

IDRC ANNUAL REPORT 1987 / 1988



The map on the front cover is based on the Peters' Projection rather than the more familiar Mercator Projection.

The Peters' Projection introduces several innovative characteristics: an accurate rendition of the proportion of the land surface area; graphical representation of the entire world surface, including the polar regions; and the Equator placed at the centre of the map. The distortions that do appear are distributed at the Equator and at the Poles; the more densely settled earth zones, it is claimed, appear in proper proportion to each other.

The map is printed courtesy of Dr Arno Peters of the University of Bremen.



INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
CENTRE DE RECHERCHES POUR LE DEVELOPPEMENT INTERNATIONAL

Chairman of the Board
Président du Conseil

July 15, 1988

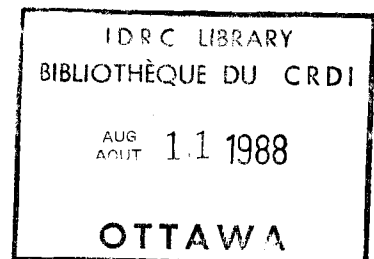
The Rt. Hon. Joe Clark, P.C., M.P.
Secretary of State for External Affairs
Lester B. Pearson Building
Ottawa, Ontario

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, 1988 which includes the financial statements of the Centre and the Auditor General's report thereon.

Yours sincerely,

Janet M. Wardlaw
Janet M. Wardlaw



Head Office

IDRC, P.O. Box 8500, Ottawa, Ontario, Canada K1G 3H9

Regional Office for Latin America and the Caribbean

CIID, Apartado Aéreo 53016, Bogotá, D.E., Colombia

Regional Office for the Middle East and North Africa

IDRC/CRDI, P.O. Box 14 Orman, Giza, Cairo, Egypt

Regional Office for South Asia

IDRC, 11 Jor Bagh, New Delhi 110003, India

Regional Office for Eastern and Southern Africa

IDRC, P.O. Box 62084, Nairobi, Kenya

Regional Office for West and Central Africa

CRDI, B.P. 11007, CD Annexe, Dakar, Sénégal

Regional Office for Southeast and East Asia

IDRC, Tanglin P.O. Box 101, Singapore, Republic of Singapore

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

©International Development Research Centre 1988

IDRC, Ottawa CA

IDRC-003/88e,f

IDRC annual report 1987-1988. Ottawa, Ont., IDRC, 1988.

93 p. : ill.

/Annual report/, /IDRC/ — /development research/, /research projects/.

UDC: 338.001

ISBN: 0-88936-524-5

ISSN: 0704-7584

A microfiche edition is available.

Mention of a proprietary name does not constitute endorsement of the product and is given only for information.

Annual Report 1987-1988

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; forestry; fisheries; animal sciences; energy; tropical diseases; water supplies; health services; education; population studies; economics; communications; urban policies; science and technology policy; 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 nine other governors must be Canadian citizens; in practice, 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 the researchers so that these countries can work to solve their own problems. Research projects supported by the Centre 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

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

Contents

Introduction	5
<hr/>	
Divisional summaries	8
<hr/>	
Board of Governors	29
<hr/>	
Officers of the Centre and Regional Directors	30
<hr/>	
Financial commentary and highlights	31
<hr/>	
Auditor's report	39
<hr/>	
Projects for which funds were approved during the fiscal year 1987-1988	50
Agriculture, Food and Nutrition Sciences	50
Communications	57
Earth and Engineering Sciences	57
Fellowships and Awards	59
Health Sciences	61
Information Sciences	66
Social Sciences	69
Division activity projects	76
<hr/>	
Fellowships	77
<hr/>	
Publications	83
<hr/>	

Introduction

At the beginning of this year, the Government of Canada announced its aid strategy for developing countries. The highlights of this strategy include the government's commitment to review all its aid activities in light of how they contribute to increasing the ability of the recipient countries to solve their own problems. In practice, this means that the development of local skills is now the priority of Canada's official development assistance.

The International Development Research Centre (IDRC) strongly approves of this policy of the Canadian government and fully supports it. All of IDRC's activities may be summed up as constituting a bold investment in one of the most valuable components of Third World human resources — that is, the men and women who seek original and practical solutions to development problems in partnership with the most disadvantaged peoples. In the 18 years that have passed since it was created by the Parliament of Canada, IDRC has helped to train thousands of technicians and scientists. Some have been appointed to important decision-making positions; others are playing their part, day after day, in the work of hundreds of research institutions, and a great number have been decorated for the contribution they have made to improving the lot of their fellow citizens.

The most telling proof of the importance attached by IDRC to the development of human capital is the fact that it is itself prepared to be a place for experience and training, which leaves plenty of room for residents of the Third World to serve at all levels of the organization. In this way, IDRC's daily operations become an opportunity for many people from Third World countries to advance their skill and knowledge through exchanges with and advice from their colleagues.

At the highest level, there are seven representatives of Africa, Asia, the Caribbean, and Latin America on IDRC's Board of Governors. Its six regional offices in Bogotá, Cairo, Dakar, Nairobi, New Delhi, and Singapore, which form the spearhead of its drive to decentralize, are all managed by individuals from the particular region. In addition, at the various executive levels in Ottawa and in the regional offices, there are dozens of experts, scientists, and specialists from developing countries. Many of them return, after several years of service with IDRC, to take up important leadership positions in their own countries.

These IDRC staff members interact constantly with the hundreds of researchers who are looking for lasting solutions to the problems of development. They are encouraging the best minds in the developing regions to push forward and extend the supposed frontiers of knowledge and innovation, which too many people in industrialized countries consider unalterable. They constantly nourish the intellectual, creative, and innovative ferment that develops along with one of the most valuable human qualities: the conviction that it is possible to set things on a new course and shape the

future. The thousands of partners of IDRC, with a new sense of purpose created by their ability to change the world, have an increasingly firm belief in their own worth. There is, in fact, no stage on the way to the full and proper use of human resources that is more critically important than the individual's arrival at a consciousness of personal worth. The most critical moment in the development of a human being or a community has certainly arrived when self-awareness becomes a reality. IDRC, because it leaves the initiative to the Third World researchers, is a powerful instrument for developing this self-confidence.

By giving the leading minds of the Third World the opportunity to meet the challenges of scientific and technical creation, IDRC is opening up a limitless horizon to the development of human resources. Moreover, this "brains trust" is not confined within an ivory tower. The scientists supported by the Centre are in close contact with the people who are experiencing the problems under study. This greatly enhances the possibility of finding realistic and workable solutions. From time to time, the research work even affords real opportunities to transfer scientific methodology to fishermen, families, and farmers. For example, village women help to design, implement, and analyze inquiries into the health needs of their communities; peasants join with breeders in producing improved strains; and residents of shanty towns work along with sociologists and planners who are searching for new ways of improving their quality of life. More and more of the research projects are providing opportunities to share scientific methodology with peoples who are, in some cases, illiterate — solid evidence that human resource development knows no limits.

The appropriateness of a strategy based on the full development of human resources is amply demonstrated by the results achieved. At first glance, there is not much difference between a turnkey operation and one that is built using locally developed technology; between seed that has been imported and seed that has been produced on site; between a given piece of equipment and another that was made by workers in the community. However, time will doubtless reveal the difference. Technology that has no local roots rusts, breaks, and comes to a stop for lack of proper maintenance and spare parts; in contrast, technology that has been invented and produced locally not only endures, but also can change, evolve, and develop. Several IDRC projects — in the areas of telecommunications, computerization, improvement of strains, economic innovation, food processing, wastewater treatment, and water supply — have created centres of excellence. In the context of these projects, Third World experts, who are world authorities in their fields, provide training for colleagues from other developing countries. There is no better proof of the value of an investment in raising the level of human ability.

The needs are nevertheless immense: less than 3% of all research and development funds are spent in developing countries. These countries have only 95 engineers and scientists per 10 000 inhabitants, as compared with an average of 285 for the countries with market economies. A society has no future if it cannot rely on a steady stream of new knowledge provided by its own researchers.

This need for local scientific and technical skills has gained further importance since the World Commission on Environment and

Development — the Brundtland Commission — demonstrated how important it is to develop viable long-term agriculture that is more ecologically based and less dependent on chemical products. This type of agriculture requires a steady flow of new strains that are appropriately adapted to local conditions. The switch from chemical to biological pest control depends on the ability, at the local level, to identify “good insects” and to increase their numbers, because viruses, bacteria, and harmful insects are constantly evolving. In fact, agriculture that shows greater respect for the environment and has a more strongly biological orientation cannot exist without continuing input from specialists in the local environment; this kind of agriculture cannot be imported.

The need for local skills is obvious with regard to viable agriculture that respects the environment; it applies just as much to the health and well-being of local populations. The bacteria and viruses that affect human beings differ from one place to the next and their evolution is determined by the conditions of their local microenvironment. The same goes for the analysis of the economy; even though world economies are increasingly interrelated, the inhabitants of East Africa, Southeast Asia, and Latin America need to know their own socioeconomic context and to invent strategies and policies tailored to their needs.

Improvement in scientific and technical skills also creates better conditions for the development of national human resources. The quality of training is greatly enhanced by the contributions of highly qualified researchers, beginning with teaching in universities and in specialized institutes.

Finally, IDRC places great emphasis on South-South cooperation in scientific and technical training. IDRC gives researchers an opportunity to learn on the job, increases exchanges, encourages the growth of centres of excellence, assists researchers who engage in teaching to keep their knowledge up to date, and awards a large number of training fellowships in the institutions of developing countries; these actions have numerous multiplier effects, all of which contribute to the most promising human resource development.

All the work devoted to the development of individuals is carried out in a context of research related to everyday problems. In this way, the individuals supported by the Centre raise their level of competence and, at the same time, make a solid contribution to improving the living conditions of their fellow citizens.

During the past financial year, IDRC has placed particular emphasis on the coordination of its programs, so that the people it is helping to train will have both a sound training in a specific scientific discipline and the ability to work with colleagues in other disciplines. For example, several groups of specialists in agricultural and aquacultural research have been trained in economics and in promoting the results of research. In this way, those individuals funded by IDRC increase their competence without losing sight of their basic objective: to improve the conditions of the world's poorest inhabitants.

Divisional summaries

Agriculture, Food and Nutrition Sciences 107 projects, \$26.5 million

The goal of the Agriculture, Food and Nutrition Sciences (AFNS) Division is to increase access to food for the individual. Achieving this goal involves strategies that go beyond increasing food production. Equitable distribution of the benefits of agricultural production and the purchasing capacity of the rural and urban poor must be ensured. The need to increase opportunities for income-generation and employment within the production and utilization system for renewable natural resources is thus of increasing concern. Concerns for qualitative aspects of food has also led to increased programing in nutrition.

Promoting the development of sustainable land-use systems has become both a program objective in itself as well as an underlying factor to be considered in all program activities of the Division. These broad themes are reflected in the specific examples of activities of the Division's five programs that follow.

AFNS is developing stronger links with other divisions and collaborates in their new initiatives. For example, since the Women in Development Unit was created in the Social Sciences Division, AFNS has contributed funds to the Unit and included gender-related considerations in its programs.

Crop and animal production systems

The development of stable and sustainable crop- and animal-production systems underlines many of the projects supported by the crop and animal production systems program. For example, special attention was given in 1987-1988 to agroforestry: the integration of woody perennial species into agricultural systems. Such systems not only provide fuel, timber, fodder, food, and other products, but the trees and shrubs can also play a major role in recycling nutrients and in stabilizing and protecting soils from erosion.

The program joined the forestry program in supporting three new agroforestry projects in 1987-1988: the collection of the leguminous tree, *Sesbania* species, in Tanzania; the biological control of psyllids, a devastating pest of *Leucaena*, in Asia; and the development of alley farming systems in Mali — alley farming is an agroforestry system in which crops are grown between hedgerows of trees or shrubs, with the prunings from the hedges being either fed to livestock or used as a mulch. In addition, support was given to second phases of two projects originally funded by the forestry program alone: one in Peru and one in Kenya. In the project in Kenya, the new phase will ensure widespread testing and dissemination of some of the new technologies developed in phase one, particularly for live fencing using

species of *Caesalpinia*, *Parkinsonia*, and *Zizyphus*, and for improving grazing land using *Acacia*, *Leucaena*, and *Prosopis* species.

Another new initiative during the year was the support of an innovative research project on soil erosion in Nepal. This cooperative project involves the Integrated Soil Survey Section of the Nepalese Government and the University of British Columbia, Vancouver. The project seeks to study the extent, causes, and consequences of soil erosion under various land-management practices in the mid-hills of Nepal, with the aim of identifying sustainable land-use systems. The theme of sustainable land-use systems was also pursued in three related projects on agropastoralism in the Maghreb countries of Algeria, Morocco, and Tunisia.

In late 1986, IDRC and the Small Ruminant Collaborative Research Support Program of the U.S. Agency for International Development (USAID) jointly sponsored a workshop on production systems for small ruminants in South and Southeast Asia. Participants at the meeting stressed the large potential contribution that tree cropping systems could make to providing feed for sheep and goats. About 20 million ha of land are under permanent tree crops in the region. As a result of this meeting, proposals have been prepared for several related projects that look at integrating small ruminants with perennial crops. The first project on this theme was funded in 1987-1988 and seeks ways to use, more effectively, the land and natural vegetation under coconuts for increased meat production, especially from goats.

Research on small ruminants continues to receive a high priority because of their importance in smallholder systems, in harsh environments, and in areas of Africa that are unsuitable for cattle production because of tse-tse fly-transmitted trypanosomiasis. A project in Zimbabwe, aimed at improving goat and sheep production through improved management and breeding, was renewed for a second phase. Goats are also the main focus of a new project in Nepal.

A group of projects on rice-fish systems started in 1986-1987 with a project in northeastern Thailand. In 1987-1988, a second research project, also looking at integrating fish within rice-based systems, was started in Indonesia. Raising fish in rice paddies has been shown to have beneficial consequences for rice yields and, at the same time, the production of fish contributes to improved diets and to increased incomes. A further project was started during the year on the management of muscovy ducks for meat in Thailand.

A new area of research that was initiated during 1987-1988 addresses the issue of draft animal power. It has been estimated that about half the land area in developing countries is cultivated using animal power and, in parts of Asia, the fraction is much higher. Research on animal power, especially on buffalo, has been generally neglected and little is known about power and labour constraints on small farms, the potential contribution of draft animals, and the extent to which farmers are willing to allocate scarce resources of time or money to alleviate these constraints. In an attempt to address these issues, three parallel projects were supported in India, the Philippines, and Thailand.

In the crops area, a new initiative was supported on testing triticale on small farms in Syria. Although IDRC supported several projects on triticale

in the 1970s, little support has been provided recently. Triticale, an artificial crop developed from crosses between wheat and rye, performs well in rainfed regions that are too dry for bread wheat. It has a good protein content and out-yields barley at the wetter end of the barley-growing rainfall spectrum.

The Oilcrops Network for Eastern Africa and South Asia continued to expand during 1987-1988. The core network project was renewed, with continued support for the network advisor based in Ethiopia. In addition, the national projects in Sri Lanka and Ethiopia were renewed for second and third phases, respectively. The project in Sri Lanka has made good progress in developing improved sesame and groundnut lines. These are now being tested in adaptation trials on farmers' fields in several districts in the dry zone of the country. In Ethiopia, high-yielding new cultivars of rapeseed, sesame, and groundnuts have been released, and on-farm trials have indicated that, through a combination of improved varieties and agronomic practices, yields may be substantially increased for several oilseed crops including nigerseed, linseed, rapeseed, mustard, and sunflower. New initiatives were also started during the year in Tamil Nadu, India, and in the Philippines on sesame research.

Cropping-systems research continued to receive a high priority. A project in Jamaica was renewed for a second phase. The first 3 years of the project saw the successful development and evaluation on-farm of several improved cultivars and production systems for maize, sorghum, plantain, potato, yam, cabbage, and passion fruit. These new technologies have been well accepted by many small-scale farmers and the project will make special efforts during the second phase to monitor the extent of adoption and impact of the research.

Forestry

The forestry program continues to support social, or integrated, forestry designed to meet the needs of village communities and small landowners. Research to improve the supply of wood-based energy in the countryside and cities and to integrate trees into crop and livestock systems is now the priority topic within the program. The objective is to develop simple technologies that rural communities can apply easily. These priorities have been defined in the context of the Division's major theme of providing access to food. Clearly, the forestry program can seldom provide food directly; however, its support of research into integrated production systems and provision of energy does contribute to the overall objective of the Division. Equally, in its support for other areas of forest research — for example, bamboo and rattan — the program is concentrating on areas that can generate income, again in line with increasing access to, or purchasing power for, food.

Some initiatives developed during the year deserve special mention. In Asia, a new regional project links four countries and eight institutions in research on palmwood utilization. The stems of coconut, oil palm, and other palms offer a potential timber resource in many countries of Southeast Asia, and undertaking the necessary research jointly avoids duplication and assures the sharing of benefits.

In Pakistan, another project will transfer technology developed in an ongoing project in China for intercropping wheat with the multipurpose tree, *Paulownia*. Scientists from the Chinese project will provide the technical support.

Two other projects in agroforestry are of particular interest. The first is a new project in Zimbabwe that will investigate the short- and long-term effects on soil fertility of eucalypts, in particular the reported allelopathic effects between some species and agricultural crops grown with them in integrated systems. The second is an ongoing project in Peru to develop agroforestry systems for the small-scale farmers in the upper Amazon basin. A technically productive first phase is now being followed by a second in which work will concentrate on the economic aspects and the delivery of the technological package to farmers — this project is closely linked to the native fruit-tree project in Peru that was approved last year.

Support for research into bamboo and rattan continues to represent a major theme of the program, not only in Southeast Asia, but also now in Africa and South Asia. A total of 19 projects on this topic are now active. During the year, a film on bamboo was produced by the Communications Division in collaboration with staff of the forestry program.

Another example of collaboration with other divisions is forestry's participation in a project to combat the Chagas infection in Paraguay. The disease-carrying insects nest in the wooden houses of the region and Paraguayan timber technologists will work on simple improvements to house design to reduce this risk. Collaboration with the crop and animal production and the agricultural economics programs is now a regular feature in developing and monitoring projects in agroforestry.

Fisheries

The fisheries program continued to grow in 1987-1988. In Latin America, the Aquaculture Network is continuing to expand and a joint series of projects involving other programs of the Division has been developed. For instance, a mariculture-systems project in Chile and an aquaculture-development project in Colombia were approved this year. The network coordinator is based in Colombia and is playing a key role in leading these activities. The network now produces a newsletter and is establishing several specialized study groups to look at such specific technologies of aquaculture as genetics, breeding, and larval rearing. The projects on artisanal fisheries in this region are now moving into an implementation phase based on an integrated coastal development plan.

This year has seen an increased emphasis in Africa both in aquaculture and artisanal fisheries. New projects on pisciculture in Côte d'Ivoire and Mauritania, plus a project on integrated livestock and aquaculture in Cameroon, have greatly expanded the IDRC-funded aquaculture activities in this region. Strong aquaculture-economics components were necessary in Côte d'Ivoire and Mauritania to develop appropriate small-scale farmers' systems.

The second phase of a study on artisanal fisheries in the Casamance of Sénégal is of interest. This project follows on an earlier phase funded solely by IDRC's Social Sciences Division. The second phase involves linkages with

IDRC's Communications and Social Sciences divisions in addition to the agricultural economics program of AFNS. It is recognized that most fisheries activities are broadly based and require interdisciplinary holistic approaches and the program expects to receive increasing numbers of proposals, including economics and implementation components.

