to involving the potential users of



the research results in the research process so as to empower them to deal with their problems and their eventual solutions. In the Thai project, the Divisional component will provide communications support to the research team.

### **Earth and Engineering Sciences**

Activities of the Earth and Engineering Sciences Division for 1989–90 were categorized in three programs. The first program of specialization, Earth Sciences, includes water in the environment, geotechnical engineering, agrogeology, and small-scale mining. The first two research sectors apply engineering principles to solving environmental problems of a geological nature (earthquakes and volcanoes, soil erosion and slope instability, and water supply and potability). The third sector supports research into the extraction and processing of natural resources, particularly industrial minerals used in the poorest countries.

The purpose of the second program, Technology for Local Enterprises, is to fund applied research into solving problems related to the productivity, efficiency, and profitability of small-scale businesses in the Third World. It examines the options available for overcoming technological problems in priority industrial sectors and attempts to establish a local research-resources pool with a view to reaching national industrial-development objectives. Activities undertaken as part of this program are designed to create jobs, increase urban and rural incomes, and help low-income consumers by fostering the production of good-quality merchandise at better prices. The following industrial sectors are

beneficiaries of this program: small mechanical and metallurgical industries, industrial chemical products, and textiles and leather.

Finally, 1989–90 is scheduled to be the last year of the Building Industry, Materials and Technologies Program, which will be eliminated because of budget cuts last year. This program was based on research into locally available construction materials to reduce housing costs, technological research (architectural design and structural design), and construction techniques, which include the creation and use of appropriate tools and equipment for building and the improvement of traditional construction methods. The purpose of the program was to research housing that provides protection against natural disasters such as earthquakes, floods, and cyclones, and that uses techniques and organizational structures that foster independence and participative research by end users. Although this program will be cancelled, several of its components will be incorporated into the remaining two programs of the Division.

### **Africa**

Africa is certainly not a homogeneous continent. There are great disparities between countries, and the solutions to development problems are not homogeneous either. At the end of the 1980s, Central and West African countries were still grappling with problems resulting from rapid and uncontrolled social change, both domestic and foreign. Generally, these concerns can be identified as management of the processes and effects that accompany increasing world economic integration, management of the processes involved in domestic

socioeconomic change, and management of natural resources and measures to counter environmental degradation.

Most of the countries in Central and West Africa are producers of raw materials, and their population growth rates are among the highest in the world. Moreover, the region's natural resources are promising. Compared to the area of the region, however, the exploration work and soil studies conducted to date have not been extensive and, on the whole, basic geological information is slim. In view of these problems, the Division has concentrated its efforts on research designed to identify the region's hydrogeological potential with a view to improving the quality and quantity of available water resources and fostering the emergence of local industries to diversify the region's economic structure at the same time as creating jobs. Another aspect of the Division's activities was to find innovative solutions to housing problems by using local resources to minimize the contribution of foreign currencies to residential construction.

The second phase of the *Quaternary hydrogeology* project in Bénin is intended to improve knowledge of the hydrodynamic conditions of the aquifer systems in the sedimentary basin on the south Bénin coast so as to optimize their development and set up a system to monitor the migration of the salt-water wedge. Wells in the basin already provide 11 million m<sup>3</sup> of water annually to the city of Cotonou and its environs. Growing demand threatens to provoke the intrusion of salt water and the infiltration of brackish water through the top of the aquifer. The littoral lenses that rural populations exploit by constructing shallow wells are also threatened by saline intrusion and human pollution. The health situation in this area is particularly critical, and water-borne illness is becoming endemic. Therefore, the project will determine the chemical and microbiological quality of the underground water and establish a network to monitor the salt-water wedge. This project will be carried out by the Université du Bénin in collaboration with the Université de Dakar and Laval University, representing a significant south-south collaborative effort, in addition to Canadian cooperation.

The *Inedible vegetable oils* project in Burkina Faso is designed to replace edible oils with inedible vegetable oils in several applications, thus freeing a significant nutritive source at the same time as contributing to the development of various local small-scale industries.

The project on *Plant fibre-reinforced roofing*

*tiles* in Côte d'Ivoire is designed to prove the value of local raw materials and to develop a technology that will permit local production of roofing tiles with a minimum of imported components. In this way, the project will make it possible to appreciably reduce the cost of these products for the consumer, to decrease imports of roofing components, to improve housing quality, and to create jobs. The project should, therefore, permit the production of moderately priced vegetable-fibre tiles at the village and district level, and the results will be applicable to similar situations elsewhere in Africa.

Eastern and southern Africa includes 13 of the poorest countries in the world and 7 middle-income economies. Their economies vary greatly in importance and in performance. Generally speaking, the south is more industrialized, and the north more populous. There is also major mining activity in the region, mainly concentrated in countries neighbouring South Africa. Most social and economic activities are still related to agriculture. The manufacturing sector, where it exists, is concentrated first on the textile industry and then almost equally on machinery manufacturing and chemical products. The domestic markets are small, and the infrastructure used to transport agricultural or manufactured products to market is rather faltering.

Hydrogeological concerns are not as important in this region as in West Africa. Geotechnology is relatively well developed in several countries, and mining research is most relevant in Zimbabwe. There are several industrial research centres in this region, notably in Kenya, Rwanda, Tanzania, and Zambia. Divisional activities, therefore, are concentrated on maximizing the existing industrial potential in the following fields.

The *Underground mine support* project is involved in the cooperative artisanal development of a metallic mineral, chromite, by African entrepreneurs and miners in Zimbabwe. This mineral is crucial to the economy of the country. The project deals with the safety of miners in the work place and the planning of mining work by these artisans. Participative research, involving miners organized in cooperatives, is an important component of the project, which will be carried out jointly by researchers at the universities of Zimbabwe and Toronto.

The purpose of the *Baked bricks* project in Rwanda is to improve the local manufacture of baked clay brick for residential construction. Baked clay brick is already used extensively in Rwanda, but its quality is variable, mechanization rudimentary, and funding almost nonexistent. The





project is designed to rectify these shortcomings by optimizing work organization and the various production phases, reducing energy consumption, and fostering the dissemination and distribution of research results. This project is a collaborative effort between the Université nationale du Rwanda and the University of Sherbrooke and was funded jointly with the Social Sciences Division.

The aim of the *Vegetable extracts* project, also in Rwanda, is to establish the scientific and technical base of a natural-source chemical-products industry. The project is focused on four plants likely to produce flavourings that are marketable locally and in markets geared to development. A significant part of the researchers' task will consist of establishing a process for transferring the technology to facilitate the creation of small, local production units that will generate jobs.

The *Processing of cashew nut-shell oil* project in Mozambique is an effort toward industrial profitability in a very disadvantaged country. This oil, which is a by-product obtained in large quantities during the production of cashew nuts, is exported unprocessed to industrialized countries. The project is designed to develop a process to obtain from this oil products of high added value as well as products of vital necessity for Mozambique, such as tar, phenol, and the liquid fuel now used in Mozambique for lighting and cooking, thus maximizing the side effects of an expanding industry.

Countries in the Maghreb are also attracting attention: a good example of projects being pursued by the Division in this region is the *Rif slope* pro-

ject, which focuses on landslides in the mountainous area of northern Morocco. These are a major obstacle to development in this region and have been a longtime concern of Moroccan authorities. The particularly complex geology is characterized by dominant formations of flysch, marl, clay, and schist, which are highly vulnerable to slides. The purpose of the project is to establish the geotechnical parameters necessary to control the instability of the mountains in such a way as to design curative or preventive reinforcement methods that ensure the safety of residents and infrastructures (roads, schools, and villages). The research is being conducted jointly by the École Hassania des travaux publics de Rabat and Laval University.

### Latin America and the Caribbean

The decade just ended has been one of the worst in history with respect to the socioeconomic situation and development efforts in Latin America. There has been some talk of the "lost decade" or the pure and simple failure of existing economies. The region is confronted with a most alarming financial and economic crisis, carrying in its wake disastrous social consequences for the countries concerned. The most significant problems are the position of regional economies in the global economy; limited access to new technologies, restricting economic growth and employment; and debt and the impact of the net transfer of resources to developed countries. Development priorities are the improvement of the socioeconomic situation of both urban and rural communities, the development of appropriate technologies, and the creation of incomes and jobs for the poor flocking to and congesting urban areas. In 1989-90, the Division

was primarily active in the area of improving urban living conditions.

The water supply in Mexico City, one of the largest in the world with its population of 16 million, is based on an aquifer from which it draws an average of 56 m<sup>3</sup>/second. This overexploitation has resulted in lowered levels of ground water that have prompted irregular soil subsidence. This subsidence, and the population density, are contributing to the risks of human-source contamination. *Aquifer development*, in its second phase, is intended to design an effective method of detecting soil-borne pollution, to identify natural recharge sites with a view to their protection, and to improve aquifer management. The Instituto de Geofísica of the Universidad Nacional Autónoma de México, in collaboration with the University of Waterloo, will be continuing research to find solutions to these problems and to insure the water supply of an ever-growing population.

The regional *Seismic hazard* project involves interregional cooperation in applied seismology, a burning issue since the earthquakes in Armenia and the San Francisco region. Research will make it possible to assess the potential dangers resulting from seismic manifestations with the establishment of a standardized regional data bank. The project will produce a complete historical catalogue and a catalogue of available instrumentation. The intensity and frequency of seismic dangers will be calculated for Latin America and the Caribbean. This first major phase is essential to risk determination and accounts for the relative physical and human vulnerability of each subregion. This project, developed in cooperation with the Information Sciences Division, will extend over a period of 5 years. It will contribute to efforts made during the United Nations International Decade for Natural Disaster Reduction.

Also linked to the struggle against natural disasters, the *Cyclone-resistant housing* project in the Caribbean attacks the problem of cyclones that occasionally cause major losses of human lives and damage to housing of the poor in the Caribbean. The project is designed to improve traditional construction methods and to develop appropriate and acceptable building plans for construction by and with the participation of local communities who will be using the results of this research.

## Asia

Like Africa, Asia is a region of contrasts in which some countries are better endowed than others, and the industrial infrastructure differs greatly from place to place. Poverty, management

of natural resources (land, water, and forests), malnutrition, food security, housing, demographic pressures, deterioration of terms of trade, and the debt burden are concerns found in differing degrees depending on the country involved. In this context, the Division has again concentrated on maximizing the existing industrial and technological potential while creating opportunities for the most disadvantaged populations. Research into the problems caused by natural disasters has been an important component of divisional activities in this part of the world over the past year.

As part of the Water in the environment subprogram, the Division funded a cooperative project involving the National Hydraulic Center of the University of the Philippines and McGill University's Geotechnical Research Centre. The project deals with the development of a *Water-resources management model for Metro Manila* that will take into account the use of underground and surface water.

A project in India, *Coal workings*, is designed to locate the underground cavities of abandoned coal mines with the help of advanced geophysics. The coal-bearing basin of Raniganj near Calcutta was the first established in India in the 19th century. At that time, the absence of control over coal developments caused serious problems that are still affecting the safety and lives of miners and neighbouring inhabitants. Over the years, miners accidentally breaking through to flooded cavities and the subsidence of soils under these cavities have caused loss of life and significant material damage, affecting primarily low-income residents. The project's primary output will be the development of a new methodology for the three-dimensional representation of underground cavities. It is a sizeable scientific challenge for the Mining, Geological and Metallurgical Institute of India, in cooperation with Laval University.

In the field of industrial technology adapted to local productions, the *Improved processing techniques for low-grade jute and cuttings* project in Bangladesh should be mentioned. This project is intended to maximize the commercial use of jute. Jute fibres and products represent 58% of Bangladesh's exports. This sector employs 2.7 million families in jute production and 1.5 million workers in its processing. Of the entire production, 42% is composed of lower quality fibres, resulting in losses during production and use. The project is designed to study several biotechnical processes designed to maximize the flexibility of second-class jute fibre as well as developing instruments for measuring quality and flexibility. The new process



will make it possible to fine tune and increase methods of controlling the quality of jute production at a lower cost than existing systems. Given the importance of this product for the entire region, the effects of this project will extend far beyond Bangladesh.

A project in the Philippines is dealing with the fight against pollution caused by effluent from the galvanic-plating industry. This project is attempting to find a solution to the problem posed by chrome pollution, by developing economical techniques that make it possible to reduce the quantity of chrome-bearing effluent and to recover the chrome. At present, 3 tonnes of hexavalent chromium are dumped into Lake Laguna every year by these industries. If this lake is to be a source of potable water for the population of Manila by the year 2000, an immediate solution is required for the problem of contamination, including chrome. This project will be a strong complement to the work undertaken as part of the earth sciences program in the Philippines, as previously described.

A project in Thailand involves the design and adaptation of an automatic microprocessor control system. The purpose of this project (*Control of manual lathes with microprocessors*) is to permit small-scale machining businesses to automate at low cost to improve their productivity and to maintain constant quality in their production. The cost of the equipment and installing it is sufficient to allow for its amortization over a few months. The small-scale businesses will also be able to undertake work that is now out of their reach because it requires expensive machine tools. Jobs will be created in Thailand and other countries to which the technology might be exported.

Elsewhere, in the context of the regional theme for the area served by IDRC's Regional Office in Singapore, the Division has supported a project on rural housing construction in an area affected by numerous typhoons in the Philippines. This project, *Low-cost housing*, aims at improving traditional house-building techniques by reinforcing and rearranging the structural components to make these houses resistant to the violent winds that stress them. The project will be carried out by a local NGO and will include participative research and a self-funding program for housing by the populations concerned. The results of such a project will extend far beyond the target area, and could eventually be applied in other regions and countries affected by these natural disasters.

## Fellowships and Awards

The Fellowships and Awards Division assists research institutions of the developing regions of the world to create a capacity for high-quality research and to develop training institutions in these regions to the point where they can meet their own research-related training needs. Consequently, the concept of capacity building is seen as the unifying and guiding theme of the Division, permeating all of its activities.

The focus on capacity building is a reminder that development cannot exclusively emphasize economic growth. It is also concerned with human beings, especially with building the kind of self-confidence and capabilities required for autonomous goal-setting and decision-making. Indeed, IDRC recognizes that people are the *raison d'être* of development efforts as well as the main



protagonists, and that research — no matter how valid, relevant, or accurate — will never achieve a status as a useful or viable component of the development process unless there are people within each national level and sector with the interest and capacity to initiate, implement, and apply it with vigour and skill. Sustainability remains a critical aim for IDRC: sustainability, in the last analysis, is built on human capacity.

The Division's capacity-building efforts contribute directly to IDRC's objective of establishing autonomous, independent research and training institutions in the Third World. The Division is committed to what it terms the trainer-trainee approach to building research capacity. This approach strives to ensure that an investment in training links and strengthens both the institution that provides the training and the institution whose personnel will receive the training. Consequently, training supported by the Division emphasizes the need to use a developing-country venue, whenever possible, to foster the indigenization of training and to diminish dependence on institutions of the north.

### Africa

Of the three continents described in this annual report, Africa is probably the least well endowed in terms of trained researchers or of institutions capable of providing postgraduate education to citizens of the region. Consequently, the Division expends a good proportion of its resources in support of postgraduate degree training and in strengthening existing skills of researchers through highly focused training workshops. Because of the

relative paucity of universities capable of providing postgraduate degree training in the region, many of the master's and doctoral awards provided by the Division are for training in Canada. This is reflected elsewhere in the listing of recipients of awards from the Division (see page 73).

The technical advances in the research enterprise continue to present the greatest challenges to the program in the region. Thus, courses in advanced research methods such as experimental design, data analysis, use of microcomputers, and statistical management packages are quite popular. For instance, one such course, *Use of microcomputers in education research*, in Kenya, introduced 20 senior researchers to the application of microcomputers in analysis and management of education-research data. Other initiatives of this nature that were supported during the course of the year include training in information sciences, library automation, agricultural research management, and management of institutions of higher learning. All of these courses were designed, developed, and offered by researchers and academics associated with institutions in the region, in keeping with the Division's commitment to indigenizing training.

To assess the needs, problems, and approaches relating to human resource development in Africa, hard data are needed on the availability and use of teaching and research resources in the region. A project on *Graduate education and research and development in African universities* was supported during the year with this objective in mind. Specifically, the project permitted the Association of African Universities to develop the tools that will allow it to establish a permanent mechanism for

gathering and processing data, and evaluating the potential of universities in West and Central Africa with regard to postgraduate education and research.

### Latin America and the Caribbean

Latin America and the Caribbean has a well-established academic and research community. Thus, the training needs for the region differ considerably from those of Africa. Indeed, most countries have a critical mass of trained researchers, and many of the universities in several of the larger countries (Argentina, Brazil, Chile, Colombia, Jamaica, Mexico, and Peru) are capable of providing postgraduate-level training, at least at the master's level. Consequently, the Division addresses the issue of capacity building and human resource development from a different perspective in this region, with greater emphasis on qualitative adjustments to the systems of higher education, and lesser emphasis on developing a nucleus of trained researchers.

Although the Division has supported doctoral training in Canada for persons from several countries of the region (master's degree training is generally available in the region), several initiatives are directed to strengthening indigenous training capacity and to examining alternative models for higher education. An example of these includes *Training of university senior administrators in Central America and the Spanish-speaking Caribbean*. This project is aimed at providing opportunities to senior higher-education administrators of Central America and the Spanish Caribbean to reflect and learn about the role of universities in their societies, alternative organizational models of undergraduate and postgraduate education, management of teaching and research programs, and long-term planning.

At a time when Latin American countries are most concerned with their ability to compete economically with other regions of the world, research centres and universities are paying more attention to the role that higher-learning institutions can play in a new global scenario characterized by intensive use of knowledge in all sectors of economic development. Against a backdrop of tight budgets, higher education finds itself pressured by concerns of an immediate nature, such as reexamining the relevance of curricula and teaching, contributing to the solution of current development problems, and improving management systems to upgrade research facilities and retain high-level human resources.

Other initiatives include projects in several countries designed to help create, or to support the

strengthening of, postgraduate-degree programs. In Jamaica, the Division is funding the Consortium Graduate School at the University of the West Indies to create a master's program in social sciences and, at the University of Costa Rica, a similar initiative is under way for Spanish-speaking students.

### Asia

The greater Asia region, for the purposes of this report, encompasses both South Asia and Southeast Asia. It is a region that has a relatively good supply of trained researchers and a number of good universities that are increasingly capable of dispensing postgraduate education. Thus, the focus for the Division in this region is to enhance the indigenization of training through support for numerous formal and nonformal training programs and to foster south-south collaboration. Indeed, dependence on institutions of the north is diminishing as local institutions become more intellectually self-reliant.

Thematically, the Division is committed to in-project training, to the direct linkage of individual training grants to research activities, and to establishing in the region, to the extent possible, long-term training facilities — in the form of stand-alone learning materials, resource persons, networks, and training courses.

Toward the first end, the Division continues where feasible and appropriate to cofund projects with research divisions, to incorporate human resource development from the outset and, with increased emphasis, to monitor the effectiveness of this "within-study" training approach. Toward the second, greater attention is given to ensuring that any individual training grant, whether using project or fellowship funds, is explicitly linked to the priorities of the supporting research division in terms of the individual selected, the training program followed, and the subsequent incorporation of the trainee into specific research activities. Toward the last, the Division seeks to identify stable venues for, and to support the development of, locally sustainable training courses to address research needs identified across the divisions.

The regional *Small Ruminants Network* project is cofunded with several other divisions of IDRC. Its training plan is consistent with the Division's emphasis on encouraging more contact, exchange, and collaboration between scientists and technicians in South and Southeast Asian organizations and institutions. In this project, trainers and technicians from both regions are being

brought together once a year for short-term training in specific topics, for example, feed resources and artificial insemination. To promote further interaction and exchange, the venues of these training activities shift from one region to the other in the course of the project's duration: Andhra Pradesh Agricultural University and the Central Institute for Research on Goats in South Asia, and the Philippine Council for Agriculture and Resources Research and Development and the University of Malaysia in Southeast Asia.

The *Research management training* project in Southeast Asia, designed and conducted by the Research Management Center of the University of the Philippines in Los Baños, will put into place an institutionally stable, professionally sound venue for training research-project leaders in the theory and practice of project management. As such, it responds to an issue of increasing concern in the region across all divisions of IDRC — the lack of effective management skills among the research teams supported through projects, especially those undertaken in the context of interdisciplinary studies.

## Health Sciences

The Health Sciences Division supports research leading toward effective and sustainable systems of community health that will contribute to improved health and well-being of the poor. The research programs of the Division are derived from a holistic model of the ecology of health, embracing the many elements that affect the health of a community and its people. Three such groups of elements constitute the basis of the Division's three research programs:

- Health and the Community (human circumstances and behaviour),
- Health Systems, and
- Health and the Environment.

These programs focus explicitly upon people and their communities, are interdependent and interactive, and form a continuum of research activities on health and health-related problems ranging from those perceived by community members to those identified by health experts. The Health Systems Program links these areas of perception of health problems by supporting research to find effective, equitable, and sustainable solutions. Integrated support for research institutions is an integral part of all three divisional research programs.

The potential scope of the three programs is

large. Each is, therefore, focused, based on criteria that include local and national needs, regional priorities and opportunities, geographic distribution, interprogram coherence and continuity, intersectoral and interdivisional linkages, and the likely speed with which results will be implemented. Such considerations are the basis for setting priorities and making choices for research support.

There are major needs in the developing world related to such problems as debt repayment and structural adjustment, commodity production and terms of trade, environmental degradation, population pressures, desertification, refugee population movements, climatic changes and natural disasters, and epidemics of disease, notably AIDS (acquired immune deficiency syndrome). Many of these are interrelated and affect health.

They cannot all, however, be addressed directly through health research activities. From the health perspective, the following are major issues in the regions; and examples are given of projects supported in addressing those issues.

As regional strategies and plans evolve with the Division's global strategies, specific projects will fit more and more closely within the frameworks. This should become even clearer next year.

## Africa

The Division's main concern in Africa is with the sub-Saharan area where, along with economic hardship, environmental degradation is an increasing problem. In some parts of Africa, AIDS is a new epidemic, striking men, women, and children, with grave effects on, and implications for, economic output. AIDS is itself only the most deadly of the sexually transmitted diseases, a growing concern not only for Africa but for much of the world.

A major effort must be made to understand the dynamics of transmission of these diseases, with the emphasis on sexuality and sexual behaviour in existing cultures. Only then can the most appropriate measures be taken to change the prevailing situation.

With the economic downturn, preventive and primary health care have suffered. Thus, infections and parasitic diseases are, if anything, on the increase. Increasing desertification in the Sahel, with the resulting migration of people, has had implications for water availability, water quality, and water-related diseases. Some countries, in trying to industrialize and to increase agroindustrial enterprise, also have to face the problems of chemical contamination of the environment (with



pesticides, etc.), and increasing occupational hazards and accidents.

The "Bamako Initiative" of the World Health Organization, which tries to create an entry point into primary health care through self-sustenance in the community-controlled purchase, distribution, and sale of essential drugs, is of interest to the Division. This effort provided an opportunity for the support of a large project, just getting under way (although appropriated in 1988) for developing and strengthening a series of community health systems in Bénin, with the help of staff from the Université du Bénin, whose capacity for health research for development will simultaneously be increased. This project has implications for other countries in the region and could become a model for community-based health care.

In eastern and southern Africa, the major concerns are communicable and infectious diseases (including AIDS), nutrition, environmental health, and research capacity and institution strengthening. Some relevant projects during this year were:

- The second phase of *Pediatric AIDS* in Uganda, which investigates the vertical transmission from seropositive mothers to their newborn infants;
- *Community prevention of malaria* in Tanzania, which addresses community-based modifications of the environment to curb transmission of the disease in a sound, affordable, and sustainable fashion;
- *Peri-urban sanitation* in Lesotho, which aims to reduce environmental contamination by human wastes;

- *Seasonal hunger and nutrition in Kenya*, which will identify household members who are most vulnerable to the effects of seasonal hunger and the reasons for such vulnerability from a multidisciplinary perspective. "Coping strategies" are the expected outcome;
- *Health sciences education rehabilitation in Uganda*, which aims to provide long-term support to Makerere University, in concert with other IDRC divisions, to redirect its curriculum toward community health-services, to produce appropriate personnel, and to strengthen a regional network of community-oriented health institutions; and
- *Household health-care use and expenditure in rural Kenya*, which will determine patterns of use and expenditures on health-care service at the household level and identify factors that influence them. Policymakers will gain information regarding dependence on the free public-health services at a time when user fees are being contemplated.

In West and Central Africa, where the main concerns are AIDS, desertification (with implications for nutrition and the health of nomads), strengthening of institutional capacity, and networking of researchers, the following projects indicate of the Division's support during 1989-90:

- *Sexually transmitted diseases* in Senegal will explore social and cultural factors in sexually transmitted diseases leading to a better understanding of culture-specific sexuality and, it is hoped, to appropriate interventions;
- *Child nutrition and agriculture* in Nigeria will

evaluate the impact of agricultural modernization on the health and nutritional status of children under 10 and their mothers;

- *Onchocerciasis control* in Côte d'Ivoire relates to community control of an important water-associated disease causing blindness; and
- In *Food security and nutritional status of households*, Congolese communities and national decision-makers will obtain data concerning those who are malnourished as well as causal factors.

In the Middle East, food security and population are seen as major concerns. Information, education, and communications research are vital in

understanding and modifying behaviour. In this context, *"The Family House"*: a public health soap opera in Egypt, cofunded with the Communications Division, will be used to determine if attitudes, opinions, and practices that influence health can be changed through character identification and social-value reinforcement. Specific, regionally relevant topics will then be the focus of later activity.

The second phase of the *Health-systems research in Thatta District* project in Pakistan, should help in improving the government and community health systems, with better health status for the people. A first phase, funded in 1986, constituted a situation analysis.

### Latin America and the Caribbean

In Latin America, there are several major concerns. Among them are the unplanned rural-urban migration, which gives rise to the rapid growth of urban centres, and the concomitant lack or degradation of social amenities and services. This results in an exacerbation of parasitic and infectious diseases, including those due to overcrowding.

Because of attempts at rapid "development," with industrialization and high-yield agriculture, there is pollution of land, air, and water with pesticides, fertilizers, toxic gases, and heavy metals. There are, in addition, somewhat "marginal" populations with special health needs. These include inhabitants of the High Andes, some of whom are in the mining industries, coastal artisans and fishing families, and indigenous population groups, for whom services are not highly developed.

Sexually transmitted diseases, including AIDS, are a particular problem. Some of the countries of Latin America have among the highest incidence of AIDS in the world. Nutrition is also of concern, especially for the poor and for women and children. Projects supported include:

- *AIDS counselling and education* in the Dominican Republic will look at sexual behaviour of HIV-positive individuals (human immunodeficiency virus) and of high-risk groups to develop the most appropriate action;
- *Health and nutrition impact on families of plantation workers* also in the Dominican Republic will evaluate the impact of an integrated rural development program on families on a state-run sugar plantation;
- *High altitude and mining* in Peru addresses the specific health problems of heavy underground work at 4 500 m altitude; and





- *Vector blood meals*, also in Peru, tries to find environmental interventions that would reduce the incidence of both yellow fever and malaria.

## Asia

Side by side with the emerging countries of the region, where industrialization has been in progress for several decades, are some of the poorer countries of the world, lacking food, shelter, and clean water. In the former group, problems are arising with respect to occupational health, particularly in those industries that employ women. In the latter group of countries, environmental problems still persist, related to improper disposal of human wastes. Parasitic and infectious diseases are still prevalent and, in some cases (for example, malaria), are once more increasing in occurrence.

The region also has a major portion of the world's population and, despite efforts by such countries as China, populations continue to grow at appreciable rates, with implications for health and general development. Research is needed to understand personal and community behaviour in these respects, as the basis for enhanced action in contraceptive use and family planning.

Efforts are under way to support research, in the near future, in such countries as Myanmar and the Indo-Chinese nations where conditions have precluded IDRC's involvement in the past.

- *Household rainwater catchment* in Bangladesh and *Household water disinfection* in Thailand both seek to promote community- or family-based water provision and purification systems or both;
- *Tropical knapsack sprayer* in Malaysia aims to improve the design of pesticide sprayers for increased safety;
- *Acute respiratory infections* in Nepal tries to determine if infection in children is linked to conditions of shelter and the environment;
- *Breastfeeding practices and working mothers* in Indonesia will investigate practices and problems related to promoting and protecting breastfeeding in the work place;
- *Sociocultural factors influencing contraceptive behaviour*, also in Indonesia, evaluates, using both qualitative and quantitative methods, couples' reasons for beginning, continuing, and ceasing contraceptive use; and
- *Determinants of contraceptive use and effectiveness* in China identifies specific

factors regarding abandonment of contraception and unplanned pregnancy.

Activities in the South Asia region were drastically curtailed this year because of budgetary constraints.

## Information Sciences

Information is an important resource for development, and the programs of the Information Sciences Division are aimed at delivering that resource to development practitioners at various points in the information chain that stretches from researchers to the end beneficiaries of research. The Division continues to pursue three main objectives:

- Building indigenous capacities within developing countries to manage and apply information effectively;
- Improving systems, services, and tools to manage and use information relevant to development research and change; and
- Fostering cooperation and coordination in development research by promoting the sharing of information, for example, through strengthening networks.