In Asia, the existing networks on disease, farming systems, and nutrition are being expanded with new projects in Indonesia, the Philippines, and Thailand. Of note is the large interdivisional project to establish an international centre for mariculture research and training at the Yellow Seas Fisheries Research Institute in Qingdao, Shandong Province in the People's Republic of China. This institution-building grant involves major support from the fisheries program as well as from the Fellowships and Awards and the Communications divisions.

In addition, the agricultural economics and fisheries programs of AFNS and the Social Sciences Division jointly funded the third phase of the Asian Fisheries Social Science Research Network.

A final interesting example of the new approaches available in IDRC's support package is the recent small-grants project approved with the Asian Fisheries Society. It is expected that this project will provide critical support to young Asian fisheries scientists to increase both their number and quality as well as to develop the Asian Fisheries Society itself as a regional body promoting fisheries activities.

Postproduction systems

The postproduction systems program continued to pursue, in 1987-1988, applied results and technology adaptation for food needs and income generation in a predominantly rural environment. Availability and nutritional adequacy of foods is a key objective of the program within three subprograms: food processing, utilization, and nutrition; food handling, storage, and drying; and equipment design, adaptation, and testing. These involve, respectively, transforming and preparing basic food commodities into more acceptable, usable, and nutritious forms; primary stabilization, preservation, and distribution of food commodities; and appropriate hardware and its application to specific problems identified in the first two categories.

Because much of what the program supports interacts with production and socioeconomic factors, a close working association with other programs of AFNS and IDRC divisions has been developed. Of 18 projects funded during the year, 9 involved some form of direct collaboration. A small-grants project was supported with the fisheries program in Asia, three fisheries projects were supported with the fisheries and agricultural economics programs in Latin America, a project on dehuller-milling systems was supported with agricultural economics in the Gambia, and a production and marketing project for oilcrops in the West Bank was jointly funded with the crop and animal production systems program. Two postproduction projects received additional support from the Communications Division to promote the application of research results on groundnut shellers in Thailand and on maize storage in Togo. A project to improve the groundnut industry evolved from a groundnut marketing study in the Philippines.

A relatively large project was jointly developed and funded with the Canadian International Development Agency (CIDA) to establish stronger, better focused, national programs on postharvest treatment of grains in the six countries of the Association of South East Asian Nations (ASEAN).

Nutrition improvement was a major theme of the program throughout the year. In addition to funding a project on infant foods in India, and contributing to a document on nutrition by a Centre working group, three program-development studies and a workshop were supported. The latter, with IDRC's Health Sciences Division and the United Nations Children's Fund (UNICEF), was on household food technologies to improve feeding of young children. The studies included diagnosing nutrition needs in rural India, adapting techniques of rapid rural appraisal from farming-systems research methodology, and evaluating the role and potential of nongovernmental organizations (NGOs) in nutrition-delivery programs in India.

Introduction of milling systems and dehullers remains a strong part of the program in semi-arid Africa where coarse grains are important. The focus of these projects has shifted from hardware development, a necessary but not sufficient entry point, to greater understanding of the beneficiaries' needs and enhanced food security. Projects were funded dealing with marketing of sorghum products in Kenya and Lesotho; dehuller pilot testing in the Gambia, Kenya, and Niger; and sorghum utilization in Tanzania.

The program continued support on the major issue of crop drying at the appropriate place, time, and cost within given food systems. A project was approved linking researchers at Queen's University in Canada with colleagues in five West African countries to improve solar-drying systems that are applicable at the farm level. The project continues laboratory studies of applied thermodynamics and computer simulation with field testing of improved models under various conditions and on different food commodities.

Agricultural economics

The agricultural economics program's major activity continues to be integrating social sciences into the development and introduction of technology in rural areas. During the year, increasing emphasis was put on the institutional aspects of changing technology. Credit is an important factor in technology introduction and, in Sénégal, an innovative project was funded on farmers' savings and credit that supports farmers' organizations to develop their own credit and rural institutions. A new project on national grain-quality economics links biological and social scientists in the International Rice Research Institute (IRRI) and eight Asian countries in determining what value the markets in each country put on each of the major characteristics of rice grain: this information will help biological scientists establish research priorities.

Eight projects based on crop and animal systems in six Latin American countries are working together to find the critical determinants that affect adoption of new technology in farming-systems research programs. A new initiative has been started in the Maghreb with three projects on pastoral systems to help define research priorities for the future. These projects

include two other AFNS programs plus the Women in Development Unit. It is hoped that the Social Sciences Division will join in the second phase of activities.

In line with the new emphasis on involving the poor in the research process, and in collaboration with other programs, IDRC divisions, and international donor agencies, two new activities on oilseed protein in Kenya and on natural-resource management on communal lands in Zimbabwe have been started in eastern and southern Africa. Both activities focus on bringing together all those concerned to work out a desired future before starting detailed research activities.

Communications 6 projects, \$0.8 million

The Communications Division plays a vital role in promoting the results of projects funded by other IDRC divisions by supporting a whole range of methods and means for disseminating research results as well as by encouraging their adoption and use. The Division also studies all strategies and methods used to better plan promotional activities for the Centre. What distinguishes the Communications Division in particular is the role it plays for the Centre throughout Canada as the unit responsible for the public affairs program and for establishing an education program on development.

Through funding granted to numerous Third World groups, the Communications Division supports a wide range of innovative projects developed by members of the electronic and print media, popular science writers, and editors of scientific publications, as well as scientists who are prepared to work in concert with communications specialists.

Over the past year, most projects supported by the Division have been aimed at utilizing research results. In Togo, West Africa, the second phase of the project on improving traditional maize storage techniques will consist mainly of efforts to disseminate results. The Division is cooperating on this project with the Agriculture, Food and Nutrition Sciences Division. In conjunction with the Social Sciences Division, which provided all funding for the first phase of research, these two divisions are also working on a project involving artisanal fisheries in southern Sénégal.

A very ambitious project involving three IDRC divisions — Agriculture, Food and Nutrition Sciences; Fellowships and Awards; and Communications — is aimed at making the Yellow Seas Fisheries Research Institute in Qingdao, in the People's Republic of China, an aquacultural training centre for developing countries. The Communications Division will be funding the production of written and audiovisual teaching materials. The Division is also involved in promoting techniques in China for planting *Paulownia*, a fast-growing tree used as a wind break and as a source of firewood and lumber. Spectacular results have been obtained thus far, especially after funding was provided by the Agriculture, Food and Nutrition Sciences Division. The goal of the project is to encourage the planting of *Paulownia*, not only in the 14 provinces in northern and southern China, but also in South America.

At the meeting of IDRC's Board of Governors in Nairobi, Kenya, in March 1988, Board members visited an agroforestry research site. The project, which is supported by the Agriculture, Food and Nutrition Sciences,

Social Sciences, and Communications divisions, forms an open-air forestry school. The research team has contributed greatly to promoting the concept of agroforestry, a promising technique that closely links farming, animal husbandry, and forestry. Research results will also be relayed to farmers by students and community groups.

In 1987-1988, the Communications Division also continued its support for scientific and technical publishing in Africa. In cooperation with the Agence de coopération culturelle et technique, individuals in charge of scientific publications in northern Africa participated in two workshops on desk-top publishing in Rabat, Morocco. Approval has also been given for a huge project aimed at restarting publication of three scientific periodicals in Côte d'Ivoire, Sénégal, and Tanzania, to be undertaken in conjunction with the Canadian Association of African Studies.

Another project supported by the Division will enable the University of the Philippines in Los Baños to develop five teaching modules on research management techniques. The modules include manuals, and examples are presented in a very lively manner on videocassette. Scientists involved in several IDRC projects should also be able to benefit from this course.

Publications

In 1986-1987, the Division published 51 monographs, proceedings, technical studies, and manuscript reports covering numerous areas of research receiving support from IDRC's other program divisions. These are listed on page 83 together with those publications resulting from Centre-funded research — titles are given in the original language of publication. Catalogues of IDRC's publications are available on request.

Magazines

The Division also administers, on behalf of the Centre, a number of development information services for a variety of audiences both abroad and in Canada. The Centre's quarterly magazine, *The IDRC Reports*, is an important element in these services. The magazine contains articles on research funded by the Centre and on subjects related to its work. The print run is 28 000 for the English, French (*Le CRDI Explore*), and Spanish (*El CIID Informa*) versions, with about 60% going to the developing countries, more than 22% within Canada, and the remainder to other industrialized countries. *The IDRC Reports* is published in January, April, July, and October. A special annual edition is published in Arabic.

Films

Last year, IDRC produced a documentary film titled *Bamboo: The Miracle Grass*. The film, which runs for 27 minutes, follows the multiple uses of this astonishing plant and examines the efforts made by Asian researchers to protect it and ensure its successful growth and development.

As with all IDRC films, *Bamboo: The Miracle Grass* is available as 16-mm prints or on videocassette (in NTSC, PAL, or SECAM signal systems and in U-matic, VHS, or Betamax formats). A catalogue of IDRC's films is available on request.

Earth and Engineering Sciences

26 projects, \$7.8 million

The Earth and Engineering Sciences Division is the new name for the Cooperative Programs Division, which was established as a result of the United Nations Conference on Science and Technology for Development held in Vienna in 1979. Initially an IDRC section and then a division, cooperative programs began in the fiscal year 1980-1981. They grew out of the perceived need for cooperation between research institutions in developing countries and those in Canada — before 1980, Third World institutions were almost exclusively the sole recipients of IDRC's grants.

Since the Division was established, it has had three main objectives: first, to develop the scientific and technical research capacity of participating Third World institutions and associations; second, to create lines of communication and exchange between Canadian scientists and those in developing countries; and, third, to encourage Canadian research groups to take a practical interest in the increasingly numerous and diverse problems that impede development in the Third World.

Over the years, the Division has been involved in a great many research projects, which fell into three main categories that have become the programs of the new Division. During 1987-1988, the Division was renamed the Earth and Engineering Sciences Division, a name that better reflects its main areas of activity. The new name also redefines its mandate, as only those programs described here are now eligible for funding.

Earth sciences

The Division's first program of specialization, established in 1983, is earth sciences, which comprises three subprograms: hydrogeology and hydrology, geotechnics, and a small sector on mining that includes agrogeology. The first two subprograms use engineering principles to deal with environmental problems of a geological nature, earthquakes and volcanos, soil erosion and slope instability, and water supply and potability. The third subprogram funds research into the efficient extraction and processing of local natural resources, especially industrial minerals for use by the poorest countries.

Technology for local enterprises

A second program, established in 1984, is technology for local enterprises. Specific areas of concentration, which fall under the broad heading of job creation, will be announced in the coming year. Generally, the program deals first with improving traditional labour-intensive techniques through the gradual, rational introduction of new technologies and second with developing methods for processing local animal-, vegetable-, and mineral-based natural resources.

Building industry, materials, and technologies

The third program, building industry, materials, and technologies, was launched last year and deals with the complex problem of shelter for the homeless. The program concentrates on using local materials and on

developing construction techniques that can use these materials. Funding research on startup of small- and medium-sized industries to manufacture construction materials from local natural resources is an essential element of this program.

New directions

In 1987-1988, the new Division funded several projects that reflect its new thrust. As part of the hydrogeology subprogram, the University of Quebec at Montreal is working with the Université de Niamey in Niger to define sites with high potential for water power. Through field observation, photointerpretation, and geophysical exploration, Canadian and African hydrogeologists hope to increase the success rate of very costly wells. Another project with similar goals is being conducted in neighbouring Burkina Faso, by the Centre d'études sur les ressources minérales of the University of Quebec at Chicoutimi and the Université de Ouagadougou. This team is evaluating the technique of hydraulic fracturing to stimulate unproductive wells.

The catastrophic mudslides that killed so many in Brazil in early 1988 emphasize the importance of research being conducted by the University of Alberta and the Pontificia Universidade Católica, Rio de Janeiro, to stabilize the sides of the spectacular hills that flank that country's economic capital. Once covered by dense tropical rain forest, these slopes are now home to hundreds of thousands of poor families. Researchers are attempting to determine how to stabilize the slopes and protect the shanty-towns that cling to them. In Malaysia, specialists from McGill University will be working with a team from the University of Malaya, the Technical University of Malaysia, and the Geological Survey of Malaysia to stabilize the soils of former tin-mining sites that have been filled in and on which subsidized rental housing has been built. This cooperative project will apparently involve a totally new method for restoring land gutted by strip mining, not only in Malaysia, but also in Burma, Indonesia, and Thailand. Again in the field of small-scale mining, the Division has agreed to fund a promising project of the University of Guelph and the Sokoine University of Agriculture in Tanzania. Canadian and Tanzanian scientists have already identified several reserves of natural mineral fertilizers that can be applied almost directly to farmers' fields. This work should make it possible to determine the feasibility of using natural phosphate-rich minerals.

Within the technology for local enterprises program, the Division has funded several projects to promote local job creation. For example, McMaster University and the Universidad de Concepción in Chile are working together to develop an antirust coating extracted from pine bark. In Bolivia, the University of Quebec at Chicoutimi and the Universidad Mayor de San Simón will show about 20 Bolivian small businesses how to use so-called "essential oils" from eucalypts to make detergents, soaps, and deodorants.

Lastly, an example of the building industry, materials, and technologies program is the joint undertaking of the National Research Council of Canada and the Instituto Tecnológico de Costa Rica to produce low-cost, durable asphalt shingles entirely from local materials.

Fellowships and Awards

27 projects, \$3.0 million

The Fellowships and Awards Division (FAD) is an active partner with the Centre's program divisions in training and upgrading administrators of research institutions, research managers, and researchers themselves. Its various programs are designed to respond to the training needs identified by specialists in the program divisions, both in Ottawa and in the regional offices, and most of the fellowships are granted on the recommendation of staff from the program divisions.

The main objective of the Centre's support for training is to increase the research capacity of Third World research institutions. FAD endeavours to meet this objective by offering various categories of awards, which vary in nature and number according to changing needs as perceived by the Centre. The program focuses principally on individuals from the least-developed countries, with the greater part of the Division's budget spent on individual training awards, which emphasize professional upgrading rather than basic training. Training takes place in centres of excellence located, in order of priority, locally, regionally, in Canada, or in another developed country; where training takes place outside the country of origin, the IDRC-award holder is expected to return home at the end of tenure.

The Division's activities focus on five programs: training for project development; training for program development; training for institutional development; specialized training; and training for careers in development — Canada.

Training for project, program, and institutional development

The first three elements of this program framework recognize a gradual shift in emphasis that places priority on strengthening indigenous Third World institutions. In this regard, two long-term projects worth particular mention are the Division's continued support for the graduate program in rural economics at the Centre ivoirien de recherches économiques et sociales (CIRES) in the Côte d'Ivoire and the master's degree program of the Consortium Graduate School that, although based at the University of the West Indies' campus in Jamaica, serves students from Guyana, Surinam, and throughout the West Indies. In the past year, the Division has also provided support to a network of deans and coordinators of graduate studies from universities in eastern and southern Africa to strengthen graduate education in that region.

The Division continues to collaborate with the other program divisions on projects related to their support for research. This collaboration may be in the form of joint funding of training projects but FAD also provides the design and coordination of training programs funded by other divisions. For example, the Division is working with the Health Sciences Division to organize a training program to improve health-systems research in Sri Lanka. This program will involve a consortium of Canadian medical schools working through the Canadian Association of Tropical Medicine and International Health.

In addition to the individual awards, listed on page 77, the Centre supported the enrollment of young trainees from developing countries at the Hague Academy of International Law — 21 for a 3-week training course and 7 for doctoral studies.

Specialized training

Under the program for specialized training, the Division continues to support the Pearson fellowships. Named after the former Canadian Prime Minister Lester B. Pearson, who was Chairman of IDRC's Board of Governors from 1970 until his death in December 1972, the fellowships are offered to young public servants from developing countries who have had at least 3 years' working experience in the service of their government. Candidates are nominated through Canadian missions abroad and IDRC's regional offices. Pearson fellows spend 9-12 months in Canada where they pursue a nondegree program made up of academic studies and a practical attachment with a government department. All Pearson fellows take part in a special program in public administration designed jointly by the School of Public Administration of Carleton University and the Faculty of Administration of the University of Ottawa. The 17 Pearson fellows for 1987-1988 are listed on page 77.

Training for careers in development — Canada

Under the program that supports training for careers in development for Canadians, the Young Canadian researchers' awards are designed for doctoral students registered in a Canadian university. The aim of this program is to encourage the students' involvement in scientific areas of concern to IDRC and to give them, at the same time, exposure to problems of Third World countries. At the doctoral level, students in the following fields are eligible to apply: agriculture, food and nutrition sciences, communications, information sciences, health sciences, social sciences, engineering, and earth sciences. Candidates at the master's level are restricted to the fields of health sciences, information sciences, communications/media, journalism, and financial and administrative management. Young Canadian professionals in communications/media and financial or administrative management are also eligible to apply. Study, placement, or research programs take place in Third World countries, for a period of up to 12 months. Award holders, who are listed on page 80, were selected jointly in collaboration with staff of other IDRC program divisions.

The Division also offers the John G. Bene fellowship in social forestry, administered by IDRC but funded from an endowment established by the estate of the late John G. Bene, a former governor of IDRC, and by public subscription. This fellowship is awarded to a postgraduate student in forestry whose research explores the problems and promise of forestry in economic and social development.

Health Sciences

72 projects, \$12.8 million

The Health Sciences Division completed a review and analysis of its operations in mid-1987 and then reorganized itself into three functional and interlocking programs that predominantly deal with people and their

communities — health and the community, health systems, and health and the environment. The Division believes that through the reorganization it will be better able to carry out its mission effectively and to evolve a balanced set of activities that will contribute directly to the improvement of the health and well-being of the poor.

Health and the community

The health and the community program will identify and develop action-oriented, community-based research initiatives. Priority will be given to projects that examine how economic and social conditions and human behaviour affect health. These will be complemented by projects examining strategies to improve the health of individuals, families, and communities, by involving them in possible solutions.

The research supported by the health and the community program will involve the community in its own social, economic, and environmental organization and several areas will be explored. The program will support research on the social, cultural, and economic factors that influence a community's acceptance or rejection of information about behavioural traits that improve, maintain, or impair the health of its members. It will stress experiments on ways of effectively conveying health information and knowledge, and of introducing technologies that influence community health, as well as the ways of stimulating communities to correctly and consistently apply information or properly use and maintain the new technologies. Great importance will also be given to an examination of the types of community organization that should be involved, and the methods that can be employed to allow these organizations to identify health needs and priorities and to initiate public action on means of addressing these needs.

Over the next 5 years, the health and the community program will develop or coordinate several overlapping themes in collaboration with the Division's other programs, other IDRC divisions, and other agencies. These themes will include the introduction and use of technologies, behaviour and transmission of communicable diseases, methodologies to promote participatory research, women and children in health promotion, health education, and strategies to improve the nutrition of women and children.

During the last fiscal year, the program approved a participatory project to study the role of women in health care in six Asian countries and to identify both health needs and means by which health care at the community level can be improved.

Another important project will look into the health management of the urban poor in four Asian cities and, in Latin America, a study on psychosocial support and pregnancy outcomes is the culmination of work on perinatal health previously supported in the region. This network study in four countries aims to show that psychosocial interventions in the home environment positively influence pregnancy outcomes, biologically and psychologically. Results could have important implications for health-services organization.