Project development reflects the needs of different users for a wide variety of up-to-date, relevant information. It is also sensitive to the geographical priorities identified by regional offices and embodied in regional thrusts because these provide an important mechanism for promoting the convergence of IDRC's program efforts. Geographic focus also considers such factors as urgency of environmental problems, potential impacts and benefits, potential for success considering existing infrastructure, potential for a multiplier effect in the region, and south-south cooperation.

Although the Division cannot cover all subjects and types of information, it is investing in demonstration projects to show the value of applying information-science techniques and technologies to practical problems of operational information management for research and planning. Increasingly, additional emphasis is being placed on more applications that are not documentation based (for example, numerical and factual data). In addition, the Division is seeking to reach the intended beneficiaries of research more directly through information outreach at the level of extension workers, community NGOs, and village information centres.

The Division also supports two important

in-house activities that directly benefit developing-country information and research institutions: IDRC's Library and the Computer Systems Group.

A recent survey by the Library of active IDRC-supported projects showed that the most common problem in acquiring information was a lack of resources available locally, closely followed by the cost and time delays in obtaining information from elsewhere. The Library assists these projects in various ways, with research and document-delivery services being those most used. The highest percentage of projects using these services is in Africa, followed by Latin America and the Caribbean, and Asia.

The Computer Systems Group develops, maintains, and distributes MINISIS (interactive microcomputer system for information retrieval), a software package for data-base management developed by IDRC. Through a small program, it also supports the establishment of MINISIS Resource Centres (MRCs) in developing countries. These are currently operational in China and India and in the Middle East, North Africa, and West Africa. Based on current requirements and growth in the user community, MRCs will next be established in Thailand and South and Central America. The Division, together with the MRCs, is investigating various ways to increase the financial self-sufficiency of the MRCs and reduce their dependency on IDRC.

## Africa

Africa continues to be confronted with issues related to rapid external and internal economic and social changes, as well as dealing with environmental degradation and the need to more effectively manage its natural resources. Agricultural production and generation of employment are also priorities. The Division's Africa strategy (published as an IDRC technical study *Sharing Knowledge for Development: IDRC's Information Strategy for Africa*), although developed with sub-Saharan Africa principally in mind, provides a useful framework for work across the continent. Some of the important elements include capturing and managing information locally (including indigenous information, information for management, and sectoral information), building national information infrastructures, resource sharing (including networking, use of appropriate standards, and coordination), and human resources development. IDRC's research thrust on desertification will provide an opportunity for support to projects in such areas as small-scale

regenerative and low-input agriculture, or the use of modern information technologies for resource monitoring and management.

Sharing and improving access to scarce information resources was an important theme during 1989–90. A West African project (*Community network of business information and documentation*) will attempt to overcome some of the existing obstacles to trade by establishing a common mechanism for collecting, processing, and distributing trade-related information and by linking an information centre to national chambers of commerce and trade promotion bureaus. Similarly, a *Subregional Centre for Scientific and Technical Documentation and Information* will improve the previously unsatisfactory scientific and technical information structures of Central Africa through the creation of a technical–scientific information centre.

Building on an earlier phase that strengthened a regional clearinghouse for information on standards, another project (*African Standards Documentation Network — phase II*) will develop national participating centres and promote the exchange of information among members, partly through experimentation with the use of telematics techniques. Indeed, the need for better communications among all information producers and consumers led to an Africa-wide project to investigate and experiment with computer-based networking methods and facilities, including messaging, conferencing, and on-line data-base access.

Documentation-based information services still require attention and, for example, a project in Zimbabwe will help establish a national health documentation and information networking centre. This type of information does not, however, meet all needs, especially in the rural areas. Another project (*Rural audio library*), in Mali, will extend existing experience by which rural populations have been involved in information- and education-based development activities with the help of audiocassettes, as well as transcribing and publishing in pamphlet form the best topics formerly transmitted by oral tradition. At the other end of the technological scale, a project (*Telematics and Informatics Information System for Africa*) will establish a West African regional information system on local applications of informatics and telematics technologies, given the current lack of adequate experience in Africa.

Rural development is viewed as the foundation for national development in many countries of the continent, and there is a pressing need for an



adequate survey of agricultural and related resources at the local level. A second phase project (*Local-level mapping*) in Nigeria will expand on the results of earlier work by developing a geographic information system-based method for constructing land-capability mapping at the local scale and will integrate high-resolution remote-sensing data with information from local farmers and data on institutional arrangements for water and land resources management.

The strategy to locate a MINISIS Outreach Officer for West Africa at the MRC in Cameroon has proved to be a sound one. He will continue to develop the skills of the MRC staff and to support users in East Africa (and occasionally other regions) while based in Yaoundé until 1991-92.

### Latin America and the Caribbean

Economic and social issues continue to be a major preoccupation in Latin America. In addition to the need for increased social participation, the impact of stabilization policies adopted by many governments is being felt on social programs and income-generation opportunities. On the external front, the debt crisis and net transfers of resources, the effect of international trading blocs, and the need for access to new industrial technologies are providing additional pressures. Although information support cannot solve these problems, it can assist in helping to make better use of scarce resources.

For example, one project (*Information service on innovation*) in Uruguay will support and stimulate the activity of the agents of innovation, particularly small- and medium-scale enterprises.

Establishing an information service on innovation will facilitate the exchange of information or services with technical, commercial, and financial information networks, development agencies, and other entrepreneurs. Another project (*Information service for industry*) in Colombia will allow consulting engineers to visit small- and medium-scale enterprises to help meet their demands for information from local and international data bases, as well as that based on advice from researchers and experts.

Given the growth of urban areas, a project in Costa Rica (*Geographic information system for small municipalities*) will develop, adapt, and transfer a microcomputer-based geographic information system specializing in the construction and maintenance of municipal master plans. This is aimed at increasing the planning capacity and decision-making ability of small municipalities. Because of the prevalence of seismic disturbances in some countries, a regional project (*Seismic hazard*) will collect data on past seismic activities and estimate hazard potentials: this project is jointly supported with the Earth and Engineering Sciences Division.

A recently concluded evaluation examined the contribution of information projects supported by the Division in the Caribbean. It is assisting staff of the Division in identifying areas to consolidate experience and investments in the region and to work in priority areas identified as part of the regional information system strategy prepared for the Caribbean Development and Cooperation Committee, such as agriculture, industry, energy, trade, and tourism. Coordination at the national level is also important, and one project will permit Jamaica, which has developed a National

Information Network and System, to launch a sustained public education program to reach various parts of the community. The training of professionals who can meet current and future information needs is also a priority and will be addressed through a project at the University of the West Indies to establish a program for a *Master's degree in library studies* for the Caribbean region.

## Asia

Basic survival issues, such as food security, shelter, and health delivery, continue to trouble this region. Social problems have increased the need for more work at the local level and greater community participation. This is reflected in efforts to decentralize planning and implementing programs, which are, in turn, mirrored by information systems. In addition, it is important to encourage the adaptation of technologies resulting from research and the development of "downstream" information systems that meet the needs of extension workers, farmers, and agricultural systems and that take into account indigenous knowledge and practices.

For example, Thailand's rural development policy calls for increasing decentralization of planning, monitoring, and evaluation to the provinces. A microcomputer-based provincial management information system has been established, but it was unfortunately based on a top-down approach. A project will now promote local-level planning and participation and two-way information flow and develop appropriate adaptations and enhancements to the system. Another project, in India, will build on village information centres that have been successful in conveying development information to rural people as part of an adult literacy campaign. The project will test a multimedia model involving a central information centre, a monthly newsletter, mobile audiovisual units, village-level data bases, and circulating libraries. For extension workers — a key link in the agricultural productive system — the second phase of a regional project (*Southeast Asian Weed Information Center*) will develop appropriate materials and tools (including both printed and microcomputer-based) to assist in the identification and management of weeds.

Information is crucial for better management. For example, it can help improve the focus in determining research priorities that respond to the needs of those involved in agricultural production. A project (*Agricultural research management information system*) in the Philippines will develop a prototype management information system to provide an information base for regional research

and development planning, monitoring, and evaluation of agricultural research.

Debt continues to be a priority concern of developing countries. The Commonwealth Secretariat, with IDRC's support, had developed a debt recording and management system (CS-DRMS) software package as a part of its advisory service to Commonwealth countries. A long-term objective, and one of IDRC's concerns, was to make the package readily available to non-Commonwealth countries. A project in Thailand will support the application of CS-DRMS so that the Ministry of Finance will be able to use the package for debt management and policy-planning activities.

Although the information community is relatively well organized in the region, effective, focused training in information management is still needed. A regional project (*Information management training series*) with three leading information and training centres will produce thoroughly assessed curricula and provide courses in abstracting and indexing, information packaging and consolidation, and library automation over 3 years. This local approach to training is proving very successful and will probably be introduced in other regions of the world.

## Social Sciences

The Social Sciences Division has two primary functions: to support research on social and economic problems in the developing world so as to promote sustainable and equitable development, and to assist other divisions in IDRC to examine development problems from the perspective of the social sciences. The Division continues to target its efforts toward meeting the needs of those who are most at risk and whose choices are most limited: the urban and rural poor and women and children.

Priority topics for the Division include several of the world's most pressing concerns: economic deterioration and increasing inequality in the distribution of wealth, widespread decline in the quantity and quality of child and adult education, environmental degradation and resource depletion, uncontrollable growth of cities, continuing assaults on the viability of families through both high rates of maternal and infant mortality and rapid population growth, and the particularly disadvantaged status of women in both their productive and reproductive roles. The Division's support of research into the causes and effects of these problems is directed toward improving decision-making and policy and toward encouraging individuals and

communities to take greater control over their own development.

The Division has four programs: Economic Policy; Environmental Policy; Population, Education and Society; and Urban Development; and one unit for Gender and Development.

### Africa

Social science researchers in Africa face a number of challenges in the era of debt crises and structural adjustment: environmental degradation and resource management, adolescent fertility, maternal and child mortality, migration, AIDS, the effectiveness and efficiency of educational services, and the management of rapidly growing cities are



but a few examples. Because many of Africa's countries are among the world's poorest, they have a very weak — and in some cases nonexistent — research infrastructure. Greater focus is placed on the development and refinement of cost-effective ways of doing research.

The *Small research grants* project enables the Organization for Social Science Research in Eastern Africa to increase the number of social scientists in the region by providing small grants for training and research. The project is supported jointly with the Ford Foundation.

Four major networks of research are being supported or planned in West Africa on migration, adolescent fertility, and educational quality (*Education research network in West and Central Africa*) and on maternal mortality in an effort to identify critical issues and to recommend more appropriate policies and practices for the future.

Support for *Technology policy research networks* in eastern and southern Africa and in West Africa brings together a mix of economists, engineers, lawyers, and sociologists involved in policy research with policymakers to generate information to be used in the assessment of current technology policy and to design and implement new policies to harness technology for development.

Two urban projects are being supported in South Africa (*Conditions of life in the urban-migrant hostels of Cape Town* and *Migrant labour*) and a large network on local government issues involving Zimbabwe as well as South Africa (*Local government issues*). Urban planning and governance will be examined and compared with a view to assist in the transition to a postapartheid state.

A project will prepare a network focusing on the implications of economic reform for the environment in sub-Saharan Africa. Others seek to identify the impact of excessive use of pesticides as seen by those who work in the fields (*No dumping here: control of pesticides in developing countries*) or the potential for alternative financial and tenure arrangements that would reverse the trend toward desertification because of overgrazing on the steppes of the Maghreb in Algeria, Morocco, and Tunisia — *Pastoral systems of the Maghreb*. These projects all reflect a trend among environmental projects in Africa in that they are being undertaken, at least in part, by NGOs rather than exclusively by universities or governments.

Projects are being supported in various parts of Africa that examine women's access to land, including legal barriers to land ownership. Research

on this issue is being carried out in Ghana, Nigeria, Senegal, and Tanzania.

### Latin America and the Caribbean

Development research takes place against a background of economic and financial crisis, characterized by crippling external debt that results in a net transfer of resources to the developed world, and of high population growth rate. It is the poorer strata of the population that are affected most if government spending in, for example, health and education is reduced. As the most urbanized region of the Third World, urban poverty is particularly critical in Latin America. Inflation, high and ever-increasing levels of unemployment, environmental deterioration, and the destabilizing effects of efforts to establish pluralistic political systems are topics for social science research. The region is well supplied with competent research institutions and researchers and the focus is to build on these resources through network projects, research consortia, and attempts to link research more closely with better policies and more effective practices.

In Mexico, a project to learn more about working mothers explores the impact of mothers' working conditions on their health and the health of their children. A group of projects in Chile (*Educational equality and democracy*), Colombia (*Alternatives in nonformal education for preschool children*), the Dominican Republic (*Alternative education for high-school graduates*), and Uruguay (*Education and work*) will identify alternative and innovative ways to increase the relevance of education to employment.

A regional project on *Export revenue management* will enable research institutions in three mineral-exporting countries in the Andean Region to identify the main channels through which revenue instability affects the domestic economy and to suggest means to mitigate the negative effects. The second-phase project on *Rethinking the Latin American city* synthesizes existing urban research in Latin America and develops a consolidated set of policy proposals on how governments and international agencies can more effectively address city problems in Latin America, emphasizing innovative and resource-efficient ways of improving urban living conditions, particularly those of the poor.

Accepted methods of calculating national accounts do not account for resource depletion and can, therefore, overstate gains from harvesting. An innovative project in Costa Rica (*Reforming the national income accounts in the fishery sector*) will

develop a method to allow for the decrease (or possibly the increase) in fishery stocks.

A project in Chile is examining the portrayal of women in television (*Social participation of women*). It will first identify the role of the medium in legitimizing and reinforcing negative images of women's participation in development. Focus will then shift to examine how the medium can help to raise the standards of living and social participation of women.

### Asia

Asia covers a geographic area with an overwhelming range of diversity: from Western Samoa with a population of 200 000 to China with



one-quarter of the world's population; from Singapore with its high technology-oriented economy to Papua New Guinea with a mix of subsistence economy and a rudimentary market economy. In common with the other regions, rapid population growth coupled with the increasing pressure for economic growth lies behind a host of problems: inequalities of income, chronic malnutrition, growing unemployment, and lack of access to health services and education. The rate of industrial growth cannot absorb the population so that a large portion of the region's people cannot contribute to national growth. Health problems, particularly those associated with the proliferation of urban squatter settlements, which mark the rapid urban growth in the region, continue to hinder development. There is a growing awareness that environmental neglect destroys assets vital to any attempt at sustained development. The Division concentrates its efforts on the lower-income countries.

Support has been given for projects to link education to the search for lasting solutions to health problems. In Thailand, research into health education among marginal groups will focus on the high incidence of chronic diarrhea and malnutrition (*Integrated health intervention for childhood diarrhea* and *Integrated community nutrition*). Projects have been supported to increase the capability of researchers: in India, to address the problems of child survival (*Human development and family studies network*) and, in Indonesia, to use demographic data for local planning and family planning (*Strengthening population research capability*).

Two environmental projects, one on *Alternatives to cyanide use in the aquarium industry* in the Philippines and another to identify sustainable nonfarm employment in the Himalayas of Nepal (*Mountain off-farm employment*) focus on efforts to improve local income generation in ways that do not degrade the environment. Another project will seek ways to ensure that benefits from expansion of the park around Mount Everest flow, in part, to those now living and using the resources of the area to be protected (*Conservation and development of the Mount Everest ecosystem (China-Nepal)*).

Projects are supported on how to assist and manage the urban informal sector in Thailand and Sri Lanka, on unregulated housing in India, and on problems of uneven regional development in countries of the ASEAN group (Association of South East Asian Nations) and in China.

A project in China is examining women's

access to land in a historical and a contemporary context. Focusing on the 1948 land-reform policies, the project will examine the elimination of women's oppression, how the reform has affected familial relations and "women's work," and how legal equality in land rights stands to undermine centuries-old patriarchal ideologies and family structures.

### Canada

The Division also supports links between Canadian and Third World researchers through IDRC's cooperative mechanism. A project is being supported under the leadership of the Dene Cultural Institute to establish links among groups collecting oral environmental history; a workshop will bring Dene and Inuit researchers from Canada together with researchers from Sahel countries and the Solomon Islands.

The Gender and Development Unit continues to place importance on training in gender analysis, both in Canada and in developing countries. Currently, it is supporting the Summer Institute in Gender and Development at Saint Mary's and Dalhousie universities in Halifax and the Atelier Femmes et Développement at Laval University.

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\*Until December 1989, the Regional Office for Latin America and the Caribbean was in Bogotá, Colombia.

## Financial commentary and highlights

During the fiscal year 1989–1990, the International Development Research Centre had to face the difficult task of revising its budget 2 months after the start of the fiscal year and after it had been approved by its Board of Governors. In May 1989, the federal government altered the percentage of Official Development Assistance (ODA) to gross national product (GNP) with the direct effect of lowering, for the first time, the annual grant to \$108.5 million from the 1988–1989 level, of \$114.2 million. The annual grant still represents 3.9% of the 1989–1990 gross commitment for ODA. For the 1990–1991 fiscal year, the grant allocated to the Centre has been increased to \$114.3 million.

During 1989–1990, the Centre carried on the freeze on the staff complement at the head office and adopted a series of cost-cutting recommendations aimed at enhancing the efficiency and effectiveness of its operations. The major recommendation the Centre had to consider and implement was the painful decision to down-size the Regional Offices in Cairo and New Delhi.

## Revenue

Total Centre revenues were slightly below the 1988–1989 level and amounted to \$121.1 million. Revenues consist of the Parliamentary grant of \$108.5 million, investment and other income of \$3.3 million, and income for contract research of \$9.3 million. The contract research figure includes the cost of the V International Conference on AIDS (acquired immune deficiency syndrome). Figure 1 illustrates the trend in total revenue over the last 5 years.

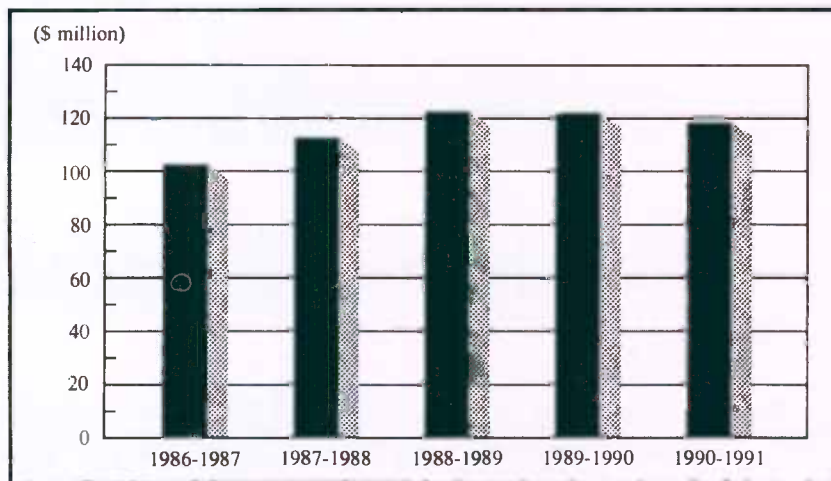


Figure 1. Total revenue for the Centre for 1986–1987 (actual) to 1990–1991 (budget).

The Parliamentary grant of \$108.5 for 1989–1990 was reduced by \$5.7 million compared to the 1988–1989 grant, a drop of 5.0%. The \$3.3 million of investment and other income in 1989–1990 topped the budgeted target of \$2.2 million. Investment income aggregated \$3.0 million compared to the budgeted \$2.0 million. The favourable variance is a result of a higher than expected investment portfolio during the whole year, and of higher rates of interest. Other income totaled \$0.3 million.

Contract research revenues reached a high of \$9.3 million in 1989–1990. This figure encompasses \$6.4 million received for the V International Conference on AIDS, organized by the Centre, from registration fees, the Canadian International Development Agency (CIDA), Health and Welfare Canada, and other donors. In addition, the Centre accepted \$2.9 million from CIDA for research conducted or managed by the Centre on its behalf.

For 1990–1991, total revenue of \$118.7 million is projected, a drop of 2.0% over 1989–1990.

## Expenditure

Total Centre expenditures in 1989–1990 reached \$130.9 million. This amount represents an increase of \$14.9 million or 12.9% over the figure registered in 1988–1989. Figure 2 outlines the relative share of each category of expenditure for 1989–1990.

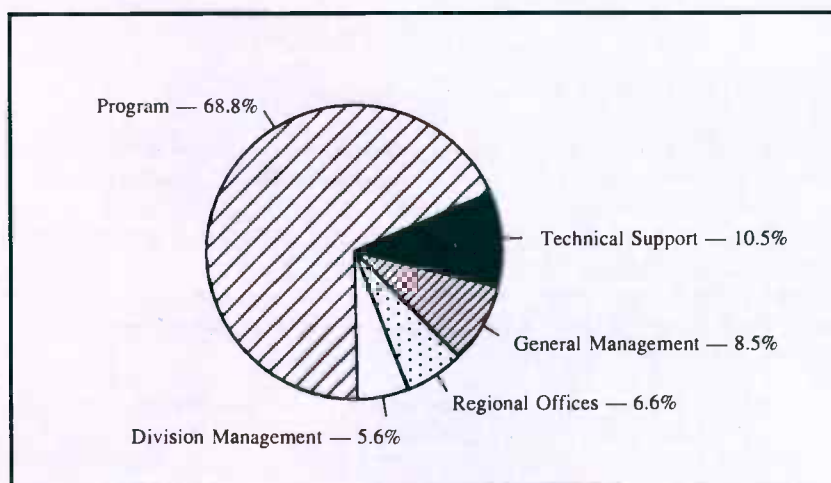


Figure 2. Breakdown of actual expenditures for 1989–1990.

The following table shows the 1990–1991 budget expenditures with actual expenditures reported for 1989–1990 and the previous 3 years (values are in millions of dollars).

	Budget		Actual		Actual		Actual		Actual	
	1990–1991	% of total	1989–1990	% of total	1988–1989	% of total	1987–1988	% of total	1986–1987	% of total
Development research activities	\$ 68.7	57.5	\$ 78.5	60.0	\$ 67.9	58.5	\$ 62.4	58.6	\$ 60.4	59.8
Research-related activities	24.4	20.4	25.2	19.3	23.8	20.5	21.3	20.0	20.3	20.1
General management	11.5	9.6	11.1	8.5	9.9	8.5	10.4	9.8	9.4	9.3
Division management	7.6	6.4	7.4	5.6	7.2	6.2	6.5	6.0	5.5	5.4
Regional offices	7.3	6.1	8.7	6.6	7.2	6.2	5.8	5.5	5.4	5.3
<b>Total</b>	<b>\$119.5</b>	<b>100.0</b>	<b>\$130.9</b>	<b>100.0</b>	<b>\$116.0</b>	<b>100.0</b>	<b>\$106.4</b>	<b>100.0</b>	<b>\$101.0</b>	<b>100.0</b>

## Development research activities

Development research activities indicate the direct costs of all scientific and technical research projects financed by the Centre in developing countries. It is the *raison d'être* of the Centre. This classification includes support for Centre projects and international research networks; projects that are identified, developed, and managed by developing-country researchers; and contract research projects that are administered on behalf of other donor organizations.

In 1989–1990, expenditures for development-research activities attained \$78.5 million or 60.0% of the Centre's total expenditures. Expenditures on existing projects that involve, for the most part, development research were higher than the 1988–1989 expenditures by 8.2%, whereas expenditures on new projects increased by 26.5% over the previous year.

This substantial increase in expenditure was anticipated and covered disbursements scheduled for 1988–1989 but which were released in this fiscal year. This, in turn, explains why the equity was unusually high at the end of the previous year.

## Research-related activities

Expenditures for research-related activities totaled, in 1989–1990, \$25.2 million or 19.3% of the Centre's total expenditures. These activities include technical support, small projects that lead to the development of research projects, and activities relating to information dissemination or application of research results. This category of expenditure also includes a development-research library, which serves the Canadian development community as well as IDRC staff, and small projects that are supportive of ongoing programs of the Centre.

The technical support expenditures entail the cost of program personnel, whose role is to develop new projects, monitor ongoing research projects, and provide technical assistance to recipients. Expenditures for technical support in 1989–1990 reached \$13.7 million, representing 10.5% of total Centre expenditures, a slight decrease over 1988–1989.

For 1990–1991, technical support expenditures are planned at \$13.4 million, a decrease of 2.2% due to the cancellation of several positions and person-years and a reduction in all travel budgets. The share of this grouping of expenditure to total expenditure will increase to 11.2%.

## Regional offices

The Centre will continue to maintain six regional offices to facilitate contacts with grant recipients and enhance the Centre's ability to respond to Third World issues. These offices are located in Egypt, India, Kenya, Senegal, Singapore, and Uruguay. The total expenditure incurred in 1989–1990 to operate these offices amounted to \$8.7 million, an increase of 21.6% over 1988–1989. This important increase is explained by the decision to move the Colombian office to Uruguay, and the cost associated with the down-sizing of the regional offices in Egypt and India. This category accounted for 6.6% of total Centre expenditures for 1989–1990.

For 1990–1991, regional office expenditures are budgeted at \$7.3 million, a decrease of 16% from the 1989–1990 level.

## Division management

In 1989–1990, division management expenditures totaled \$7.4 million, a 2.3% increase over 1988–1989, and represented 5.6% of the total Centre expenditures for 1989–1990.

Expenditures for division management are anticipated to increase by 2.7% in fiscal year 1990–1991 to about \$7.6 million. This will slightly increase its share of total Centre expenditures from 5.6% in 1989–1990 to 6.4% in 1990–1991.

## General management

To sustain its overall operations, the Centre requires policy, executive, administrative, and service functions. Within the context of IDRC, these functions are covered by the Board of Governors; the offices of the Executive, Secretary and General Counsel, Treasurer, and Human Resources; and the Administration, Electronic Data Processing, and Internal Audit departments.

General management expenditures reached \$11.1 million in 1989–1990, an increase of 12.5% over 1988–1989. Most of the increase is under the line items rent and utilities, salaries and benefits, and office and sundry expenses. This category of expenditure accounted for 8.5% of total Centre expenditures in 1989–1990, the same as in 1988–1989. The following table shows the comparative values.

	<u>1990</u>	<u>1989</u>
Salaries and benefits	\$ 6 505 670	\$6 117 923
Rent and utilities	1 806 255	1 546 887
Office and sundry	1 185 650	867 119
Depreciation and amortization	416 267	260 525
Professional and special services	366 521	283 168
Governors' meetings	308 621	279 395
Travel and relocation	248 310	279 704
Telecommunications	237 043	190 329
Insurance	41 281	43 338
Working group expenses	8 064	19 041
	<u>\$11 123 682</u>	<u>\$9 887 429</u>

For 1990–1991, the projected expenditures are set at \$11.5 million, an increase of 3.6% from the 1989–1990 level.

## Equity of Canada

The equity level as at March 31, 1990 declined, as expected, to \$4.0 million from a high of \$13.9 million reported in the previous year. The low level of the year-end equity is due to the major reduction in the annual grant as already explained. For 1990–1991, the year-end equity is estimated at \$3.3 million.

## Person-years

For 1989–1990, the Centre's head office-hired person-years totaled 435.3 compared to a budget of 459.5. Vacancies were reported primarily under technical support and resulted from delays in filling vacant positions. For 1990–1991, the number of head office-hired person-years is budgeted at 439.9 person-years.

## Appropriations

Total Centre appropriations for 1989–1990 dropped to \$115.7 million compared to \$141.3 in 1988–1989, representing an 18.1% decrease over the previous year. This total includes new projects for \$74.7 million accounting for 64.6% of the total amount appropriated during the fiscal year. Figure 3 shows the allocation of program appropriations by geographic region.

For 1990–1991, total appropriations are projected to reach \$115.9 million with the program appropriations representing 64.7% of the total (\$75.0 million).

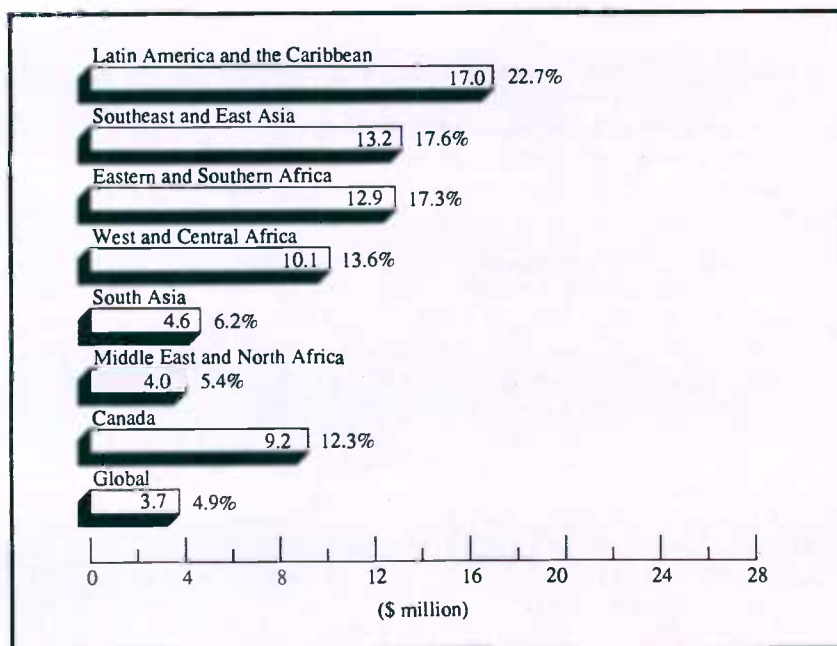


Figure 3. Actual appropriations for 1989–1990 by region.