Health systems

The health systems program links the community and its health needs to the health-care systems and available or required services. These systems extend from ministries of health and tertiary-care facilities to health dispensaries and traditional health services in villages. The program will include research on appropriate health-care providers, the curricula necessary to train them, and the infrastructures required to give them sustained support and to manage the systems. The program has four major themes: management and delivery of health services, health services planning, health policy, and strengthening the research capacity of indigenous institutions. The present health-services research projects are being incorporated into this program.

An evaluation of the administration and management of health services is the first project with the Palestine Red Crescent Society. The study is intended to enhance decision-making and the allocation of resources for improving the health of the Palestinians. In Sudan, an important study will assess how the massive influx of refugees from neighbouring countries has affected the development, structure, and delivery of health services to both refugee and indigenous populations, with implications for other regions with refugee problems.

Another health systems project will attempt to evaluate the effectiveness of a particular type of primary-health worker in Indonesia, using established standards for comparison.

Health and the environment

The health and the environment program includes research on the physical and biological elements in the environment that directly or indirectly affect the health of the poor. This new program is incorporating projects, supported by previously existing divisional sectors, that focus upon health problems as identified by international, regional, and national experts. Health needs and priorities, identified by communities, that require a discipline- or subject-oriented research approach — for example, disease or disease-vector control — are being covered, as are research activities to develop appropriate technologies to maintain and improve the health of the poor.

To promote a better understanding of health-related environmental factors and the nature of the interplay between communities and their environments, the health and the environment program will also encourage discussion and research on water and water use, with a particular emphasis on accessibility to potable-water supplies and water quality. The living environment — factors encountered in both the outdoor and indoor environments — and the working environment — related to both rural and urban industries — are considered important components of health and the environment.

Several health and the environment projects represent phases in the ongoing development and utilization of technologies, especially as related to pumping systems in the People's Republic of China, Ethiopia, Kenya, Malaysia, and Sri Lanka. Research on bilharzia in Egypt is a further step in the assessment of a potentially cheap and simple plant extract that could be used at the community level to kill the snail that is the vital link in the

transmission of the disease to humans. In Bolivia, the health status of tin miners and their families is the subject of a study aimed at improving their environment.

Two other projects approved last year demonstrate interdivisional and collaborative activities. First, a cooperative project linking Tribhuvan University in Nepal and the University of Calgary, a joint project with IDRC's Social Sciences Division, will obtain quality-of-life baseline data for later evaluation of interventions by Nepalese communities. The second one with the Earth and Engineering Sciences Division will examine groundwater quality in densely populated peri-urban areas of Dar es Salaam in Tanzania.

Information Sciences

52 projects, \$8.6 million

The work of the Information Sciences Division is directed toward three principal objectives: to improve information systems, services, and tools for managing and using information for development research and change; to build local capacity for effective management and application of information; and to foster cooperation and coordination in development research through information-sharing. The Division carries out this work by supporting practical projects that focus on specific information problems and needs in developing countries.

National projects

The projects supported in 1987-1988 reflect the diversity of target audiences who can benefit from improved availability of information — from national planners to local farming communities. A large project to assist the government of Jordan provides an interesting example of an integrated approach to the planning and implementation of information activities at the national level. The establishment of a national information system in Jordan will strengthen national planning, decision-making, and research and will provide services to public and private organizations. This complex project, which involves the participation of sectoral specialists from across the Division, addresses several information issues: developing information infrastructures at the national level; coordinating introduction of modern information technologies; disseminating scientific, technical, and socioeconomic information; and training in technical skills. Experience gained in Jordan could provide a useful model for other countries.

Modern information technologies can also have a more direct relevance to the ultimate beneficiaries of research supported by the Centre. Satellite-based remote sensing is commonly used to obtain data for planning and policy-making, but artisanal fishermen in Chile are full participants in a research project that is using remote sensing to help locate potential fishing zones. In this project, software and information are being developed and tested to improve the prospecting strategy of these artisanal fishermen. Another project intended to have a practical effect on local communities will establish a cooperative information service among the 44 agricultural colleges in Thailand. The project will include analysis of farm management data on 25 high-priority commodities and will lead to the preparation of reference manuals for farmers, extension workers, agricultural students, and teachers.

With increasing attention being paid within the Division and the Centre as a whole to the problems of African development and of "reaching" the rural poor, the particular difficulties brought on by the lack of communications infrastructure and the "last-mile" problem are of increasing importance to the programs of the Information Sciences Division. An innovative project with the Lesotho Telecommunications Corporation will test a new technology — packet radio — that has great potential to solve some of these problems in a way that may prove cost-effective and relatively simple to implement. The experimentation will be carried out within Africa by African researchers and will represent the first time that this technology has been studied as a possible component of a national telecommunications system. The project could potentially demonstrate to other national telecommunications authorities that methods exist to allow them to expand communications services to a larger proportion of their population without resorting to capital-intensive, large-scale projects.

Another project containing an important experimental component is the development of a fisheries management information system in Trinidad and Tobago. Recognition of the need to protect and strengthen the local fisheries resource has prompted the government to examine and adapt modern techniques being used in Canada and elsewhere to computerize and manage fisheries data. The system will be used by planners and will provide advisory services.

Regional projects

The projects described so far in this report are national or subnational in scope. Many other projects have been directed at regional audiences. For example, two regional information networks on vocational training and skills development are being supported in parallel in Asia and Africa. In the health field, regional services will be provided in West Africa through support for the African documentation and information system on the major endemic diseases and, in the Middle East and North Africa, through the World Health Organization's (WHO) regional water supply and sanitation network.

Another regional project will strengthen the information and documentation service for small industries provided by the Federation of Chambers of Commerce in Central Africa. On the global scale, a similar approach is being taken in a project that is, in effect, a network of regional services — the International Development Information Network on Research in Progress. This project will strengthen the five regional members of the Inter-regional Coordinating Committee of Development Associations (ICCDA) and allow them to improve their local services and their information-sharing activities.

These examples of projects are taken from topics of ongoing priority within the Division. In addition, a new program sector was introduced in 1987-1988 in support of a policy decision to move toward decentralizing the dissemination, training, and maintenance of MINISIS, a powerful software package developed by the Division for library and other applications. To increase the self-sufficiency of the MINISIS-users' group, three projects were approved in this sector: two will help establish local MINISIS resource centres in the People's Republic of China and North Africa and the third

will support the activities of MINISIS resource persons for training and problem-solving in Latin America.

Although several innovative projects such as those described earlier were supported in 1987-1988, the Division also sought out opportunities to build upon earlier successful projects. A few years ago, the Centre supported the development of a microcomputer software package, REDATAM, to provide planners and researchers with ready access to census data for small geographical areas. The software was tested at three sites in Latin America and the Caribbean and has been welcomed enthusiastically. A second-phase project was approved in 1987-1988 to make the system even more useful for planning and for exploiting the results of the planned regional censuses in 1990. The structure of the data base will be modified to allow planning data from sectors other than population and housing to be included by providing system enhancements required by users and an interface to system software for computerized mapping and geographic information, and by introducing the REDATAM concept into regional planning and training for the 1990 census.

The successful results achieved in a project to establish a Latin American communications network for nongovernmental organizations (NGOs) highlighted some of the necessary ingredients for expanding networking in developing countries. This experience has prompted the Division to consider opportunities to replicate the approach in Asia and Africa. A project using this approach in Asia was approved in 1987-1988. It will produce useful knowledge needed to adopt data communications techniques and, at the same time, will build research capacity through the provision of more efficient information-transfer mechanisms.

Several other projects approved in 1987-1988 helped consolidate the results of earlier successful phases. For example, the Division supported the publishing and distribution of the national atlas of Ethiopia, which had been prepared with the assistance of a previous grant. In other sectors, further phases of support were provided to various specialized information centres and services including those concerned with buffalo, Asian fisheries, education research in Asia, and public administration in Latin America.

Divisional cooperation

Most of the projects concerned with specific sectoral interests are developed in consultation with other Centre divisions. In view of the converging interests, many of these projects are undertaken jointly. In addition to the major interdivisional program in support of Bharatiya Agro Industries Foundation, in India, the Division supported several projects in collaboration with other divisions. These include a project on watershed management in Nepal and support to a seaweed information centre in Asia and to the West African Farming Systems Research Network, all with the Agriculture, Food and Nutrition Sciences Division; support to the Asian Mass Communication Research and Information Centre, with Communications Division; to the Jordan National Information System and to the Diploma Program in Library and Information Sciences at the University of the South Pacific, both with the Fellowships and Awards Division; to the Handpump Communications Network, with the Health Sciences Division; and to the Southeast Asia Education Research Review and Advisory Group, the

Costa Rica National Information System for Science and Technology, and to a study on Benin's national languages, all with the Social Sciences Division. Jointly administered projects such as these take full advantage of the various specialized skills available within the Centre to support multidisciplinary development efforts.

Consistent with the Division's objective of promoting cooperation and information-sharing at the international level, several projects approved in 1987-1988 involved significant collaboration between institutions in Canada and the developing countries. With the partnership of Laval University's laboratory of remote sensing, Malian scientists will have the opportunity to adapt methodologies and examine the usefulness of satellite remote-sensing data in a project aimed at identifying potential sites for agricultural development in the Niger valley. In another collaborative project, two Canadian institutions, the Centre de Toxicologie du Québec and the Canadian Centre for Occupational Health and Safety, will be major participants in an international project coordinated by WHO. The project will develop a multilingual information package to assist developing countries in planning and introducing their own microcomputer-based poison-information services. A third collaborative project has teamed the Canadian Patent Office with the Economic Commission for Latin America and the Caribbean to help develop a patent-information system for the Caribbean.

Centre library

The Centre's Library is also active in managing and delivering information not only to IDRC's staff in Ottawa and in the regional offices but also to researchers in Centre-supported projects in Canada and throughout the world. The Library was reorganized in a major way in 1987-1988 to enhance its advisory and training role for IDRC projects and to handle more effectively the steadily increasing demands for document delivery and reference and research services — computerized literature searches increased by 79% over the previous year. To Canadian and international researchers interested in development-oriented topics, the Library offers its development data-base service. This service, now offering 11 data bases, provides access to bibliographic data and information on projects in the Third World. Over the year, the number of institutional users of the service has grown to 122, an increase of 10%.

Social Sciences

89 projects, \$11.4 million

During the fiscal year 1987-1988, the Social Sciences Division adjusted its support to Third World scientists, which is now channeled through five programs: population and development research, science and technology policy, urban and regional development, economic policy, and education. Also, a Women in Development (WID) Unit has been created. This unit is part of the Social Sciences Division but its mandate permeates all IDRC activities and it engages in joint projects with all other IDRC divisions.

Population and development research

The population and development research program supported projects in some new areas and consolidated past activities in others. Several investigations were financed in cooperation with the Health Sciences, Communications, and Earth and Engineering Sciences divisions. A network of research projects on adolescent fertility was supported in Benin, Cameroon, Congo, Côte d'Ivoire, Mali, Mauritania, Nigeria, and Sénégal on the determinants of early reproductive behaviour and its consequences on the social and health conditions of young mothers and their children. Another study was supported to consolidate previous research in the area of fertility and contraception in India.

Attention continues to be given to the conditions and adaptation of refugees in Africa. Studies were approved in Somalia and Sudan, thus expanding a research network that already included Botswana, Lesotho, Swaziland, and Tanzania. On the subject of labour migration, projects on seasonal migration in Bangladesh, Chile, and Mali will examine the interrelations between agricultural changes and population movements. Several research projects dealing with the social and demographic conditions of specific illnesses (malaria, leprosy, and Chagas' disease) will be done in Kenya, Paraguay, the Philippines, and Tanzania. These initiatives are the continuation of the program's efforts to move toward a better understanding of the demographic characteristics underlying morbidity processes, the identification of communities for self-help health activities, and the generation of interdisciplinary research.

The program concluded successfully an in-house project on population, health, and development addressed to support and strengthen the capacity of developing country investigators in carrying out research on the persistent problem of poor health and high mortality in infants and children. The proceedings of seven regional workshops in Latin America and Africa have been published, as well as two large research bibliographies and four major technical papers.

Science and technology policy

In the area of science and technology policy, emphasis has continued to shift away from microlevel studies of technical change and toward policy questions of technology choice in economic sectors that are significant in their contribution to employment, value added, and exports. This includes studies on technological and structural changes in the Turkish garment industry because of the introduction of new technologies; on the technological and economic adjustments necessary in the metal-working industry in Nicaragua; and on the vegetable-oil industry in Nigeria, small-scale aluminum enterprises in Ghana, electronics export-processing zones in Malaysia, and agroindustry in Uruguay.

A second area of priority has been studies of national allocation of financial resources and development of institutional structures that can help countries to absorb imported technological inputs more effectively and introduce appropriate domestic innovations. At the moment, little information is available to guide policymakers responsible for building up a local science and technology infrastructure. Science councils, universities, industrial research institutes, academies of science, and scientific and technological

information systems have all been copied and transplanted, often without modification, from the industrialized world. Are they the most appropriate models? Have they performed their tasks well? What lessons can be drawn from the experience of those countries that have set up such institutions?

Two projects will aim at answering these questions, one in Uruguay and one in Africa with the Economic Commission for Africa. The former project received a small supplement to explore further the linkages between scientific and technological inputs and dynamic economic sectors, and to provide assistance to a similar study in Costa Rica supported jointly with IDRC's Information Sciences Division. Another study, in India, will analyze the reasons for success and failure in a number of important national scientific institutions. A project in Colombia will support a major review of science and technology policy and institutions by the Fondo Colombiano de Investigaciones Científicas y Proyectos Especiales José de Caldas (COLCIENCIAS) in collaboration with the Planning Ministry and the U.N. Centre for Science and Technology for Development. A small beginning was also made in Nepal with a grant to the Royal Nepal Academy of Science and Technology, while the Ministry of Science, Technology and Energy, Thailand, was supported with a small supplement to prepare a document on science policy for Thailand. The year also witnessed the final seminar for a multicountry study on the role of national development banks in financing technological development. The seminar, organized by the Banco de la Provincia de Buenos Aires, was attended by representatives of major development banks throughout Latin America, as well as participants from the People's Republic of China, India, and South Korea.

Urban and regional development

In 1987-1988, the urban and regional development program continued to support policy-oriented research related to shelter and service delivery, informal sector enterprises, and urban management. Projects supported included two large international networks in Latin America on rental and shared housing and on municipal reforms and local governments. In Asia, the program supported a second phase of a network of research projects on export-processing zones and a project on street foods in India. In Africa, support included a project on assistance policies toward the informal sector in Kenya.

Three important international workshops were held on local government in Latin America, on the impact of regional development programs on disadvantaged groups in Asia, and on nonfarm employment in Asia.

Economic policy

The economic policy program continues to link researchers working on similar topics through several international networks. In 1987-1988, some of these networks were developed further. Researchers in Southeast Asia expanded the work done by African researchers on contract farming, a system that provides small-scale farmers with some of the inputs and services they need to compete in national and international markets. Researchers examining the debt problem in Latin America broadened their focus to include Africa and the Caribbean. The program also invited other donors to join it in supporting macroeconomic research and training in

anglophone Africa through the formation of a Consortium for Economic Research. Finally, the program collaborated with IDRC's Fellowships and Awards Division to add a training component to its Latin American Macroeconomics Network to ensure that young scholars with fresh perspectives continue to enter the region's research community.

Education

In 1987-1988, the education program continued its efforts to implement and consolidate strategies designed for the various regions of the developing world. Research on formal, nonformal, and popular education aimed at strengthening indigenous capacities to deal with social, economic, and cultural inequalities in education, on improving teaching-learning processes, as well as on the effectiveness of policy-making in education was supported. Activities in eastern and southern Africa addressed basic problems of individual and institutional capacity building through support to young researchers and networking efforts in Botswana, Ethiopia, Lesotho, Swaziland, Tanzania, and Zambia. Strengthening the relationship between school and community was the aim of a particularly innovative project in Uganda. In West Africa, a select number of activities was supported in areas of primary importance, including the role of local languages and the implementation of educational reforms.

In East, South, and Southeast Asia, issues of social equity, educational quality, and participation continued to be primary concerns. Networking activities through the regional research and advisory group in education received attention as a means to consolidate the links among researchers. Special activities in areas related to the study of qualitative research methodologies were initiated in India and Thailand, the former with the cooperation of the University of Alberta.

General activities supported by the program included workshops of African, Asian, and Latin American researchers, teachers, and educational practitioners; publication of state-of-the-art reviews on key problem areas for developing country researchers; and the development of joint activities with other international agencies including the World Bank and the Consultative Group on Early Childhood Care and Development.

Women in development

Last year, the Social Sciences Division established a new group with Centre-wide commitment — the Women in Development Unit. It was set up to support research on the integration of women into development and to act as a resource for gender-specific and gender-related research.

During its 1st year of operation, the Unit has supported 16 projects either alone or in collaboration with the Agriculture, Food and Nutrition Sciences, the Fellowships and Awards, the Health Sciences, and the Social Sciences divisions. One special initiative was the Intern Program, which made it possible for researchers to be attached to an IDRC division for up to 6 months, working concurrently on their own research and on concerns of the Unit. With the Fellowships and Awards Division, the Unit has also funded a Summer Institute on Gender and Development at Dalhousie University (Canada) and a meeting on Women and Natural Resource Management in Africa at York University (Canada).

Board of Governors

Janet M. Wardlaw*
Chairman of the Board of Governors
Guelph, Canada

Peter A. Larkin*
Vice-Chairman of the Board of Governors
Vancouver, Canada

Ivan L. Head*
President and Chief Executive Officer
Ottawa, Canada

Anne-Claude Bernard-Bonnin
Outremont, Canada

Albert J. Butros*
Amman, Jordan

Gelia T. Castillo*
Laguna, Philippines

Margaret Catley-Carlson
Hull, Canada

Umberto P. Colombo
Rome, Italy

Norman T. Currie*
Toronto, Canada

Louis-Edmond Hamelin*
Sillery, Canada

Jorge E. Hardoy
Buenos Aires, Argentina

Gerald K. Helleiner*
Toronto, Canada

Walter J. Kamba
Harare, Zimbabwe

Francis Keppel*
Cambridge, USA

Alexander A. MacDonald
Antigonish, Canada

Robert C. McGinnis*
Winnipeg, Canada

M.G.K. Menon
New Delhi, India

Sadako Ogata
Tokyo, Japan

Marie-Josée Pinard
Montreal, Canada

Sir Kenneth L. Stuart*
Barbados

Xi Huida
Beijing, People's Republic of China

*Executive Committee

Officers of the Centre

Ivan L. Head
President

Raymond J. Audet
Vice-President, Resources

Joseph H. Hulse
Vice-President, Research Programs
(Resigned 31 March 1988)

James Mullin
Vice-President, Program

Robert Auger
Secretary and General Counsel

Gerald R. Bourrier
Director, Fellowships and Awards

W. Douglas Daniels
Director, Planning and Evaluation

Antoine Hawara
Treasurer

David Nostbakken
Director, Communications

J. Allan Rix
Director, Human Resources

Martha B. Stone
Director, Information Sciences

Mousseau Tremblay
Director, Earth and Engineering Sciences

Anne V.T. Whyte
Director, Social Sciences

Richard Wilson
Director, Health Sciences

Hubert G. Zandstra
Director, Agriculture, Food and Nutrition
Sciences

Regional Directors

Daniel Adzei Bekoe
Eastern and Southern Africa (Nairobi)

L. Fernando Chaparro
Latin America and the Caribbean (Bogotá)

Jingjai Hanchanlash
Southeast and East Asia (Singapore)

Fawzy Kishk
Middle East and North Africa (Cairo)

Vijay G. Pande
South Asia (New Delhi)

Pierre Sané
West and Central Africa (Dakar)

R. Bruce Scott
West and Central Africa (Dakar)
(Resigned 31 December 1987)

FINANCIAL COMMENTARY AND HIGHLIGHTS

For the 2nd consecutive year, the Centre's grant was reduced from its confirmed level and then supplemented during the fiscal year. The reduction, which amounted to \$2.2 million, was recovered in mid-December 1987. The total grant of \$108.1 million represented 4.0% of the 1987-1988 gross commitment for Official Development Assistance (ODA).

During 1987-1988, the Centre continued to follow the ongoing cost restraint program of the Government of Canada. This objective was achieved by maintaining a freeze on the staff complement at Head Office and by implementing a series of recommendations aimed at enhancing the efficiency and effectiveness of its operations.

Revenue

Total Centre revenues amounted to \$112.4 million, a 9.8% increase over 1986-1987. Revenues include the Parliamentary grant of \$108.1 million, investment and other income of \$2.2 million, and income for contract research of \$2.1 million. Figure 1 illustrates the trend in total revenue over the last 5 years.

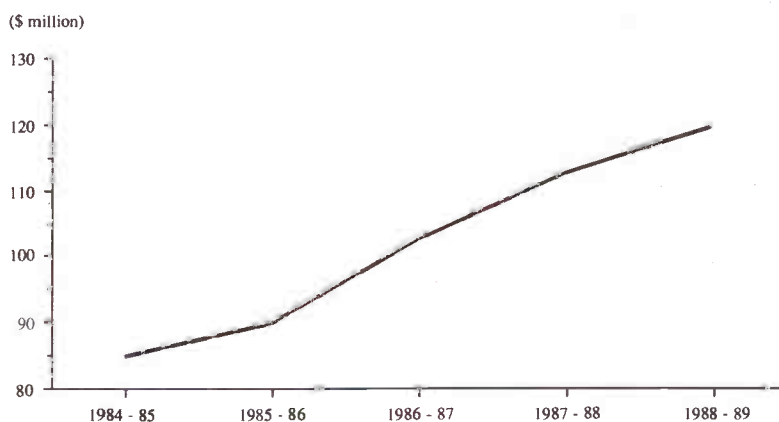


Figure 1. Total revenue for the Centre for 1984-1985 to 1988-1989 (budget values).

The Parliamentary grant of \$108.1 for 1987-1988 represents an increase of \$8.1 million over the 1986-1987 grant or 8.1%. The \$2.2 million of investment and other income in 1987-1988 exceeded the budgeted target of \$0.7 million. Investment income amounted to \$1.5 million compared to the budgeted \$0.5 million. The favourable variance is due to a higher than expected investment portfolio during the whole year. Other income amounted to \$0.7 million compared to a budget of \$0.2 million. This figure included \$0.3 million of MINISIS licence fees and \$0.4 million in other income. Contract research revenues totaled \$2.1 million in 1987-1988. This value includes \$1.4 million

received from the Canadian International Development Agency (CIDA) for research conducted or managed by the Centre on their behalf.

For 1988-1989, total revenue of \$119.5 million is projected, an increase of 6.3% over 1987-1988.

Expenditure

In 1987-1988, total Centre expenditures amounted to \$106.4 million. This amount represents an increase of \$5.4 million or 5.4% over 1986-1987. Figure 2 outlines the relative share of each category of expenditure for 1987-1988.

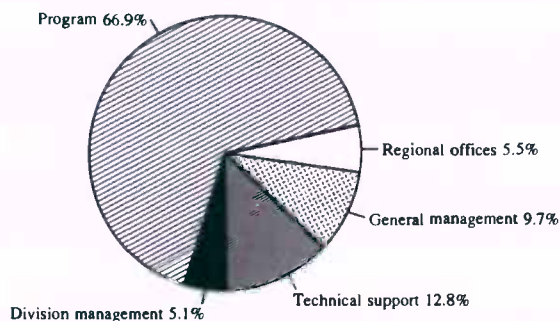


Figure 2. Breakdown of actual expenditure for 1987-1988.

The following table shows the 1988-1989 budget expenditures with actual expenditures reported for 1987-1988 and the previous 3 years.

EXPENDITURE (\$ millions)

	Budget		Actual							
	1988-89	% of total	1987-88	% of total	1986-87	% of total	1985-86	% of total	1984-85	% of total
Development research	\$ 73.2	60.4	\$ 62.4	58.6	\$ 60.4	59.8	\$ 54.6	59.7	\$ 49.8	58.6
Research-related activities	9.3	7.7	8.8	8.3	8.4	8.3	7.0	7.7	7.7	9.1
Technical support	15.2	12.6	13.6	12.8	12.9	12.8	12.0	13.1	10.7	12.6
Regional offices	7.4	6.1	5.8	5.5	5.4	5.3	5.0	5.5	4.5	5.3
Division management	6.1	5.0	5.4	5.1	4.5	4.5	4.2	4.6	4.0	4.7
General management	9.9	8.2	10.4	9.8	9.4	9.3	8.7	9.5	8.3	9.8
Total	\$121.1	100.0	\$106.4	100.0	\$101.0	100.0	\$91.5	100.0	\$85.0	100.0

Development research

Development research reflects the direct costs of all scientific and technical research projects supported by the Centre in developing countries. It is, in essence, the *raison d'être* of the Centre. This category 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 1987-1988, expenditures for development-research activities totaled \$62.4 million or 58.6% of the Centre's total expenditures. Expenditures on existing projects that relate for the most part to development research were slightly lower than the 1986-1987 expenditures by 0.9%. However, expenditures on new projects increased by 13.4% over the previous year.

Research-related activities

Research-related activities include small projects that lead to the development of research projects and activities relating to information dissemination or application of research results. These activities also include 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.

In 1987-1988, expenditures for research-related activities totaled \$8.8 million or 8.3% of the Centre's total expenditures.

Technical support

This category of expenditures includes 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 1987-1988 were \$13.6 million. This amount represented 12.8% of total Centre expenditures, the same as in 1986-1987.

For 1988-1989, technical support expenditures are budgeted at \$15.2 million, an increase of 11.5%, but the share of this category of expenditure to total expenditure will be reduced to 12.6%.

Regional offices

Six regional offices play an important role in facilitating contacts with grant recipients and in enhancing the Centre's ability to respond to Third World issues. These offices are located in Colombia, Egypt, India, Kenya, Sénégal, and Singapore. The total expenditure incurred in 1987-1988 to operate these offices amounted to \$5.8 million, an increase of 8.0% over 1986-1987. This category represented 5.5% of total Centre expenditures for 1987-1988.

For 1988-1989, regional office expenditures are expected to increase to \$7.5 million, an increase of 27.8%. It should be noted that 8.6% of this increase is due to a decision to reclassify some costs from the general management category to regional offices. As a result, this category's share of total Centre expenditures is expected to increase from 5.5% in 1987-1988 to 6.1% in 1988-1989.

Division management

Division management expenditures totaled \$5.4 million in 1987-1988, a 19.2% increase over 1986-1987, and amounted to 5.1% of the total Centre expenditures for 1987-1988. The increase is mainly due to the higher accommodation costs at the head office.

Expenditures for division management are expected to increase by 11.9% in 1988-1989 to about \$6.1 million. This category's share of total Centre expenditures will slightly decrease from 5.1% in 1987-1988 to 5.0% in 1988-1989.

General management

To support its overall operations, the Centre requires policy, executive, administrative, and service functions. Within the context of IDRC, such functions are represented 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 amounted to \$10.4 million in 1987-1988, an increase of 10.8% over 1986-1987. Most of the increase resulted from higher accommodation cost at head office. This category's share of total Centre expenditures has increased from 9.3% in 1986-1987 to 9.8% in 1987-1988.

For 1988-1989, the budgeted expenditures are set at \$9.9 million, a decrease of 4.8% from 1987-1988. As previously indicated under regional offices, the cost of certain activities, totaling \$0.5 million, are now charged to regional offices instead of general management. If this change is excluded, the 1988-1989 general management budget would remain at its 1987-1988 level of \$10.4 million.

Equity of Canada

The equity level as at March 31, 1988 increased to \$8.6 million from the \$2.6 million reported in the previous year. The high level of the year-end equity is due to higher than expected revenues and a lower rate of program expenditures, as already explained. For 1988-1989, the year-end equity is estimated to drop to a lower level.

Person-years

For 1987-1988, the Centre's person-years totaled 449.75 compared to a budget of 464. Vacancies were incurred primarily under technical support and resulted from delays in filling vacant positions. For 1988-1989, the number of person-years at head office remain at the budgeted 467 person-years.

Appropriations

Total Centre appropriations for 1987-1988 were \$124.9 million compared to \$111.5 million in 1986-1987 and represent a 12.0% increase over the previous year. Included in this amount are new projects for \$89.7 million representing 71.8% of the total amount appropriated during the fiscal year. Figure 3 shows the allocation of program appropriations by geographic region.

For 1988-1989, total appropriations are estimated to reach \$142.6 million with the program appropriations sharing \$104.0 million or 72.9% of the total.

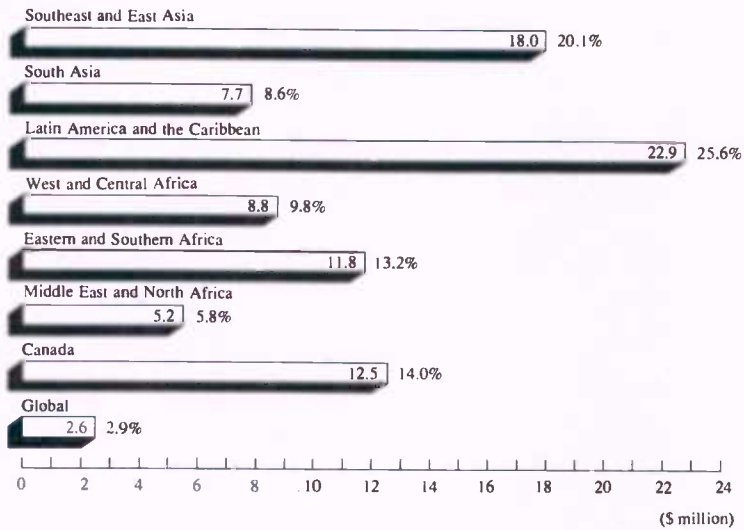


Figure 3. Actual appropriations for 1987-1988 by region.

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 a review and evaluation of the Centre's system of internal control and 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.

CENTRE TOTALS
FINANCIAL HIGHLIGHTS (\$ 000)

	Budget 1987-88	Actual 1987-88	% variance from budget	Actual 1986-87	1986-87 vs 1987-88 (% change)
FINANCIAL ACTIVITY					
Revenue	\$108,800	\$112,417	3.3	\$102,401	9.8
Grant from Parliament of Canada	108,100	108,100	0.0	100,000	8.1
Investment and other income	700	2,210	215.7	978	126.0
Contract research	—	2,107	—	1,423	48.1
Expenditure	\$106,649	\$106,401	0.2	\$100,969	5.4
Existing projects	48,617	47,630	2.0	48,039	(0.9)
New projects*	21,971	23,552	(7.2)	20,764	13.4
Regional offices	6,139	5,828	5.1	5,394	8.0
Technical support	13,785	13,613	1.2	12,876	5.7
Division management	5,397	5,415	(0.3)	4,542	19.2
General management	10,740	10,363	3.5	9,354	10.8
Excess of revenue over expenditure (expenditure over revenue)	\$ 2,151	\$ 6,016	(179.7)	\$ 1,432	(320.1)
PROGRAM ACTIVITY					
Appropriations	\$125,767	\$124,904	0.7	\$111,517	12.0
New projects	89,706	89,685	0.0	79,351	13.0
Regional offices	6,139	5,828	5.1	5,394	8.0
Technical support	13,785	13,613	1.2	12,876	5.7
Division management	5,397	5,415	(0.3)	4,542	19.2
General management	10,740	10,363	3.5	9,354	10.8
Commitments	\$117,961	\$120,154	(1.9)	\$105,098	14.3
Projects	81,900	84,935	(3.7)	72,932	16.5
Regional offices	6,139	5,828	5.1	5,394	8.0
Technical support	13,785	13,613	1.2	12,876	5.7
Division management	5,397	5,415	(0.3)	4,542	19.2
General management	10,740	10,363	3.5	9,354	10.8

* Includes contract research.

CENTRE TOTALS
FINANCIAL HIGHLIGHTS (\$ 000)

	Budget 1988-89	Actual 1987-88	Actual 1986-87	Actual 1985-86	Actual 1984-85
RESULTS OF OPERATIONS					
Revenue	\$119,500	\$112,417	\$102,401	\$ 89,663	\$ 84,659
Grant from Parliament of Canada	114,200	108,100	100,000	86,000	81,000
Investment and other income	2,100	2,210	978	1,881	3,164
Contract research	3,200	2,107	1,423	1,782	495
Expenditure	\$121,100	\$106,401	\$100,969	\$ 91,486	\$ 85,003
Development research*	73,240	62,362	60,382	54,585	49,840
Research-related activities	9,300	8,820	8,421	7,003	7,731
Research operational support	28,690	24,856	22,812	21,183	19,129
General management	9,870	10,363	9,354	8,715	8,303
Excess of revenue over expenditure (expenditure over revenue)	\$ (1,600)	\$ 6,016	\$ 1,432	\$ (1,823)	\$ (344)
PROGRAM ACTIVITY					
Appropriations	\$142,590	\$124,904	\$111,517	\$102,199	\$102,778
New projects	104,030	89,685	79,351	72,301	75,346
Regional offices	7,450	5,828	5,394	4,947	4,456
Technical support	15,180	13,613	12,876	12,012	10,676
Division management	6,060	5,415	4,542	4,224	3,997
General management	9,870	10,363	9,354	8,715	8,303
Commitments	\$133,420	\$120,154	\$105,099	\$ 95,383	\$105,495
Projects	94,860	84,935	72,933	65,485	78,063
Regional offices	7,450	5,828	5,394	4,947	4,456
Technical support	15,180	13,613	12,876	12,012	10,676
Division management	6,060	5,415	4,542	4,224	3,997
General management	9,870	10,363	9,354	8,715	8,303
Outstanding commitments	\$109,600	\$ 96,000	\$ 88,343	\$ 88,900	\$ 82,317

* Includes contract research.

PERSON-YEAR LEVELS AND APPROPRIATIONS

	1988-1989		1987-1988		1986-1987	
	Budget	Actual	Budget	Actual	Budget	Actual
Program Divisions	300.00		297.50	285.50	300.50	280.75
Agriculture, Food and Nutrition Sciences	50.00		50.50	50.00	52.00	50.75
Health Sciences	36.00		35.00	35.00	35.00	30.75
Social Sciences	48.50		48.00	45.75	49.50	47.00
Information Sciences	41.50		39.50	37.75	40.00	36.00
Project-related staff	37.50		39.50	36.75	39.00	36.75
Earth and Engineering Sciences	19.00		18.00	15.50	18.00	17.50
Fellowships and Awards	12.00		12.00	11.75	12.00	11.25
Communications	25.50		26.00	22.25	25.00	23.50
Project-related staff	19.00		18.00	19.75	19.00	17.00
Office of Planning and Evaluation	11.00		11.00	11.00	11.00	10.25
General Management	161.50		163.50	161.25	162.75	159.00
Executive Office	18.00		19.00	19.00	19.00	19.75
Office of the Secretary and General Counsel	15.00		15.00	16.25	18.75	17.50
Office of the Treasurer	39.00		97.00	92.00	93.50	92.00
Administration*	37.00		—	—	—	—
Electronic Data Processing*	14.00		—	—	—	—
Office for Human Resources	19.50		19.50	21.50	18.50	17.00
Regional Offices Administration	14.00		8.00	8.00	8.00	8.00
Internal Audit	5.00		5.00	4.50	5.00	4.75
Secondments/sabbatical/study leave	5.00		3.00	3.00	3.50	3.50
Total	466.50		464.00	449.75	466.75	443.25

* Included under the Office of the Treasurer in previous years.



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, 1988 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, 1988 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 applied on a basis consistent with that of the preceding year.

A handwritten signature in blue ink, appearing to read "Kenneth M. Dye".

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

Ottawa, Canada
June 6, 1988

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

BALANCE SHEET
as at March 31, 1988

	1988	1987
ASSETS		
Current		
Cash and short-term deposits (Note 3)	\$18,804,032	\$ 9,181,248
Accounts receivable	739,013	555,699
Prepaid expenses	973,566	700,665
	<u>20,516,611</u>	<u>10,437,612</u>
Recoverable deposits	197,721	444,754
Property and equipment (Note 4)	3,427,620	3,310,258
Endowment funds (Note 5)	151,273	138,465
	<u>\$24,293,225</u>	<u>\$14,331,089</u>
LIABILITIES		
Current		
Accounts payable and accrued liabilities (Note 6)	\$ 9,421,661	\$ 7,974,540
Contract research (Note 7)	685,697	915,689
	<u>10,107,358</u>	<u>8,890,229</u>
Accrued employee separation benefits	2,541,719	2,477,240
Deferred rent - Head Office	2,921,709	270,229
Endowment funds (Note 5)	151,273	138,465
EQUITY		
Equity of Canada	8,571,166	2,554,926
	<u>\$24,293,225</u>	<u>\$14,331,089</u>

Approved:



President



Treasurer

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

STATEMENT OF OPERATIONS
for the year ended March 31, 1988

	1988	1987
EXPENSES		
Development research		
Project grants	\$ 53,953,596	\$ 51,999,681
Centre projects	6,301,802	6,959,083
Contract research (Note 7)	2,107,575	1,422,803
	<u>62,362,973</u>	<u>60,381,567</u>
Research-related activities		
Project development and support	4,909,033	4,893,498
Information dissemination	2,428,098	2,131,104
Development-research library	1,482,233	1,396,237
	<u>8,819,364</u>	<u>8,420,839</u>
Research operational support		
Technical support	13,612,515	12,876,019
Regional offices	5,827,616	5,394,586
Division management	5,415,467	4,541,789
	<u>24,855,598</u>	<u>22,812,394</u>
Total research and support expenses (Schedule 1)	<u>96,037,935</u>	<u>91,614,800</u>
General management expenses (Schedule 2)	<u>10,362,988</u>	<u>9,353,755</u>
	<u>106,400,923</u>	<u>100,968,555</u>
REVENUE		
Grant from Parliament of Canada	108,100,000	100,000,000
Investment and other income	2,209,588	977,911
Contract research (Note 7)	2,107,575	1,422,803
	<u>112,417,163</u>	<u>102,400,714</u>
EXCESS OF REVENUE OVER EXPENSES	<u>\$ 6,016,240</u>	<u>\$ 1,432,159</u>

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

STATEMENT OF EQUITY OF CANADA
for the year ended March 31, 1988

	1988	1987
BALANCE AT THE BEGINNING OF THE YEAR	\$2,554,926	\$1,122,767
Excess of revenue over expenses	<u>6,016,240</u>	<u>1,432,159</u>
BALANCE AT THE END OF THE YEAR	<u><u>\$8,571,166</u></u>	<u><u>\$2,554,926</u></u>

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
STATEMENT OF CHANGES IN FINANCIAL POSITION
for the year ended March 31, 1988

	1988	1987
OPERATING ACTIVITIES		
Funds provided by (used for) operations		
Excess of revenue over expenses	\$ 6,016,240	\$ 1,432,159
Items not affecting funds		
Depreciation and amortization	944,724	1,095,018
Provision for employee separation benefits	356,694	357,568
Loss (gain) on disposal of equipment	(79,157)	11,502
	<u>7,238,501</u>	<u>2,896,247</u>
Accounts receivable	(183,314)	(94,684)
Prepaid expenses	(272,901)	44,858
Recoverable deposits	247,033	11,155
Accounts payable and accrued liabilities	1,447,121	(471,981)
Payment of employee separation benefits	(292,215)	(316,600)
Contract research	(229,992)	224,552
Deferred rent	2,651,480	270,229
	<u>10,605,713</u>	<u>2,563,776</u>
FINANCING ACTIVITIES		
Due to Government of Canada	—	(4,000,000)
INVESTING ACTIVITIES		
Additions to property and equipment	(1,088,862)	(1,354,825)
Proceeds on disposal of equipment	105,933	46,763
	<u>(982,929)</u>	<u>(1,308,062)</u>
INCREASE (DECREASE) IN FUNDS	<u>9,622,784</u>	<u>(2,744,286)</u>
CASH AND SHORT-TERM DEPOSITS, BEGINNING OF THE YEAR	<u>9,181,248</u>	<u>11,925,534</u>
CASH AND SHORT-TERM DEPOSITS, END OF THE YEAR	<u>\$18,804,032</u>	<u>\$ 9,181,248</u>

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

NOTES TO FINANCIAL STATEMENTS as at March 31, 1988

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 Votes 50 and 60 for the years ended March 31, 1988 and 1987 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 and reflect the following 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 hardware	Straight line	20
Leasehold improvements	Straight line	5-100
Office furniture and equipment	Diminishing balance	20
Vehicles	Diminishing balance	30
Telephone system	Straight line	20

Expenses

Expenses are recorded on the accrual basis, except for contract research expenses, which are charged to operations when disbursed.