## Responsibility for financial statements

The financial statements have been prepared by management in accordance with generally accepted accounting principles appropriate in the circumstances. Management also assumes responsibility for all other information in the annual report, which is consistent, where applicable, with that contained in the financial statements. In support of its responsibility, management maintains financial and management control systems and practices to provide reasonable assurance as to the reliability of financial information, and that the assets are safeguarded and the operations are carried out effectively. The Centre has an internal audit department whose functions include reviewing internal controls and their application on an ongoing basis.

The Board of Governors is responsible for ensuring that management fulfills its responsibilities for financial reporting and internal control. The Board exercises its responsibilities through the Finance and Audit Committee whose members are not employees of the Centre. The Committee meets with management, the internal auditors, and the external auditors on a regular basis.

The Auditor General of Canada conducts an independent examination in accordance with generally accepted auditing standards and expresses his opinion on the financial statements. His examination includes appropriate tests and procedures to enable him to report whether the financial statements are presented fairly. The external auditors have full and free access to the Finance and Audit Committee of the Board.

## Financial highlights (\$ 000)

	Budget 1989-1990	Actual 1989-1990	% variance from budget	Actual 1988-1989	1989-1990 vs 1988-1989 (% change)
<b>FINANCIAL ACTIVITY</b>					
Revenue	\$112 900	\$121 083	7.2	\$121 293	-0.2
Grant from Parliament of Canada	108 500	108 500	0.0	114 200	-5.0
Contract research	2 200	9 277	321.7	4 199	120.9
Investment and other income	2 200	3 306	50.3	2 894	14.2
Expenditure	\$123 887	\$130 946	-5.7	\$115 975	12.9
Existing projects*	59 820	54 450	9.0	50 309	8.2
New projects*	23 215	35 504	-52.9	28 060	26.5
Technical support	14 037	13 762	2.0	13 330	3.2
General management	11 682	11 124	4.8	9 887	12.5
Division management	7 672	7 378	3.8	7 212	2.3
Regional offices	7 461	8 728	-17.0	7 177	21.6
Excess of revenue over expenditure (expenditure over revenue)	\$ (10 987)	\$ (9 863)	10.2	\$ 5 318	-285.5
<b>PROGRAM ACTIVITY</b>					
Appropriations	\$115 852	\$115 678	0.2	\$141 265	-18.1
New projects	75 000	74 686	0.4	103 659	-28.0
Technical support	14 037	13 762	2.0	13 330	3.2
General management	11 682	11 124	4.8	9 887	12.5
Division management	7 672	7 378	3.8	7 212	2.3
Regional offices	7 461	8 728	-17.0	7 177	21.6
Commitments	\$138 329	\$145 089	-4.9	\$126 834	14.4
Projects	97 477	104 097	-6.8	89 228	16.7
Technical support	14 037	13 762	2.0	13 330	3.2
General management	11 682	11 124	4.8	9 887	12.5
Division management	7 672	7 378	3.8	7 212	2.3
Regional offices	7 461	8 728	-17.0	7 177	21.6

\* Includes contract research and division activity projects.



## Five-year financial review (\$ 000)

	Budget 1990-1991	Actual 1989-1990	Actual 1988-1989	Actual 1987-1988	Actual 1986-1987	Actual 1985-1986
<b>RESULTS OF OPERATIONS</b>						
<b>Revenue</b>	<u>\$118 700</u>	<u>\$121 083</u>	<u>\$121 293</u>	<u>\$112 417</u>	<u>\$102 401</u>	<u>\$ 89 663</u>
Grant from Parliament of Canada	114 300	108 500	114 200	108 100	100 000	86 000
Contract research	3 000	9 277	4 199	2 107	1 423	1 782
Investment and other income	1 400	3 306	2 894	2 210	978	1 881
<b>Expenditure</b>	<u>\$119 469</u>	<u>\$130 946</u>	<u>\$115 975</u>	<u>\$106 401</u>	<u>\$100 969</u>	<u>\$ 91 486</u>
Development research activities*	68 684	78 459	67 875	62 362	60 382	54 585
Research-related activities†	24 311	25 257	23 825	21 347	20 262	18 031
Research operational support†	14 921	16 106	14 388	12 329	10 971	10 155
General management	11 553	11 124	9 887	10 363	9 354	8 715
<b>Excess of revenue over expenditure (expenditure over revenue)</b>	<u>\$ (769)</u>	<u>\$ (9 863)</u>	<u>\$ 5 318</u>	<u>\$ 6 016</u>	<u>\$ 1 432</u>	<u>\$ (1 823)</u>
<b>PROGRAM ACTIVITY</b>						
<b>Appropriations</b>	<u>\$110 732</u>	<u>\$115 678</u>	<u>\$141 265</u>	<u>\$124 904</u>	<u>\$111 517</u>	<u>\$102 199</u>
New projects‡	70 900	74 686	103 659	89 685	79 351	72 301
Technical support†	13 359	13 762	13 330	12 527	11 841	11 027
General management	11 553	11 124	9 887	10 363	9 354	8 715
Division management†	7 583	7 378	7 212	6 501	5 577	5 209
Regional offices	7 337	8 728	7 177	5 828	5 394	4 947
<b>Commitments</b>	<u>\$112 481</u>	<u>\$145 089</u>	<u>\$126 834</u>	<u>\$120 154</u>	<u>\$105 099</u>	<u>\$ 95 383</u>
Projects**	72 649	104 097	89 228	84 935	72 933	65 485
Technical support†	13 359	13 762	13 330	12 527	11 841	11 027
General management	11 553	11 124	9 887	10 363	9 354	8 715
Division management†	7 538	7 378	7 212	6 501	5 577	5 209
Regional offices	7 337	8 728	7 177	5 828	5 394	4 947
<b>Outstanding commitments</b>	<u>\$121 582</u>	<u>\$116 100</u>	<u>\$104 400</u>	<u>\$ 96 000</u>	<u>\$ 88 343</u>	<u>\$ 88 900</u>

\* Includes contract research.

† The values for 1988 and prior years have been reclassified to conform to the statement presentation adopted in 1989.

‡ Includes division activity projects.

\*\* Excludes contract research (special projects).

**Research and support expenses**  
for the year ended March 31, 1990

	1990			1989
	Development research activities	Research- related activities	Research operational support	Total
<b>PROGRAMS</b>				
Agriculture, Food and Nutrition Sciences	\$23 156 224	\$ 4 955 366	\$ 1 196 044	\$ 28 181 425
Social Sciences	11 047 244	3 575 909	1 356 232	14 573 285
Health Sciences	11 156 938	2 622 993	1 139 425	12 700 074
Information Sciences	9 861 439	2 482 440	1 314 526	12 023 163
Earth and Engineering Sciences	7 206 912	1 311 580	614 481	8 941 883
Fellowships and Awards	5 769 844	818 484	389 566	6 854 253
				\$ 29 307 634
				15 979 385
				14 919 356
				13 658 405
				9 132 973
				6 977 894
				\$ 10 048 907
				9 801 025
				7 263 111
				1 765 694
				968 389
				8 479 955
				5 712 180
				5 824 900
				1 722 497
				1 074 224
				\$106 087 839
<b>PROGRAM-RELATED ACTIVITIES</b>				
Regional offices	77 944	1 242 540	8 728 412	10 048 907
Special program activities	8 886 377	914 648	0	9 801 025
Communication Division	1 270 467	5 022 913	969 731	7 263 111
Development-research library	0	1 765 694	0	1 765 694
External liaison and relations	25 472	544 503	398 414	968 389
				\$25 257 070
				\$16 106 831
				\$119 822 773
				\$78 458 872
				\$106 087 839

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**Person-year levels**


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	1990-1991	1989-1990		1988-1989	
	Budget	Budget	Actual	Budget	Actual
<b>PROGRAM DIVISIONS</b>	<u>285.1</u>	<u>298.0</u>	<u>283.3</u>	<u>300.0</u>	<u>271.2</u>
Agriculture, Food and Nutrition Sciences	47.6	48.5	48.5	50.0	44.8
Social Sciences	44.0	48.0	43.3	48.5	43.3
Information Sciences	38.6	42.5	35.5	41.5	37.7
Project-related staff	36.4	36.5	39.4	37.5	33.5
Health Sciences	35.0	36.0	34.1	36.0	31.5
Communications	15.0*	26.0	24.3	25.5	22.5
Project-related staff	28.0*	19.0	18.3	19.0	17.4
Earth and Engineering Sciences	17.0	18.0	17.0	19.0	17.5
Office of Planning and Evaluation	12.0	12.0	11.3	11.0	11.4
Fellowships and Awards	11.5	11.5	11.6	12.0	11.6
<b>GENERAL MANAGEMENT</b>	<u>151.8</u>	<u>158.5</u>	<u>150.5</u>	<u>161.5</u>	<u>156.2</u>
Office of the Treasurer	37.8	39.0	35.5	39.0	37.7
Administration department	34.0	35.0	32.9	37.0	35.6
Office for Human Resources	17.5	19.5	18.0	19.5	21.7
Electronic Data Processing	16.0	14.0	15.4	14.0	13.4
Office of the Secretary and General Counsel	15.0	17.0	16.2	15.0	16.4
Executive Office	14.0	15.0	13.5	18.0	14.3
Regional offices administration	12.5	14.0	14.6	14.0	13.7
Internal Audit	5.0	5.0	4.4	5.0	3.4
<b>SECONDMENTS/SABBATICAL/ STUDY LEAVE</b>	<u>3.0</u>	<u>3.0</u>	<u>1.5</u>	<u>5.0</u>	<u>0.0</u>
<b>TOTAL: HEAD OFFICE-HIRED STAFF</b>	<u>439.9</u>	<u>459.5</u>	<u>435.3</u>	<u>466.5</u>	<u>427.4</u>

\* Reflects Division's new structure.



AUDITOR GENERAL OF CANADA

VÉRIFICATEUR GÉNÉRAL DU CANADA

## AUDITOR'S REPORT

To the International Development Research Centre  
and the  
Secretary of State for External Affairs

I have examined the balance sheet of the International Development Research Centre as at March 31, 1990 and the statements of operations, equity of Canada and changes in financial position for the year then ended. My examination was made in accordance with generally accepted auditing standards in Canada, conforming with International Auditing Guidelines, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the Centre as at March 31, 1990 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles in Canada, conforming with International Accounting Standards, applied on a basis consistent with that of the preceding year.

A handwritten signature in cursive script, appearing to read "Kenneth M. Dye".

Kenneth M. Dye, F.C.A.  
Auditor General of Canada

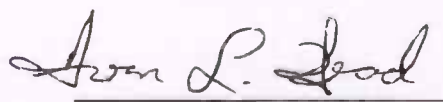
Ottawa, Canada  
June 1, 1990

## Financial statements for the year ended March 31, 1990

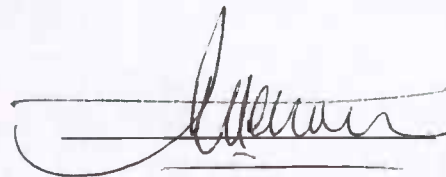
### Balance sheet as at March 31, 1990

	1990	1989
<b>ASSETS</b>		
<b>Current</b>		
Cash and short-term deposits (Note 3)	\$14 115 678	\$26 897 087
Accounts receivable	1 040 856	888 653
Prepaid expenses	849 248	1 394 660
	<b>16 005 782</b>	<b>29 180 400</b>
Recoverable deposits	206 894	183 430
Property and equipment (Note 4)	5 477 839	4 770 484
Endowment funds (Note 5)	433 475	165 441
	<b>6 118 208</b>	<b>5 119 355</b>
<b>Total assets</b>	<b>\$22 123 990</b>	<b>\$34 299 755</b>
<b>LIABILITIES</b>		
<b>Current</b>		
Accounts payable and accrued liabilities (Note 6)	\$11 303 825	\$12 373 696
Contract research (Note 7)	1 426 291	2 532 328
	<b>12 730 116</b>	<b>14 906 024</b>
Accrued employee separation benefits	2 623 128	2 722 679
Deferred rent - Head Office	2 311 918	2 616 835
Endowment funds (Note 5)	433 475	165 441
	<b>5 368 521</b>	<b>5 504 955</b>
<b>Total liabilities</b>	<b>18 098 637</b>	<b>20 410 979</b>
<b>EQUITY</b>	<b>4 025 353</b>	<b>13 888 776</b>
<b>Total liabilities and equity</b>	<b>\$22 123 990</b>	<b>\$34 299 755</b>

Approved:



President



Treasurer

**Statement of operations**  
for the year ended March 31, 1990

	1990	1989
<b>EXPENSES</b>		
<b>Development-research activities</b>		
Project-grants	\$ 63 424 558	\$ 56 898 932
Centre-administered projects	5 757 433	6 777 332
Contract research (Note 7)	9 276 881	4 198 988
	<u>78 458 872</u>	<u>67 875 252</u>
<b>Research-related activities</b>		
Technical support	13 762 411	13 330 589
Program development support	6 683 451	6 382 458
Information dissemination	3 045 514	2 389 558
Development-research library	1 765 694	1 722 497
	<u>25 257 070</u>	<u>23 825 102</u>
<b>Research operational support</b>		
Regional offices	8 728 412	7 175 783
Division management	7 378 419	7 211 702
	<u>16 106 831</u>	<u>14 387 485</u>
<b>Total research and support expenses</b>	<b>119 822 773</b>	<b>106 087 839</b>
<b>General management expenses</b>	<b>11 123 682</b>	<b>9 887 429</b>
	<u>130 946 455</u>	<u>115 975 268</u>
<b>REVENUE</b>		
<b>Grant from Parliament of Canada</b>	<b>108 500 000</b>	<b>114 200 000</b>
<b>Investment and other income</b>	<b>3 306 151</b>	<b>2 893 890</b>
<b>Contract research (Note 7)</b>	<b>9 276 881</b>	<b>4 198 988</b>
	<u>121 083 032</u>	<u>121 292 878</u>
<b>EXCESS OF EXPENSES OVER REVENUE</b> <b>(REVENUE OVER EXPENSES)</b>	<b>\$ 9 863 423</b>	<b>\$ (5 317 610)</b>

**Statement of equity of Canada**  
for the year ended March 31, 1990

	1990	1989
Balance at the beginning of the year	\$13 888 776	\$ 8 571 166
Excess of expenses over revenue (revenue over expenses)	9 863 423	(5 317 610)
Balance at the end of the year	<u>\$ 4 025 353</u>	<u>\$13 888 776</u>

**Statement of changes in financial position**  
for the year ended March 31, 1990

	1990	1989
<b>Operating activities</b>		
Cash used in (provided by) operations		
Excess of expenses over revenue (Revenue over expenses)	\$ 9 863 423	\$ (5 317 610)
Items not affecting cash		
Depreciation and amortization	(1 322 278)	(995 099)
Provision for employee separation benefits	(303 142)	(551 298)
(Loss)/gain on disposal of equipment	(28 508)	27 883
Amortization of deferred rent	304 917	304 874
	<u>8 514 412</u>	<u>(6 531 250)</u>
Changes in noncash operating assets and liabilities		
Accounts receivable	152 203	149 640
Prepaid expenses	(545 412)	421 094
Recoverable deposits	23 464	(14 291)
Accounts payable and accrued liabilities	1 069 871	(2 952 035)
Payment of employee separation benefits	402 693	370 338
Contract research liability	1 106 037	(1 846 631)
	<u>2 208 856</u>	<u>(3 871 885)</u>
<b>Investing activities</b>		
Additions to property and equipment	2 336 333	2 349 863
Proceeds on disposal of equipment	(278 192)	(39 783)
	<u>2 058 141</u>	<u>2 310 080</u>
Decrease (increase) in cash	12 781 409	(8 093 055)
Cash and short-term deposits at the beginning of the year	<u>26 897 087</u>	<u>18 804 032</u>
Cash and short-term deposits at the end of the year	<u>\$14 115 678</u>	<u>\$26 897 087</u>

## Notes to financial statements as at March 31, 1990

### 1. Authority and objective

The International Development Research Centre, a Corporation without share capital, was established in 1970 by the Parliament of Canada through the International Development Research Centre Act. The annual grant received from the Parliament of Canada is pursuant to External Affairs Vote 50 for the years ended March 31, 1990 and 1989 respectively.

The objective of the Centre 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.

### 2. Significant accounting policies

The financial statements have been prepared in accordance with Canadian generally accepted accounting principles, conforming with International Accounting Standards, and reflect the following significant accounting policies.

#### Property and equipment

Property and equipment are recorded at cost and depreciated over their estimated useful lives. Leasehold improvements are amortized over the terms of the respective leases. The methods and rates used to provide for the depreciation and amortization of property and equipment are:

	<u>Method</u>	<u>Rate (%)</u>
Computer equipment	Straight line	20
Leasehold improvements	Straight line	5-50
Office furniture and equipment	Diminishing balance	20
Vehicles	Diminishing balance	30
Telephone system	Straight line	20

#### Recognition of revenue

Parliamentary grants are recorded as revenue on an accrual basis.

Revenue in respect of contract research is recognized at the time the related project expenses are incurred. Contract research funds received in excess of expenses are included in current liabilities.

#### Accrued employee separation benefits

Employees are entitled to specified termination benefits, calculated at salary levels in effect at the time of separation as provided for by conditions of employment. The liability for these benefits is recorded as the benefits accrue to employees.

#### Deferred rent

Any rent-free period or other benefits associated with long-term leases are deferred and amortized over the term of the lease on a straight-line basis.



**Pension costs**

Employees are covered by the Public Service Superannuation Plan administered by the Government of Canada. Contributions to the Plan are required from the employees and the Centre. These contributions represent the total liability of the Centre and are recognized in the accounts on a current basis.

**Income taxes**

The Centre is exempt from any income taxes.

**Foreign-currency translation**

Foreign-currency transactions are translated into Canadian dollars by the use of an average exchange rate that closely approximates the rate in effect at the transaction date. Monetary assets and liabilities are adjusted to reflect the rate of exchange in effect at year-end. Exchange gains and losses are included in operations for the current year.

**3. Cash and short-term deposits**

	<u>1990</u>	<u>1989</u>
Cash (bank overdraft)	\$ (659 105)	\$ (179 966)
Short-term deposits		
Canadian chartered banks	11 648 255	25 114 133
Foreign-owned chartered banks	2 151 598	1 962 920
Federal and Provincial governments	<u>974 930</u>	<u>—</u>
	<u>\$14 115 678</u>	<u>\$26 897 087</u>

**4. Property and equipment**

	<u>1990</u>			<u>1989</u>
	<u>Cost</u>	<u>Accumulated depreciation and amortization</u>	<u>Net</u>	<u>Net</u>
Computer equipment	\$ 5 424 094	\$2 402 335	\$3 021 759	\$2 593 069
Office furniture and equipment	1 742 902	1 050 189	692 713	774 663
Leasehold improvements	1 365 142	376 525	988 617	496 299
Vehicles	1 275 473	638 702	636 771	742 632
Telephone system	<u>852 347</u>	<u>714 368</u>	<u>137 979</u>	<u>163 821</u>
	<u>\$10 659 958</u>	<u>\$5 182 119</u>	<u>\$5 477 839</u>	<u>\$4 770 484</u>

Depreciation and amortization for the year amounted to \$1 322 278 (1989, \$995 099).

**5. Endowment funds**

In 1987, the estate of the late John Bene established a fund to provide a postgraduate fellowship in the field of social forestry. During the same year, a former member of the Board of Governors of the Centre established a fund for applied or mission-oriented research. This year, the Centre received a contribution from the V International Conference on AIDS (acquired immune

deficiency syndrome), which was used to establish a fund for the purpose of AIDS research in the Third World.

	<u>1990</u>	<u>1989</u>
Balance at the beginning of the year	\$165 441	\$151 273
Donations received	255 958	5 000
Interest income	22 076	13 919
Expenses	<u>(10 000)</u>	<u>(4 751)</u>
Balance at the end of the year	<u>\$433 475</u>	<u>\$165 441</u>
John Bene	\$160 170	\$154 882
Governor	17 201	10 559
AIDS	<u>256 104</u>	<u>—</u>
Total endowment funds	<u>\$433 475</u>	<u>\$165 441</u>

## 6. Accounts payable and accrued liabilities

	<u>1990</u>	<u>1989</u>
Accrued liabilities – projects	\$ 6 983 667	\$ 7 278 920
Accrued annual and other leave benefits	1 390 149	1 221 879
Other	<u>2 930 009</u>	<u>3 872 897</u>
	<u>\$11 303 825</u>	<u>\$12 373 696</u>

## 7. Contract research

Contract research relates to research conducted or managed by the Centre on behalf of other organizations and to the V International Conference on AIDS organized by the Centre. These are funded by other international agencies, the Canadian International Development Agency (CIDA), other federal government entities, and registration fees.

Contract research expenses of \$9 276 881 (1989, \$4 198 988) include \$2 909 740 (1989, \$2 431 480) expended on behalf of CIDA. In addition, the Centre received \$49 971 (1989, \$24 511) as an administration fee from CIDA, which is included in investment and other income.

Contract research current liabilities of \$1 426 291 (1989, \$2 532 328) include \$1 043 422 (1989, \$608 257) held on behalf of CIDA.

## 8. Operating leases

The Centre has entered into various lease arrangements for office premises, equipment, and staff accommodation in Canada and in various countries. The total annual payments under such lease arrangements will be:

### Year ending March 31

1991	\$ 6 142 124
1992	5 150 099
1993	4 805 005
1994	4 625 239
1995	4 545 862
1996–Expiry	<u>\$12 122 893</u>
	<u>\$37 391 222</u>

### **9. Contractual commitments — project grants and program development**

The Centre is committed to make payments up to \$116 097 000 during the next 4 years subject to funds being provided by Parliament and subject to compliance by recipients with the terms of project agreements. The Centre has also submitted formal grant offers to prospective recipients totaling \$18 739 003 and is awaiting acceptance of these offers.

### **10. Comparative figures**

The 1989 figures have been reclassified to conform to the statement presentation adopted in 1990.

## Projects for which funds were approved during fiscal year 1989–1990<sup>1</sup>

### Agriculture, Food and Nutrition Sciences<sup>2</sup>

#### 89-0007 FSR methodological network (Latin America)

To enable the Grupo de Investigaciones Agrarias, Chile, to formalize and consolidate a network on methodology for farming systems research (FSR) to increase the efficiency of Latin American institutions in developing and transferring new appropriate technologies for small-scale farming systems. \$215 400 — 36 months.

#### 89-0012 By-products (Nigeria) — Phase II

For Obafemi Awolowo University, Ile Ife, to enable the Department of Animal Science to develop sheep-feeding technologies based on agricultural wastes and test them on-farm. \$170 400 — 36 months.

#### 89-0013 Rabbit production (Uganda)

For Makerere University, Kampala, to enable the Faculty of Agriculture and Forestry in the Department of Animal Science to introduce and evaluate improved rabbit-production technologies in smallholder farms so as to increase meat supplies and improve nutrition. \$130 100 — 36 months.

#### 89-0014 Enabling grant to CARDI (Caribbean)

For the Caribbean Agricultural Research and Development Institute (CARDI), Trinidad, to contribute toward the core funding of CARDI to enable it to make the transition from the old to the new organizational structure. \$240 000 — 24 months.

#### 89-0015 River fisheries (Senegal)

For l'Institut sénégalais de recherches agricoles, Dakar, to enable the Centre de recherches océanographiques de Dakar-Thiaroye to lay the necessary foundation for increasing fishing and fish farming in the Senegal River Basin. \$219 600 — 36 months.

#### 89-0016 Cassava processing (Colombia) — Phase II

To enable the Centro Internacional de Agricultura Tropical, Cali, to determine the feasibility of establishing a cassava-flour agroindustry in a cassava-producing community by integrating production, processing, and marketing functions under real market conditions. \$210 500 — 24 months.

#### 89-0017 Aquaculture development thrust (Latin America)

For the Fundación para la Educación Superior, Colombia, to enable the regional aquaculture network to contribute to aquaculture development by strengthening the research, planning, and training capacity of participating aquaculture centres. \$226 240 — 36 months.

#### 89-0018 Soybean threshers (Nigeria)

For Obafemi Awolowo University, Ile Ife, to enable the Institute of Agricultural Research and Training to develop low-cost soybean-threshing machines suitable for use by small-scale farmers in Nigeria. \$191 500 — 36 months.

#### 89-0019 Plantain conservation (Côte d'Ivoire)

For the Université d'Abidjan, to enable the Département de biochimie to improve traditional methods of plantain preservation to provide the population with more and better quality plantains. \$159 300 — 36 months.

#### 89-0020 Farm forestry (Malawi)

For the Ministry of Agriculture, Lilongwe, to enable the Department of Agricultural Research to improve and stabilize the crop-, livestock-, and tree-production components of small-scale farming systems through the generation of suitable agroforestry technologies. \$216 495 — 36 months.

#### 89-0021 Watershed management (Colombia)

For the Universidad Nacional de Colombia, Bogotá, to enable its faculty of agronomy to identify mechanisms to encourage small-scale farmers to introduce trees into various agricultural production systems and thereby improve soil conservation with reduced outside intervention. \$121 270 — 36 months.

#### 89-0026 Technology adoption evaluation (Chile) — Phase II

To enable the Centro de Estudios para América Latina sobre Desarrollo Rural, Pobreza y Alimentación, Santiago, to contribute to the generation and dissemination of appropriate technology for small-scale farmers and to identify critical factors that influence the success of extension activities. \$199 400 — 36 months.

#### 89-0036 Animal-production systems network (Latin America) — Phase II

For the Instituto Interamericano de Cooperación para la Agricultura, Costa Rica, to strengthen the research network of national, regional, and international organizations in Latin America for the generation and transfer of improved animal-production systems for small-scale farmers. \$557 220 — 36 months.

#### 89-0038 Grain legumes (Nepal) — Phase II\*

For the Ministry of Agriculture, Kathmandu, to enable the National Agricultural Research and Services Centre, to increase and sustain the production and productivity of grain legumes by strengthening the national grain-legume improvement program. \$268 540 — 36 months.

#### 89-0039 Coffee berry borer (Mexico) — Phase II\*

To enable the Centro de Investigaciones Ecológicas del Sureste, Tapachula, to consolidate and institutionalize a biological control program for the coffee berry borer. \$198 080 — 24 months.

#### 89-0040 South American camelids (Peru) — Phase III\*

For the Universidad Nacional Mayor de San Marcos, Lima, to enable the Instituto Veterinario de Investigaciones Tropicales y de Altura to develop improved alpaca-production systems for small-scale farms in the highlands. \$238 600 — 36 months.

#### 89-0048 Invertebrates-seaweeds (Chile) — Phase III

For the Universidad Católica de Chile, Santiago, to enable the Facultad de Ciencias Biológicas to develop a pilot project on the transference of repopulation and management techniques for shellfish (mainly *loco* and sea urchin) at a

<sup>1</sup> An asterisk indicates that the contract between IDRC and the recipient may not yet have been signed.

<sup>2</sup> Projects funded jointly with another division are listed under "Multidivisional."

small-scale fishermen's cove in Caleta Quintay. \$67 270 — 20 months.

**89-0049 Amazon piedmont systems (Peru)**

For North Carolina State University Mission to Peru, Lima, to permit the Instituto Nacional de Investigación Agraria y Agroindustrial to identify three tree species with high growth rates so that local fruit, coffee, and cocoa farmers can benefit by using their sloping and low productivity lands to grow the wood needed for fruit boxes. \$25 960 — 12 months.

**89-0051 Agroforestry (India)\***

For the Indian Council of Agricultural Research, New Delhi, to enable the National Research Centre in Agroforestry and the Indian Grassland and Fodder Research Institute to develop and test agroforestry technologies to increase the productivity and sustainability of farming systems with a view to improving the livelihood of the inhabitants of the Bundelkhand region. \$370 000 — 60 months.

**89-0052 Multipurpose-tree tissue culture (Africa)**

To enable the International Livestock Centre for Africa, Ethiopia, to develop in vitro systems for African *Acacia* and *Erythrina* species and to train technicians in in vitro technology. \$82 450 — 24 months.

**89-0058 Vegetable oil-protein system (Kenya) — Phase III**

For Egerton University, Njoro, to develop an integrated research and development program on the vegetable oil-protein system aimed at removing constraints to domestic oilseed production and to processing and using edible oils and protein cakes. \$698 400 — 36 months.

**89-0062 Asian Fish Health Network (Asia)**

To enable the Agriculture, Food and Nutrition Sciences Division, IDRC, Singapore, to continue the development of the Asian Fish Health Network and several proposed Centre-supported projects in fish health by providing the services of a scientific coordinator. \$124 700 — 18 months.

**89-0065 Marine larvae production (Latin America)**

To enable the Universidad del Norte — Centro Coquimbo, Chile, to contribute to training and exchange of experiences between researchers and technologists to develop the larvae production and the culture of

marine species, particularly filtrator molluscs. \$100 000 — 24 months.

**89-0066 Chachafruto (Colombia) — Phase II**

To enable the Corporación Nacional de Investigación y Fomento Forestal, Bogotá, to increase the productivity of alternative sources of vegetable protein in the Andes by promoting the cultivation of chachafruto (*Erythrina edulis*) within agrosilvopastoral systems. \$83 700 — 36 months.

**89-0067 Network coordinator (southern Africa) — Phase II**

To enable the Agriculture, Food and Nutrition Sciences Division, IDRC, Nairobi, to establish a network to provide support, effective liaison and coordination, and technical guidance to researchers. \$73 805 — 24 months.

**89-0068 Fuelwood plantations (Botswana) — Phase II**

For the Forestry Association of Botswana, Gaborone, to identify suitable tree species and reliable establishment and management practices to provide fuelwood and other benefits for rural communities and individuals in the semi-arid areas of eastern Botswana. \$334 100 — 36 months.

**89-0071 Agroforestry seed clearing house (the Philippines)**

For the University of the Philippines, Los Baños, to enable the Department of Agronomy to promote a continuous supply of good quality seed material to organizations (both governmental and nongovernmental) involved in uplands development activities, and to develop local capabilities in seed production and distribution technologies. \$16 290 — 15 months.

**89-0094 New lands water survey (Egypt)**

For the American University of Cairo to enable the Desert Development Center to document and evaluate available information on the technical, economic, and social aspects of water use in the reclaimed lands, with specific emphasis in South Tahrir. \$17 750 — 3 months.

**89-0109 Root-crops network (eastern and southern Africa) — Phase II**

For the International Institute of Tropical Agriculture, Nigeria, to strengthen the capacity of participating national programs to meet the research needs of their root-crops programs and those of the region through staff development and

other direct support. \$441 000 — 36 months.

**89-0113 Nitrogen-fixing trees (Central America) — Phase III**

For the Centro Agronómico Tropical de Investigación y Enseñanza, Costa Rica, to develop improved planting stock, cultural, and management techniques for leguminous tree species of the genera *Erythrina*, *Glyricidia*, and *Inga*, and to promote their incorporation in agroforestry systems on small-scale farms in the humid tropics of Central America. \$555 000 — 36 months.

**89-0114 Silvopastoral systems (Costa Rica) — Phase II**

For the Centro Agronómico Tropical de Investigación y Enseñanza, Turrialba, to develop sustainable agricultural production systems suitable for small-scale farmers in the Atlantic region of Costa Rica to increase land productivity and farm income. \$420 500 — 36 months.

**89-0115 Guinea pig-production systems (Peru) — Phase II\***

For the Instituto Nacional de Investigación Agraria y Agroindustrial, Lima, to develop appropriate technologies for improving the production of guinea pigs, an important source of protein for low-income families. \$321 000 — 36 months.

**89-0119 Rural food processing (Colombia) — Phase III**

For the Fundación para la Aplicación y Enseñanza de las Ciencias, Cali, to research and promote the establishment of small-scale food-processing plants in rural areas in North Cauca and Valle regions. \$375 400 — 36 months.

**89-0122 Farming systems (Ethiopia) — Phase II\***

For the Institute of Agricultural Research, Addis Ababa, to strengthen the capacity of its scientists, particularly in the Department of Agricultural Economics and Farming Systems Research, to diagnose and alleviate constraints faced by farmers by designing, carrying out, and extending on-farm and on-station research. \$225 200 — 36 months.

**89-0131 Banana postharvest technology (the Philippines)**

For the University of the Philippines, Los Baños, to enable the Postharvest Horticulture Training and Research Center to improve methods of transporting and handling Saba bananas intended for domestic markets with a view to reducing

traders' losses, eliminating price discounts to farmers, and encouraging farmers to increase production. \$81 600 — 36 months.

**89-0139 Tree-crop processing (Peru)**

To enable the Instituto Nacional de Investigación Agraria y Agroindustrial, Lima, to identify the most suitable varieties of peach palm for cultivation and processing in the Peruvian Amazon. \$199 100 — 36 months.

**89-0140 Fisheries training seminar (Latin America)**

For the Programa de Asistencia y Investigación Social, Chile, to provide a theoretical and practical background on the application of the concept of integrated coastal development to fieldworkers involved in extension activities for artisanal fisheries at the community level. \$78 560 — 12 months.

**89-0141 Fisheries development (Chile) — Phase II**

For the Universidad Católica de Chile, Talcahuano, to enable the Departamento de Biología y Tecnología del Mar to expand and complete the establishment of a pilot development program for artisanal fisheries within the integrated coastal-development thrust. \$125 320 — 18 months.

**89-0151 Agroforestry systems (Cameroon)**

To enable the International Council for Research in Agroforestry, Kenya, in collaboration with the Institute of Agronomic Research, Njombe, to develop ecologically and socioeconomically viable agroforestry technologies for increased and sustainable crop- and animal-production systems for small-scale farmers in the lowland humid tropics of Cameroon and West Africa. \$214 250 — 24 months.

**89-0153 Tsetse fly targets (Kenya)**

To enable the Kenya Trypanosomiasis Research Institute, Kikuyu, to field test delta methrin-impregnated, odour-baited targets for tsetse control. \$113 070 — 24 months.

**89-0157 Integrated coastal development (Latin America)**

To enable the Centro Peruano de Estudios para el Ecodesarrollo Marino, Lima, to coordinate and support research and development activities for artisanal fisheries undertaken as part of the integrated coastal-development thrust in Brazil,

Chile, Colombia, and Peru. \$74 950 — 9 months.

**89-0158 Fish parasites (Malaysia) — Phase III**

For the Universiti Pertanian Malaysia, Serdang, to enable the Faculty of Fisheries and Marine Sciences to study the mechanisms of host-parasite relationships, to develop models for prophylaxis and treatment of fish diseases, and to establish baseline data on fish viruses with a view to increasing the production of freshwater fish. \$210 000 — 36 months.

**89-0162 Latin American Banana Network**

To provide the International Network for the Improvement of Banana and Plantain, France, with a fund from which small grants can be made to individuals and institutions in Latin America and the Caribbean to stimulate new and increased levels of research on bananas and plantains. \$50 000 — 13 months.

**89-0166 Small-scale fish systems (Kenya)\***

To enable the University of Nairobi to improve the earnings of rural women fish traders by introducing them to improved methods of handling, marketing, and processing Nile perch (*Lates niloticus*) and omena (*Engraulicypris* sp.). \$201 500 — 36 months.

**89-0172 Sorghum and millet food-feed system (Kenya)**

For the University of Nairobi to promote the production of drought-resistant sorghum and millet cereals on arid and semi-arid lands by linking existing applied research, implementing research results, formulating policy, and encouraging additional research. \$189 000 — 36 months.

**89-0181 Rice farming systems (Bhutan) — Phase II\***

For the International Rice Research Institute, the Philippines, to develop the capability of Department of Agriculture staff at Thimphu, Bhutan, to undertake rice-based farming-systems research. \$418 490 — 45 months.

**89-0188 Duck feeding systems (Indonesia) — Phase II\***

For the University of Brawijaya, Malang, to enable the Faculty of Animal Husbandry to improve duck feeding systems and productivity using indigenous feeds. \$66 360 — 36 months.

**89-0189 Upland agriculture (the Philippines)**

For the Visayas State College of Agriculture, Baybay, to enable the Farming and Resource Management Institute to improve the productivity, income, and sustainability of farm households in the uplands of eastern Visayas. \$92 310 — 24 months.

**89-0191 Alternative production systems (Colombia) — Phase IV**

To enable the Fundación para la Aplicación y Enseñanza de las Ciencias, Cali, to complete and document the long-term trials in soil management and sustainable production that were begun in the previous phases and to consolidate its role as a rural university. \$243 000 — 36 months.

**89-0200 Sesame and finger millet biotechnology (India)\***

For Tamil Nadu Agricultural University, Coimbatore, to enable the School of Genetics to increase the yields and improve the quality of sesame (*Sesamum indicum*) and finger millet (*Eleusine coracana*) through cell- and tissue-culture techniques. \$168 410 — 36 months.

**89-0202 WAFSRN (West Africa) — Phase II**

For the Semi-Arid Food Grain Research and Development Project, Burkina Faso, to enable the West African Farming Systems Research Network (WAFSRN) to strengthen and support national programs through training, promoting dialogue among researchers, and improving access to information. \$551 035 — 36 months.

**89-0204 Fruit trees (Thailand)**

For Chiang Mai University to enable the Faculty of Agriculture to develop and promote management techniques for incorporating mango trees in intercropping systems for small farms in northern Thailand. \$149 580 — 36 months.

**89-0215 Small dams (Côte d'Ivoire)\***

For the Ministère de la recherche scientifique et de la culture, Abidjan, to enable the Institut des savanes, the Institut d'écologie tropicale, and the Centre ivoirien des recherches économiques et sociales to improve the production of microfisheries in small- and medium-sized reservoirs to offer more employment, revenues, and protein-rich foods to the rural and small-town populations in northern Côte d'Ivoire. \$355 670 — 36 months.

**89-0219 Fish genetics**

**(Thailand) — Phase III**  
For the Ministry of Agriculture and Cooperatives, Bangkok, to enable the National Aquaculture Genetics Institute to develop truly domesticated strains of tilapia (*Oreochromis* sp.), catfish (*Clarias* sp.), common carp (*Cyprinus carpio*), giant freshwater prawn (*Machrobrachium rosenbergii*), and seabass (*Lates calceifer*) for superior yields in artisanal aquaculture; to introduce these strains to Thai farmers; to train Thai researchers in relevant research methods; and to strengthen the Institute. \$247 935 — 36 months.

**89-0223 Groundnut shellers (Senegal)\***

For the Centre national de recherches agronomiques de Bambey to facilitate the production of adequate quantities of seeds of good quality by field-testing a groundnut sheller in the rural areas and studying its technical and socioeconomic aspects. \$55 300 — 36 months.

**89-0228 Bamboo mat board (India)**

For the Indian Plywood Industries Research Institute, Bangalore, to develop appropriate technologies for producing good-quality, low-priced bamboo mat boards to increase the income of bamboo mat workers (mostly tribal women) while reducing dependence on imported wood for plywood production. \$145 150 — 36 months.

**89-0231 Oilseed processing (Kenya)**

To enable Egerton University, Njoro, to promote maximum use of oilseeds by adapting, testing, and introducing suitable, small-scale oilseed-processing equipment and by developing a process for its effective incorporation in rural enterprises. \$193 200 — 36 months.

**89-0238 Food legumes (Burkina Faso) — Phase IV\***

For the Ministère de l'enseignement supérieur et de la recherche scientifique, Ouagadougou, to enable the Institut national d'études et de recherches agricoles to develop high-yielding, disease-resistant cowpea cultivars that are adaptable enough to produce well during the wet years and sustain minimal losses during the dry years in the semi-arid zones. \$275 915 — 36 months.

**89-0239 Fish nutrition (China)**

To enable Zhongshan University, Guangzhou, to develop practical diets

for use in the culture of grass carp in China, as well as elsewhere in developing countries in Asia, using readily available, low-cost agricultural by-products. \$172 500 — 36 months.

**89-0249 Soil fertility (Uganda)**

To enable Makerere University, Kampala, to gain a better understanding of the role of soil fauna in soil fertility so as to develop improved soil-management options for Uganda farmers. \$40 400 — 24 months.

**89-0253 Banana and plantain network — INIBAP (Global) — Phase VI**

To enable IDRC, Ottawa, to continue support for the establishment and operations of the International Network for the Improvement of Banana and Plantain (INIBAP). \$200 000 — 12 months.

**89-0259 Fish genetics (the Philippines) — Phase II**

To enable the Freshwater Aquaculture Center, Central Luzon State University, Nueva Ecija, to develop selection procedures suitable for small- to moderate-scale production of improved fish stock and to develop lines of tilapia with superior growth performance for distribution to farmers. \$115 000 — 36 months.

**89-0271 Soybean utilization (Nigeria-Ghana) — Phase II**

For the International Institute of Tropical Agriculture, Ibadan, to develop and encourage appropriate technologies for soybean use for rural and urban households and small-scale processing enterprises to stimulate increased production and benefit the population. \$403 200 — 36 months.

**89-0279 Local organizations support (West Africa)\***

For Development Innovations and Networks, Switzerland, to strengthen the ability of local organizations involved in rural development to meet the needs of their members and to improve the institutional environment in which they function. \$349 418 — 24 months.

**89-0292 Aflatoxin in maize (the Philippines) — Phase II\***

To enable the National Post Harvest Institute for Research and Extension, Manila, to determine the effectiveness of prescribed farm-level postproduction practices in controlling aflatoxin contamination and the acceptability and economic implications of such practices to farmers. \$170 300 — 34 months.

**89-0308 Bananas (the Philippines) — Phase III\***

For the Philippine Council for Agriculture and Resources Research and Development, Los Baños, to enable the University of the Philippines to work toward overcoming the biological and socioeconomic constraints to small-scale banana production and to exchange information, research results, and germ plasm with other members of the international community of banana researchers. \$242 220 — 36 months.

**89-0314 Mineralization and nutrient recycling (Costa Rica)\***

To enable the Asociación Bananera Nacional, San José, to better understand the process by which banana crop residues are broken down and their essential nutrients released for use by a new crop. Researchers will identify the microorganisms involved and the factors affecting their activity. \$146 570 — 36 months.

**89-0315 Inga (Peru) — Phase II**

To enable the Instituto Nacional de Investigación Agraria y Agroindustrial, Lima, to explore the potential of *Inga* tree species as components of agroforestry technologies for a range of soil types and climatic conditions in the humid tropics. \$100 000 — 12 months.

**89-0318 Integrated pest management (Egypt)\***

For the University of Alexandria to enable its faculty of agriculture in collaboration with the University of Assiut and the Ministry of Agriculture to develop and evaluate an integrated pest-management system for maize that would reduce pesticide use, decrease damage to health and the environment, and raise the income of maize farmers. \$210 410 — 48 months.

**89-0323 Biological pest management (India) — Phase III\***

To enable the University of Nagpur, Maharashtra, to develop commercial *in vitro* production of *Nosema locustae*, a biological agent for controlling grasshoppers and locusts, and appropriate management strategies. \$78 040 — 36 months.

**89-0333 On-farm testing (Ecuador) — Phase II\***

To enable the Fundación para el Desarrollo Agropecuario, Quito, to increase the production and productivity of small-scale farming systems for maize, beans, and wheat in Bolívar Province using research

results from institutions in the region. \$118 800 — 24 months.

**89-0342 National Aquaculture Network (Colombia)\***

To enable the Fondo Colombiano de Investigaciones Científicas y Proyectos Especiales Francisco José de Caldas, Bogotá, to contribute to freshwater and marine aquaculture development by reinforcing the national aquaculture network's efforts to coordinate the activities of the 40 institutions involved in aquaculture. \$50 000 — 12 months.

**89-0343 Mollusc culture (Indonesia) — Phase II\***

For the Central Research Institute for Fisheries, Jakarta, to enable the Research Institute for Coastal Aquaculture to increase shellfish production and marketability, thereby providing coastal peoples with increased possibilities for employment and income. \$54 030 — 24 months.

**89-0345 Biological control (China) — Phase II\***

To enable the Chinese Academy of Agricultural Sciences, Beijing, to perfect and reduce the cost of commercial production of various species of *Trichogramma*, a parasite that attacks the eggs of insect pests, and to extend the area of application of this form of biological pest control. \$55 500 — 36 months.

**89-1016 Acacia root symbiosis (Tunisia–Canada) — Phase II**

To enable the Institut national de recherches forestières, Tunis, and Laval University, Quebec, to increase the productivity of *Acacia cyanophylla* through rhizobium, endomycorrhizal fungi, and clonal selection. \$222 550 — 36 months.

**89-1021 Aquaculture Genetics Network (Asia–Canada) — Phase II**

For Dalhousie University, Nova Scotia, to coordinate the Aquaculture Genetics Network in Asia and to develop new measurement procedures, genetic models, selection protocols, and basic biological knowledge in support of the network. \$482 800 — 36 months.

**89-1024 *Trifolium* rhizobia (sub-Saharan Africa–Canada) — Phase II**

For the International Livestock Centre for Africa, Ethiopia, and the University of British Columbia, Vancouver, to develop appropriate *Rhizobium* inoculants for perennial African clovers. \$190 700 — 36 months.

**89-1036 Passive crop dryer (Indonesia–Canada)**

To enable Bogor Agricultural University and the University of Moncton, New Brunswick, to provide farmers' groups with an efficient, passive drying system to store their harvest or to produce dried products for market. \$232 600 — 24 months.

## Communications<sup>3</sup>

**89-0003 Bakery improvements dissemination (Chile)**

To enable the Federación Gremial Chilena de Industriales Panaderos, Santiago, to promote the dissemination and transfer of improved bakery technologies. \$30 122 — 20 months.

**89-0004 Training modules in community participation (Costa Rica)**

To enable the Fundación Tecnológica de Costa Rica, Cartago, to collect operationally useful information on the social and management aspects of community participation and incorporate it into a set of training video modules for use by nongovernmental organizations and communities involved in technology-introduction projects in Latin America. \$90 710 — 12 months.

**89-0006 Promotion of beekeeping (Malaysia)**

To enable the Universiti Pertanian Malaysia, Serdang, to disseminate the results of the Universiti-IDRC research projects on beekeeping to poor rural communities. \$100 695 — 36 months.

**89-0063 Improving communication between research institutes and extension services (Africa)**

To enable the African Association of Science Editors, Kenya, to conduct a series of training workshops for publication officers and editors from research institutions and for extension workers in eastern, southern, and western Africa on effective communication of research results to users and beneficiaries. \$153 495 — 24 months.

**89-0064 Summative evaluation of *Prescription for Health* (the Philippines)**

To enable the Kabalikat ng Pamilyang Pilipino Foundation, Makati, to formulate recommendations for the development,

distribution, and use of a health-social promotional film based on the Centre's experience with the film *Prescription for Health*. \$22 408 — 6 months.

**89-0092 Directory of scholarly publishers (Latin America)**

To enable the Centro Regional para el Fomento del Libro en América Latina y el Caribe, Colombia, to help increase cooperation, exchange, and links among the scholarly publishers of the region; to promote scholarly production at the higher education centres of the region in view of the new possibilities opened by the Asociación de Editoriales Universitarias de América Latina y el Caribe; and to stimulate further dissemination and use of this production both within and outside the region. \$19 520 — 12 months.

**89-0093 Latin American scholarly coedition program**

To enable the Centro Regional para el Fomento del Libro en América Latina y el Caribe (CERLALC), Colombia, to sponsor the launching of a coedition program for the production, dissemination, and distribution of scholarly texts, books, and manuals between CERLALC and the Asociación de Editoriales Universitarias de América Latina y el Caribe that will serve as a model for future endeavours; to stimulate intellectual production among the academic staff in the higher education centres of the region; and to identify texts, books, and manuals with potential for use in higher education in the region. \$19 337 — 15 months.

**89-0108 Women's radio (the Philippines)**

For the University of the Philippines, Los Baños, to enable the Institute of Development Communication, College of Agriculture, to train 20 women in development broadcasting activities and evaluate the impact of such activities on their respective villages. \$43 957 — 24 months.

**89-0110 "North-South" television series (Canada) — Phase II**

To enable Metavidea Associates Inc., Quebec, to continue producing the successful television series "North-South" with IDRC as the major sponsor. \$217 270 — 12 months.

**89-0133 Promotion of jab-seeder (Thailand)**

To enable the Ministry of Agriculture and Cooperatives, Bangkok, in collaboration with the Asian Institute of Technology (AIT), to introduce

<sup>3</sup> Projects funded jointly with another division are listed under "Multidivisional."



and promote the use and fabrication of the AIT-IDRC soybean jab-seeder by farmers, farm-machinery manufacturers, and agricultural extension staff in northeastern Thailand. \$49 120 — 12 months.

**89-0134 Participatory development communication (the Philippines)**

For Silliman University, Dumaguete City, to enable the School of Communication to strengthen the Silliman University Research Action Program in the Uplands through systematic planning, implementation, and evaluation of development communication activities. \$47 190 — 36 months.

**89-0164 Communication and technology transfer (Latin America)**

To enable the Centro Internacional de Agricultura Tropical, Colombia, to improve the transfer of agricultural research results and technologies to agricultural producers, particularly low-resource farmers, and thus increase their productivity and income and contribute to economic development. \$16 543 — 12 months.

**89-0165 STD and AIDS prevention for adolescents (Colombia)**

To enable the Comité Regional de Educación Sexual para América Latina y el Caribe, Bogotá, to produce an educational video aimed at creating awareness of the need to prevent sexually transmitted diseases (STD) and AIDS with the participation of the target adolescent population. \$13 020 — 6 months.

**89-0208 Traditional media (Malaysia-India)**

To enable the Asian Mass Communication Research and Information Centre, Singapore, to complete research into the efficacy of integrating traditional media and mass media in communicating environment-related messages from governmental and nongovernmental organizations. \$39 650 — 24 months.

**89-0214 Radio-program evaluation (Peru)**

To enable the Asociación de Comunicadores Sociales, Lima, to evaluate the radio program "Nuestra Vida" (Our Life) addressed primarily to low-income women, so as to determine how it is perceived and used by the intended audience after 5 years of existence. \$6 012 — 6 months.

**89-0237 Dissemination of research results (Togo)**

To enable the Association togolaise de la recherche scientifique, Lomé, to make research institutions more aware of their potential role in the transfer of scientific and technical knowledge and to improve communication between the institutions and their users—beneficiaries. \$29 936 — 6 months.

**89-0250 Science popularization (Nepal) — Phase II\***

To enable the Royal Nepal Academy of Science and Technology, Kathmandu, to help isolated mountain communities become more aware of, and thereby more likely to benefit from, the application of science and technology through the use of communications tools developed to suit the communities' particular needs. \$120 072 — 24 months.

**89-0282 Audience research — Channel 11 (Thailand)\***

For the Centre for Educational Technology, Bangkok, to carry out audience research among viewers of Thailand's Channel 11 to develop a viewers' profile, to evaluate the effectiveness and relevance of current educational programming, and to identify the information needs and information-seeking behaviour of viewers. \$75 846 — 36 months.

**89-0283 Community-based evaluation of water quality in Kibwezi (Kenya)\***

For the African Medical and Research Foundation (AMREF), Nairobi, to encourage the use of qualitative community-based evaluation techniques in water-supply and sanitation projects by disseminating information on the design, adaptation, and implementation of the World Health Organization's Minimum Evaluation Procedures based on the experience of AMREF's Kibwezi water-supply project. \$17 038 — 12 months.

**89-0284 Science and technology features service (Kenya) — Phase III\***

For the Africa Church Information Service, Nairobi, to allow the All Africa Press Services to continue and to improve its science and technology feature service in both English and vernacular languages for a further 2 years. \$42 853 — 24 months.

**89-1045 Communication strategies in applied scientific and technical research (Thailand-Canada)\***

To enable Mahidol University, Bangkok, and McGill University,

Quebec, to examine the communications strategies of research and development institutions with a view to improving linkages between such institutions and the users of technical research. \$41 586 — 12 months.

**Earth and Engineering Sciences<sup>4</sup>**

**89-0053 Tar sands (Nigeria)**

For the University of Benin, Benin City, to enable its Department of Civil Engineering to develop a technology for effectively using tar sands to produce asphaltic concrete for constructing and rehabilitating roads. \$205 400 — 36 months.

**89-0074 Estuarine waters (Senegal)\***

For the Université Cheikh Anta Diop, Dakar, to enable the Department of Geology to acquire a better understanding of the hydrochemistry of the estuary of the Senegal River and to locate the most environmentally disturbed zones between Guiers Lake and the mouth of the river to propose water-management solutions for that portion of the river. \$23 989 — 18 months.

**89-0075 Inedible vegetable oils (Burkina Faso)**

For the Centre national de la recherche scientifique et technologique, Ouagadougou, to enable the Institut burkinabé de l'énergie to propose efficient techniques to add value, in a decentralized fashion, to inedible vegetable oils to meet the production needs of maintenance products. \$32 155 — 18 months.

**89-0280 Control of manual lathes with microprocessor (Thailand)**

For Chiang Mai University to develop a low-cost system for equipping existing manual lathes with numerical control, thus enhancing the production capability of small enterprises and enabling them to support an expanding industry. \$110 400 — 24 months.

**89-0287 Low-cost housing (the Philippines)**

To enable the Capiz Research, Extension and Development Consortium, Roxas City, to carry out, in collaboration with the University of the Philippines and the National University of Singapore, research activities into the construction of

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socially acceptable and affordable typhoon-resistant, low-cost houses in Capiz Province with locally available materials. The community will participate in the planning, design, construction, and financing of the housing. \$129 930 — 24 months.

**89-0293 Mangrove salt (Guinea)\***  
To enable the Direction nationale de la recherche scientifique, Conakry, to improve the traditional salt-extraction technique used in Lower Guinea by farmers for whom salt production constitutes an essential off-season economic activity. \$24 033 — 18 months.

**89-1006 Dobby exploitation strategy (Global-Canada)**  
To enable James F. Hickling Management Consultants Ltd, Ontario, to select two or three countries that offer the best prospect for equipment sales in the immediate future from the 10 already identified as potential markets for the Dobby technology; and to develop detailed marketing strategies for each, including the methods to be used and the terms and conditions of the arrangements. \$176 550 — 8 months.

**89-1009 Rif slope (Morocco-Canada)**  
For the Centre national d'études routière, Rabat, and Laval University, Quebec, to permit the École Hassania des travaux public and the Department of Civil Engineering to make a comprehensive study of the instability phenomenon in general, and of land slides in particular in the Rif area. \$356 853 — 42 months.

**89-1011 Cyclone-resistant housing (Caribbean-Canada)\***  
For the University of the West Indies, Trinidad, and the University of Waterloo, Ontario, to improve cyclone resistance in lower-income housing built with community participation. \$392 370 — 30 months.

**89-1017 Quaternary hydrogeology (Bénin-Canada) — Phase II\***  
For the Université nationale du Bénin, Cotonou; the Université de Dakar, Senegal; and Laval University, Quebec, to gain a better knowledge of the hydrodynamic and hydrochemical conditions of aquifer systems in the coastal sedimentary basin of South Bénin for their optimal development. \$375 105 — 36 months.

**89-1019 Improved processing techniques for low-grade jute and cuttings (Bangladesh-Canada)**  
To enable the International Jute

Organization, Dhaka, and Laval University, Quebec, to develop improved processing techniques to upgrade the fibres of low-grade jute and cuttings to maximize their commercial use. \$232 367 — 30 months.

**89-1022 Industrial interface-research utilization program (Global-Canada)**  
For the Earth and Engineering Sciences Division, IDRC, Ottawa, to provide practical on-the-job training to research managers from developing countries and industrial research organizations to which the Technology for Local Enterprise Program has an expressed interest. \$199 000 — 18 months.

**89-1025 Water-resources management model for Metro Manila (the Philippines-Canada)**  
To enable the National Hydraulic Research Center, Quezon City, and McGill University, Quebec, to develop a water-resources management model for Metro Manila and its environs that accounts for the conjunctive use of both surface water and groundwater resources. \$227 700 — 36 months.

**89-1027 Plant fibre-reinforced roofing tiles (Côte d'Ivoire-Canada)\***  
For the École nationale supérieure des travaux publics, Yamoussoukro, and the National Research Council, Ontario, to enable the production of low-cost plant fibre tiles so that the country can reduce its imports of roofing components to be used in building houses. \$245 400 — 36 months.

**89-1028 Coal workings (India-Canada)\***  
For the Mining, Geological and Metallurgical Institute of India, Calcutta, and Laval University, Quebec, to establish a geophysical procedure for delineating uncharted abandoned collieries. \$325 500 — 36 months.

**89-1029 Aquifer development (Mexico-Canada) — Phase II**  
For the Universidad Nacional Autónoma de México (UNAM), Mexico City, and the University of Waterloo, Ontario, to forecast the response of the aquifer system in the Valley of Mexico to the stress of continued groundwater extraction, with special emphasis on evaluating the risk of aquifer contamination, and to strengthen the research group at the Institute for Geophysics at UNAM. \$261 000 — 36 months.

**89-1032 Underground mine support (Zimbabwe-Canada)\***  
To enable the University of Zimbabwe, Harare, and the University of Toronto, Ontario, to improve miners' working conditions by reducing the safety hazard due to collapsing ground in small mines. \$239 400 — 36 months.

**89-1035 Electroplating effluents (the Philippines-Canada)\***  
To enable the Industrial Technology Development Institute, Manila, and the Saskatchewan Research Council, Saskatoon, to develop technology to solve the problem of chromium contamination from the electroplating industry. \$237 000 — 24 months.

**89-1039 Processing cashew-nut shell oil (Mozambique-Canada)\***  
For the Universidade Eduardo Mondlane, Maputo, and the University of Western Ontario, London, to develop a process to transform the raw cashew-nut shell liquid obtained from cashew treatment plants into chemical products useful for the Mozambican market. \$240 600 — 30 months.