Recognition of revenue

Parliamentary grants are recorded as revenue when received. Investment interest and endowment funds income are recorded when earned.

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 liability for income taxes.

Foreign-currency translation

Monetary assets and liabilities are translated into Canadian dollars at the rate of exchange in effect at year-end. Nonmonetary assets are translated at rates prevailing at the respective transaction dates. 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. Exchange gains and losses are included in operations for the current year.

3. Cash and short-term deposits

	<u>1988</u>	<u>1987</u>
Cash (bank overdraft)	\$ 211,052	\$ (2,062)
Short-term deposits		
Canadian chartered banks	13,731,820	6,904,367
Trust and mortgage companies	3,867,140	—
Commercial enterprises	994,020	990,300
Governments and governmental enterprises	—	1,288,643
	<u>\$18,804,032</u>	<u>\$9,181,248</u>

4. Property and equipment

	<u>1988</u>			<u>1987</u>
	<u>Cost</u>	<u>Accumulated depreciation and amortization</u>	<u>Net</u>	<u>Net</u>
Computer hardware	\$3,326,957	\$1,611,086	\$1,715,871	\$1,523,464
Office furniture and equipment	1,673,489	1,049,157	624,332	743,182
Vehicles	1,062,733	522,188	540,545	502,084
Telephone system	740,903	453,341	287,562	394,525
Leasehold improvements	448,783	189,473	259,310	147,003
	<u>\$7,252,865</u>	<u>\$3,825,245</u>	<u>\$3,427,620</u>	<u>\$3,310,258</u>

Depreciation and amortization for the year amounted to \$944,724 (1987, \$1,095,018).

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 year, a former member of the Board of Governors of the Centre established a fund for applied or mission-oriented research.

	<u>1988</u>	<u>1987</u>
Balance at the beginning of the year	\$138,465	\$ —
Donations received	5,150	131,059
Interest income	12,658	7,406
Expenses	(5,000)	—
Balance at the end of the year	<u>\$151,273</u>	<u>\$138,465</u>
John Bene Governor	\$146,160 5,113	\$138,465 —
Total endowment funds	<u>\$151,273</u>	<u>\$138,465</u>

6. Accounts payable and accrued liabilities

	<u>1988</u>	<u>1987</u>
Accrued liabilities - projects	\$5,704,488	\$4,198,635
Accrued annual and other leave benefits	1,313,885	1,235,921
Other	2,403,288	2,539,984
	<u>\$9,421,661</u>	<u>\$7,974,540</u>

7. Contract research

Contract research relates to research conducted or managed by the Centre which is funded by other international agencies, the Canadian International Development Agency (CIDA), and other federal government entities.

Contract research expenses of \$2,107,575 (1987, \$1,422,803), include \$1,436,190 received from CIDA (1987, \$1,198,162). In addition, the Centre received \$56,489 as an administration fee from CIDA (1987, \$51,334) which is included in investment and other income.

Contract research current liabilities of \$685,697 (1987, \$915,689) include \$332,537 held on behalf of CIDA (1987, \$661,459).

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

1989	\$ 5,071,598
1990	3,691,120
1991	3,608,161
1992	3,659,203
1993-1997	19,721,343
	<u>\$35,751,425</u>

9. Contractual commitments - project grants and project development

The Centre is committed to make payments totaling up to \$96,000,000 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 \$26,100,000 and is awaiting acceptance of these offers.

10. Contingencies

The Centre is a defendant in two actions for damages and costs allegedly sustained by the plaintiffs. Management and counsel are of the opinion that the Centre has defences against these claims and accordingly no provision has been made in the financial statements in respect of them. The claims are not significant to the operations of the Centre.

11. Comparative figures

The 1987 figures have been reclassified to conform to the statement presentation adopted in 1988.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
SCHEDULE OF RESEARCH AND SUPPORT EXPENSES
for the year ended March 31, 1988

	1988			1987
	Development research	Research- related activities	Research operational support	Total
Programs				
Agriculture, Food and Nutrition Sciences	\$21,708,441	\$ 785,668	\$ 4,639,817	\$27,133,926
Social Sciences	10,691,650	675,855	3,526,323	14,893,828
Information Sciences	8,990,723	641,695	2,872,013	12,504,431
Health Sciences	8,300,072	572,072	2,945,824	11,817,968
Fellowships and Awards	5,670,774	178,400	990,230	6,839,404
Earth and Engineering Sciences	4,232,677	528,413	1,288,443	6,049,533
Program-related activities				
Regional offices	—	939,811	5,827,617	6,767,428
Information dissemination	564,460	2,428,098	2,009,035	5,001,593
Special program activities	2,204,176	371,463	—	2,575,639
Development-research library	—	1,482,233	—	1,482,233
External liaison and relations	—	215,656	756,296	971,952
	\$62,362,973	\$8,819,364	\$24,855,598	\$96,037,935
				\$91,614,800

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

SCHEDULE OF GENERAL MANAGEMENT EXPENSES
for the year ended March 31, 1988

	1988	1987
Salaries and benefits	\$ 6,523,077	\$6,065,602
Rent and utilities	1,460,730	1,004,136
Office and sundry	643,705	638,654
Travel and relocation	513,214	488,402
Governors' meetings	363,618	238,885
Depreciation and amortization	323,311	535,439
Professional and special services	270,587	185,141
Telecommunications	174,484	164,208
Working group expenses	62,258	-
Insurance	28,004	33,288
	<u>\$10,362,988</u>	<u>\$9,353,755</u>

Projects for which funds were approved during the fiscal year 1987-1988¹

Agriculture, Food and Nutrition Sciences

86-0263 Root-crop utilization (the Philippines)

For the Visayas State College of Agriculture, Pasay, to develop and test schemes to provide simple, low-cost technologies for the local processing of cassava and sweet potato. \$166 000 — 36 months.

87-0001 National grain-quality economics (Asia)

For the International Rice Research Institute, the Philippines, to estimate implicit values for rice-grain quality characteristics in the domestic markets of eight Asian countries: Bangladesh, Burma, India, Indonesia, Malaysia, Pakistan, the Philippines, and Thailand. \$88 500 — 18 months.

87-0007 Plantain production improvement (Colombia)

For the Instituto Colombiano Agropecuario, Bogotá, to increase and stabilize plantain productivity in the target areas of Colombia by identifying and distributing superior cultivars and developing and transferring appropriate agronomic practices. \$246 600 — 36 months.

87-0013 Palmwood utilization (Asia)

For the Asian and Pacific Coconut Community, Indonesia; the Forest Research Institute, Malaysia; the Forest Products Research and Development Institute, the Philippines; and Kasetsart University, Thailand, to develop techniques for the utilization of palm stem wood and to promote its processing and use by small- and medium-scale industries in the Asia and Pacific Region. \$412 000 — 36 months.

87-0014 Dry zone afforestation (Zimbabwe) — Phase II

For the Zimbabwe Forestry Commission, Harare, to enable the Forest Research Centre to provide the local population with fuelwood and building poles by establishing three plantations in the semi-arid and arid regions of the country and to integrate such plantations with local pastoral and agricultural activities. \$281 500 — 48 months.

87-0015 *Acacia albida* (Burkina Faso)

For the ministère de l'Enseignement supérieur et de la Recherche scientifique, Ouagadougou, to enable the Institut de recherche en biologie et écologie tropicale to make *Acacia albida* plants of known provenance with small intraspecific variability and high production available to peasants. \$110 400 — 36 months.

87-0016 Sugarcane substitution (Ecuador)

For the Instituto Interamericano de Cooperación para la Agricultura, Quito, to enable the Centro de Reconversión Económica del Azuay, Cañar y Morona, Santiago, to generate agricultural production alternatives to sugarcane currently grown by small farmers in the Yunguilla Valley so as to preserve or improve family income and labour utilization. \$219 800 — 36 months.

87-0018 Farming systems (Costa Rica) — Phase II

For the Universidad de Costa Rica, San José, to develop improved crop and animal production technologies for use by small-scale farmers in the lowland humid tropics. \$369 500 — 36 months.

87-0019 Dehuller testing (Niger)

For the Institute for the Study and Application of Integrated Development, Niamey, to introduce and test the mini-CRS dehuller in Niger and determine its overall suitability for rural application. \$70 000 — 24 months.

87-0021 Hill crops (Nepal)*

For the Department of Agriculture, Kathmandu, to enable its Agricultural Botany Division to establish a hill-crop improvement program to increase and sustain production and productivity of neglected hill cereals. \$485 000 — 36 months.

87-0022 Pasture improvement (Zimbabwe)

For the Ministry of Lands, Agriculture, and Rural Resettlement, Harare, to enable its Department of Research and Specialist Services to develop appropriate forage production technologies for the communal areas in Zimbabwe and to disseminate forage legume germ plasm. \$188 600 — 36 months.

87-0023 Dairy feeding systems (Tanzania) — Phase II

For Sokoine University of Agriculture, Morogoro, to strengthen the livestock systems research capability of its departments of Animal Science and Production

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

and Rural Economy to develop appropriate livestock feed technologies and test them on farms. \$209 800 — 36 months.

87-0024 Oilseeds (Nepal)*

For the Department of Agriculture, Kathmandu, to enable its national oilseed development program to raise and stabilize the production and yields of oilseed crops in Nepal through a well-functioning national oilseed development program. \$413 700 — 24 months.

87-0025 Oilseeds network (Ethiopia) — Phase III

For the Institute of Agricultural Research, Addis Ababa, to strengthen the oilseed research carried out in South Asia and eastern Africa by establishing effective, practical liaison between the national oilseed programs. \$391 200 — 24 months.

87-0026 Peach palm and aroids (Costa Rica)

For the Universidad de Costa Rica, San José, to enable its Centro de Investigaciones Agronómicas and its school of biology to improve the productivity and quality of peach palm by genetic and in vitro methodologies; and to consolidate a national program of virus-free seed production of aroids, specifically *Colocasia esculenta* and *Xanthosoma* spp. \$336 900 — 36 months.

87-0027 Groundnut industry (the Philippines)

For Isabela State University, Echague, and the National Food Authority, Quezon City, to develop an appropriate postproduction system for a groundnut farmers' cooperative, to increase its members' production and income, and to produce better quality, aflatoxin-free nuts for the market. \$234 300 — 36 months.

87-0032 Fish farming (Côte d'Ivoire)

For the ministère des Eaux et des Forêts, Abidjan, to enable the Projet de vulgarisation de la pisciculture en milieu rural to increase production by making clearly defined pisciculture systems and better training methods available to training agents and fish farmers. \$253 500 — 30 months.

87-0034 Seaweed (the Philippines)

For the University of the Philippines, Quezon City, to enable its Marine Science Institute to develop the necessary technical capability and research facilities to support a vigorous seaweed research and development program. \$406 700 — 36 months.

87-0035 Seaweed (Chile)

For the Universidad de Concepción to conduct a third symposium on the status of seaweed research in Chile and to prepare a document reporting on the results of the symposium. \$17 200 — 3 months.

87-0036 Infant foods (India)

For Maharaja Sayajirao University of Baroda, Vadodara, to systematically evaluate and promote the application of amylase-rich food in infant nutrition. \$208 400 — 36 months.

87-0038 Groundnut improvement (Mozambique) — Phase III

For the Universidade Eduardo Mondlane, Maputo, to assist smallholders by developing improved agronomic practices and varieties that are appropriate to their circumstances and to develop research capability at different levels for conducting this work. \$501 600 — 36 months.

87-0039 Oilseeds (Sri Lanka) — Phase II

For the Department of Agriculture, Peradeniya, to develop an effective, coordinated oilseeds research program aimed at generating improved varieties and technology for rainfed production by small-scale farmers in the dry and intermediate zones where annual oilseeds have the most potential. \$202 400 — 36 months.

87-0041 Groundnut mechanization (Thailand) — Phase III

For Khon Kaen University, Muang Khon Kaen, and the Ministry of Agriculture and Cooperatives, Bangkok, to improve land and labour productivity, groundnut quality, and farmers' income by introducing appropriate groundnut production and postproduction mechanization. \$213 500 — 24 months.

87-0048 Goat production systems (Nepal)*

For the Ministry of Food and Agriculture, Kathmandu, to enable its Department of Livestock Development and Animal Health to describe and assess current goat production in Nepal and test appropriate interventions to improve it. \$80 500 — 36 months.

87-0063 Sesbania germ plasm (Africa)

For the International Livestock Centre for Africa, Ethiopia, to increase the genetic base of *Sesbania* in its collection and to disseminate the germ plasm for evaluation among several African countries. \$11 000 — 2 months.

87-0070 Sesame research (India)

For the Tamil Nadu Agricultural University, Coimbatore, to identify and assess specific constraints to sesame production and develop methodologies to overcome them by supporting six doctoral studies on this topic. \$96 900 — 48 months.

87-0079 Forest regeneration (Chile) — Phase II

For the Instituto Forestal, Santiago, to develop suitable silvicultural techniques for the regeneration and management of the depleted native woodlands of the semi-arid zone of central Chile and to provide technical support to other IDRC-supported afforestation research projects in Latin America. \$395 200 — 36 months.

87-0082 Asian Fisheries Society small grants (Asia)

For the Asian Fisheries Society, the Philippines, to provide small research grants to young scientists to carry out indigenous fishery research in Asian developing nations. \$420 700 — 36 months.

87-0110 Soil improvement by trees (Zimbabwe)

For the University of Zimbabwe, Harare, to investigate the effect of trees on soils with regard to their influence on fertility and their potential to enhance sustained crop productivity. \$131 800 — 36 months.

87-0113 Postharvest systems (China)

For Zhejiang Agricultural University, Hangzhou, to enable the Post-Harvest Technology Development Research Centre to define grain postharvest systems and identify needs for new technology to increase economic returns in those systems. \$105 100 — 24 months.

87-0114 Agroforestry (Kenya) — Phase II

For the Ministry of Environment and Natural Resources, Nairobi, to enable the Kenya Forestry Research Institute to continue developing agroforestry systems for the semi-arid areas of Kenya and other East African countries with a view to improving the inhabitants' quality of life. \$345 200 — 36 months.

87-0115 Minidehullers (the Gambia) — Phase II

For the Catholic Relief Services (CRS), Banjul, to promote the local manufacture and use of the mini-CRS dehuller. \$140 000 — 30 months.

87-0118 Cropping systems (Jamaica) — Phase II

For the Inter-American Institute for Cooperation on Agriculture, Kingston, to develop economically viable production systems acceptable to small farmers that will increase and stabilize farm income while preserving watershed resources. \$465 000 — 36 months.

87-0123 Postharvest economics advisor (Asia) — Phase II

For the Southeast Asian Ministers of Education Organization's Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), the Philippines, to continue to provide an experienced scientist to develop SEARCA's postharvest economics and agribusiness research and training capabilities. \$177 000 — 24 months.

87-0128 Nile perch (Tanzania)

For the Tanzania Fisheries Research Institute, Dar es Salaam, to develop fishing methods and practices that will ensure maximum long-term benefits from Tanzania's Lake Victoria fishery resources. \$182 200 — 36 months.

87-0130 Maize storage (Togo) — Phase II

For the Université du Bénin, Lomé, to encourage farmers to adopt improvements to traditional storage systems in southern Togo as a means of increasing the quantity and quality of maize stored on farms. \$249 400 — 39 months.

87-0131 ASEAN grains postharvest program (Southeast Asia)*

For the Ministry of Agriculture and Cooperatives, Thailand, to improve the cereal and legume

postharvest systems in countries of the Association of South East Asian Nations (ASEAN), allowing farmers and small entrepreneurs to produce good quality products and improve their livelihood. \$250 000 — 60 months.

87-0132 Food legumes (Mali) — Phase III

For the ministère de l'Agriculture, Bamako, to enable the Institut d'économie rurale to develop high-yielding, stable, and drought-, insect-, and disease-resistant cultivars of cowpea and 'Bambara' groundnut of acceptable quality. \$259 800 — 36 months.

87-0133 Integrated pest management (the Philippines)

For the University of the Philippines at Los Baños to improve the health, productivity, and income of rural households in rice-growing regions by introducing integrated pest-management techniques. \$108 100 — 24 months.

87-0135 On-farm sesame research (India)

For Tamil Nadu Agricultural University, Coimbatore, to enable Krishi Vigyan Kendra to improve sesame productivity through a sesame-based farming-systems approach that will contribute to the improvement of the general economic conditions of small-scale sesame farmers in three target areas in Tamil Nadu. \$160 700 — 60 months.

87-0149 Mariculture systems (Chile)

For the Universidad Austral de Chile, Valdivia, to establish an integrated system of mariculture as a means to promote development in the rural communities of the island of Chiloé. \$404 400 — 36 months.

87-0151 Aquaculture development (Colombia)

For the Fondo Colombiano de Investigaciones Científicas y Proyectos Especiales Francisco José de Caldas, Bogotá, to contribute to aquaculture development for small- and medium-scale producers in the southeastern region of Colombia through the adaptation and transfer of technology. \$269 000 — 24 months.

87-0161 Bharatiya Agro Industries Foundation: institutional support (India)

For the Bharatiya Agro Industries Foundation, Pune, to set up an institute for development research whose proposed program would include creating an information resources centre and undertaking research activities related to health systems, agricultural production, and postproduction systems. \$1 855 000 — 60 months.

87-0168 Mechanization and rural employment (Morocco)

For the International Center for Agricultural Research in the Dry Areas, Syria, to assist agricultural research and development institutions in the design of appropriate alternatives in the field of rural mechanization and employment. \$64 700 — 9 months.