**89-1043 Foundry sand (Latin America-Canada)\***  
To enable the Universidad Mayor de San Andrés, Bolivia; the Universidad Nacional de Colombia; the Escuela Superior Politécnica de Litoral, Ecuador; and the Collège d'enseignement général et professionnel de Trois-Rivières, Quebec, to develop molding-sand technology for small- to medium-scale foundries to improve productivity and casting quality. \$239 000 — 36 months.

## Fellowships and Awards<sup>5</sup>

**89-0001 The Hague Academy of International Law scholarships (Global)**  
For the Hague Academy of International Law, the Netherlands, to train young legal scholars from developing countries in several aspects of international law; and to offer Canadian support for the Academy's training programs for Third World legal practitioners and researchers. \$30 000 — 12 months.

**89-0009 Women's studies training (Thailand)**  
For Chiang Mai University to enable

<sup>5</sup> Projects funded jointly with another division are listed under "Multidivisional."

the Faculty of Social Sciences to help a cross-section of people involved in development and research on programs and policy on women's issues in various governmental and nongovernmental institutions throughout Thailand to strengthen their ability to prepare, analyze, and present research information in a conceptually and methodologically accurate way. \$20 038 — 12 months.

**89-0010 University training and use of research by local governments (Colombia)**  
For the Pontificia Universidad Javeriana, Bogotá, to enable the Facultad de Estudios Interdisciplinarios to train a group of local government officials in research utilization through analysis of problems faced in their special area of work. \$48 600 — 24 months.

**89-0046 Research management training (Southeast Asia)**  
For the Southeast Asian Regional Center for Graduate Study and Research in Agriculture, the Philippines, to enable the Research Management Center, in collaboration with the University of the Philippines at Los Baños, to help develop a cadre of research managers proficient not only in the techniques of good research but also in managing a research institution. \$157 555 — 30 months.

**89-0072 Training seminar: education, employment, and work (Africa)**  
To enable the International Institute for Educational Planning, France, to enable 13 key researchers and policy advisors to participate in an intensive course on the linkages between education, work, and productivity in eastern and southern Africa. \$25 000 — 5 months.

**89-0083 Library automation (Zimbabwe)**  
To enable the University of Zimbabwe, Harare, to facilitate resource sharing in the region by providing a series of courses to be developed in the field of information sciences, starting with computerization of library services. \$69 000 — 6 months.

**89-0085 Models for native education in Latin America — Phase II**  
To enable the Saskatchewan Indian Federated College, Canada, to provide indigenous communities with training in research management and administration to enhance the formal knowledge-base relevant to the

development and goals of these distinct societies. \$98 780 — 10 months.

**89-0143 Human resources development in Latin America**  
To enable the Facultad Latinoamericana de Ciencias Sociales, Chile, to study current research-training programs in Brazil, Chile, Colombia, and Mexico that are aimed at strengthening indigenous institutional training capacity and to foster local efforts to establish a regional exchange of researchers. \$61 995 — 15 months.

**89-0144 Design of a national policy for doctoral programs (Colombia)**  
To enable the Universidad Nacional de Colombia, Bogotá, to prepare the necessary elements to formulate a national policy for establishing and evaluating doctoral programs in higher-education institutions. \$50 000 — 6 months.

**89-0145 Research methods course for on-farm animal-feed resources (eastern and southern Africa) — Phase III**  
To enable the International Livestock Centre for Africa, Ethiopia, to complement and strengthen the research and network activities of the Pasture Network for Eastern and Southern Africa by training 20 senior biological scientists in on-farm experimental-research design. \$50 700 — 6 months.

**89-0203 Credit institutions for scientific training in Latin America**  
To enable the Asociación Panamericana de Instituciones de Crédito Educativo, Colombia, to identify the types of loans granted for postgraduate study in selected Latin American countries, to analyze them in relation to their efficiency and results, and to compare the various models encountered. \$59 520 — 12 months.

**89-0207 Training of university senior administrators in Central America and the Spanish-speaking Caribbean**  
To enable the Fundación Interamericana de Costa Rica, San José, to help policymakers and administrators in higher education (vice-presidents, deans, and department heads, for example) to establish a continuous process of critical analysis and reflection on the direction of higher education in their countries. \$53 050 — 12 months.

**89-0255 Documentary information retrieval — MINISIS (Cameroon)**  
To enable the National Assembly of Cameroon, Yaoundé, to acquire a good knowledge of the MINISIS program, to manage its documentary system efficiently, and to serve as a training place for professionals in need of such services. \$35 550 — 12 months.

**89-0256 Use of microcomputers in education research (Kenya)**  
To enable Egerton University, Njoro, to train senior researchers in education in the use of microcomputers in education research, data analysis, and management. \$56 250 — 6 months.

**89-0257 Agroforestry experimental-data handling and management: training course (Central, eastern, and southern Africa)\***  
To enable the International Council for Research in Agroforestry (ICRAF), Kenya, to train up to 15 field technicians involved in ICRAF- and IDRC-supported agroforestry projects in handling and management of experimental data. \$53 000 — 6 months.

**89-0258 Marketing information and documentation sciences (West and Central Africa and the Maghreb)\***  
To enable the Centre national de documentation, Morocco, to train 15 French-speaking instructors in the techniques of marketing and promoting documentation and information services with a view to increasing the use of documentary products in these regions. \$51 090 — 24 months.

**89-0263 Project development and management in the social sciences (West and Central Africa)\***  
For the Université Marien Ngouabi, Congo, and the Université d'Abidjan, Côte d'Ivoire, to enable the Institut supérieur de gestion and the Institut de géographie tropicale to carry out a training program on the development, analysis, and management of research and development projects in social sciences. \$33 542 — 6 months.

**89-0286 Identification of research priorities and development of research proposals (Middle East)\***  
For Suez Canal University, Egypt, to enable the Faculty of Medicine to help participants acquire the skills needed to develop methodologically sound plans for studying priority

questions on health research.  
\$73 000 — 6 months.

**89-0300 Workshop on the use of SPSS software package (West and Central Africa)\***

To enable the Regional Institute for Population Studies, Ghana, in collaboration with the Ghana Institute for Management and Public Administration to enhance the skills of demographers, sociologists, and statisticians from English-speaking countries by training 16 of them in the use of the Statistical Package for the Social Sciences (SPSS).  
\$42 015 — 6 months.

**89-0307 Internship program (Global) — Phase III**

To enable the Fellowships and Awards Division, IDRC, to provide training opportunities to candidates from institutions or projects in which IDRC has an expressed commitment.  
\$150 000 — 24 months.

**89-1003 Research management workshop (Global-Canada) — Phase II**

For the University of Manitoba, Winnipeg, to enable the Department of Agricultural Economics and Farm Management to provide an overview of the knowledge and skills required for assuming research-management roles to a group of developing-country students who are completing their education in Canada (primarily master's and doctoral degrees) in agriculture and related resource sectors. \$80 270 — 6 months.

**89-1046 Research management workshop (Global-Canada) — Phase III**

For the University of Manitoba, Winnipeg, to enable the Department of Agricultural Economics and Farm Management to provide an 18-day training course in the application of management principles to agricultural research for trainees supported by the Fellowships and Awards and Agriculture, Food and Nutrition Sciences divisions from developing countries who are completing master's and doctoral degrees in Canada. \$113 276 — 6 months.

## Health Sciences<sup>6</sup>

**89-0022 Sexually transmitted diseases (Senegal)**

For the Université Cheikh Anta Diop, Dakar, to enable the Institut des sciences et de l'environnement to

study the prevalence of sexually transmitted diseases in their social, cultural, and behavioural context.  
\$114 960 — 18 months.

**89-0029 Opisthorchiasis (Thailand)**

For the Southeast Asian Ministers of Education Organization's Tropical Medicine and Public Health Project, Bangkok, to enable the Department of Clinical Tropical Medicine of Mahidol University to determine the importance of opisthorchiasis as a public-health problem and the effect of treatment on morbidity to assist decision-making regarding opisthorchiasis control. \$218 260 — 30 months.

**89-0041 Anticonceptive technology (India) — Phase V\***

For the National Institute of Immunology, New Delhi, to develop an anticonceptive vaccine that would evoke sufficient antibody levels against human chorionic gonadotropin hormone in females to prevent pregnancy and that would be reversible and free of side effects.  
\$698 150 — 36 months.

**89-0081 Community control of malaria (Thailand)**

For Mahidol University, Bangkok, to enable the Faculty of Tropical Medicine to assess the Village Malaria Collaborator program in all five malarial regions in the country.  
\$90 180 — 24 months.

**89-0084 Revision and testing of material for the health systems research workshop (Global)**

To enable the Universidad de San Carlos de Guatemala; the University of Freetown, Sierra Leone; and Makerere University, Uganda, to encourage, facilitate, and coordinate the processes that will speed implementation of health systems research in developing countries.  
\$231 860 — 18 months.

**89-0088 Analysis of health and nutrition problems (Senegal)**

To enable the Centre d'enseignement supérieur en soins infirmiers, Dakar, to explore the factors influencing the health and nutrition status of preschool children to formulate recommendations to improve child health in the rural areas. \$14 150 — 12 months.

**89-0089 Measles immunization (Sudan)**

For the University of Khartoum to enable the Department of Pediatrics to compare antibody response, protective efficacy, and cost-benefit

of alternative measles vaccines (high dose Edmonston-Zagreb or high dose Connaught) administered to infants at 5 months of age with that of the conventional measles vaccine and schedule (standard dose Schwarz administered at 9 months of age) in the Sudan. \$224 870 — 24 months.

**89-0090 Leishmaniasis (Mexico) — Phase II**

For the Universidad Autónoma de Yucatan, Mérida, to enable the Centro de Investigaciones Regionales to identify risk factors associated with the acquisition of cutaneous leishmaniasis infection or disease in the state of Campeche so as to develop preventive and control measures. \$110 750 — 30 months.

**89-0100 Hepatitis B immunization strategy (Korea-Malaysia-the Philippines)**

For the Universiti Sains Malaysia, Minden, in collaboration with the Philippines General Hospital, Manila, and the Kyungpook National University, Taegu, to determine the protective efficacy of hepatitis B virus immunization when integrated into the differing regimes of national Expanded Programs on Immunization to evolve a simplified vaccine-delivery system suited to the individual countries. \$452 630 — 36 months.

**89-0118 Pediatric AIDS (Uganda) — Phase II**

For Makerere University, Kampala, to enable the Department of Paediatrics and Child Health to examine the epidemiology of the perinatal transmission of HIV infection by continuing to follow mother-child pairs through a further 2-year period, thereby producing 4 years of continuous data.  
\$105 080 — 24 months.

**89-0123 Iodine deficiency disorders (Kenya)\***

For the Ministry of Health, Nairobi, to enable the National Council for Control of Iodine Deficiency Disorders to conduct a national survey to determine the severity and extent of iodine-deficiency disorders and the consumption of iodized salt.  
\$199 982 — 25 months.

**89-0124 Chloroquine-resistant malaria (Guinea)**

For the Ministère de la santé et de la population, Conakry, to enable the Service national de contrôle du paludisme of the Service de prévention to study the prevalence of malaria, the distribution of chloroquine- and quinine-resistant

<sup>6</sup> Projects funded jointly with another division are listed under "Multidivisional."

*Plasmodium falciparum* in Lower Guinea, and the availability and use of antimalarial drugs by the population. \$107 470 — 24 months.

**89-0125 Health sciences education rehabilitation (Uganda)**  
For Makerere University, Kampala, to rehabilitate the faculties of health sciences through specific long-term institutional support and to focus the educational programs of the Faculty of Medicine upon the health and well-being of rural communities as well as upon the urban poor. \$1 055 500 — 48 months.

**89-0136 Botanical molluscicide (Endod) toxicology (Global)**  
For Carleton University, Canada, to enable the Department of Biology to determine whether the plant molluscicide *Phytolacca dodecandra* (Endod) is ecologically and toxicologically safe for use in and by communities to control aquatic snails, the intermediate hosts of human schistosomiasis. \$126 645 — 12 months.

**89-0146 Vector blood meals (Peru)**  
For the Universidad Peruana Cayetano Heredia, Lima, to enable the Instituto de Medicina Tropical Alexander von Humbolt to determine the source of blood meals and presence of leishmania infection in *Lutzomyia* spp. sandflies found in and around homes in the Huayllacallan Valley. \$53 831 — 18 months.

**89-0148 Community ORT program (Nicaragua)\***  
For the Universidad Nacional Autónoma de Nicaragua, León, to enable the Facultad de Ciencias Médicas to determine the effectiveness of a community-based oral rehydration therapy (ORT) program on mothers' knowledge and attitudes regarding acute diarrheal disease on the increased use of oral rehydration and on the reduction of infant death from diarrhea. \$76 466 — 24 months.

**89-0149 Onchocerciasis control (Côte d'Ivoire)**  
To enable the Institut Pierre Richet, Bouaké, to determine the impact of Ivermectine as a means of onchocerciasis control on the transmission of the disease in a forested area with small rivers. \$145 080 — 24 months.

**89-0150 Acute respiratory infections (Nepal)\***  
For Tribhuvan University, Kathmandu, to enable the Institute of Medicine to reduce morbidity and

mortality from acute respiratory infections in 0- to 5-year-old children by developing of a treatment plan based on identification of the principal causative agents, the sensitivity pattern of these bacteria to antimicrobials, and child risk factors. \$103 630 — 24 months.

**89-0156 Insecticide resistance detection (Cuba)**  
To enable the Instituto de Medicina Tropical "Pedro Kouri," Habana, to field test a simple, rapid filter-paper test to detect organophosphate resistance in mosquitos and to determine whether it is as effective as the standard World Health Organization-bioassay test. \$25 500 — 18 months.

**89-0159 Determinants of contraceptive use and effectiveness (China)**  
To enable the Nanjing College for Family Planning Administrators to determine the level and identify the determinants of contraceptive use and effectiveness, with particular focus on the failure rate in Yangzhou City, as a basis for formulating an effective intervention design to reduce contraceptive failure and the need for abortion. \$77 190 — 12 months.

**89-0161 Household water disinfection (Thailand)**  
To enable King Mongkut's Institute of Technology, Bangkok, to develop a low-cost and affordable device for disinfecting shallow wells in rural villages. \$46 820 — 24 months.

**89-0169 Slow sand filtration (Egypt)**  
For El-Mansoura University to enable the Civil Engineering Department to develop a simple, cost-effective, easy to operate, and easy to maintain technology for water treatment in rural areas. \$112 920 — 30 months.

**89-0170 Breastfeeding practices and working mothers (Indonesia)\***  
For the Universitas Indonesia, Jakarta, to enable the Faculty of Medicine to examine the problems associated with breastfeeding among working mothers with the aim of formulating solutions for its promotion. \$58 354 — 21 months.

**89-0171 Periurban sanitation (Lesotho)**  
For the Ministry of Interior, Maseru, to enable the Urban Sanitation Improvement Team to field test the "minitanker" equipment for emptying pit latrines to examine the specifications required for the

practical operation and maintenance of an affordable service for emptying pit latrines, and to disseminate the findings to other departments and organizations working to promote nonwaterborne sanitation. \$9 820 — 12 months.

**89-0173 Educational strategy to reduce contraceptive failure in urban China**  
For the Lu Wan District Maternity and Child Health Hospital, Shanghai, to enable the Department of Obstetrics and Gynecology to improve the choice and use of contraception by means of a focused health-education program at study sites, so as to reduce the incidence of unwanted pregnancy after the first child and the need for induced abortion. \$224 990 — 36 months.

**89-0180 Roughing filters (Colombia)**  
To enable the Universidad del Valle, Cali, to optimize the hydraulic cleaning of roughing filters and develop guidelines for their operation and maintenance as pretreatment units in rural and periurban systems supplying surface water. \$67 580 — 24 months.

**89-0182 Household health-care use and expenditure in rural Kenya**  
For the African Medical and Research Foundation, Nairobi, to examine the pattern and cost of health-service use at the household level and to determine what effect introducing user fees might have on access to modern health-care services by, especially, women and children. \$60 900 — 24 months.

**89-0184 University partnership in essential health research (Global)**  
For McMaster University, Canada, to improve the relevance of health professionals' education by enhancing the ability of graduates to identify and solve the problems of communities in which they serve. \$125 000 — 18 months.

**89-0195 Socio-cultural factors influencing contraceptive behaviour (Indonesia)**  
For the Yayasan Pelayanan Dan Pengembangan Masyarakat Desa, Malang, to examine the dynamics of decision-making concerning contraceptive use, and how certain factors influence the adoption and continuation of contraceptive use in eight villages of East Java. \$50 040 — 12 months.

**89-0205 Health-system research in Thatta district (Pakistan) — Phase II\***

For the Aga Khan University, Karachi, to enable the Department of Community Health Sciences in the Faculty of Health Sciences to strengthen the health services in Sindh Province by developing and testing innovative health-services planning, management, and delivery processes, with an emphasis on maternal and child health services. \$436 950 — 36 months.

**89-0209 Rainwater catchment (Bangladesh)\***

To enable the Bangladesh Agricultural University, Mymensingh, to develop and demonstrate an appropriate rainwater-catchment system for rural areas where tubewells cannot readily be used because of the cost of construction and the quality of the water (salinity or iron content). \$136 510 — 24 months.

**89-0211 Gravel water-filtration systems (Jordan)**

To enable the Royal Scientific Society, Amman, to investigate the feasibility of using rock or gravel filters (an inexpensive process) in upgrading the quality of effluent from waste-stabilization ponds to reduce fecal coliform and algal concentrations to allowable levels for use in drip irrigation by low-income rural communities. \$102 000 — 30 months.

**89-0216 Community prevention of malaria (Tanzania)\***

For the National Institute for Medical Research, Muheza, to enable the Amani Medical Research Centre to determine and compare, in community trials, the performance of permethrin-impregnated bed nets versus bed curtains on the reduction of clinical, parasitological, and entomological malarial indices. \$152 960 — 36 months.

**89-0226 AIDS counselling and education (Dominican Republic)**

To enable the Instituto de Sexualidad Humana, Santo Domingo, to compare the effectiveness of individual versus group therapy, including counselling, emotional support, and education, in modifying high-risk sexual behaviour in seropositive individuals. \$114 556 — 24 months.

**89-0227 Iodine deficiency control (India)\***

For Shreemati Nathibai Damodar Thackersey Women's University, Bombay, to enable the Home Science

College to provide baseline data about the iodine status of an "at risk" population in areas not documented as endemic goitre areas, for use by the Department of Public Health of the Government of Maharashtra. \$37 683 — 24 months.

**89-0233 Infant feeding and diarrheal disease (Kenya)\***

For the Kenya Medical Research Institute, Nairobi, to enable the Unit of Applied Human Nutrition in the Department of Food Technology and Nutrition at the University of Nairobi to find means of preventing growth faltering caused by nutrient loss and increased catabolism due to diarrhea. \$40 156 — 27 months.

**89-0235 Tropical knapsack sprayer (Malaysia)\***

To enable the Malaysian Agricultural Research and Development Institute, Kuala Lumpur, to develop a hand-operated knapsack pesticide sprayer suitable for local manufacture that would be safer, more efficient, and more affordable than the model currently in use in developing countries. \$94 700 — 24 months.

**89-0242 Women's status and fertility in the Gusii community (Kenya)**

For the University of Nairobi to enable the Institute of African Studies to investigate cultural and social issues related to women's status and the adoption of fertility regulation. \$2 904 — 8 months.

**89-0243 Food security and nutritional status of households (Congo)\***

To enable the Organisation de recherche scientifique et technique d'outre-mer, Brazzaville, to identify nutritionally vulnerable groups and determine mechanisms to ensure the food security of these and other groups. \$104 000 — 24 months.

**89-0244 Occupational health and safety in the cotton industry (Uganda)\***

For the Ministry of Labour, Kampala, to enable the Factories Inspectorate to identify and evaluate hazards to the safety and health of workers in the cotton industry and to develop measures for reducing them. \$195 700 — 24 months.

**89-0246 Paradigm of family medicine in less-industrialized countries (Global)**

For the College of Family Physicians of Canada, Ontario, to enable World Organization of National Colleges and Associations of Family Medicine

to explore the applicability of the family-medicine paradigm in the developing world and to identify similarities and differences in needs and resources in family medicine around the world. \$74 500 — 30 months.

**89-0247 High altitude and mining (Peru)**

To enable the Universidad Peruana Cayetano Heredia, Lima, to assess the health status of the Andean population, with particular interest in Andean miners, and with emphasis on diseases that are or may be related to physiological disturbances associated with high altitudes. \$146 445 — 18 months.

**89-0251 Biomedical and sociocultural dimensions of sickle-cell anemia (Nigeria)\***

For Obafemi Awolowo University Teaching Hospital, Ile Ife, to describe the natural history of sickle-cell anemia (SCA) and its genetic trait in a selected area of Nigeria, to collect information on the cognitive dimensions and cultural practices of parents of children with SCA, and to develop a health-education package and health-care guidelines for patients and families afflicted by SCA. \$122 920 — 60 months.

**89-0270 Ecological, social, and health assessment (Mexico)\***

For the Universidad Autónoma de Yucatán, Mérida, to enable the Centro de Investigaciones Regionales "Hideyo Noguchi," in collaboration with the Centro de Investigaciones y de Estudios Avanzados del Instituto Politécnico Nacional, to improve the well-being of a Mayan community through information generated with the active involvement of the people themselves. \$50 000 — 8 months.

**89-0290 Ecology of leishmaniasis infection (Jordan)\***

For the University of Jordan, Amman, to study the prevalence and community risk factors (ecology) of cutaneous leishmaniasis so that appropriate preventive and control measures can be proposed. \$146 600 — 36 months.

**89-0296 Proposed Canadian university consortium for health in development (Global)**

To enable McMaster University, Canada, to facilitate the actual formation and incorporation of the proposed Canadian university consortium for health in development and to provide partial support for its activities over the next 2 years. \$156 900 — 24 months.

**89-0319 Evaluation and planning centre (South Africa)\***

For the University of Natal, Durban, to enable the Department of Pediatrics to develop a capacity for researching, managing, and planning health and development programs in a nonracial, democratic, and equitable postapartheid society. \$108 359 — 12 months.

**89-0324 Social analysis of AIDS (Uganda)\***

For Makerere University, Kampala, to enable its Faculty of Social Sciences to provide descriptive baseline data on AIDS for policy and programmatic intervention. \$61 250 — 12 months.

**89-0326 Evaluation of occupational health-service systems (Republic of Korea)**

For the Catholic Industrial Medical Center, Seoul, to enable the Department of Preventive Medicine of the Catholic University Medical College to establish a methodology for evaluating the performance of two different modes of occupational health-care delivery. Both preventive and curative services will be included in the study. \$135 920 — 24 months.

**89-0330 Rainwater catchment (Tanzania)\***

For the Centre for Housing Studies, Dar es Salaam, to enable the Water Research Division of the Ministry of Water to review the current knowledge, practices, and attitudes with regard to rainwater-harvesting techniques and systems with the aim of improving and popularizing such methods. \$45 450 — 18 months.

**89-0334 Hierarchy of risk factors in childhood pneumonia (Brazil)\***

To enable the Universidade Federal de Pelotas to investigate the relative importance of various environmental, socioeconomic, and behavioral variables hypothesized to be associated with increased risk of contracting pneumonia in young children living in the urban slums of Fortaleza in northern Brazil. \$120 000 — 24 months.

**89-0335 Field trial of a noninvasive test for anemia (Nigeria)\***

For the University of Lagos, Nigeria, to enable the Institute of Child Health and Primary Care to evaluate the sensitivity and accuracy of a method of screening for anemia that involves colour-matching an individual's tongue with a hemoglobin scale developed by the researcher for

eventual use as an alternative to blood testing. \$12 716 — 9 months.

**89-0336 Evaluation of the height-weight gain of children from 0 to 5 years (Bénin)\***

For the Université nationale du Bénin, Cotonou, to enable its department of pediatrics and genetics to establish standards for height-weight gain and brachial perimeter increase in children from birth to 5 years of age and to determine the incidence and prevalence of malnutrition among the various age groups of the cohort. \$39 280 — 60 months.

**89-0337 Study of the sociocultural aspects of epilepsy (Senegal)\***

For Environnement et Développement du Tiers-Monde, Dakar, to understand the sociocultural interpretation of epilepsy as manifested in the attitude of the epileptic, the family, the community, and the traditional health practitioner. \$40 440 — 12 months.

**89-0339 Study of HIV infection risks (Bénin)\***

For Laval University, Canada, to allow its Département de médecine sociale et préventive to help prevent AIDS in the Republic of Bénin by contributing to a better understanding of the risk factors and cofactors. \$9 675 — 3 months.

**89-0340 Measuring child development in Yorubaland (Nigeria)\***

For Lagos University Teaching Hospital to enable the Institute of Child Health and Primary Care to administer the Denver Developmental Screening Test to a sample of children to see how it can be validated or adapted for use under Nigeria's environmental and cultural conditions. \$6 163 — 9 months.

**89-0346 Rural sanitation (South Africa)\***

For the Consultancy for Alternative Education, Canada, to enable the Wilgespruit Fellowship Centre, Roodepoort, to develop further and refine a manual on rural sanitation, aimed at the community fieldworkers and health workers in South Africa and in other Third World countries. \$55 675 — 12 months.

**89-1014 Community health research (Ethiopia-Canada) — Phase II**

For McGill University, Montreal, to enable the Ministry of Health, Addis Ababa, to create health research and analytic capacities at the district and community levels; to provide

community-based health information and analyses to the Ministry for decision-making; and to establish a continuing dialogue regarding health and health services among district health services, the University's health faculties, and the Ministry. \$850 000 — 36 months.

**89-1030 Seminar on applied research in health (Bénin-Canada)\***

To enable the Université nationale du Bénin, Cotonou, and Laval University, Quebec, to help the researchers teaching at the Faculty of Health Sciences to design, describe, and carry out the various steps in an operational research project in applied medicine. \$51 460 — 12 months.

**89-1037 Community participation in PHC (Botswana-Canada)**

To enable the University of Botswana, Gaborone, and the University of Toronto, Ontario, to gather in-depth information on primary health care (PHC) and the role of the nurse in community participation. \$108 560 — 12 months.

**89-1038 Health and nutrition impact on plantation workers' families (Dominican Republic-Canada)**

To enable the Centro de Promoción Integral y Salud Educacional, Santo Domingo, and Laval University, Quebec, to determine the sociosanitary situation in the *bateys* of the Dominican Republic, using maternal and child indicators, with respect to the interventions of the project Bon Samariten to make recommendations to increase the efficiency of these interventions. \$220 820 — 36 months.

**Information Sciences<sup>7</sup>****89-0002 Refugee information (Sudan)**

To enable the Office of the Commissioner for Refugees, Khartoum, to take the first steps toward improving the handling and disseminating of information concerning refugees in the country. \$120 000 — 24 months.

**89-0011 SITIA: Telematics and Informatics Information System for Africa (West and Central Africa)**

To enable the Institut africain d'informatique, Gabon, to

<sup>7</sup> Projects funded jointly with another division are listed under "Multidivisional."

disseminate, within a network formed of country members of the Institute, information on informatics and telematics technologies accounting for the needs of the different categories of users and their means of access. \$224 600 — 30 months.

**89-0023 Debt recording and management system (Thailand)**  
For the Ministry of Finance, Bangkok, to support the application of the Commonwealth Secretariat's computer-based debt recording and management system and to provide appropriate training in its use. \$118 300 — 24 months.

**89-0024 Business and economics libraries network: pilot project (Pakistan)**  
For Lahore University of Management Science to enable the Graduate School of Business Administration to establish in the Lahore area a network of libraries and bibliographic data bases specializing in public and business administration, management, and economics to serve as a model information-sharing network for other libraries and information centres in the country. \$75 700 — 24 months.

**89-0025 African Standards Documentation Network — Phase II**  
To enable the African Regional Organization for Standardization, Kenya, to make its documentation and information systems fully operational by developing the participating national centres of the network and strengthening the exchange of information among them. \$244 685 — 24 months.

**89-0033 National health documentation and information network (Zimbabwe)**  
For the University of Zimbabwe, Harare, to enable the Medical Library to improve access to information emanating from or relating to the country's health services by establishing a national health documentation and information network. \$141 115 — 24 months.

**89-0035 Master's degree in library studies (Caribbean)**  
For the University of the West Indies, Jamaica, to help the Department of Library Studies establish a 15-month master's degree program in library studies. \$125 500 — 24 months.

**89-0044 Provincial Management Information System (PMIS) (Thailand)**  
For the National Economic and

Social Development Board, Bangkok, to improve the PMIS so that provincial officers at all levels will have a long-range planning, monitoring, and evaluating tool to link provincial production, employment development, and marketing. \$265 800 — 24 months.

**89-0045 Community network of business information and documentation (West Africa)**  
For the West African Economic Community, Burkina Faso, to establish a cooperative relationship between the main and decentralized focal points for collecting, processing, and disseminating commercial information and to allow the Centre régional d'information commerciale to access existing information systems outside of the subregion. \$309 000 — 24 months.

**89-0069 HELLIS: Health Literature, Library, and Information Service (Sri Lanka)**  
For the University of Colombo to enable the Faculty of Medicine to achieve "Health for all by the year 2000" by providing timely health and biomedical information to health-care professionals to assist them in their decision-making. \$77 870 — 36 months.

**89-0070 Geographic information system for small municipalities (Costa Rica)**  
For the Universidad Nacional, Heredia, to enable the Escuela de Ciencias Geográficas to develop a microcomputer-based prototype tool for constructing, updating, and maintaining master plans in small municipalities and to test it in two representative municipalities. \$91 040 — 24 months.

**89-0078 Information service on innovation (Uruguay)**  
To enable the Centro de Innovación y Desarrollo, Montevideo, to support and stimulate the agents of innovation, especially the small- and medium-sized entrepreneurs, by establishing an information service on innovation that will seek to facilitate cooperation with technical, commercial, and financial information networks and development agencies. \$243 630 — 36 months.

**89-0080 Water and sanitation information network (Tanzania)**  
For the Ministry of Water, Dar es Salaam, to enable the Rwegaralila Water Resources Institute to establish a national water and sanitation information network by strengthening the documentation centre at the

Institute in collaboration with the Water Master Plan Coordination Unit Documentation Centre and the Ministry Headquarters library. \$129 480 — 27 months.

**89-0086 Occupational health and safety information and documentation centre (Malawi)**  
For the Ministry of Labour Headquarters, Lilongwe, to enable the Factories Inspectorate to collect, organize, and disseminate information related to occupational health and safety by establishing an information and documentation centre. \$148 370 — 24 months.

**89-0097 Information service for industry (Colombia)**  
To enable the Asociación Colombiana Popular de Industriales, Bogotá, to reinforce its technological information service for industry and to decentralize its services to three regions of the country. \$156 680 — 24 months.

**89-0098 Village information centres (India)\***  
To enable the Manipal Industrial Trust, Karnataka, to establish 50 village information centres divided equally between Udupi and Thirthalli taluks, Karnataka State, and by testing and refining methodologies for delivering information to rural communities, to create a model for replication elsewhere in India. \$127 240 — 36 months.

**89-0105 Regional information network on bananas and plantains in Latin America and the Caribbean**  
To enable the Unión de Países Exportadores de Banano, Panama, to create and organize an information network on bananas and plantains by establishing national units to collect and disseminate information on a regular and continuous basis and to link the regional activities with those of the global coordinating centre at Montpellier, France. \$218 000 — 24 months.

**89-0112 Information service for small-scale industries (Indonesia)**  
To enable the Perkumpulan Untuk Peningkatan Usaha Kecil, Bandung, to provide information services for the benefit of small-scale industries in rural areas of West Java. \$98 730 — 36 months.

**89-0155 Documentation and information centre for small- and medium-sized industries (Ecuador)**  
To enable the Instituto de Investigaciones Socioeconómicas y



Tecnológicas, Quito, to reinforce its documentation and information centre and to initiate the decentralization of its information services through the creation of two provincial industrial information offices for small- to medium-sized industries. \$219 600 — 36 months.

**89-0163 National health-information network (Colombia) — Phase II**  
To enable the Federación Panamericana de Asociaciones de Facultades de Medicina (FEPAFEM), Bogotá, to develop and consolidate a national health-information network of independent units interacting to achieve rational and efficient use of health and biomedical information and to pave the way for the transfer of network operations from FEPAFEM to a national institution. \$153 580 — 24 months.

**89-0174 Agricultural research management information system (the Philippines)**  
For the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, Los Baños, to accelerate technology generation and use for rural development by strengthening agricultural research and development management at both national and regional levels. \$430 700 — 48 months.

**89-0193 Computer-based networking in Africa: PADIS**  
For the United Nations Economic Commission for Africa, Ethiopia, to enable the Pan African Development Information System (PADIS) to improve the flow of information for socioeconomic development, to improve the timely use of existing information systems and networks through the development of on-line linkages among them, to contribute to the appropriate use of data communications information technologies, and to improve linkages between researchers in Africa and elsewhere working on development issues. \$217 825 — 24 months.

**89-0196 RELIS: Latin American labour information network — labour inspection module\***  
For the Centro Interamericano de Administración del Trabajo, Peru, to develop the Labour Inspection Module of RELIS as an information service to labour administrators with a view to facilitating labour administration and the enforcement of labour legislation. \$264 545 — 24 months.

**89-0213 Rural audio library (Mali)**  
For the Ministère des sports, des arts et de la culture, Bamako, to enable the Direction nationale des arts et de la culture to help rural populations participate in their own economic and social development by promoting the dissemination of modern and traditional knowledge through rural audio libraries. The existing national network will be consolidated and extended by creating 50 new audio libraries in different geographic, linguistic, and cultural areas. \$99 305 — 24 months.

**89-0217 DRMS: Debt Recording and Management System (Sri Lanka) — Phase II**  
For the Commonwealth Fund for Technical Cooperation, UK, to help the External Debt Management Unit of the Ministry of Finance and Planning, Colombo, to monitor and manage external debt in the context of an overall macroeconomic framework by reinforcing the skills and upgrading the capability of staff to use Commonwealth Secretariat's DRMS version 5. \$52 050 — 6 months.

**89-0225 DEVINSA — Development Information Network for South Asia — Phase II**  
To enable the Marga Institute, Sri Lanka, to strengthen the Committee for Studies in Cooperation for Development in South Asia's information base in support of its research programs, thereby enabling each lead institution to input information into the system relating to its own interests and to retrieve from it the data required for its research studies. \$245 040 — 36 months.

**89-0230 DRMS: Grant and debt recording and management system (Mozambique)\***  
For the Commonwealth Fund for Technical Cooperation, UK, to enable the Public Debt Department of the Ministry of Finance, Maputo, to support the application of the Commonwealth Secretariat's DRMS and provide appropriate training in its use so that the Ministry of Finance and the Bank of Mozambique will be able to use it for contracting and servicing external grants and loans and internal lending. \$101 100 — 24 months.

**89-0240 CREDESA Information and Documentation Centre (Benin)\***  
For the Université nationale du Bénin, Cotonou, to enable the Faculté

des sciences de la santé and the Centre régional de développement et santé (CREDESA), Pehou, to set up within the Pehou health development project a specialized information and documentation centre in primary health care. \$140 452 — 36 months.

**89-0262 SEAWIC: Southeast Asian Weed Information Center — Phase II\***  
For the Regional Center for Tropical Biology, Indonesia, to modify its information program to meet the needs of extension workers, field workers, and farmers, while launching new services; to continue to provide information services to weed scientists; and to market the SEAWIC team's expertise, products, and services. \$315 652 — 36 months.

**89-0272 Information activities on post-dam development (Mali-Mauritania-Senegal)\***  
For the Organisation pour la mise en valeur du fleuve Sénégal, Dakar, to allow the Centre régional de documentation to consolidate its existing documentation system and to make it available to the various community groups with an interest in the phase of development following the completion of two dams on the Senegal River. \$111 555 — 24 months.

**89-0277 MINISIS Resource Centre (China) — Phase II\***  
For the Scien-Tech Information Centre (STIC), Beijing, to provide direct services to the Chinese users of MINISIS, to promote the application of MINISIS as a software tool in information-processing applications, to assist in the on-going development of a Chinese version of MINISIS, and to develop further applications using MINISIS within STIC. \$93 790 — 24 months.

**89-0309 Agricultural information (Senegal) — Phase III\***  
For the Ministère du développement rural, Dakar, to enable the Documentation Centre to set up a decentralized information-access system in nine areas of the interior of the country by creating regional documentation cells and diversifying information products. \$225 841 — 36 months.

**89-0317 National information system for science and technology (Tanzania)\***  
To enable the Tanzania Commission for Science and Technology, Dar es Salaam, to improve its ability to advise on the implementation and planning of the national policy for

science and technology. \$115 950 — 24 months.

**89-1018 Local-level mapping (Nigeria–Canada) — Phase II**  
To enable the University of Lagos and the University of Waterloo, Ontario, to develop a methodology based on the integration of remote sensing techniques and local knowledge systems using a “geographic information system” approach and to let national, state, and local planning authorities know about the powerful potential of these technologies to harness people’s creativity. \$246 695 — 36 months.

## Multidivisional<sup>8</sup>

**89-0031 Integrated health intervention for childhood diarrhea (Thailand)**  
To enable Khon Kaen University, Thailand, to develop and test a community-based integrated health intervention program to reduce the incidence of childhood diarrhea in northeastern Thailand. \$189 460 — 30 months. HS–SS.

**89-0047 Information management training series (Southeast Asia)**  
For the Universiti Sains Malaysia, Minden; the Southeast Asian Regional Center for Graduate Study and Research in Agriculture, the Philippines; and the Asian Institute of Technology, Thailand, to ensure that the participants learn information packaging and consolidation techniques. \$646 650 — 36 months. FAD–IS.

**89-0050 National Information Network and System for Jamaica: public education program**  
To enable the National Council on Libraries, Archives and Documentation Services, Kingston, to launch a sustained public-relations campaign to increase public awareness and use of information and financial support for information

services. \$110 000 — 24 months. COMM–IS.

**89-0057 Rural enterprises (Latin America)**  
For the Instituto Latinoamericano de Fomento Agroindustrial, Costa Rica, to improve the probability that research results will be applied in rural enterprise development projects in Latin America. \$339 300 — 24 months. AFNS–EES–FAD–HS.

**89-0101 Mobilization of private sector resources for promotion of immunization (Indonesia)**  
To enable Yayasan Kusuma Buana, Jakarta, to demonstrate the feasibility of adapting modern marketing technologies and strategies for immunization information, education, and promotion. \$87 480 — 24 months. COMM–HS.

**89-0106 CESODIST: Subregional Centre for Scientific and Technical Documentation and Information (Central Africa)**  
To enable the Customs and Economic Union of Central Africa, Central African Republic, to strengthen subregional scientific cooperation by setting up an information system coordinated by CESODIST to support research programing and the dissemination of research results. \$184 805 — 36 months. FAD–IS.

**89-0111 Nutrition education for young women (India)**  
To enable the Nutrition Foundation of India, New Delhi, to develop appropriate models for delivering nutrition education and vocational training to adolescent women to improve the quality of life in rural areas. \$243 500 — 24 months. AFNS–COMM–FAD.

**89-0147 Graduate education and research and development in African universities**  
To enable the Association of African Universities, Ghana, to help reactivate and strengthen graduate education and its contribution to research and development, especially in key development fields, by assisting African universities to develop mechanisms for cooperation and the sharing of resources. \$77 760 — 12 months. AFNS–FAD–OPE.

**89-0187 Communication strategies for drug-abuse prevention (Peru)**  
To enable the Centro de Información y Educación para la Prevención del Abuso de Drogas, Lima, to develop and evaluate a training methodology

based on the use of communication media and group discussions by health promoters in activities aimed at preventing drug abuse. \$30 760 — 12 months. COMM–FAD.

**89-0190 Seismic hazard (Latin America and the Caribbean)**  
For the Instituto Panamericana de Geografía y Historia, Mexico, to enable the Centro de Coordinación para la Prevención de Desastres Naturales en América Central, Guatemala; the Universidad Nacional Autónoma de México; the Centro Regional de Sismología para América del Sur, Peru; and the Seismic Research Unit of the University of the West Indies, Trinidad and Tobago, to create formal working relationships among themselves for regional cooperation in activities related to seismic-risk determination and the mitigation of seismic hazard. \$595 500 — 60 months. EES–IS.

**89-0206 Farm forestry (China)**  
For the Chinese Academy of Forestry, Beijing, to maximize the sustainable productive use of scarce land and forest resources for the benefit of producers and consumers, and to strengthen the capacity of the Academy to undertake integrated research of increasing quality, coherence, scope, and impact. \$1 128 670 — 36 months. AFNS–FAD–IS–OT–SS.

**89-0210 Integrated community nutrition (Thailand)**  
For Mahidol University, Bangkok, in collaboration with Khon Kaen University, the Ministry of Agriculture and Cooperatives, and the Ministry of Public Health to formulate and implement appropriate nutritional improvement programs for northeast Thailand employing a multidisciplinary research approach. \$214 400 — 18 months. AFNS–COMM–FAD–HS–SS.

**89-0212 APPROTECH-Asia information system on water and sanitation — Phase II**  
For the Philippine Social Development Center, the Philippines, to strengthen the capabilities of selected national and provincial nongovernmental organizations operating under the APPROTECH-Asia umbrella for handling information activities in support of their community-based water and sanitation programs. \$307 720 — 36 months. FAD–HS–IS.

**89-0218 Child nutrition and agriculture (Nigeria)\***  
To enable Obafemi Awolowo

<sup>8</sup> Projects listed in this section are jointly funded by several divisions: AFNS = Agriculture, Food and Nutrition Sciences Division; COMM = Communications Division; EES = Earth and Engineering Sciences Division; EO = Executive Office; FAD = Fellowships and Awards Division; HS = Health Sciences Division; IS = Information Sciences Division; OPE = Office of Planning and Evaluation; OT = Office of the Treasurer; SS = Social Sciences Division.

University, Ile Ife, to assess the effect of agricultural modernization on the health and nutrition status of children under 10 years and their mothers in the Oyo North Agricultural Development Project area and to propose appropriate policies for nutritional improvement. \$236 000 — 24 months. AFNS-HS.

**89-0221 "The family house": a public health soap opera (Egypt)**  
To enable the Centre for Development Communications, Giza, to increase awareness within the general public about certain public-health problems and teach appropriate concepts and practices through innovative use of mass-media entertainment. \$117 000 — 30 months. COMM-HS.

**89-0222 Working mothers and their children: health risks and needs (Mexico)**  
For the Population Council, USA, to enable its Regional Office in Mexico City to explore the specific health risks to mothers and infants of certain types and conditions of maternal employment as well as the effect on health of inadequate child-care arrangements. \$242 930 — 30 months. HS-SS.

**89-0241 Seasonal hunger and nutrition (Kenya)**  
For Egerton University, Njoro, to enable the Department of Home Economics to provide detailed knowledge about the nutritional status of agricultural workers who are landless as compared to their counterparts who own small plots in the same area and to determine whether nutritional status is affected by seasonal food shortages. \$56 097 — 18 months. AFNS-HS.

**89-0248 Mass media and oral health (Kenya)\***  
To enable Mazingira Institute, Nairobi, to disseminate the findings of a previous research project that demonstrated that chewsticks were as effective in maintaining good oral hygiene as manufactured toothbrushes used with or without toothpaste. \$45 483 — 12 months. COMM-HS.

**89-0252 Models and strategies for small-scale farmers' credit (Colombia)**  
For the Fundación para la Aplicación y la Enseñanza de las Ciencias, Cali, to identify the most appropriate models and training strategies for extending credit to small-scale farmers, and to systematize that knowledge and its social application

through the publication of a case study. \$100 000 — 36 months. AFNS-SS.

**89-0265 Pastoral systems of the Maghreb (Algeria) — Phase II\***  
For the Ministère de l'enseignement supérieur, Algiers, to sustainably improve the production and standard of living of the small- and medium-scale pastoralists and agropastoralists of the Algerian steppe and to stop the degradation of the steppe by allowing its regeneration. \$249 830 — 36 months. AFNS-SS.

**89-0266 Pastoral systems of the Maghreb (Morocco) — Phase II\***  
For the Institut national agronomique et vétérinaire, Rabat, to develop practical, appropriate ways of managing pastoral resources that would improve the living conditions of the pastoralists while preserving the rangelands. \$248 850 — 36 months. AFNS-SS.

**89-0267 Pastoral systems of the Maghreb (Tunisia) — Phase II\***  
For the Ministère de l'agriculture, Tunis, to enable the Institut des régions arides to develop a better approach to the management of the Tunisian steppe to improve the living and working conditions of the people and reduce the degradation of the environment. \$248 760 — 36 months. AFNS-SS.

**89-0268 Small Ruminants Network (Asia)\***  
For Central Research Institute for Animal Science, Indonesia, to strengthen small-ruminant research and development by establishing effective and practical linkages between the national programs. \$510 660 — 48 months. AFNS-COMM-FAD-SS

**89-0289 Pyrethroid poisoning (China) — Phase II\***  
For the Institute of Occupational Medicine, Beijing, to confirm and popularize the research results obtained during phase I of the pyrethroid project and to promote the safe use of pyrethroid and other pesticides on a larger scale. \$57 845 — 24 months. COMM-HS.

**89-0295 Procurement, operation, maintenance, and repair of scientific equipment (eastern and southern Africa)**  
To enable the International Foundation for Science, Sweden, to facilitate the formation of a network of senior technicians in the region who will collaborate on issues

pertaining to purchase, repair, and maintenance of scientific research equipment and instruments. \$150 000 — 24 months. AFNS-EES-FAD.

**89-0298 Impact of the Kabuhi Project (the Philippines)**  
To enable the Capiz Research, Extension and Development Consortium, Roxas City, to examine the impact on beneficiaries and their communities of the various community-based (*Kabuhi*) projects designed to provide training for rural, low-income homemakers. \$22 230 — 12 months. FAD-SS.

**89-0304 Health communication (Papua New Guinea)**  
To enable the Enga Provincial Government, Wagbag, to develop and test a set of health education and communication strategies and materials that can be adopted by tribal communities for campaigns to reduce the prevalence of diarrheal disease. \$115 416 — 36 months. COMM-FAD-HS.

**89-0312 Northeast Thailand development study**  
To enable the Green-Esam Research and Development Institute, Bangkok, to identify and address the principal economic, social, administrative, and political problems of the poorest people in the country's least developed region — the Northeast or Esam region. \$20 000 — 12 months. EO-SS.

**89-0320 Development of microbiological water-quality testing capability (Canada)**  
To enable the National Water Research Institute, Ontario, and the Cree Nations Split Lake Band, Manitoba, to assess the feasibility of introducing a simple, inexpensive bacteriological water-monitoring system, operated and maintained by the Band Council of the Band of First Nations at Split Lake. \$29 500 — 15 months. HS-OPE.

**89-0325 Integrated agricultural development (China)\***  
To enable the Guizhou Academy of Agricultural Sciences, Guiyang, to improve the production, income, and sustainability of rural villages in Guizhou Province. \$198 050 — 36 months. AFNS-FAD.

**89-1001 Young Canadian researchers award program (Global)**  
For the Communications, Fellowships and Awards, Health Sciences, and Social Sciences

divisions, IDRC, to contribute to the growth of a research capacity in Canada that is responsive to Third World priorities by supporting Canadians at various stages of their academic and professional careers in research or training undertaken in a Third World country. \$625 000 — 12 months. COMM-FAD-HS-SS.

**89-1002 Vegetable extracts (Rwanda-Canada)**

For the Université nationale du Rwanda, Butare, and the University of Quebec at Chicoutimi to allow researchers and government services to initiate the production of vegetable extracts, and, more generally, to master the conditions for implementing a small-scale industry for developing local raw-vegetable resources. \$308 118 — 24 months. EES-IS.

**89-1007 Baked bricks (Rwanda-Canada)**

For the Université nationale du Rwanda, Butare, and the University of Sherbrooke, Quebec, to maximize production of traditional burnt-clay bricks with a view to making available low-cost, durable housing. \$266 800 — 48 months. EES-SS.

**89-1012 Botanical pesticides (Thailand-Canada)**

For Chiang Mai University and the University of Ottawa, Ontario, to develop safe and inexpensive insecticides and antifeedants from plants growing in Thailand, using a multidisciplinary approach. \$419 600 — 24 months. AFNS-HS.

## Social Sciences<sup>9</sup>

**89-0027 Structural adjustment and technology supply (Nigeria)**

To enable the National Centre for Economic Management and Administration, Ibadan, to study the effects of the structural adjustment program on the nature and volume of technology supplied by foreign and domestic sources. \$61 010 — 24 months.

**89-0028 Intermediate cities and regional development (Mexico)**

For the Universidad Nacional Autónoma de México, Mexico City, to enable the Instituto de Geografía to evaluate government efforts to encourage the growth of intermediate cities. \$102 160 — 24 months.

**89-0032 Macroeconomic modeling (Dominican Republic)**

To enable the Centro de Investigaciones y Economía Aplicada, Santo Domingo, to build a small- to medium-sized macroeconomic model of the Dominican economy and to analyze the implications of alternative government policies and the impact of external shocks on the domestic economy. \$81 340 — 18 months.

**89-0034 Education and work in Uruguay**

To enable the Centro de Investigación y Experimentación Pedagógica, Montevideo, to gather basic information about the factors that determine the decisions of individuals from different socioeconomic groups regarding both education and work in the context of the social changes that are taking place in Uruguay. \$39 830 — 18 months.

**89-0042 Regional development plan for Xinjiang (China)**

To enable the Xinjiang Research Institute of Scientific and Technological Policy, South Urumqi, to provide a comprehensive, up-to-date assessment of Xinjiang's development capabilities as well as strategic planning guidelines. \$130 000 — 24 months.

**89-0054 Distance education on research methods (Latin America)**

For the Ministerio de Educación Pública, Costa Rica, to enable the Departamento de Investigación Educativa to adapt and apply a model for training government officials in Central America and the Caribbean in social research methods applied to education with a view to bringing the results of education research to bear on policy-planning and decision-making. \$47 100 — 21 months.

**89-0055 Economic Research Consortium (Peru)**

For the Centro de Investigaciones de la Universidad del Pacífico, the Centro de Estudios y Promoción del Desarrollo, the Grupo de Análisis para el Desarrollo, the Instituto de Estudios Peruanos, and the Pontificia Universidad Católica del Perú, all in Lima, to support a 4-year program of research, publication, and dissemination on key issues of economic policy. \$344 325 — 48 months.

**89-0056 Internal trade (China)**

For the Shanghai Academy of Social Sciences to enable the Institute of National Economy Research to document the patterns and

mechanisms of internal trade liberalization, project future patterns, anticipate problems, assess benefits, and examine alternative policy and institutional approaches. \$40 700 — 24 months.

**89-0059 The housing problem and community participation (Costa Rica)**

To enable the Centro de Estudios para la Acción Social, San José, to produce a comparative analysis of the present and potential role of community organizations in the process of formulating and implementing public-housing policy. \$28 068 — 24 months.

**89-0060 Alternative education for high-school graduates (Dominican Republic) — Phase II**

To enable the Colegio Dominicano de Estudios Profesionales, Santo Domingo, to design, test, and evaluate an experimental technical-vocational system of supervised open education for high-school graduates from the academic stream and for high-school drop-outs. \$123 000 — 34 months.

**89-0073 Contract farming and outgrower schemes (Uganda)**

For Makerere University, Kampala, to enable the Makerere Institute of Social Research to assess the experience of contract farming and outgrower schemes, particularly with respect to smallholder welfare and agricultural development policy. \$45 300 — 18 months.

**89-0076 Workers' education (Uganda)**

To enable the Centre for Basic Research, Kampala, to design, prepare, and apply a set of adult-education modules addressing issues relevant to educating workers in labour organizations. \$120 790 — 18 months.

**89-0077 Conservation and development of the Mount Everest ecosystem (China-Nepal)**

For the Woodlands Mountain Institute, USA, to enable the Task Force for the Makalu-Barun Extension of Sagarmatha National Park, Kathmandu, and the Working Commission on Qomolangma Nature Preserve, Beijing, to extend, on the Nepal side, the existing park around Mount Everest to include a much larger, sparsely populated area with some seasonal use and to create a national park on the Tibetan side of the border. \$228 980 — 20 months.

<sup>9</sup> Projects funded jointly with another division are listed under "Multidivisional."

**89-0079 Educational Research Network of Eastern and Southern Africa (Kenya)**

For Kenyatta University, Nairobi, to enable the Educational Research Network in Kenya to strengthen cooperation between researchers and research institutions in that country and to revive its affiliation with the Educational Research Network of Eastern and Southern Africa. \$26 460 — 24 months.

**89-0096 Access by the urban poor to services: developing action-oriented policies (Global)**

To enable the World Bank, USA, to determine more effective ways for the urban poor to have access to basic services and to highlight the problems encountered and policy issues involved in securing such access. \$58 200 — 6 months.

**89-0102 Technology policy research network (eastern and southern Africa) — Phase III**

For IDRC, Kenya, to strengthen the East African Technology Policy Studies network as a mechanism for facilitating an exchange of ideas, experience, and results among researchers and for encouraging collaboration between researchers and policymakers. \$215 480 — 36 months.

**89-0103 Technology policy research network (West Africa) — Phase II**

For IDRC, Kenya, to generate information usable in designing and implementing future policy or in identifying and assessing the impact of existing policy and to strengthen the West African Technology Policy Studies Network as a mechanism for fostering collaboration between policy researchers and policymakers in the region. \$215 480 — 36 months.

**89-0104 Comparative evaluation of regional development in ASEAN countries (Southeast Asia)**

For the University of the Philippines' Planning and Development Research Foundation, Quezon City; the Universitas Indonesia, Jakarta; and the Thai University Research Association, Bangkok, to assess the regional development experience in their respective countries over the past 15 years through case studies with a view to possible reformulation of regional policy and projects in the 1990s. \$155 985 — 24 months.

**89-0107 Human development and family studies network (India)**

For the Maharaja Sayajirao University of Baroda, Vadodara, to

enable the Department of Child Development to establish a centre for research coordination and consultative services in human development and family studies. \$84 000 — 24 months.

**89-0117 Economic policy and income distribution (Chile)**

For the Corporación de Investigaciones Económicas para Latinoamérica, Santiago, to develop new knowledge about the behaviour of Latin American economies and to apply this knowledge to influence economic policies in Chile. \$419 700 — 24 months.

**89-0120 Education research network in West and Central Africa**

For the Université nationale du Bénin, Togo, to develop a network for education research in West and Central Africa with a view to improving the effectiveness of education in the region and enhancing its responsiveness to an increasingly constrained socioeconomic environment. \$328 470 — 24 months.

**89-0121 Maternal mortality (West Africa)\***

For the Direction de la statistique, Burkina Faso; the Association congolaise pour le bien-être familial, Congo; the Ministère de la santé publique et des affaires sociales, Mali; and the Centre africain d'études supérieures en gestion, Senegal, to establish a network to provide the various assessment factors that will help reduce maternal morbidity and mortality. \$360 670 — 24 months.

**89-0126 Unregulated housing submarket in Ahmedabad (India)**

To enable the Ahmedabad Study Action Group to document the processes inherent in the operations of the unregulated housing submarket in the city of Ahmedabad and to disseminate the findings through five workshops. \$37 030 — 18 months.

**89-0127 Informal sector (Sri Lanka)**

To enable the Marga Institute, Colombo, to study the informal production sector in the urban economy with the objective of identifying its potential for increasing productivity, generating income and employment, and absorbing technology at relatively low levels of capital expenditure. \$60 470 — 28 months.

**89-0129 Urban passenger transport in Lagos (Nigeria)\***

For Obafemi Awolowo University, Ile Ife, to enable the Department of

Economics to contribute to the formulation of an urban transport policy by systematically analyzing the organization, operations, and efficiency of informal modes of public transport, using Lagos as a case study. \$32 450 — 24 months.

**89-0130 Traditional credit associations (Cameroon)\***

For the Centre Universitaire de Douala, to enable the École supérieure des sciences économiques et commerciales to study the *fontines* or rotating credit associations and the possibility of making them more reliable by legal and regulatory means. \$29 330 — 24 months.

**89-0135 Infant mortality data for policy monitoring in the Brazilian Northeast**

To enable the Fundação Sistema Estadual de Análise de Dados, São Paulo, to conduct research on the application and adaptation of a new demographic method (the "previous child method") to monitor infant-mortality levels and specific health programs. \$176 255 — 24 months.

**89-0137 Rural organizations and participation (Sierra Leone)**

For the University of Sierra Leone, Freetown, to enable the Department of Agricultural Economics of Njala University College to analyze the factors, conditions, and problems affecting existing local organizations in rural areas, particularly the extent to which they do and could involve the rural poor in development. \$55 590 — 24 months.

**89-0138 Small research grants (eastern Africa) — Phase VI**

To enable the Organization for Social Science Research in Eastern Africa, Ethiopia, to continue providing small grants for training and research in social science to further the objectives of earlier IDRC support and to consolidate its results. \$220 000 — 24 months.

**89-0142 External competitiveness in Moroccan industry**

To enable the Centre d'études et de recherche Aziz Belal, Rabat, to contribute to the optimization of the government's intervention program for industrial development by analyzing the results of industrial policy since the introduction of the structural adjustment program. \$156 220 — 24 months.

**89-0152 Low-cost housing and social promotion in Abidjan (Côte d'Ivoire)**

For the Université d'Abidjan to

enable the Centre de recherches architecturales et urbaines to study the impact of the government's intervention program on urban shelter by means of a survey of 1 000 households, half of which are owner-occupied and the other half rented. \$58 360 — 18 months.

**89-0154 Property tax revenues for local governments (Nigeria)**  
For Obafemi Awolowo University, Ile Ife, to enable the Department of Public Administration to examine and document some of the most successful strategies for dealing with the problems of property taxation drawing on the experience of 10 cities in Nigeria and other African countries. \$99 800 — 24 months.

**89-0160 Rethinking the Latin American city — Phase II**  
To enable the Instituto Internacional de Medio Ambiente y Desarrollo—América Latina, Argentina, to understand how Latin American cities are built, administered, and maintained; to identify available local resources for these purposes; and to develop a set of policy proposals on how governments and international agencies can more effectively address the problems of urbanization in the region. \$128 160 — 24 months.