87-0170 Paulownia (Pakistan)*

For the Pakistan Forest Institute, Peshawar, to evaluate the potential for incorporating *Paulownia* species in agroforestry systems. \$178 200 — 36 months.

87-0174 Olives (West Bank)

For the Arab Scientific Institute for Research and Transfer of Technology, El Bireh, to improve olive production and processing capability in the West Bank. \$96 600 — 36 months.

87-0177 Agroforestry (Peru) — Phase II*

For the Instituto Nacional de Investigación y Promoción Agropecuaria, Lima, to identify and test improved alternative agroforestry production systems for the Peruvian Upper Amazon Basin and strengthen the national agroforestry research capacity. \$376 600 — 36 months.

87-0179 Bamboo (Malaysia)

For the Forest Research Institute, Selangor, to upgrade and promote the production, development, and utilization of bamboos in Malaysia through scientifically sound techniques. \$170 000 — 36 months.

87-0180 Farm credit and savings (Sénégal)*

For the Fédération des organisations non-gouvernementales du Sénégal, Thiès, to develop and test an original saving and credit formula, the success of which would depend on the alliance of a rural bank with a federation of farmers' organizations. \$276 000 — 38 months.

87-0182 Dynamic analysis of farm data (Peru)

For the Centro de Estudios y de Desarrollo Agrario del Perú, Lima, to generate and test procedures to design, collect, and analyze small-farm records from four ecological areas of Peru, in such a way that applied research projects can make efficient use of such information. \$87 200 — 12 months.

87-0185 New agricultural policy (Sénégal)*

For the Institut sénégalais de recherches agricoles, Dakar, to characterize the response of various actors to the new agriculture policy for the groundnut-growing basin of Sénégal to consider possible adjustment measures. \$198 270 — 36 months.

87-0188 SPAAR forestry working group (Africa)

For the World Bank, USA, to enable the Special Program for African Agricultural Research (SPAAR), to carry out specific working-group activities and provide support for African representatives to participate in it. \$40 000 — 12 months.

87-0190 Asian Fisheries Social Science Research Network — Phase III

For the International Center for Living Aquatic Resources Management, the Philippines, to develop fisheries-social sciences research capacity as a partner with the fisheries, biological, and engineering sciences in planning and decision-making processes

for natural resource systems management in Asia. \$600 000 — 36 months.

87-0191 Alley cropping (Mali)*

For the International Livestock Centre for Africa, Ethiopia, to improve the productivity of breeding and of food crops in agropastoral systems by integrating woody fodder species with annual crops. \$99 300 — 36 months.

87-0197 Mycorrhiza network (Asia)*

For the Tata Energy Research Institute, India, to strengthen research, encourage cooperation, promote exchange of information and germ plasm, and facilitate transfer of technology through the establishment of a mycorrhiza research network in India. \$189 200 — 36 months.

87-0201 Banana and plantain network (Global) — Phase IV

For the International Network for the Improvement of Banana and Plantain, France, to further support its establishment and operations. \$150 000 — 12 months.

87-0205 Food legumes (Tunisia)*

For the Institut national de la recherche agronomique de Tunisie, Ariana, to increase and enhance food legume production, especially faba bean, chickpea, and lentil, in the major rainfed production zones of Tunisia. \$361 100 — 36 months.

87-0216 Rice prices and farmers' response (Asia)

For the International Rice Research Institute, the Philippines, to define the response of farm households to long-run declines in the price of rice in Indonesia and Thailand. \$38 900 — 18 months.

87-0222 Goats and sheep (Zimbabwe) — Phase II*

For the University of Zimbabwe, Harare, to enable its Department of Animal Science to develop and introduce feeding and management technologies appropriate for small ruminants in the communal areas of Zimbabwe. \$300 100 — 36 months.

87-0223 Buffalo for draft power (Thailand)

For Kasetsart University, Bangkok, to assess the need and potential for improving draft animal power (DAP) capacity on small farms, including a preliminary assessment of the possibilities for increasing DAP through improved nutrition. \$156 600 — 24 months.

87-0224 Dairy production systems (Ethiopia)*

For the Institute of Agricultural Research, Addis Ababa, to increase milk production in two regions of Ethiopia and to strengthen its capacity to conduct animal research. \$370 900 — 36 months.

87-0225 Dairy-beef production systems (Botswana) — Phase II*

For the Ministry of Agriculture, Gaborone, to enable its Department of Agricultural Research to increase milk production among small-scale

peri-urban livestock owners and to strengthen the national capacity to carry out animal-production systems research. \$395 300 — 36 months.

87-0226 Women in farming systems (Thailand)*

For the Ministry of Agriculture and Cooperatives, Bangkok, to enable the Farming Systems Research Institute to improve social and economic conditions for rural families through the transfer of affordable technology to women. \$95 800 — 24 months.

87-0227 Social forestry (Lesotho)*

For the Ministry of Agriculture, Maseru, to enable its Division of Forestry to develop an effective social forestry program throughout Lesotho. \$25 600 — 5 months.

87-0229 Faba beans processing (Egypt) — Phase II

For the University of Alexandria to enable its Faculty of Agriculture to develop and test improved equipment and processes for the production of *falafel* and *medammis* by small- to medium-scale faba bean processors. \$41 300 — 12 months.

87-0230 Buffalo for draft power (India)*

For the Indian Council for Agricultural Research, New Delhi, to enable the Central Institute for Research on Buffaloes to assess the nutritional requirements of Murrah buffalo for maximum draft capacity, and thereby provide basic information required to design practical interventions to improve draft animal power on small farms. \$48 600 — 12 months.

87-0233 Tropical pastures network (Latin America) — Phase III*

For the Centro Internacional de Agricultura Tropical, Colombia, to improve livestock production systems in tropical Latin America by introducing low-input grass and legume pastures and to strengthen national capability in tropical pasture research. \$671 600 — 36 months.

87-0235 Integrated livestock and aquaculture (Cameroon)*

For the Ministry of Livestock, Fisheries and Animal Industries, Yaoundé, to enable its Fisheries Department to develop technically and socioeconomically appropriate integrated livestock-aquaculture packages. \$249 800 — 36 months.

87-0236 Tissue culture (India)*

For the Tata Energy Research Institute, New Delhi, to develop tissue-culture techniques suitable for tree species used in social forestry and wasteland development. \$157 600 — 36 months.

87-0237 Farming systems (China) — Phase II*

To provide the Chinese Academy of Agricultural Sciences, Beijing, with institutional support to enable the Crop Breeding and Cultivation Institute to promote the development and expansion of farming-systems research in China. \$489 000 — 36 months.

87-0240 Crop-animal systems (Asia) — Phase II*

For the International Rice Research Institute, the University of the Philippines at Los Baños, and the Institute of Animal Sciences, the Philippines, to increase productivity, income, and employment on small farms in Asia through farming-systems research with special emphasis on crop-animal interactions. \$327 500 — 36 months.

87-0242 Casamance artisanal fisheries (Sénégal) — Phase II*

For the Institut sénégalais de recherches agricoles, Dakar, to enable the Centre de recherches océanographiques de Dakar-Thiaroye to provide fisheries development programs in the Casamance with the necessary scientific support to improve the income of fishermen and farmer-fishermen. \$270 500 — 36 months.

87-0246 Vegetables (China) — Phase II*

For the Asian Vegetable Research and Development Center (AVRDC), Thailand, to improve vegetable production in China through further research cooperation with the Chinese Academy of Agricultural Sciences and the Ministry of Agriculture, Animal Husbandry and Fisheries, through the AVDRDC's Regional Training and Outreach Program. \$454 600 — 36 months.

87-0254 Dairy-beef production systems (Guatemala) — Phase II*

For the Instituto Interamericano de Cooperación para la Agricultura, to enable the Instituto de Ciencia y Tecnología Agrícola, the Universidad de San Carlos de Guatemala, and the Dirección General de Servicios Pecuarios, Guatemala City, to improve small-farm dairy-beef production systems in six areas of Guatemala. \$404 000 — 36 months.

87-0255 Oil crops (Ethiopia)*

For the Institute of Agricultural Research, Addis Ababa, to develop higher-yielding cultivars of oil crops of improved nutritional value and to increase productivity through improved cultural practices. \$465 900 — 36 months.

87-0257 Sorghum utilization (Tanzania) — Phase II*

For Sokoine University of Agriculture, Morogoro, to improve and increase the utilization of sorghum in Tanzania. \$115 300 — 36 months.

87-0258 Muscovy ducks (Thailand)*

For the Asian Institute of Technology, Bangkok, to develop feeding strategies, using indigenous feeds, for duck production in integrated duck-fish systems. \$122 900 — 36 months.

87-0261 Triticale (Syria)*

For the University of Aleppo to enable the Faculty of Agriculture to strengthen its research capacity in the area of triticale production and use. \$276 300 — 36 months.

87-0262 Small ruminant-coconut systems (the Philippines)

For the Philippine Council for Agriculture and Resources Research and Development, Los Baños, to enable the Livestock Research Department to develop appropriate strategies for integrating small ruminants with coconut production. \$160 600 — 36 months.

87-0263 Irrigated forestry (Pakistan)*

For the Pakistan Forest Institute, Peshawar, to optimize the biomass yields of irrigated forestry plantations in Pakistan by improving the management and use of water resources. \$245 400 — 60 months.

87-0266 Fish breeding (Mauritania)*

For the Centre national de recherches océanographiques et des pêches, Nouadhibou, to maximize production of freshwater fish on the Mauritanian side of the Sénégal River. \$173 800 — 36 months.

87-0267 Vegetative propagation (Sénégal) — Phase II*

For the Institut sénégalais de recherches agricoles, Dakar, to enable the Département des recherches sur les productions forestières to use vegetative propagation techniques (cuttings, grafting, and in vitro culture) to produce high-yielding clones on a large scale so as to allow increased production of forest plantations. \$126 600 — 24 months.

87-0275 Sorghum-processing pilot plant (Kenya)*

For the Kenya Industrial Research and Development Institute, Nairobi, to encourage greater utilization of sorghum in dry, urban Kenya by introducing small-scale dehulling machinery. \$200 900 — 36 months.

87-0277 Rice-fish improvement (Indonesia)*

For the Agency for Agricultural Research and Development, Bogor, to enable the Sukamandi Research Institute for Food Crops and the Research Institute for Freshwater Fisheries to improve integrated rice-fish culture systems in Indonesia. \$410 000 — 36 months.

87-0285 Pearled-sorghum market survey (Kenya)*

For the Kenya Industrial Research and Development Institute, Nairobi, to determine household acceptance of, or resistance to, whole dehulled sorghum in selected urban areas of Kenya. \$46 900 — 15 months.

87-0290 Pastoral systems of the Maghreb (Tunisia)*

For the ministère de l'Agriculture, Tunis, to permit the Institut des régions arides to identify and test interventions to improve the living and working conditions of populations in the region and, at the same time, contribute to the stability of the environment. \$71 400 — 15 months.

87-0291 Pastoral systems of the Maghreb (Algeria)

For the ministère de l'Enseignement supérieur, Algiers, to enable the Centre de recherches en économie appliquée pour le développement to identify and test interventions to improve the living and working conditions of populations in the region and, at the same time, contribute to the stability of the environment. \$99 200 — 15 months.

87-0296 Research results utilization workshop (Colombia)*

For the Agriculture, Food and Nutrition Sciences Division, IDRC, to develop a strategy to increase the extent to which results from Centre-supported research are utilized. \$52 000 — 12 months.

87-0297 Smallholder agricultural innovation (Malawi)*

For the University of Malawi, Zomba, to enable its Chancellor College and Bunda College of Agriculture to understand the decision-making process used by smallholders in Malawi regarding agricultural innovations. \$24 000 — 18 months.

87-0300 Farming-systems classification (Colombia) — Phase II

For the Corporación de Estudios Ganaderos y Agrícolas, Bogotá, to develop a methodology for classifying farmers by regions and microregions, for use by national institutions in designing, implementing, and evaluating improved farm technology. \$152 700 — 24 months.

87-0328 Artisanal fisheries development (Colombia)*

For the Fondo Colombiano de Investigaciones Científicas y Proyectos Especiales Francisco José de Caldas, Bogotá, to enable the Instituto de Desarrollo de los Recursos Naturales Renovables (INDERENA) to provide institutional support to the INDERENA Artisanal Fisheries Division to enable it to take a leading role in the future Artisanal Fisheries Development (Colombia) project. \$30 000 — 6 months.

87-0338 Bivalve genetics (Chile)*

For the Pontificia Universidad Católica de Chile, Talcahuano, to determine and document the genetic and physiological characteristics of commercial bivalves now cultivated on the Pacific coast of Chile and Peru, as a prelude to their large-scale use in intensive mariculture. \$39 700 — 24 months.

87-1008 Agricultural marketing (Lesotho-Canada) — Phase II*

For the National University of Lesotho, Maseru, and the University of Saskatchewan, Saskatoon, to deepen and extend the research on agricultural marketing and to continue the ongoing process of consultation with the Government of Lesotho regarding research priorities and policy recommendations. \$274 400 — 32 months.

87-1009 Leaf spot (Costa Rica-Canada) — Phase II

For the Universidad de Costa Rica, San José, and the University of Alberta, Edmonton, to further develop, test, and disseminate nonhazardous chemical and biological control measures for leaf spot disease of coffee. \$328 700 — 36 months.

87-1010 Weevil resistance (Mexico-Zimbabwe-Canada) — Phase II

For the Centro Internacional de Mejoramiento de Maíz y Trigo and the Instituto Politécnico Nacional, Mexico City; the University of Zimbabwe, Harare; and the University of Ottawa, Ontario, to develop comprehensive selection criteria and to screen maize germ plasm under laboratory and field conditions for resistance to major storage pests. \$278 400 — 36 months.

87-1011 Phosphorus availability (Brazil-Ghana-Canada)

For the Universidade Federal de Pernambuco; the University of Ghana, Accra; and the Saskatchewan Institute of Pedology, Saskatoon, to recommend crop and fertilizer management practices that will enhance phosphorus-fertility and organic-matter conservation under sustainable, low-input agricultural production. \$280 400 — 36 months.

87-1014 *Bacillus thuringiensis elisa* (Global-Canada)

For the University of Western Ontario, London, to enable its departments of Chemical and Biochemical Engineering and of Microbiology and Immunology to produce an immunochemical test to facilitate identification of *Bacillus thuringiensis* in field isolates and improve quality control during production. \$28 600 — 12 months.

87-1022 Botanical pesticides (the Philippines-Canada)

For the Philippine Council for Agriculture and Resources Research and Development, Los Baños, and the University of Ottawa, Ontario, to identify and develop promising botanical pesticides for use by small-scale farmers within the context of integrated pest-management programs. \$301 800 — 36 months.

87-1026 *Bacillus thuringiensis* (Mexico-Nicaragua-Canada)

For the Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional, Mexico City; the Ministerio de Desarrollo Agropecuario y Reforma Agraria, Managua; and the University of Western Ontario, London, to develop Mexico's and Nicaragua's capacity to produce effective and economical biological insecticides using *Bacillus thuringiensis*. \$353 300 — 24 months.

87-1027 Fish poisons (Thailand-Canada) — Phase II*

For Chiang Mai University and the University of British Columbia, Vancouver, to develop and test, under realistic conditions, promising natural piscicides for use in Thai aquaculture. \$277 400 — 24 months.

87-1028 Induced spawning (China-Canada) — Phase II

For Zhongshan University, Guangzhou; the University of Guelph, Ontario; and the University of Alberta, Edmonton, to further the development of the Department of Biology at Zhongshan University as a centre for applied research in fish hormonal physiology. \$287 500 — 24 months.

87-1029 Mariculture (China)

For the Ministry of Agriculture, Animal Husbandry and Fisheries, Beijing, to establish the Yellow Sea Fisheries Research Institute as an institution of international calibre for research and training in marine polyculture. \$482 500 — 36 months.

87-1031 Timber construction (Chile-Canada)

For the Instituto Forestal, Santiago, and the University of New Brunswick, Fredericton, to establish and disseminate the technical information required to promote the efficient use of Chile's abundant pine timber resource in local construction. \$426 700 — 36 months.

87-1040 Free convective dryers (West Africa-Canada) — Phase II*

For the Centre national d'études et d'expérimentation du machinisme agricole, Cameroon; the Ahmadu Bello University, Nigeria; the Centre d'études et de recherches sur les énergies renouvelables, Sénégal; the Ministry of Agriculture and Natural Resources, Sierra Leone; the Université du Bénin, Togo; and Queen's University, Ontario, to develop improved natural-convection solar crop dryers suitable for on-farm use and to encourage their use in West Africa. \$268 400 — 36 months.

87-1043 *Leucaena psyllid* biocontrol (Asia-Canada)*

For the Central Institute for Food Crops, Indonesia; the Philippine Council for Agriculture and Resources Research and Development; the Commonwealth Agricultural Bureaux's Institute of Biological Control, U.K.; and the Alberta Environmental Centre to reduce the *Leucaena* psyllid to the level at which it ceases to cause economically and socially significant damage, by means of imported natural enemies in conjunction with other control measures. \$256 500 — 36 months.

87-1049 Soil fertility and erosion (Nepal-Canada)*

For the Integrated Survey Section, Kathmandu, and the University of British Columbia, Vancouver, to identify and quantify the causes and nature of soil erosion, soil fertility decline, and sediment transport in small river basins in the hills of Nepal and to develop ways of improving biomass production on a sustainable basis. \$238 600 — 36 months.

87-1050 Sea urchins (Barbados-Canada)*

For the University of the West Indies, Cave Hill, and McGill University, Quebec, to determine stock structure and population dynamics of the sea urchin, *Trypanistes ventricosus*, in Barbados and

neighbouring islands, to enhance the recovery of the sea-urchin population, and to develop models on which scientific management of the urchin fisheries may be based. \$74 200 — 36 months.

Communications

87-0069 Scientific publishing in North Africa

For the Institut agronomique et vétérinaire Hassan II, Morocco, to organize two workshops for 20 participants responsible for scientific publications in French in North Africa. \$73 800 — 9 months.

87-0199 Scholarly publishing (Africa-Canada)*

For the Canadian Association of African Studies, Ontario, to improve scholarly publishing in Africa and to encourage research and publishing collaboration between Canada and Africa. \$485 000 — 36 months.

87-0315 Minimum tillage: technology utilization (Kenya)*

For the University of Nairobi to enable its Department of Crop Science (Kabete Campus) to transfer current knowledge to extension workers in the Ministry of Agriculture and to develop communications strategies for wider dissemination of minimum-tillage technology to farmers. \$52 900 — 30 months.

87-0325 Integrated support for Research Management Centre (the Philippines)*

For the University of the Philippines at Los Baños, Laguna, to enable the Research Management Centre to enhance responsiveness, relevance, productivity, and efficiency of the science and technology system through teamwork, mutual support, and cooperation among research managers, researchers, and support staff. \$73 500 — 12 months.

87-0329 Paulownia: dissemination of research results (China-Latin America)*

For the Chinese Academy of Forestry, Beijing, to enable the Forest Research Institute to develop and implement a communications program to inform and educate targeted groups of farmers of the advantages of intercropping and planting *Paulownia* trees and to share China's knowledge and experience with interested groups in Latin America. \$49 500 — 30 months.

87-0345 Canadian public opinion survey

For the Communications Division, IDRC, to enable Decima Research, Toronto, to survey the beliefs, attitudes, intentions, and behaviours of Canadians with respect to the developing world. \$99 400 — 6 months.

Earth and Engineering Sciences

86-1027 Small-scale brick production (Nigeria-Canada)*

For the Nigerian Building and Road Research

Institute, Lagos, and the Prairie Masonry Research Institute, Alberta, to make adequate housing more accessible by reducing the cost of walling materials and also to create job opportunities by establishing small-scale brick-production units. \$255 000 — 24 months.

86-1029 Microprocessor modules for machine-tool and process-control applications (India-Canada)*

For Production Aids and Control Electronics (India) Limited, Hyderabad, and the Institut d'ordinaire du Québec, Sainte Thérèse, to develop and fully engineer 16-bit microprocessor modules for computer numerical control systems and process controls and to strengthen the research capacity of Production Aids and Control Electronics (India) Limited by providing hands-on experience with the latest development tools available at the Institute. \$593 455 — 24 months.

87-0333 Eppawala phosphate (Sri Lanka)*

For the Institute of Fundamental Studies, Colombo, to study the Eppawala phosphate deposit with a view to developing commercial production of partially acidulated fertilizers for local consumption. \$92 600 — 12 months.

87-0341 Calcarenite (Mauritius)*

For the University of Mauritius, Réduit, to enable the School of Industrial Technology to improve housing conditions in Rodrigues by rationalizing the mining of calcarenite deposits and formulating specifications for the use of blocks derived from the deposits. \$21 000 — 24 months.

87-0342 Preventing Chagas' disease through improved housing (Paraguay)*

For the Universidad Católica "Nuestra Señora de la Asunción" to enable the Centro de Tecnología Apropriada and the Instituto de Investigaciones en Ciencias de la Salud to determine the effectiveness of various interventions to control Chagas' disease in rural areas. \$659 490 — 36 months.

87-1003 Harbour siltation (China-Canada)

For Nanjing University and the Department of Fisheries and Oceans, Nova Scotia, to identify sediment sources, to determine sedimentation rates, and to study the environmental effects of dredge spoils in and about the two ports of Sanyo and Yangpu of Hainan Island, to facilitate the design and maintenance of expanded harbour facilities. \$512 400 — 24 months.

87-1004 Industrial steel alloys (Brazil-Canada) — Phase II

For the Fundação Técnico-Educacional Souza Marques, Rio de Janeiro, and the Metallurgical Consulting Services Limited, Saskatchewan, to develop improved damage-assessment methods for chromium-molybdenum steel tubes to provide for safer operation and preventive maintenance and also to develop improved high-alloy, high-temperature tube material for the petrochemical industry. \$199 650 — 24 months.

87-1005 Asphalt roofing sheets (Costa Rica-Canada)*

For the Instituto Tecnológico de Costa Rica, Cartago, and the National Research Council of Canada, Ontario, to develop a low-cost and durable asphalt roofing sheet that will contribute to the provision of adequate housing facilities for the poor. \$332 600 — 36 months.

87-1006 Slope stability (Brazil-Canada)*

For the Pontificia Universidade Católica, Rio de Janeiro, and the University of Alberta, Edmonton, to characterize slope-stability hazards related to geotechnical behaviour of residual and colluvial soils in the Rio de Janeiro region, and to provide guidelines for urbanization plans in *favela* areas located on unstable slopes. \$271 600 — 24 months.

87-1007 Pollution associated with coal utilization (India-Canada)

For the Indian Institute of Technology, Bombay, and the University of Western Ontario, London, to evaluate the environmental impact, with respect to heavy metals, of large-scale coal consumption in actual and projected thermal plants and to study and propose remedial measures to minimize the observed deleterious effects through improved waste treatment or use of the waste products (or both). \$369 500 — 36 months.

87-1016 Altiplano hydrological system (Bolivia-Canada)*

For the Universidad Mayor de San Andrés, La Paz; the Universidad Técnica de Oruro; and Laval University, Quebec, to increase knowledge of the hydrological system of the Desaguadero River to propose solutions to past and future flooding problems and to contribute to the training of competent researchers in the field of hydrology and water resources. \$315 527 — 36 months.

87-1017 Productivity of aquifers in foundation rock (Burkina Faso-Canada)*

For the Université de Ouagadougou and the University of Quebec at Chicoutimi to increase the proportion of high-yielding drilling during future drilling campaigns to supply drinking water to small urban communities of Burkina Faso and eventually of other areas on the Precambrian metamorphic basement in Africa. \$305 623 — 24 months.

87-1018 Discontinuous aquifers (Niger-Canada)

For the Université de Niamey and the University of Quebec at Montreal to examine the structure and functioning of discontinuous basement aquifers through intensive study of localized sites in basins where there are operating hydraulic works to develop a hydrological model of national and regional value. \$309 230 — 36 months.

87-1020 Seismic-resistant quincha construction (Peru-Canada)

For the Pontificia Universidad Católica del Perú, Lima, and the Technical University of Nova Scotia, Halifax, to evaluate the seismic performance of

quincha dwellings with a view to developing an earthquake-resistant model. \$339 645 — 24 months.

87-1021 Carmine production from cochineal (Peru-Canada) — Phase II

For the Instituto de Investigación Tecnológica Industrial y de Normas Técnicas, Lima, and Simon Fraser University, British Columbia, to develop a technology for obtaining a high yield of commercial forms of carmine with a high carminic-acid content. The processes developed are to be scaled to the pilot-plant stage and the technology transferred to potential users. \$229 960 — 24 months.

87-1025 Essential oils (Bolivia-Canada)

For the Universidad Mayor de San Simón, Cochabamba, and the University of Quebec at Chicoutimi to promote the use of local renewable natural resources in the Department of Cochabamba and to develop a technology to allow the industrial production to be sold on the Bolivian market and, eventually, on foreign markets of the Andean zone. \$383 754 — 36 months.

87-1032 Ductile-iron foundry (Peru-Canada)*

For the Instituto de Investigación Tecnológica Industrial y de Normas Técnicas, Lima, and Queen's University, Ontario, to develop appropriate industrial practices for production of high-quality ductile-iron casings for the use of small- and medium-sized foundries in Peru. \$249 700 — 36 months.

87-1033 Volcanic-ash cement (Bolivia-Canada)*

For the Ministerio de Planeamiento y Coordinación, La Paz, and the University of Calgary, Alberta, to develop lime-pozzolan-cement (LPC) and LPC-based building materials for constructing low-cost housing for the poor. \$300 000 — 36 months.

87-1034 Technology adoption by SMEs (Thailand-Canada)*

For the Department of Industrial Promotion, Bangkok; TECHNUNET Asia, Singapore; and the Saskatchewan Research Council and the University of Saskatchewan, Saskatoon, to design a system for improved access to and adoption of technology by individual small- and medium-sized enterprises (SMEs) by focusing on the efforts of various SME support institutions. \$214 200 — 18 months.

87-1035 Agrogeology (Tanzania-Canada) — Phase II*

For Sokoine University of Agriculture, Morogoro, and the University of Guelph, Ontario, to improve the agricultural capability of Tanzanian soils by using locally available geological resources. \$497 500 — 36 months.

87-1036 Pine tannins as anticorrosives (Chile-Canada)

For the Universidad de Concepción and McMaster University, Ontario, to develop the regional chemical industry relating to the use of *Pinus radiata* by-products and thus generate employment and income. \$107 600 — 24 months.

87-1044 Special electronics zones (Malaysia-Canada)*

For the Malaysian Institute of Microelectronics Systems, Kuala Lumpur, and Simon Fraser University, British Columbia, to undertake economic-industrial research on Malaysia's electronics industry in the export processing zones and to use the results of this research to guide national policy with respect to various issues. \$166 980 — 18 months.

87-1046 Slurry-pond reclamation (Malaysia-Canada)*

For the Universiti Malaya and the Universiti Teknologi Malaysia, Kuala Lumpur, and McGill University, Quebec, to develop an economic and efficient slurry-pond reclamation technique using, wherever possible, the technology, facilities, and resources available in the affected areas. \$348 900 — 36 months.

87-1048 SEAPOL (Southeast Asia-Canada) — Phase II*

For Chulalongkorn University, Thailand; the International Institute for Transportation and Ocean Policy Studies, Nova Scotia; and the University of Victoria, British Columbia, to continue to strengthen regional research capacity in the Law of the Sea, to produce policy papers for governments of countries of the Association of South East Asian Nations on management of natural resources, and to provide opportunities for informal consultation among states on contentious maritime issues. \$407 990 — 30 months.

87-1051 Partial carbonization of peat (Burundi-Canada)*

For the Office national de la tourbe, Bujumbura, and the Société d'ingénierie Cartier Limitée, Quebec, to develop small-scale technology to transform raw peat into coal (carbonized product) to meet household energy needs. \$145 365 — 16 months.

87-1052 Technology adoption by SMEs (Singapore-Canada)*

For the Singapore Institute of Standards and Industrial Research (SISIR), and the University of Saskatchewan and the Saskatchewan Research Council, Saskatoon, to identify the characteristics of small- and medium-sized enterprises (SME) that are successful in adopting technology and to design and test a system to improve the effectiveness of SISIR's technological assistance to SMEs. \$216 250 — 24 months.

Fellowships and Awards

87-0003 Regional training course on advanced biogas reactor (Southeast Asia)

For King Mongkut's Institute of Technology, Thailand, to develop a research, development, and design capability for the use of an advanced, high-rate anaerobic reactor for agroindustrial waste-pollution abatement and energy recovery. \$78 202 — 6 months.

87-0029 Doctoral program: CIRES (West Africa) — Phase III

To strengthen the Centre ivoirien de recherches économiques et sociales (CIRES), Abidjan, by providing it with six scholarships in rural economics at the doctoral level for the 1987-1988 university year. \$124 400 — 12 months.

87-0056 The Hague Academy of International Law scholarships (Global)

For The Hague Academy of International Law, the Netherlands, to assist in training young legal scholars from developing countries in aspects of international law and to support the Academy's training program for legal practitioners and researchers from the Third World. \$25 733 — 12 months.

87-0062 Training course on fish reproduction (Brazil) — Phase II

For the Centro de Pesquisa e Treinamento em Acuicultura, São Paulo, to upgrade local research capability in freshwater-fish aquaculture by providing practical and theoretical training in fish reproduction, induced spawning, and larvae rearing in support of ongoing aquaculture research activities in Centre-sponsored fisheries projects in Latin America and the Caribbean. \$61 875 — 6 months.

87-0064 Training course on insect pest management (sub-Saharan Africa) — Phase II

For the International Centre of Insect Physiology and Ecology, Kenya, to hold a training course to establish a practical foundation for pest and vector management and an exchange of experience in handling this problem. \$67 920 — 6 months.

87-0065 Research methods focusing on gender issues (sub-Saharan Africa) — Phase II

For the Eastern and Southern African Management Institute, Tanzania, to conduct a training workshop to strengthen its women-in-development program and those in other institutions of the region by producing training manuals that integrate gender issues. \$69 900 — 6 months.

87-0066 Microcomputers in health research and data analysis (sub-Saharan Africa)

For the Kenya Medical Research Institute, Nairobi, to upgrade its staff's skills in conducting research projects more efficiently. \$80 456 — 6 months.

87-0067 Research methods focusing on urban issues (sub-Saharan Africa)

For the Ardhi Institute, Tanzania, to hold a training course for 25 participants with a view to developing common research priorities in urban studies, upgrading the research skills of urban studies scientists, and developing active research proposals for funding by donor agencies including IDRC. \$68 420 — 6 months.

87-0068 Forestry research-methods course (East Africa) — Phase II

For the University of Dar es Salaam, Tanzania, to enable the Faculty of Agriculture, Forestry, and

Veterinary Science to conduct a course to enhance the research skills of forestry scientists in the region. \$86 465 — 6 months.

87-0072 WID awards*

For the Social Sciences Division, IDRC, to provide support from the Centre's Women in Development (WID) program for individual training awards to increase the capability of researchers and institutions in developing countries to undertake WID-related research. \$107 730 — 18 months.

87-0141 Applied economics on tropical roots network (Latin America)

For the Universidad de Costa Rica to enable the Asociación Costarricense de Raíces Tropicales to provide agronomists and other biology-oriented professionals and technicians with the analytical tools needed to enable them to include basic economic indicators in the analysis of their research and to recommend technological alternatives. \$18 190 — 6 months.

87-0147 Strengthening Latin American development thinking and teaching

For the Corporación de Investigaciones para el Desarrollo, Chile, to develop a set of 10 instructional packages to be used as teaching materials in economic-development courses. \$84 430 — 18 months.

87-0156 Farm classification techniques (Latin America)

To enable the Universidad de San Carlos, Guatemala, to provide researchers involved in the application of statistical techniques for small-farm classification with the basic analytical tools to develop appropriate methodologies, with a view to improving the design and dissemination of production alternatives for small-scale farmers. \$42 000 — 6 months.

87-0163 Symposium on higher education (Dominican Republic)

For the Asociación Dominicana de Rectores de Universidades, Santo Domingo, to hold a symposium on higher learning that will enable policymakers and university administrators to establish an ongoing process of critical analysis and reflection about the direction of higher education in the country. \$59 876 — 24 months.

87-0164 Senior fellowship for Dr José Joaquín Brunner (Latin America)

For the Fellowships and Awards Division, IRDC, to enable Dr Brunner to spend 12 months at IDRC and several Canadian universities conducting research on questions related to the development, maintenance, and expansion of scientific communities in Latin America. \$65 270 — 12 months.

87-0175 Insect identification and biosystematic services for agriculture (sub-Saharan Africa) — Phase II

For the National Museums of Kenya, Nairobi, to provide training courses that will enable graduate

entomologists to collect, prepare, and identify specimens of agricultural insect pests and their predators; to introduce the scientists to the scientific basis of insect biosystematics and identification; and to strengthen the National Museums of Kenya in providing biosystematic services to the region. \$30 060 — 6 months.

87-0196 International Foundation for Science (Global)

For the International Foundation for Science, Sweden, to provide support for about 10 young scientists from the Third World to undertake research in scientific areas of priority to their countries. \$125 000 — 12 months.

87-0218 An approach to development of human resources (West and Central Africa and the Maghreb)

For the Université de Yaoundé, Cameroon, to enhance the ability of 30 African specialists to analyze the region's training and human resources-development needs and to define a set of projects to meet these needs. \$86 170 — 6 months.

87-0270 Postgraduate education (eastern and southern Africa)*

For the Fellowships and Awards Division, IDRC, to encourage and strengthen graduate education in universities in eastern and southern Africa by emphasizing its importance as the primary source of trained researchers and high-level human resources. \$500 000 — 36 months.

87-0324 EDPUB national-level training (Asia)*

For Sukhothai Thammathrist Open University, Thailand, to foster the development of effective editing and publishing procedures at the national level in South and Southeast Asia by beginning the process of transferring the IDRC-International Rice Research Institute regional training course in editing and publishing (EDPUB) for adaptation and use by local institutions. \$50 750 — 18 months.

87-0327 Master's degree program: fisheries diseases and diagnosis (Malaysia)*

For the Universiti Pertanian Malaysia, Serdang, to enable the Faculty of Fisheries and Marine Sciences to establish a master's-level program in fisheries diseases and diagnostic theory and research methods. \$149 420 — 48 months.

87-0335 Curriculum-development training (the Philippines)*

For the Southeast Asian Fisheries Development Center, Thailand, to enable its Aquaculture Department in the Philippines to fund a workshop to help staff develop more useful pedagogical strategies in designing and delivering short-term courses. \$32 000 — 6 months.

87-0336 Training of human resources in CDS-MICROISIS (Global)*

For the Fellowships and Awards Division, IDRC, to train technicians in IDRC-funded projects in software

management for CDS-MICROISIS and to train a selected group of technicians to act as resource persons and instructors in future training activities. \$36 340 — 18 months.

87-0343 DAWN research training workshop (Brazil)*

For the Instituto Universitario de Pesquisas, Rio de Janeiro, to enable the Development Alternatives with Women for a New Era (DAWN) to develop a graduate training and research program to be institutionalized as a regular graduate program. \$83 668 — 18 months.

87-1001 Young Canadian researchers (Global)

For Fellowships and Awards Division, IDRC, to contribute to the growth of 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. \$550 000 — 12 months.

87-1002 Health exchange program (Global) — Phase IV

For the Canadian Society for Tropical Medicine and International Health, Ontario, to enable Canadian health personnel to serve attachments in developing country institutions and, thereby, increase personnel resources for international health in Canada and in Canadian-sponsored activities. \$250 000 — 12 months.

87-1015 Summer institute on gender and development (Canada)

For Saint Mary's University, Halifax, in collaboration with Dalhousie University, Halifax, to assist students to identify research questions, examine methodological debates and advances, and analyze the existing literature on women and development with the goal of upgrading the capability of students to conduct/supervise high-quality social science research on women and/or gender relations. \$60 000 — 24 months.

Health Sciences

87-0004 Polyvinyl chloride (PVC) handpumps (China)*

For the Ministry of Machine Building Industry, Beijing, to enable the Chinese Academy of Agricultural Mechanization Sciences to adapt the IDRC-University of Malaysia PVC handpump for use in China with a view to assessing the possibility for large-scale manufacture and installation in the country. \$249 880 — 24 months.

87-0033 Women in community development (Asia)

To enable the Institute of Southeast Asian Studies, Singapore, and six institutions in Southeast Asia and the Pacific, to plan, implement, and evaluate a program of participatory research for community-

health development involving rural women in various settings in Asia and the Pacific. \$317 156 — 36 months.

87-0037 Health management of the urban poor in four Asian cities

For the Institute of Southeast Asian Studies, Singapore, to develop viable operational plans to meet the health needs of the urban poor in selected cities in the ASEAN (Association of South East Asian Nations) region. \$230 250 — 24 months.

87-0043 Hepatitis B (Saint Christopher and Nevis)

For the Caribbean Epidemiology Centre, Trinidad and Tobago, to evaluate the immune response in infants and children of two hepatitis B vaccines in terms of maximal conversion for lowest dosage or cheapest cost or both. \$259 965 — 24 months.

87-0044 Training in priority health problems in medical education (Global) — Phase II

For McMaster University, Canada, to enable its Faculty of Health Sciences to allow four fellows to participate in the "Priority Health Problems in Medical Education" project of the network of Community-oriented Educational Institutions for Health Sciences. \$45 000 — 12 months.

87-0046 Epidemiology of diarrheal disease (Indonesia)*

For Universitas Andalas, Padang, to investigate the epidemiology of diarrheal diseases in the rural area of Kecamatan Kuranji in West Sumatra. \$163 700 — 24 months.

87-0060 FRCSs manual (the Philippines)

For the Kabalikang Pamilyang Pilipino, Metro Manila, to promote the acceptability and proper use of ferrocement rainwater catchment systems (FRCSs). \$25 490 — 28 months.

87-0061 Helminthiasis control (Sri Lanka)

For the University of Ruhuna, Galle, to enable its Faculty of Medicine to study the severity and prevalence of soil-transmitted helminths in rural communities in southern Sri Lanka with a view to improving the well-being of the community. \$40 020 — 36 months.

87-0073 Diet and changing lifestyle (Mauritius)

For the Ministry of Health, Port Louis, to characterize the prevailing diet and lifestyle of Mauritian youth, with specific attention to subgroups of particular interest. \$28 965 — 12 months.