**89-0176 Information and research centre on climate change (South Asia)\***  
To enable the Tata Energy Research Institute, India, to establish a centre to collect, develop, and disseminate information on the social impact of climatic change in South Asia, with special attention to gender aspects. \$160 350 — 36 months.

**89-0177 Conditions of life in the urban-migrant hostels of Cape Town (South Africa)**  
For the University of Cape Town to enable the Department of Social Anthropology to document the conditions of life in the urban council-built hostels of Cape Town and to provide the hostel dwellers with the necessary data to campaign for improved living conditions. \$10 620 — 12 months.

**89-0178 International return migration to Egypt**  
For the American University in Cairo to enable the Social Research Center to measure and analyze the social and economic impact of return migration on migrant and nonmigrant families. The results will eventually help in formulating comprehensive policies for a better social and economic integration of the returnees into

Egyptian society. \$50 560 — 24 months.

**89-0183 Macro policy study on small-scale enterprise development for the Philippine government**  
For Appropriate Technology International/Philippines, Metro Manila, to enable the Congressional Economic Planning Staff to produce an integrated national policy on small-scale enterprise development for passage by the Philippine Congress. \$47 310 — 12 months.

**89-0186 The Inca region: development potential and constraints (Peru)**  
To enable the Centro de Estudios Rurales Andinos "Bartolomé de las Casas," Cusco, to assess the socioeconomic development potential and constraints of the Inca region, and to formulate guidelines for an appropriate and sustainable regional development plan. \$86 780 — 18 months.

**89-0192 Export revenue management (Latin America)**  
For the Centro de Estudios de la Minería y el Desarrollo, Bolivia; the Corporación de Investigaciones Económicas para Latinoamérica and the Centro de Estudios del Cobre y la Minería, Chile; and the Grupo de Análisis para el Desarrollo, Peru, to study the effects of export-revenue instability on the economies of developing countries to devise policies to minimize the cost of price fluctuations in primary commodities on the international market. \$353 390 — 24 months.

**89-0194 National household literacy survey (People's Democratic Republic of Yemen)\***  
To enable the General Directorate for Literacy and Adult Education, Aden, to develop a survey instrument for measuring literacy with special consideration given to linking the output data directly into the national education-planning process and to building the national capacity to conduct and use similar surveys. \$80 190 — 12 months.

**89-0197 Strengthening population research capability (Indonesia)**  
To enable Universitas Hasanuddin, Ujung Pandang, to enable the Population and Studies Centre to develop a low-cost research-methodology training package for researchers and planners whose responsibilities relate to population research and policy issues in the five eastern provinces of Indonesia. \$170 050 — 36 months.

**89-0198 Human settlements and sustainable development (Global)**  
For the University of Toronto, Canada, to enable the Centre for Urban and Community Studies to promote international discussion on, and understanding of, the relationship between human settlements and sustainable development by financing six regional papers prepared by leading researchers from developing countries. \$53 120 — 12 months.

**89-0199 Managing the urban informal sector (Thailand)**  
For the National Economic and Social Development Board, Bangkok, to enable the Thailand Development Research Institute to identify practical policies for solving basic problems faced by workers in the urban informal sector, particularly those associated with their employment situation. \$88 190 — 12 months.

**89-0201 Industrial organization of the vegetable-oils sector (Kenya)**  
For Egerton University, Njoro, to enable the Department of Economics, Kenyatta University, to study the supply of and demand for edible vegetable oils and fats and the structure and performance of the processing industry so as to identify policy interventions aimed at increasing domestic production. \$72 990 — 24 months.

**89-0224 No dumping here: control of pesticides in developing countries (Global)**  
For the Environmental Liaison Centre International, Kenya, to provide support for, and to coordinate the efforts of, a group of nongovernmental organizations in four countries that will examine national pesticide markets in developing countries. \$107 026 — 18 months.

**89-0232 Indigenous culture and health-services use among Indian migrants (Guatemala)\***  
To enable the Universidad del Valle de Guatemala to determine the extent to which Indian families use health services for children 0–5 years of age, the importance of selected sociocultural factors in inhibiting full use of health services, and the way traditional beliefs, practices, and personnel might be incorporated into the health-care system. \$53 100 — 12 months.

**89-0245 Educational equality and democracy (Chile) — Phase III**  
To enable the Centro de Investigación y Desarrollo de la Educación, Santiago, to continue an integrated

program of education research, extension, and dissemination, and, thereby, to respond to the challenges the country faces as a result of current sociopolitical, economic, and cultural changes. \$140 000 — 24 months.

**89-0254 Socioeconomic impacts of mangrove resource over-exploitation (the Philippines)**

To enable the University of Eastern Philippines Research and Development Foundation Inc., Samar, to formulate workable conservation-intervention programs and policies to ensure the long-term efficient use and management of mangrove resources. \$39 400 — 24 months.

**89-0264 Economic policy reform and environmental management (eastern and southern Africa)\***

To enable the African Centre for Technology Studies, Kenya, to study the interrelationships between economic reform and environmental management, to direct policy-making toward long-term sustainable development, and to build relevant policy-research capability in sub-Saharan Africa. \$192 980 — 18 months.

**89-0269 Evaluation of distance education programs (Dominican Republic)**

To enable the Centros APEC de Educación a Distancia, Santo Domingo, to carry out a systematic assessment of the educational, social, and economic impact of the distance education programs for secondary education on the graduates of the APEC centres in the Dominican Republic. \$57 840 — 12 months.

**89-0273 Science teaching in Côte d'Ivoire: approaches, problems, and perspectives**

For the Université d'Abidjan to enable the Centre ivoirien de recherches économiques et sociales to study the constraints to teaching science in the schools and the interaction between science-technology and society. \$38 000 — 24 months.

**89-0278 Mountain off-farm employment (Nepal)**

For the International Centre for Integrated Mountain Development, Kathmandu, to develop and apply a comprehensive analytical framework to assess crucial issues and options in off-farm employment in the Hindu Kush-Himalaya region of China, Nepal, and Pakistan. \$246 500 — 20 months.

**89-0288 Local government issues (South Africa-Zimbabwe)\***

For the University of the Western Cape, Bellville, and the University of Zimbabwe, Harare, to provide an analysis of, and guidelines for, the restructuring of local government systems in postapartheid South Africa and revision or modification to local government in the case of Zimbabwe. \$592 740 — 24 months.

**89-0294 Alternatives in nonformal education for preschool children (Colombia)**

To enable the Centro de Investigación y Desarrollo Infantil, Bogotá, to plan, implement, and evaluate an alternative community-based program for preschool education by developing a set of learning materials to stimulate child development through the use of games in rural areas where no formal preschool services are available. \$94 320 — 18 months.

**89-0297 Flood hazard minimization: Kano Plain (Kenya)\***

To enable Kenyatta University, Nairobi, to investigate the nature and extent of the flood hazard in the Kano Plain and examine nonstructural measures to minimize flood losses (flood proofing, flood-warning systems, etc.). \$51 840 — 15 months.

**89-0301 BOLESWA research awards program (Botswana-Lesotho-Swaziland) — Phase II\***

To enable the Botswana Educational Research Association, Gaborone; the Lesotho Educational Research Association, Maseru; and the Swaziland Educational Research Association, Luyengo, to continue to enhance educational research capacity in their respective countries. \$149 550 — 24 months.

**89-0302 Evaluation of school network sufficiency (Yemen Arab Republic)**

To enable the Educational Research and Development Center, San'a, to identify the gap between the supply and demand for educational services, to evaluate the quality of educational services at all levels of formal education, and to propose a program capable of meeting both the growing social demand for education and the needs of sustainable economic development. \$145 200 — 24 months.

**89-0303 Reforming the national income accounts in the fishery sector (Costa Rica)\***

To enable the Tropical Science Center, San José, to develop a method of preparing national

economic accounts that treats national resource assets, in this case fish stocks, consistently with other tangible capital so that resource depletion is recorded as capital consumption rather than income. \$33 370 — 12 months.

**89-0306 Inventory of social science research on the environment (Brazil)**

To enable the Universidade de São Paulo, Brazil, to create an inventory of existing social science research undertaken by universities, nongovernmental organizations, and government institutions on environmental issues. \$55 000 — 12 months.

**89-0310 Poverty alleviation programs and macro policies (India)\***

To enable the Institute of Development Studies, Bapu Nagar, to assess existing information on poverty-alleviation programs in different states of India with a view to formulating more successful policies and programs. \$44 680 — 24 months.

**89-0311 Interest rate and flow of funds (Nepal)\***

To enable the Institute for Development Studies, Kathmandu, to assist the government, the central bank, and national financial institutions to achieve more effective mobilization and more efficient allocation of financial resources. \$36 600 — 19 months.

**89-0313 Chemical fertilizer marketing and distribution (Thailand)**

For the Thai University Research Association, Bangkok, to enable the Faculty of Economics of Chulalongkorn University to recommend measures to make standard quality chemical fertilizers available to Thai farmers at a reasonable price and in sufficient quantity to improve their yields. \$50 320 — 12 months.

**89-0321 Industrial policy and business reaction (Argentina)\***

To enable the Centro de Investigaciones Sociales sobre el Estado y la Administración, Buenos Aires, to analyze the development of several leading industrial enterprises and formulate suggestions on economic policy taking into account the strategies adopted by the enterprises in the course of their historical evolution. \$71 440 — 24 months.

**89-0322 Structural adjustment and the manufacturing sector (Guyana)\***

To enable the Department of International Economic Cooperation, Georgetown, to provide a detailed analysis on all aspects and policies related to the development of the manufacturing sector from 1966 to 1988. \$39 800 — 12 months.

**89-0328 Computers in Kenya's secondary schools: case study of an innovation in education — Phase III**

To enable the Research and Evaluation Associates, Nairobi, to study the financial implications of computers in schools — in particular, the role of donors in the initial stages and the subsequent ability (or inability) of schools and communities to sustain the innovation in the context of resource constraints. \$93 700 — 24 months.

**89-0331 Impact of decentralization on rural poverty (Asia)\***

To enable the Centre on Integrated Rural Development for Asia and the Pacific, Bangladesh, to examine the socioeconomic impact of decentralization programs on the rural poor in Bangladesh, India, Nepal, Sri Lanka, and Thailand and find out the extent to which the rural poor participated in the planning and implementation of such programs. \$56 030 — 18 months.

**89-0338 Structural adjustment and agrarian crisis in Africa\***

To enable the Council for the Development of Economic and Social Research in Africa, Senegal, to study the effects of macroeconomic policies, particularly structural adjustment, on agriculture. \$230 000 — 42 months.

**89-1005 Alternatives to cyanide use in the aquarium industry (the Philippines—Canada)**

For the Haribon Foundation for the Conservation of Natural Resources, Manila, in collaboration with the International Marine Life Alliance, Quebec, to test a method for teaching sustainable techniques to artisanal fishermen harvesting aquarium fish from coral reefs and to identify options for diffusing the method throughout the Philippines, thereby supporting the government's efforts to combat destructive fishing practices. \$172 930 — 12 months.

**89-1013 Foreign trade (China—Canada)**

For the Ministry of Foreign Economic Relations and Trade,

Beijing, and the Institute for Research on Public Policy, British Columbia, to complete studies on economic development issues in the coastal region; the role of foreign trade in the development of the Chinese economy; China's commodity strategy; the reform of China's foreign-trade system; China and the multilateral trade negotiations; prospects for economic cooperation between China and other countries; and institutional aspects of China's foreign-exchange market. \$147 465 — 12 months.

**89-1015 Export-only industries (Tunisia—Canada)**

For the Agence de promotion de l'industrie, Tunis, and the University of Sherbrooke, Quebec, to increase the Tunisian government's knowledge of a sector considered to be a priority and to help improve policies for its promotion. \$36 370 — 9 months.

**89-1020 Women and development workshop (Global—Canada)**

For Laval University, Quebec, to enable the Laboratoire de recherches anthropologiques to teach a conceptual apparatus and a research method on women in development to understand the reality of women and to improve the planning of development policies. \$113 235 — 12 months.

**89-1031 Macroeconomic management (Tanzania—Canada) — Phase II\***

For the University of Dar es Salaam and the University of Toronto, Ontario, to improve and update the supply-constrained macroeconomic model for use in macroeconomic policy simulations to assist policymakers particularly in the Planning Commission, the Central Bank, and the ministries of Finance, Trade and Industries, and Agriculture. \$180 795 — 24 months.

**89-1033 Debt-trade bargaining (Global—Canada) — Phase III**

To enable the Facultad Latinoamericana de Ciencias Sociales, Argentina, and the North-South Institute, Ontario, to examine two aspects of global trade bargaining, specifically, the political and economic determinants of trade bargaining by particular developed countries vis-à-vis developing countries, and to compare the trade-bargaining strategies used by developing countries. \$210 670 — 24 months.

**89-1034 Migrant labour (South Africa—Canada)\***

For the University of Cape Town and

Queen's University, Ontario, to provide a critical analysis of state and company policies toward migrant mine workers on accommodation issues, and to generate information and analysis that will contribute to the abolition of the repressive institutions of migrant labour and the compound system. \$88 800 — 12 months.

**89-1041 Documentation and application of traditional environmental knowledge (Global—Canada)**

To enable the Dene Cultural Institute, Canada, to provide a forum for information exchange among researchers currently documenting and applying traditional environmental knowledge of aboriginal peoples in the Pacific Islands, Sahelian Africa, and the Canadian North in the context of natural resource management and local formal and informal education. \$74 200 — 12 months.

## Special Program Activities<sup>10</sup>

**89-0095 Social participation of women (Chile)**

For the Centro de Indagación y Expresión Cultural y Artística, Santiago, to identify ways in which the mass media play a role in legitimizing and reinforcing negative images with respect to the participation of women in national development. \$50 970 — 24 months. SS.

**89-0167 The contribution of Caribbean men to the family**

For the University of the West Indies, Jamaica, to enable the Caribbean Child Development Centre to study the behaviour and attitudes of Jamaican men toward family responsibilities. \$67 780 — 18 months. SS

**89-0229 Rural development and nutrition (Bénin)\***

For the Université nationale du Bénin, Cotonou, to enable its health sciences faculty to study, with assistance from the community, problems related to the undermining of food security and the constraints to and opportunities for the development of intersectoral activities to

<sup>10</sup> For each project, the administering division is given: AFNS = Agriculture, Food and Nutrition Sciences; EES = Earth and Engineering Sciences; HS = Health Sciences; and SS = Social Sciences.



promote food security. \$147 000 — 12 months. AFNS.

**89-0260 Women and land tenure ownership (Senegal)\***

For the Université Cheikh Anta Diop, Dakar, to enable the Institut fondamental Cheikh Anta Diop to examine the situation of women in rural areas where different customary laws coexist with state legislation and to understand the implications of a dual system for women's social status in general and land ownership in particular. \$41 040 — 18 months. SS.

**89-0261 Women's land rights (China)\***

To enable Disha, India, a registered charitable trust, to examine land reform in China during the past 40 years focusing on the extent to which women have acquired land rights as the result of land redistribution policies enacted after 1949. \$50 680 — 18 months. SS.

**89-0299 Resources of women farmers (Thailand)\***

For the Ministry of Agriculture and Cooperatives, Bangkok, to enable the Farming Systems Research Institute and the Prince of Songkla University to use a farming systems approach to identify the needs of women farmers in southern Thailand and options for increasing their access to and control of resources. \$64 470 — 24 months. AFNS.

**89-0316 Urban food security (Central America)\***

To enable the International Food Policy Research Institute, USA, to develop operational paradigms for strengthening development efforts at the grassroots level and top-down policy formulation and development planning, particularly as these affect the food security, health, and nutrition of the urban poor. \$126 900 — 12 months. HS.

**89-0341 Women's knowledge, management, and control of seed genetic resources (Ghana)\***

To enable the University of Ghana, Legon, to study the extent of knowledge women possess on seed genetic resources, how this information is passed from generation to generation, and the impact on small-scale agriculturalists of the patenting of new improved seeds by multinational companies. \$43 350 — 16 months. SS.

**89-0344 Economic role of women in the cocoa industry (Nigeria)\***

To enable the Nigerian Institute of Social and Economic Research,

Ibadan, to determine women's contribution to cocoa production and marketing in southwest Nigeria with a view to proposing policy measures that will enhance and sustain their contribution and ensure a flow of benefits to female farm workers. \$20 140 — 24 months. SS.

**89-1004 Institutional support for the International Division of the AUCC (Global)**

To enable the Association of Universities and Colleges of Canada (AUCC) to maintain its activities aimed at increasing the role and participation of Canadian universities in international cooperation and development. \$88 524 — 12 months. EES

**89-1044 Discrimination and gender (India-Canada)\***

To enable the National Law School of India, Bangalore, and York University, Ontario, to examine the conflicts and constraints of equality claims raised by women within different religious communities in India. \$55 365 — 24 months. SS.

## Division activity projects

Apart from the activities described in the preceding pages, IDRC funds several relatively small-scale projects designed to support, in one way or another, the activities in progress in the divisions. These are such things as promoting workshops or seminars on the research priorities in a given region or topic, enabling researchers from developing countries to participate in meetings of experts in various parts of the world, or making it possible for specialists to visit and assist a project team in another country. There are also funds available to IDRC's regional offices to support activities in their respective regions. Most division activity projects cover the cost of meetings or of consultations directly or indirectly connected with IDRC-funded research. The following are examples:

- A study was supported to determine the feasibility of using radio or a combination of radio and other communications media to disseminate agricultural research findings to small-scale farmers in Kenya.
- In Nepal, a National Seminar on the "Role of Communication for Basic Needs" was funded in collaboration

with the Ministry of Communications of His Majesty's Government of Nepal and the Royal Nepal Academy of Science and Technology.

- Two Sri Lankan consultants evaluated information activities in Sri Lanka to assess the impact of past efforts and help determine the direction of future program development.
- A consultant undertook a comprehensive approach to auditing information requirements in national disaster-preparedness planning and management in the developing countries of Asia.
- Several divisions combined resources to support a visit by three Canadian university professors to Makerere University in Uganda to assess the research, training, and teaching needs of the social sciences faculty and the Makerere Institute of Social and Economic Research.
- Support was provided for a meeting of 12 researchers from East, West, and southern Africa to discuss issues of African women's access to land under statutory and customary law.
- In Zambia, because of the economic crisis characterized by high inflation, scarcity of essential commodities, and personal hardship, many of the educated elite are leaving the country. A small project was developed to enable the Education Research Bureau of the University of Zambia to survey research institutions and the University to document the phenomenon and to explore various incentive systems used in neighbouring countries to counter the "brain drain."
- An analysis of the Pearson Fellowships Program, which was instituted in 1977, was made to generate the data needed to assess the impact of this program as well as to make any needed qualitative changes.
- A 3-day workshop entitled "Essential National Health Research for Egyptian and Middle East Researchers and Health Services Providers" was held in Egypt. Participants were invited from Egypt, Iraq, Jordan, Morocco, Syria, and Yemen. The workshop was organized to familiarize participants with the concept of essential health research.

- A short study was supported to elucidate and confirm the diagnostic potential of low, intraocular pressure for early diagnosis of family contact leprosy. It would be a simple, safe, and noninvasive field technology, likely to be the first satisfactory method for early diagnosis of this disease.
- The Chemical Engineering Institute at the Universidad de la República in Uruguay has undertaken a diagnostic study of the local tanning industry, with a special emphasis on small- and medium-size enterprises. In addition to defining processing problems, the study is also looking at the structure and characteristics of this industry, which represented 12% of the total industrial exports in 1985.
- A review of all projects funded by the Earth and Engineering Sciences Division in the foundry sector, especially in Latin America, has been undertaken by a Canadian consultant to assess the outcome of these projects and to recommend further researchable issues in this important industrial sector in several developing countries.
- A consultant identified and evaluated Canadian expertise — in universities, federal research laboratories, and private biotechnology companies — in biotechnology with potential application in agriculture, forestry, and fisheries in developing countries.
- A series of studies were undertaken by consultants to determine the state-of-the-art of biotechnology research in IDRC's target regions.

## Fellowships

### Pearson fellowship

Pearson fellows undertake a program of academic study focusing on public administration and management at the Faculty of Administration of the University of Ottawa and School of Public Administration of Carleton University, Ottawa, ON, Canada, with practical attachment with a government department.

**Adan, Zeinab Yusuf Hajl** (Somalia)  
*Present position in home country:* Laboratory Manager and Assistant Director — Quality Control and Milk Procurement, Mogadisho Dairy Plant

**Agbaje, Arthur** (Sierra Leone)  
*Present position in home country:* Deputy Director, Ministry of Mines, Geological Survey Department

**Amoah, Kobina** (Ghana)  
*Present position in home country:* Senior Economic Planning Officer, Investments and Project Analysis Division, Ministry of Finance and Economic Planning

**Chatterjee, Rachel** (India)  
*Present position in home country:* Joint Development Commissioner — Handlooms, Ministry of Textiles

**Dilla, Humberto Aroldo** (Cuba)  
*Present position in home country:* Scientific Researcher, Centro de Estudios Sobre América

**Epino, Agnes Padilla** (the Philippines)  
*Present position in home country:* Assistant Director, Office of Career Systems Standards, Civil Service Commission

**Eteki, Marie-Louise** (Cameroon)  
*Present position in home country:* Assistant Chief, Planning and Reconstruction Agency for North-West Yaoundé, Ministry of Urban Planning and Housing, Working Group on Urban and Rural Lands Planning and Services

**Lertsuridej, Prommin** (Thailand)  
*Present position in home country:* Director of Nongsonghong Community Hospital, Office of the Permanent Secretary for Public Health

**Mahlatsi, Lisebo Alina** (Lesotho)  
*Present position in home country:* Senior Planning Officer, Health Planning and Statistics Unit, Ministry of Health

**Morelli, Jorge Eduardo** (Peru)  
*Present position in home country:* Executive Secretary, Social Economic Research, Instituto De Estudios Alberto Ulloa

**Mwiyerwa, Chrissie Nancy** (Malawi)  
*Present position in home country:* Deputy Program Manager, Agricultural Development Division, Ministry of Agriculture

**Najera, Ruben Estuardo** (Guatemala)  
*Present position in home country:* Advisor, Department of Science and Technology, Permanent Secretariat of the General Treaty on Central American Economic Integration

**Pangastuti, Sri** (Indonesia)  
*Present position in home country:* Chief of Health Services for Government Employees Section, Directorate of Community Participation, Ministry of Health

**Rahman, Hamidur Md.** (Bangladesh)  
*Present position in home country:* Assistant Chief — Agriculture Division, Planning Commission, Ministry of Planning

**Rodríguez, Armando Agustín** (Nicaragua)  
*Present position in home country:* General Director, Secretaría de Planificación y Presupuesto, Instituto Nacional de Estadísticas y Censos

**Shrestha, Ramesh L.** (Nepal)  
*Present position in home country:* Section Officer, Foreign Aid Coordination Division, Ministry of Finance

**Swarup, Asha** (India)  
*Present position in home country:* Deputy Secretary/Director — Rural Development, Planning Commission of India

**Wu, Han** (China)  
*Present position in home country:* Deputy Section Chief, Science and Technology Development Section, Guangdong Provincial Science and Technology Commission

### Program-related award

**Andrade, Beatriz O.** (Colombia)  
Undertake a training course on working conditions on health; División de Ciencias Biológicas,

Universidad Autónoma Metropolitana, México, DF, Mexico

**Arroyave, María Elena** (Colombia)  
Undertake graduate studies leading to a master's degree in epidemiology; McGill University, Montreal, PQ, Canada

**ASEAN Training Center for Primary Health Care Development**  
To permit two participants to attend the international training program on planning and management for health and development [Khan, Outhene Vongsyprasom (Laos); Outhone, Anothay (Laos)]; ASEAN Training Center for Primary Health Care Development, Nakhon Chaisri, Thailand

**Baslao, Zubalda** (the Philippines)  
Undertake a doctoral degree in biology, specifically in the area of fish genetics; Department of Biology, Dalhousie University, Halifax, NS, Canada

**Betancourt, Oscar** (Ecuador)  
Undertake a training course on working conditions and health; Universidad Autónoma Metropolitana, México, DF, Mexico

**Bhuj, Dinesh Raj** (Nepal)  
Support attendance at the regional workshop on community broadcasting and new technologies; Asia-Pacific Institute for Broadcasting Development, Penang, Malaysia

**Bustamante, Cristian** (Chile)  
Participate in the training course on working conditions and health; Universidad Autónoma Metropolitana, México, DF, Mexico

**Consejo Superior Universitario Centroamericano** (Costa Rica)  
Enable seven students to undertake studies toward a master's degree in sociology [Castro Valverde, Carlos (Costa Rica); Garay, Carolina Icabalzeta (Nicaragua); González, Carlos Ramos (El Salvador); Gutiérrez Andrade, María Jesús (Honduras); Povedano, Silvia Lara (Costa Rica); Román Vega, Isabel (Costa Rica); Solís, Mario Alas (Honduras)]; Consejo Superior Universitario Centroamericano, San José, Costa Rica

**Castro Bonilla, Myrlam** (Honduras)  
Undertake studies toward a master's degree in information sciences; Universidad Simón Bolívar, Caracas, Venezuela

- Dschang University Centre** (Cameroon)  
Enable five candidates to undertake research work for the preparation and presentation of their theses; Dschang University Centre, Dschang, Cameroon
- Centro de Investigación y Capacitación en Acuicultura** (Brazil)  
Allow 15 professionals to attend the fourth course organized by CEPTA on Técnicas de Reproducción, Larvicultura y Alevinaje de Peces [Alva, Guillermo T. (Peru); Chaparro, Nicholas (Colombia); Delgado, Penelope (Ecuador); Eraso, Andrés (Colombia); Grajales, Alberto (Colombia); Lopez, Ricardo (Colombia); Paz, Alberto O. (Chile); Rodriguez, Gladys J. (Panama); Salazar, Jose Miguel (Venezuela); and six others]; Centro de Investigación y Capacitación en Acuicultura, Pirassununga, Brazil
- Centro Rosarino de Estudios Perinatales** (Argentina)  
Enable seven physicians to undertake a graduate training program for research in social aspects of perinatology [D'Agostino, Mario; Di Monaco, Rene Alberto; Lardizabal, Jaime Luis; Nardin, Carlos Alberto; Paciocco, Miguel; Velasco, Ricardo Jose; Zasfora, Calixto]; Centro Rosarino de Estudios Perinatales, Rosario, Argentina
- Chica, Ricardo** (Colombia)  
Complete the writing of a thesis toward a doctoral degree in economics; Faculty of Economics, University of Cambridge, Cambridge, UK
- Chitrakar, Roshan** (Nepal)  
Undertake a doctoral degree in education specializing in educational planning; University of Alberta, Edmonton, AB, Canada
- Cisse, Moussa Kola** (Senegal)  
Attend a research management workshop; University of Manitoba, Winnipeg, MB, Canada
- Coulibaly, Souleymane** (Ethiopia)  
Undertake studies leading to a master's degree in geological sciences; Isotopic Geochemistry and Geochronology Research Centre, University of Quebec in Montreal, Montreal, PQ, Canada
- Cuenca, Julio Cesar** (Mexico)  
Undertake studies toward a master's degree in seismology; Universidad Nacional Autónoma de México, México, DF, Mexico
- De la Cruz, Quirino** (the Philippines)  
Undertake a doctoral degree in plant breeding; University of the Philippines, Los Baños, the Philippines
- Diallo, Harouna Abdoulaye** (Senegal)  
Undertake certificate training leading to a program of studies in veterinary sciences; Université Cheikh Anta Diop, Dakar, Senegal
- Doumbia, Edwige Joachim** (Burkina Faso)  
Undertake a master's degree in land use planning and regional development; Laval University, Quebec City, PQ, Canada
- Ethangatta, Linda K.** (Kenya)  
Undertake doctoral degree studies in nutrition sciences; University of Alberta, Edmonton, AB, Canada
- Fundación para la Educación Superior y el Desarrollo** (Colombia)  
Enable three economists to undertake an internship program for socioeconomic research [Alvear, Mario; Escobar, Jaime Humberto; Orbelaez, Maria Angelica]; Fundación para la Educación Superior y el Desarrollo, Bogotá, Colombia
- Gunasekera, Rasanth M.** (Sri Lanka)  
Undertake a doctoral degree in zoology with specialization in fish nutrition; Department of Zoology, University of Singapore, Singapore
- Houalakoue, Jean** (Bénin)  
Undertake, under the supervision of the ICCD, a theoretical and practical course of study leading to a journalism internship (specializing in scientific interpretive writing); International Centre of Communication for Development, Westmount, PQ, Canada
- Kaendi, Joyce M.** (Kenya)  
Undertake doctoral studies in medical anthropology to strengthen the capacity of the Institute of Development Studies, University of Nairobi; University of California, Los Angeles, CA, USA
- Keembiyahetti, Chitra** (Sri Lanka)  
Undertake training course on culture of natural food organisms; Southeast Asian Fisheries Development Center, Tigbauan, the Philippines
- Kisanga, Alda U.** (United Republic of Tanzania)  
Undertake fieldwork for a doctoral degree in technology policy for building materials; Building Research Unit, Ardhi Institute, Dar es Salaam, United Republic of Tanzania
- Kone, Mamadou Ahmed** (Senegal)  
Undertake a master's degree in public communication with specialization in health and communication; Laval University, Quebec City, PQ, Canada
- Lee, Soo-Ann** (Malaysia)  
Undertake a specifically tailored program of training in the safety aspects of pesticide application; Central Toxicology Laboratory, Cheshire, UK
- Lio-Po, Gilda** (the Philippines)  
Undertake a doctoral degree in biology with specific reference to fish virology; Simon Fraser University, Vancouver, BC, Canada
- Loh, Chi Leong** (Malaysia)  
Undertake a doctoral degree in microbiology and immunology; University of Ottawa, Ottawa, ON, Canada
- Mabeza, Hlezipti** (Zimbabwe)  
Undertake a master's degree in agricultural economics (agrobusiness management option) to strengthen the capacity of the University of Zimbabwe for agricultural research; Department of Agricultural Economics, University of Manitoba, Winnipeg, MB, Canada
- Manalo, Cynthia H.** (the Philippines)  
Undertake a master's degree program in agricultural economics with specialization in production economics; College of Economics and Management, University of the Philippines, Los Baños, the Philippines
- Mbarga, Gervais** (Cameroon)  
Undertake a doctoral degree in the sociology of science and of scientific extension; Sociology Department, Laval University, Quebec City, PQ, Canada
- Medialdia, Maria Theresa S.** (the Philippines)  
Undertake a master's degree in economics; Thammasat University, Bangkok, Thailand
- Mlama, Penina** (United Republic of Tanzania)  
Support participation in the summer institute on gender and development; Saint Mary's University, Halifax, NS, Canada
- Mourad, Amil** (Morocco)  
Undertake graduate studies leading to a doctoral degree in geology; Sciences Faculty, Université Cheikh Anta Diop, Dakar, Senegal

**Muteshi, Jacinta K.** (Kenya)  
Undertake doctoral degree in education to strengthen the capacity of Kenyatta University relating to research and training in curriculum issues; Ontario Institute for Studies in Education, University of Toronto, Toronto, ON, Canada

**Mwenesi, Leonard C.** (United Republic of Tanzania)  
Undertake a master's degree in visual arts and design; Department of Arts and Design, University of Alberta, Edmonton, AB, Canada

**Nahar, Luftun** (Bangladesh)  
Undertake a master's degree program in sociology; University of Western Ontario, London, ON, Canada

**Nhema, Alfred** (Zimbabwe)  
Undertake doctoral studies to strengthen the capacity of the University of Zimbabwe in research and training in public administration; Dalhousie University, Halifax, NS, Canada

**Nkunzebose, Janvier** (Burundi)  
Undertake a diploma in documentation; Library Department, Université de Dakar, Dakar, Senegal

**Okatcha, F.M.** (Kenya)  
Participate and learn from two conferences — 2nd Regional Conference of the International Association for Cross-Cultural Psychology and 1st European Congress of Psychology; International Association for Cross-Cultural Psychology, Amsterdam, the Netherlands

**Okoth, Sheila** (Kenya)  
Support field work in Kenya on weed science and so strengthen the Botany Department; Botany Department, University of Nairobi, Nairobi, Kenya

**Ould Mohamed, Cheikh S.** (Senegal)  
Undertake a certificate leading to a program of studies in veterinary sciences; Université Cheikh Anta Diop, Dakar, Senegal

**Pocharawan, Padermchai** (Thailand)  
Undertake a master's degree program in farming systems; Chiangmai University, Chiangmai, Thailand

**Rwakkalkara-Abwoll, E.H.M.** (Uganda)  
Undertake a master's degree in clinical epidemiology; Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, ON, Canada

**Santichai, Rungsiyaprom** (Thailand)  
Support participation in the integrated fish farming training course in China; Network of Aquaculture Centres in Asia — Regional Lead Centre in China, Wuxi, China

**Tevera, Sipiwe** (Zimbabwe)  
Undertake a master's degree in library and information sciences; School of Library and Information Sciences, University of Western Ontario, London, ON, Canada

**Universidade Federal Santa Catarina** (Brazil)  
To support two candidates in completing the writing of their theses toward a master's degree in aquaculture [Fernandes, Wilson Marta (Brazil); Manzoni, Gilberto Caetano (Brazil)]; Universidade Federal Santa Catarina, Florianapolis, Brazil

**Wai, Mar Mar** (Burma)  
Support a 9-month research and study program as a visiting fellow; Institute of Asian Studies, Chulalongkorn University, Bangkok, Thailand

## Project-related award

**Abdel Rahman, Abdel Kareem** (Sudan)  
Undertake a master's degree in library and information sciences; School of Library and Information Science, University of Western Ontario, London, ON, Canada

**Ben Saad, Abdallah** (Tunisia)  
Undertake an internship on improving goat production; Arid Nations Institute, Tours, France

**Ben Salem, Moktar** (Tunisia)  
Undertake a course leading to a degree in agropastoral studies for arid regions; National Centre of Agricultural Studies for Warm Regions, Montpellier, France

**Chomba, Bernard** (Zambia)  
Undertake master's degree training to strengthen the capacity of the Forestry Department of the IDRC Fuelwood Project in Zambia; Faculty of Forestry, University of British Columbia, Vancouver, BC, Canada

**Chunge, R.N.** (Kenya)  
Follow a course on epidemiology to strengthen the Kenya Medical Research Institute; McMaster University, Hamilton, ON, Canada

**Del Valle, Jose** (Chile)  
Complete studies leading to a doctoral degree in food science;

Department of Food Science, University of Guelph, Guelph, ON, Canada

**Diaw, Mariteuw Chimere** (Senegal)  
Undertake studies leading to a doctoral degree in anthropology; Laval University, Quebec City, PQ, Canada

**Djigo, Abdoulaye** (Senegal)  
Support participation in an internship on biomedical equipment maintenance; Montpellier, France

**Elta, Mahran** (Egypt)  
Support participation in the research management workshop; Research Management Workshop, University of Manitoba, Winnipeg, MB, Canada

**El-Kholy, Mohamed Akmal** (Ethiopia)  
Undertake a doctoral degree and thus strengthen the Al-Azhar University in carrying out research in cytogenetics; International Livestock Centre for Africa, Addis Ababa, Ethiopia

**African Institute for Economic and Social Development**  
Allow three students to undertake a program of studies in production and extension, to increase their knowledge of agricultural methods [Azoma, Komla (Togo); Dokpo, Kossi (Togo); Eklo, Kodjo (Togo)]; African Institute for Economic and Social Development, Abidjan, Côte d'Ivoire

**Kiyilapi, James L.** (Kenya)  
Undertake a master's degree in forestry; Department of Forestry, University of Toronto, Toronto, ON, Canada

**Mbai, Crispin Odhiambo** (Kenya)  
Undertake a doctoral degree in development studies to strengthen the Kenya Medical Research Institute in carrying out research related to the implementation and management of health programs in Kenya; Kenya Medical Research Institute, Nairobi, Kenya

**Mdoe, Ntengua** (United Republic of Tanzania)  
Undertake doctoral studies to strengthen the capacity of Sokoine University to carry out livestock research; University of Reading, Reading, Surrey, UK

**Michael, Benedict** (United Republic of Tanzania)  
Attend a course on information technology and computerized library services with special emphasis on water and sanitation; Asian Institute of Technology, Bangkok, Thailand

**Monglben Ali, Sghai R.** (Tunisia)  
Undertake an internship on rural-areas analysis; Arid Regions Institute, Montpellier, France

**Moussa, Mohamed** (Tunisia)  
Undertake an internship on sand-dune fixation and water- and soil-conservation methods; Soil Conservation Directorate, Environment Ministry, Dakar, Senegal

**Omojola, Ademola** (Nigeria)  
Undertake studies in geographic information systems; School of Natural Resources, Sir Sandford Fleming College, Peterborough, ON, Canada

**Otieno, Kenneth** (Kenya)  
Travel to start a doctoral degree program; University of Reading, Reading, Surrey, UK

**Pwiti, Jessica** (Zimbabwe)  
Undertake a master's degree in information management; School of Library and Information Studies, University of Sheffield, Sheffield, Yorks, UK

**Rajab, Hussein I.A.** (United Republic of Tanzania)  
Undertake a master's degree to strengthen the capacity of the Centre for Housing Studies, Dar es Salaam, to carry out research and training in water resources and environmental engineering; University of Toronto, Toronto, ON, Canada

**Salazar, Angel Alejandro** (Peru)  
Undertake studies leading to a master's degree with a major in soil sciences; Soil Science Department, North Carolina State University, Raleigh, NC, USA

**Sikateyo, Bornwell** (Zambia)  
Attend a 12-day training course in advanced epidemiological methods; London School of Hygiene and Tropical Medicine, London, UK

## Young Canadian researchers' award

**Adams, Alayne** (Canada, London School of Hygiene and Tropical Medicine)  
Complete a study on "Seasonal food shortage in the Sahel and its nutritional and socioeconomic implications for vulnerable households"; Institut du Sahel, Bamako, Mali

**Arratia, Maria-Ines** (Canada, York University)  
Undertake research on "Cultural

action and cultural synthesis — a study of emerging pedagogical methods for social transformation and development" in fulfillment of the requirements for a doctoral thesis in social anthropology; Centro de Investigación de la Realidad del Norte, Iquique, Chile

**Booth, Sarah** (Canada, McGill University)  
Undertake research on indigenous green plants used as food and medicine by the Kekchi people in Guatemala; Comité Nacional Prociegos y Sordomudos de Guatemala, Guatemala City, Guatemala

**Bootsma, Harvey A.** (Canada, University of Manitoba)  
Undertake research on the application to fisheries management of the factors affecting primary productivity in Lake Malawi; Department of National Parks and Wildlife, Department of Fisheries, Lilongwe, Malawi

**Brady, Michael A.** (Canada, University of British Columbia)  
Undertake field work on a framework for environmental impact assessment of mining projects in Indonesia for a doctoral degree in forestry; Bandung Institute of Technology, Bandung, Indonesia

**Butz, David** (Canada, McMaster University)  
Undertake research on community sustainability and rural development in Shimshal, Pakistan, in fulfillment of doctoral thesis requirements; Aga Khan Rural Support Program, Gilgit, Pakistan

**Chase, Robert** (Canada, McMaster University)  
Undertake 1 year of study and fieldwork in community and occupational health in partial fulfillment of requirements for a master's degree in design, measurement, and evaluation; Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

**Chlason, Hélène** (Canada, Macdonald College of McGill University)  
Pursue thesis research in partial fulfillment of doctoral degree requirements; Université de Conakry, Conakry, Guinea

**Dua, Enakshi** (Canada, York University)  
Undertake research entitled "A reanalysis of technological development in the Third World: a case study of the Indian machine-tool

industry" in partial fulfillment of the requirements for a doctoral degree; Indian Institute of Public Administration, New Delhi, India

**Girard, Pierre** (Canada, Quebec University)  
Complete research work on the isotope hydrogeology of the Liptako-Niger discontinuous aquifers, in fulfillment of doctoral degree requirements; Science Faculty, Université de Niamey, Niamey, Niger

**Grant, Miriam R.** (Canada, Queen's University)  
Undertake research on low-income rental housing in Gweru, Zimbabwe, in partial fulfillment of the requirements for a doctoral degree; Department of Geography, University of Zimbabwe, Harare, Zimbabwe

**Halle-Meskale, Mezmure** (Canada, University of Quebec)  
Undertake a study on the quantity and quality of groundwater in the Santa Lucia Basin, Uruguay; Dirección Nacional de Minería y Geología, Montevideo, Uruguay

**Hoskins, Eric** (Canada, University of Oxford)  
Complete the final year of studies in community medicine; Department of Community Medicine, University of Khartoum, Khartoum, Sudan

**Jacob, Jacqueline** (Canada, University of British Columbia)  
Undertake research on the formulation of premixes and protein concentrates for poultry production on Kenyan small-scale farms growing maize, sorghum, and millets; Department of Animal Production, University of Nairobi, Kabete, Kenya

**Jedlic, Patricia** (Canada)  
Undertake an overseas professional placement in the field of journalism; *The Bangkok Post*, Bangkok, Thailand

**Korban, Martine** (Canada, Macdonald College of McGill University)  
Undertake research on plant regeneration and selection for salt tolerance of *Phaseolus vulgaris* in tissue culture; Centro Internacional de Agricultura Tropical, Cali, Colombia

**Lopez, Andres** (Canada, University of British Columbia)  
Undertake research on traditional communication practices among the Aymara and Quechua people in Bolivia; Centro de Formación e

Investigación sobre las Culturas Indias, La Paz, Bolivia

**Merette, Marcel M.** (Canada, Montreal University)  
Undertake a study entitled "Politiques d'ajustement de la balance des paiements : étude du cas du Brésil à l'aide d'un modèle calculable d'équilibre général," in fulfillment of the requirements for a doctoral degree; Universidade Federal de Pernambuco, Recife, Brazil

**Montejo, Maria Elisa** (Canada, Laval University)  
Complete a research entitled "Femmes en milieu rural et idéologies : une comparaison Mexique-Colombie," in fulfillment of a doctoral degree; Centro de Investigaciones Regionales, Universidad de Yucatán, Mérida, Mexico

**Morin, Diane** (Canada, Laval University)  
Undertake research work on the relationship between hydro-agricultural projects and schistosomiasis in Mali; National Institute of Public Health Research, Bamako, Mali

**Pigott, Catherine** (Canada, *The Whig Standard*)  
Undertake research on Benazir Bhutto's personality and leadership as they affect grassroots development and the status of women; *Pakistan Times*, Islamabad, Pakistan

**Riley, Evelyn Marie** (Canada, Simon Fraser University)  
Investigate the potential of traditional media for communication development in rural Ghana; School of Communication Studies, University of Ghana, Legon, Ghana

**Rizk, Nagla** (Canada, McMaster University)  
Undertake research on "Comparative advantage, economic efficiency, and research and development: the case of Egypt — a sectoral perspective" in partial fulfillment of the requirements for a doctoral degree in economics; Department of Economics, American University in Cairo, Cairo, Egypt

**Saleh, Walid** (Canada, Concordia University)  
Undertake research to develop a numerical model on groundwater recharge for semi-arid land; Faculty of Agriculture, University of Jordan, Amman, Jordan

**Salinas, Bertha** (Canada, Montreal University)  
Undertake research on the popular

education movement in Latin America focusing on the values, strategies, and tactics in Mexico City; Centro de Estudios Educativos, México, DF, Mexico

**St-Hilaire, Colette** (Canada, Quebec University)  
Undertake a study of feminism and development among the peasant women of the Philippines, in fulfillment of a doctoral degree in political science; Women's Resource and Research Center, Mary Knoll College Foundation, Quezón City, the Philippines

**Technical University of Nova Scotia** (Canada)  
To provide support for two students to undertake research toward a master's degree [Corson, J. (Canada); Dartana, P. (Canada)]; Faculty of Architecture, Technical University of Nova Scotia, Halifax, NS, Canada

## Gemini award

**Montgomery, Susan E.** (Canada)  
Undertake an internship with the Gemini News Service with assignments and research in Namibia; Gemini News Services, London, UK

## John Bene award

**Rewald, Michael** (York University, Canada)  
Follow-up and disseminate the results of research on community forestry in tropical rainforests in Central America; Campo Experimental Forestal "San Felipe Bacalar," Chetumal, Quintana Roo, Mexico

**Tracey, Jacqueline** (University of British Columbia, Canada)  
Pursue studies in Indonesia and collect information on the topic of plantations; University of Bangkor, Jakarta, Indonesia

## Institutional-related award

**Habib, Mervat Hishmat** (Sudan)  
Undertake a master's degree in library science relating to the development of a national information service and bibliographic data base; School of Library, Archival and Information Studies, University of British Columbia, Vancouver, BC, Canada

**Kebede, Yohannes** (Ethiopia)  
Undertake doctoral studies in

agricultural economics; MacDonald College of McGill University, Sainte Anne de Bellevue, PQ, Canada

**Kogi-Makau, Wambui** (Kenya)  
Support participation in the training course on public health nutritional epidemiology; University of Southampton, Hampshire, UK

**Maaref, Moussa** (Tunisia)  
Undertake a master's degree in economics; Economics Research and Development Centre, Montreal University, Montreal, PQ, Canada

**Rop, Isaac** (Kenya)  
Attend a 2-week course on statistical and economic analysis of fertilizer experimental data; International Fertilizer Development Center, Lomé, Togo

**Shao, Ibrahim F.** (United Republic of Tanzania)  
Complete doctoral dissertation on rural financial credit institutions; Institute of Development Studies, Nairobi, Kenya

**Toure, Alassane** (Senegal)  
Complete an internship in records management to increase the archival capabilities in the area of records management; Gestar Group, Montreal, PQ, Canada

## Publications

### IDRC publications

*IDRC annual report 1988-1989 / Rapport annuel CRDI 1988-1989.* IDRC-003/89e,f, 80 + 72 pp.

*Participación comunitaria en la prestación de servicios urbanos en Asia.* Yeung, Y.M., McGee, T.G. IDRC-238s, 308 pp.

*Energy research: directions and issues for developing countries* (Arabic version). IDRC-250a, 312 pp.

*Enseñando a los hijos de los pobres: un estudio etnográfico en América latina.* Avalos, B., ed. IDRC-253s, 175 pp.

*L'incidence de la modernisation sur le développement et le comportement démographique : études de cas dans sept pays du Tiers-Monde.* Vlassoff, C. Barkat-e-Khuda, réd. IDRC-260f, xi + 141 p.

*Evaluating primary education: qualitative and quantitative policy studies in Thailand.* Amrungs Chantavanich, Supang Chantavanich, Fry., G.W. IDRC-261e, x + 234 pp.

*Pour améliorer l'alimentation des jeunes enfants en Afrique orientale et australe : une technologie à la portée des ménages; compte rendu d'un atelier tenu à Nairobi, Kenya, du 12 au 16 octobre 1987.* Alnwick, D., Moses, S., Schmidt, O.G., réd. IDRC-265f, xii + 430 p.

*Problèmes liés à la recherche sur la santé et les soins infantiles : compte rendu d'un atelier tenu à Accra, Ghana, du 22 au 26 septembre 1986.* MacKenzie, F., Ewusi, K., réd. IDRC-266f, viii + 128 p.

*Abrasive disk dehullers in Africa: from research to dissemination.* Bassey, M.W., Schmidt, O.G. IDRC-270e, x + 98 pp.

*Alley farming in the humid and subhumid tropics: proceedings of an international workshop held at Ibadan, Nigeria, 10-14 March 1986.* Kang, B.T., Reynolds, L., ed. IDRC-271e, x + 252 pp.

*Búsqueda: CIID 1988; agua dulce — imperativo humano.* IDRC-272s, 44 pp.

*Rapid assessment of community nutrition problems: a case study of Parbhani, India.* Kashyap, P., Young, R.H. IDRC-274e, vii + 60 pp.

*Évaluation rapide des problèmes de nutrition au niveau communautaire : une étude de cas, Parbhani, Inde.* Kashyap, P., Young, R.H. IDRC-274f, vii + 68 p.

*The global research agenda: a South-North perspective (Searching series).* IDRC-275e, 40 pp.

*Un programme mondial de recherche : une perspective Sud-Nord (Collection Quête d'avenir).* IDRC-275f, 42 p.

*Un programa mundial de investigación: una perspectiva Sus-Norte (Colección Busqueda).* IDRC-275s, 44 pp.

*Basic sensory methods for food evaluation.* Watts, B.M., Ylimaki, G.L., Jeffery, L.E., Elias, L.G. IDRC-277e, x + 160 pp.

*Choice and challenge: global teamwork in developing a contraceptive implant.* IDRC-278e, x + 73 pp.

*Choix et défis : la recherche d'un implant contraceptif — un effort mondial.* IDRC-278f, x + 84 p.

*Principes directeurs pour la construction de fichiers d'autorité dans les systèmes d'information relatifs au développement.* Di Lauro, A., Sly, M. IDRC-TS52f, viii + 194 p.

*Effects of decreasing fertility on infant mortality levels.* Taucher, E. IDRC-TS57e, vii + 52 pp.

*Techniques for collection and analysis of data on perinatal mortality in Kinshasa, Zaire.* Nzita Kikhala, D. IDRC-TS61e, 98 pp.

*Entrepreneurs in education: Canada's response to the international human resource development challenge.* Simpson, D., Sissons, C. IDRC-TS62e, x + 101 pp.

*Entrepreneurs en éducation : la réponse du Canada au défi international du développement des ressources humaines.* Simpson, D., Sissons, C. IDRC-TS62f, x + 116 p.

*Technology, gender, and power in Africa.* Stamp, P. IDRC-TS63e, x + 185 pp.

*Sharing knowledge for development: IDRC's information strategy for Africa / Partage des connaissances pour le développement: stratégie d'information du CRDI en Afrique.* IDRC-TS64e,f, viii + 67, viii + 67 pp.

*Erythrina spp. — Fase I: informe técnico final del proyecto.* IDRC-MR217s, xi + 185 pp.

*Erythrina spp. — Fase II: informe técnico anual del proyecto.* IDRC-MR218s, viii + 123 pp.

*Epidemiologic assessment of acute poisoning incidence in developing countries.* Forget, G., ed. IDRC-MR219e, viii + 55 pp.

*Évaluation épidémiologique de l'incidence des intoxications aiguës dans les pays en développement.* Forget, G., réd. IDRC-MR219f, viii + 58 p.

*Análisis epidemiológico de la frecuencia del envenenamiento agudo en países en desarrollo.* Forget, G., ed. IDRC-MR219s, viii + 58 pp.

*Développement des ressources humaines en Afrique : politiques vis-à-vis des études à l'étranger dans les pays africains et dans les pays donateurs.* Diambomba, M. IDRC-MR220f, iv + 59 p.

*Les étudiants africains au Canada : leur profil, les conditions de leur formation et leurs plans de carrières.* Diambomba, M. IDRC-MR221f, xvii + 298 p.

*Costos de la atención primaria: eficiencia de unidades del primer nivel de atención.* Centro de Investigaciones Multidisciplinarias en Desarrollo. IDRC-MR222s, vi + 88 pp.

*Teaching and learning biology in Kenya — volume 1: educating the elite — harmony and conflict.* Namuddu, C. IDRC-MR223e.1, 108 pp.

*Teaching and learning biology in Kenya — volume 2: teacher participation in research for professional growth.* Namuddu, C. IDRC-MR223e.2, 184 pp.

*Teaching and learning biology in Kenya — volume 3: backbenchers as pacesetters — a small price for individualism.* Namuddu, C. IDRC-MR223e.3, 81 pp.

*Guidelines for executing and documenting small-scale milling projects.* Bassey, M., Schmidt, O. IDRC-MR224e, xi + 34 pp.

*Lignes directrices pour la réalisation et la documentation de projets de petites minoteries.* Bassey, M.,



- Schmidt, O. IDRC-MR224f, xi + 38 p.
- The gender variable in agricultural research.* Feldstein, H.S., Flora, C.B., Poats, S.V. IDRC-MR225e, vi + 58 pp.
- Tendencias en educación y trabajo en América latina: resultados de un seminario regional.* Morales-Gómez, D.A., Gallart, M.A., ed. IDRC-MR226s, iv + 155 pp.
- Sesame diseases: an annotated bibliography from the 1900-1988 literature.* Saharan, G.S., comp. IDRC-MR227e, vi + 75 pp.
- Integration of food crops, fisheries, and nutrition research in northeast Thailand.* Young, R.H., Bernard, A.K. IDRC-MR228e, iv + 28 pp.
- Management of science and technology information projects supported by IDRC.* IDRC-MR230e, 221 pp.
- Solar water disinfection: proceedings of a workshop held at the Brace Research Institute, Montreal, Que., Canada, 15-17 August 1988.* IDRC-MR231e, 240 pp.
- National information and informatics policies in Africa: report and proceedings of regional seminar held in Addis Ababa, Ethiopia, 28 November-1 December 1988.* Akhtar, S., ed. IDRC-MR233e, 312 pp.
- Strategies and methodologies for the planning, design, and implementation of information systems in public administration.* IDRC-MR235e, viii + 385 pp.
- Stratégies et méthodologies pour la planification, la conception et la mise en oeuvre des systèmes d'information dans l'administration publique.* IDRC-MR235f, viii + 417 p.
- Human resource development: results of a 1988 international survey by the International Development Research Centre and the Canadian International Development Agency.* IDRC-MR236e, xiii + 171 pp.
- Développement des ressources humaines : résultats d'une enquête internationale menée en 1988 par le Centre de recherches pour le développement international et l'Agence canadienne de développement international.* IDRC-MR236f, x + 183 p.
- Women's role in natural resource management in Africa.* Rathgeber, E.M. IDRC-MR238e, viii + 133 pp.
- Project profiles: the quality of teaching and training of teachers in the developing world.* IDRC-MR239e, 80 pp.
- L'information, une ressource à partager : vingt années d'expérience du CRDI.* Akhtar, S., éd. IDRC-MR240f, vi + 117 p.
- The selective trainer-trainee scheme of the International Development Research Centre.* Flores, P.V. IDRC-MR245e, 105 pp.
- Epidemiology and statistics in diarrhoea research.* Nagelkerke, N.J.D., Manji, F., Muttunga, J. IDRC-MR246e, 61 pp.
- Use of simple, inexpensive microbial water quality tests: results of a three-continent, eight-country research project.* Dutka, B.J., El-Shaarawi, A.H., ed. IDRC-MR247e, vi + 186 pp.
- Water quality control network: proceedings of the meeting held in Ottawa, Canada, 20-24 February 1989.* Payment, P., Sanchez, W.A., ed. IDRC-MR248e, iv + 28 pp.
- MINISIS Users' Group Meeting 1988 / Réunion du groupe des utilisateurs de MINISIS 1988.* Phillips, W.-J., ed. IDRC-MR250ef, viii + 236 pp.
- Computers in Kenya's secondary schools: case study of an innovation in education.* Makau, B.M. IDRC-MR251e, 245 pp.

## Staff papers<sup>1</sup>

Abraham, A.; Mullin, J. 1989. Beyond the protocol: ethics and research for development. *In* Ethics and technology. Wall and Thompson, Toronto, ON, Canada. pp. 155-164.

Akhtar, S., ed. 1990. IDRC: 20 years in information development. *Information development* (London, UK), 6 (1), 64 pp.

\_\_\_\_\_. 1990. Regional information networks: some lessons from Latin America. *Information Development* (London, UK), 6 (1), 35-42.

Ayling, R.D.; Mubita, A.C. 1989. Research programme: conservation of Zambezi teak ecosystems through sustainable management and utilization. *Forest Genetic Resources Information*, 16, 11-13.

<sup>1</sup> Titles are in the original language of publication.

Bassey, M.W. 1989. Besoins en séchage : le point de vue des fermiers de Sierra Leone. *In* Céréales en régions chaudes. Eurotext, Paris, France. p. 57-69.

\_\_\_\_\_. 1989. Development and use of solar drying technologies. Paper presented at the Nigerian Solar Energy Forum for 1989, Nsukka, 17-20 May 1989. IDRC, Dakar, Senegal. 18 pp.

Belisle, J.F.; Prieto N., M.; Cuvil S., M. 1989. Pescadores artesanales de la costa ecuatoriana. Centro de Planificación y Estudios Sociales, Quito, Ecuador.

Broadbent, K.P. 1989. New information — communication technologies in scientific communication: implications for Third World users. Paper presented at the New Communication Technologies in the Global Information Age, Columbus, Ohio, 9 May 1989. IDRC, Ottawa, ON, Canada. 57 pp.

\_\_\_\_\_. 1990. Information needs for rural development. *Information Development* (London, UK), 6 (1), 49-54.

Brooks, D. 1989. Sustainable development: easy slogan or difficult choice? Paper presented at the Other Economic Summit — North America Conference, 17-19 June 1988. *Human Economy Newsletter* (Mankato, MN, USA), 10 (1), 4-5.

Brooks, D.; Torrie, R.D. 1990. Sustainable energy paths: the possibilities and the challenges. *In* Legal challenge of sustainable development. Canadian Institute of Resources Law, Calgary, AB, Canada. pp. 235-252.

Browne, P.; Gavin, T. 1990. Support for information technology development. *Information Development* (London, UK), 6 (1), 20-27.

Camara, A.B. 1990. Implementing an information strategy for sub-Saharan Africa: the first stages. *Information Development* (London, UK), 6 (1), 55-81.

Cliche, G.; Valantin, R. 1988. Remote sensing research for development at IDRC. Paper presented at the International Symposium on Remote Sensing of Environment, Abidjan, 20-26 Oct. 1988. IDRC, Ottawa, ON, Canada. 7 pp.

Coulibaly, S.; Antoine, P. 1989.

Insertion urbaine des migrants en Afrique : actes du séminaire « Insertion des migrants en milieu urbain en Afrique », Lomé, 10-14 fév. 1987. Office de la recherche scientifique et technique outre-mer, Paris, France. 242 p.

Daniels, W.D. 1989. Evaluation process in a development agency. Paper presented at the Department of Communications Seminar, University of Windsor, Windsor, Jan. 1989. IDRC, Ottawa, ON, Canada. 9 pp.

\_\_\_\_\_. 1989. Reflections on alternative futures. Paper presented at the Future of Alternative Sciences in Asia: Agricultural and Health Research and Delivery, Vancouver, BC, 28 Oct. 1989. IDRC, Ottawa, ON, Canada. 8 pp.

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