87-0080 Community participation in health development (Ghana)

For the University of Ghana, Accra, to permit its Medical School to identify the extent to which rural populations are actively involved in health-related decision-making, health-resources development, and specific activities aimed at health promotion and protection and disease prevention. \$15 183 — 16 months.

87-0081 Waterlines (Global) — Phase II

For the Intermediate Technology Publications Limited, U.K., to support the marketing and promotion activities of *Waterlines*, to ensure that it continues to be a vehicle for information dissemination to the end of the International Drinking Water Supply and Sanitation Decade. \$95 000 — 36 months.

87-0084 Water-pumping technology (Malaysia) — Phase III

For the Universiti Malaya, Kuala Lumpur, to establish a regional centre for research and development in handpump technology; to use this centre of expertise for on-the-job training in the manufacture, assembly, installation, and maintenance of the UNIMADE handpump; and to establish a network of manufacturing units (large- and small-scale) within the region and elsewhere. \$1 129 040 — 36 months.

87-0085 Wells and handpump testing (Kenya)

For the Kenya Medical Research Institute, Nairobi, to install, field-test, and evaluate 50 UNIMADE Mark III handpumps on wells of various designs and construction (traditional hand-dug and tube wells); and to compare water quality and pump performance in relation to well type and construction techniques. \$200 090 — 24 months.

87-0086 Human pathogen survival (Zaire)

For the Comité de développement socio-économique des Baha'is du Haut Zaïre, Kisangani, to enable the Département de microbiologie of the Université de Kisangani to study the survival of excreted pathogens in stored excreta and in the subsoil to determine the appropriate design and operation (optimum pit volume and emptying frequency) of pit latrines that will minimize the risks associated with groundwater pollution and handling pit contents. \$98 690 — 24 months.

87-0091 Socioeconomic study of the Ethiopian Water Works Construction Authority's handpump project*

For the University of Addis Ababa to enable the Institute of Development Research to undertake a comprehensive socioeconomic study of the IDRC-funded project "Pumping Technology Research (Ethiopia) — Phase II," with particular reference to the involvement of community members in the planning, implementation, and maintenance of the handpump program, the reaction of community members to the technology, and the impact of the program on daily life. \$105 000 — 30 months.

87-0092 Women in handpump technology (Sri Lanka) — Phase II

For the Sarvodaya Economic Enterprises Development Services, Ratmalana, to replicate the strategies identified in the recently completed "Women in Handpump Technology" project for expansion to other dry-zone districts in Sri Lanka, and develop a low-cost well-drilling rig to

complement the Sarvodaya handpump program. \$370 140 — 36 months.

87-0100 Infant and child mortality (Nigeria)

For the University of Ibadan to identify and explore the interactive relationships between environmental and maternal factors and child mortality and health in two different ecological zones in southwestern Nigeria. \$36 240 — 12 months.

87-0103 Excreta disposal (Bolivia)

For the Proyecto Sucre-Ciudad Universitaria, Sucre, to improve sanitary conditions in low-income areas of Sucre through introduction of reliable and acceptable latrine technologies and a simple hygiene-education program. \$83 700 — 24 months.

87-0105 Soil-transmitted helminths (Indonesia) — Phase II

For Gadjah Mada University, Jogjakarta, to enable its Department of Parasitology to demonstrate that a community-managed water supply and sanitation improvement program with a supporting health-education program is an effective means of reducing the prevalence of water-related diseases on a long-term and sustained basis. \$54 300 — 30 months.

87-0111 Liver-fluke infections (Thailand) — Phase II*

For Mahidol University, Bangkok, to maintain the control of liver-fluke infection through a nutrition and health education-cum-treatment program. \$176 400 — 36 months.

87-0122 Diagnosis of dengue (Malaysia)*

For the Universiti Sains Malaysia, Penang, to reduce the cost of patient management and hospital-bed utilization during outbreaks of dengue fever by predicting which patients are at risk of developing severe hemorrhagic manifestations and hypovolemic shock. \$135 870 — 36 months.

87-0124 Typhoid porins (Chile)

For the Pontificia Universidad Católica de Chile, Santiago, to evaluate the antibody response to *Salmonella typhi* porins as a diagnostic procedure for typhoid fever, characterizing its sensitivity, specificity, and predictive value in acute-stage patients and also to determine whether it is present in chronic carriers and vaccinated subjects. \$179 290 — 24 months.

87-0126 Filariasis (Dominican Republic)*

For the Centro de Investigaciones Biológicas y Adiestramiento, Santo Domingo, to determine the epidemiological characteristics in the transmission of filariasis due to *Wuchereria bancrofti* in Cabral, Barahona Province. \$121 850 — 24 months.

87-0137 Leishmaniasis (Ethiopia)*

For the University of Addis Ababa to enable the Institute of Pathobiology to determine the extent of visceral leishmaniasis and its socioeconomic implications in agricultural and resettlement areas in southwestern Ethiopia with a view to recommending

feasible intervention strategies. \$216085 — 36 months.

87-0138 Neurocysticercosis (Peru)

For the Universidad Peruana Cayetano Heredia, Lima, to develop a rapid serological method for use in the diagnosis, treatment, and epidemiology of neurocysticercosis. \$161 140 — 18 months.

87-0153 Community self-reliance (Thailand)

For Chulalongkorn University, Bangkok, to enable its Faculty of Engineering to develop the capacity of communities to choose, plan, construct, and manage a water and sanitation program according to their resources and skills. \$52480 — 18 months.

87-0154 AIDS diagnosis (Global)

For the Program for Appropriate Technology in Health, USA, to develop a rapid and simple test for the detection of antibodies to the human immunodeficiency family of viruses, the etiological agents of acquired immunodeficiency syndrome (AIDS). \$47 260 — 12 months.

87-0155 Occupational health in the metal industry (Mexico)

For the Universidad Autónoma Metropolitana-Xochimilco, Mexico City, to validate the participatory and educational methodology to study working conditions in relation to workers' health that was developed in the first phase of this research program. \$90760 — 18 months.

87-0158 "Open mole" (Liberia)

For Cuttington University College, Monrovia, to study traditional knowledge, attitudes, and practices regarding "open mole" — sunken fontanel caused by dehydration resulting from severe diarrhea or vomiting, or both — with a view to developing an educational package for use by the Ministry of Health. \$38860 — 16 months.

87-0171 Organization and management in primary health care (Zambia)

For the University of Zambia, Lusaka, to explore the extent to which mechanisms exist to promote teamwork among primary health-care professionals, and with other sectors as well as within communities. \$16750 — 12 months.

87-0172 Evaluation of PK nurses (Indonesia)*

For the Ministry of Health, Jakarta, to enable the Centre for Education of Health Manpower to evaluate the performance of graduates from the Primary Health Nurse/Perawat Kesehatan (PK) program, with particular reference to their functions as defined by the standards of service delivered, job satisfaction, and factors that may affect the delivery of their program. \$213170 — 24 months.

87-0173 Pollution load in the Msimbazi Stream (Tanzania)*

For the University of Dar es Salaam to enable its Faculty of Engineering to assess the nature and degree of pollution in the Msimbazi Stream, with

particular reference to industrial and domestic wastes. \$71760 — 18 months.

87-0187 Hepatitis B vaccine in schoolchildren (Egypt)*

For Suez Canal University, Ismailia, to study and compare the kinetics of antibody response to hepatitis B virus recombinant yeast vaccine in schistosomiasis-infected and uninfected subjects. \$85 725 — 24 months.

87-0192 Growth faltering (Malawi)*

For the University of Malawi, Zomba, to enable the Centre for Social Research to study the complex nature of undernutrition in Malawi, focusing on the patterns of seasonal variation in the growth and well-being of children and their parents. \$231 660 — 30 months.

87-0198 Epidemiology of dengue (Malaysia) — Phase II*

For the Universiti Malaya, Kuala Lumpur, to carry out basic epidemiological and serological studies to monitor the activity of the dengue virus in regions where it is endemic and to determine the risk factors contributing to dengue hemorrhagic fever. \$100 550 — 36 months.

87-0200 Training in health management (Canada) — Phase III

For the University of Toronto to enable its Faculty of Medicine to provide fellowship support for 24 trainees to participate in the University's course in Health Care Evaluation and Management Skills. \$396 450 — 36 months.

87-0204 Bilharzia (Egypt) — Phase IV*

For the University of Alexandria to enable the High Institute of Public Health and the Medical Research Institute to assess the effectiveness of *Ambrosia maritima* for sustained control of schistosomiasis in an established and newly reclaimed area of Egypt. \$356 080 — 36 months.

87-0211 Tuberculosis annual risk (Botswana)*

For the Ministry of Health, Gaborone, to enable the Epidemiology Unit to estimate the annual risk of tuberculosis infection among school entrants. \$71 740 — 12 months.

87-0212 Socioeconomic determinants of infant mortality in Rosario (Argentina) — Phase II

For the Administración Médica de Rosario to enable its Centro de Estudios Sanitarios y Sociales to compare the relative impact of behavioural, socioeconomic, and institutional factors on infant health during the 1st year of life so as to propose a strategy to improve maternal child-care programs. \$37 000 — 12 months.

87-0221 Malaria field incubator (the Philippines-Global)*

For the World Health Organization's (WHO) Regional Office for the Western Pacific, Manila, to enable the Malaria Control Service of the Ministry of

Health to produce and distribute (within 1 year and at cost) to developing country researchers 100 WHO field incubators designed specifically for the WHO standard in-vitro microtest for monitoring response of *Plasmodium falciparum* to antimalarial drugs. \$50 270 — 12 months.

87-0231 Ethno-medicine and health care (Kenya)*

For Kenyatta University College, Nairobi, to enable its Department of Geography to develop policy recommendations on the role of traditional health practitioners in rural health-care delivery for use in planning and implementing improved primary health-care strategies. \$76 740 — 24 months.

87-0232 Psychosocial support and pregnancy outcomes (Latin America)*

For the Centro Rosarino de Estudios Perinatales, Argentina; the Universidade Católica do Pelotas, Brazil; the Ministerio de Salud Pública, Cuba; and the Instituto Nacional de Salud Pública, Mexico, to establish a network of Latin American biomedical and social scientists to study the impact of psychological interventions on pregnancy outcomes. \$953 133 — 24 months.

87-0238 Evaluation of health services in a refugee-affected area (Sudan)*

For the Office of the Commissioner for Refugees, Khartoum, to enable the Office and the Department of Community Medicine in the Faculty of Medicine, University of Khartoum, to carry out a comparative analysis of the performance and operation of the health-care delivery system in a refugee-affected area of the Eastern Region and one located in an area that has not experienced an influx of refugees. \$154 295 — 14 months.

87-0239 Active surveillance of TB in remote communities (Mexico)*

For the Universidad Autónoma de Guerrero to enable the Centre for Tropical Disease Research to investigate the feasibility of tuberculosis (TB) surveillance using inexpensive portable microscopes in remote communities. \$28 690 — 24 months.

87-0241 Mining sector (Bolivia)*

For the Comité Ejecutivo de la Universidad Católica Boliviana, La Paz, to analyze the health-disease process in the tin-mining sector using a representative cooperative and a state mine in the department of Potosí, and to establish what determines this process in the miners and their families. \$147 444 — 24 months.

87-0243 Endemic goitre (Ecuador)*

For the Fundación Ciencia para el Estudio del Hombre y la Naturaleza, Quito, to determine the prevalence and etiology of goitre on the coast of Ecuador. \$147 990 — 24 months.

87-0244 Maternal and perinatal mortality (Indonesia)*

For the Coordinating Board of Indonesian Fertility Research, Bandung, to determine the incidence,

etiology, and risk factors of maternal and perinatal mortality with a view to improving maternal and child health and family-planning services in Central Java Province. \$145 320 — 18 months.

87-0245 Evaluation of administration and management of health services (Egypt)

For the Palestine Red Crescent Society, Heliopolis, to evaluate its administrative and management structure and process with respect to the policy-making, planning, and programing for the health and social service needs of the communities it serves. \$232 210 — 15 months.

87-0249 Hepatitis B immunization (China)*

For the Program for Appropriate Technology in Health, Canada, to establish a research project in Long An county to determine how best to integrate hepatitis B vaccination into China's Expanded Program on Immunization. \$334 525 — 48 months.

87-0250 Immunization coverage (Thailand)*

For Khon Kaen University, Muang Khon Kaen, to enable its Faculty of Medicine to carry out a research study to assess the effectiveness and performance of the Expanded Program on Immunization. \$56 210 — 18 months.

87-0252 Diabetes and hypertension in women (Trinidad and Tobago)*

For Researchers for Education, Action, and Development, Port-of-Spain, to investigate the etiology and management of diabetes mellitus and hypertension, two major causes of death and disability in women in Trinidad and Tobago. \$84 760 — 12 months.

87-0260 Acute respiratory infections (China)*

For the Capital Institute of Pediatrics, Beijing, to develop, implement, and evaluate a comprehensive health-care package for children aimed at reducing morbidity and mortality from acute lower-respiratory infection. \$135 540 — 36 months.

87-0264 Containers for primary health care (Global) — Phase II*

For the Program for Appropriate Technology in Health, USA, to complete the development of an appropriate portable container system for primary health care to be used to transport medical supplies and equipment by primary health-care workers. \$284 690 — 18 months.

87-0269 Small grants program on health services research (Africa)*

For the World Health Organization's Regional Office for Africa, Congo, to promote the development of research on social, economic, and behavioural determinants of health and on management methods that can improve health services coverage, equity, efficiency, and impact. \$328 580 — 24 months.

87-0271 Yellow fever vaccine (Nigeria)*

For the Ministry of Health, Lagos, to enable the Federal Vaccine Production Laboratories to

modernize and strengthen yellow fever-vaccine laboratory facilities at Yaba, Lagos, to promote good manufacturing practices in all steps of production and quality control and to ensure their compliance with the World Health Organization's requirements; and to up-grade vaccine production qualitatively and quantitatively using thermostable formulation. \$256 530 — 36 months.

87-0272 Rehabilitation (Jamaica)

For the Caribbean Regional Office of Disabled Peoples' International, Kingston, to develop a data base for Jamaica and a methodology for disability surveys that can be applied in other Caribbean countries on the nature and prevalence of physical disability and the knowledge and attitudes of society toward physical disability and the disabled. \$83 450 — 18 months.

87-0274 Perinatal mortality (Jamaica) — Phase II*

For the University of the West Indies, Kingston, to continue to develop a knowledge base from which to improve maternal and child-care services, thereby reducing perinatal morbidity and mortality. \$239 700 — 12 months.

87-0281 Tropical diseases research (Global) — Phase VII*

For the World Health Organization, Switzerland, to develop new tools for the prevention, diagnosis, and treatment of the most prevalent tropical diseases and to strengthen the research capabilities of developing countries by providing training in biomedical sciences and various forms of institutional support. \$400 000 — 24 months.

87-0286 DAFF latrine (Guatemala) — Phase II*

For the Centro de Estudios Mesoamericano sobre Tecnología Apropriada, Guatemala City, to evaluate and provide advice on technical aspects and social acceptance of dry alkaline family fertilizer (DAFF) latrines. \$215 300 — 36 months.

87-0287 Pesticide poisoning (Jordan)*

For Birzeit University, West Bank, to reduce the occupational hazard to farmers and their families posed by the use of organophosphate pesticides. \$48 770 — 12 months.

87-0292 Cadmium and arsenic intoxication of children (Mexico)*

For the Universidad Autónoma de San Luis Potosí to assess the magnitude of environmental contamination by arsenic and cadmium in a residential zone adjacent to copper and zinc smelters in San Luis Potosí, and to examine the degree to which the health of the population may have been affected by exposure to these toxic metals. \$78 680 — 24 months.

87-0293 Vitamin A deficiency (Tanzania)*

For the Tanzania Food and Nutrition Centre, Dar es Salaam, to assess the extent and severity of vitamin A deficiency among children in a drought-prone area of the country. \$57 490 — 12 months.

87-0304 Hepatitis B vaccine in schistosomiasis (Egypt)*

For University of Cairo to enable the Department of Tropical Medicine (Immunology) to evaluate the effectiveness (immunogenicity) of vaccination against hepatitis B virus (HBV) schistosomiasis-infected individuals, so that appropriate preventive strategies for hepatopathy can be developed. \$127 000 — 36 months.

87-0305 Training in priority health problems in medical education (Global) — Phase III*

For McMaster University, Canada, to enable the Faculty of Health Sciences to assist educational institutions for health sciences to train health professionals in the knowledge, skills, and attitudes needed to address community health needs. \$77 960 — 12 months.

87-0306 Mother's education and child health (South Korea)*

For the Population Association of Korea, Seoul, to gain new insights into the relationship between a mother's education and behaviour and her child's health. \$80 664 — 24 months.

87-0308 Epidemiology of hepatitis B (Mozambique)*

For the Ministerio da Saude, Maputo, to enable the Instituto Nacional de Saude to assess the epidemiological pattern of infection with hepatitis B virus (HBV) in children and their mothers in the city of Maputo and to evaluate an HBV-immunization schedule appropriate to the country's conditions. \$193 682 — 30 months.

87-0309 AIDS health education (Uganda)*

For the Ministry of Local Government, Kampala, to enable the Nsamizi Training Institute of Social Development to understand people's knowledge, attitudes, and practices concerning acquired immunodeficiency syndrome (AIDS) and to use the results to plan a public education program. \$33 395 — 12 months.

87-0318 Hookworm (Indonesia)*

For Udayana State University, Denpasar, to determine the prevalence pattern of hookworm infestation in relation to anemia in the Province of Bali to permit a feasible strategy for prevention and control to be planned. \$68 500 — 24 months.

87-0323 Diarrheal disease (Uruguay)*

For the Universidad de la República, Montevideo, to enable the Departamento de Bacteriología y Virología of the Instituto de Higiene to characterize acute diarrheal disease in disadvantaged children under 18 months of age, to identify factors that may influence its duration and effect, and to propose ways of improving management of the disease. \$52 380 — 24 months.

87-1039 Groundwater pollution (Tanzania)

For the Centre for Housing Studies of the Ardhi Institute, Dar es Salaam, to investigate the

contamination of groundwater and of water supplied by municipal water mains in areas where on-site waste-disposal systems are used, so as to develop guidelines for the siting of these facilities. \$179 704 — 24 months.

87-1041 Institution development and infant nutrition research (China-Canada)*

For Sun Yat-Sen University of Medical Sciences, Guangzhou, and the University of Toronto, Ontario, to assist the departments of Clinical Nutrition and of Pediatric Nutrition of Sun Yat-Sen University of Medical Sciences to become self-sufficient in the field of community nutrition and nutrition research. \$478 950 — 60 months.

87-1045 Enhancement of *jeevanstar* in rural Surkhet (Nepal-Canada)*

For Tribhuvan University, Kathmandu, and the University of Calgary, Alberta, to gather information on basic human needs, including health and quality of life, from community residents in the Surkhet District. \$626 052 — 24 months.

Information Sciences

87-0009 International Buffalo Information Center (Global) — Phase II

For Kasetsart University, Thailand, to enable the Department of Animal Science and Main Library to ensure that the services and products (output) of the International Buffalo Information Center (IBIC) are made available to the target users and that the scientific community contributes to the IBIC system. \$80 160 — 24 months.

87-0010 Communication for development: Asia Pacific Information Network

For the Asian Mass Communication Research and Information Centre, Singapore, to improve and extend its capacity to collect, repackage, and disseminate information on communication and its use for development within the region. \$303 000 — 36 months.

87-0012 Information and documentation service of the Central African Chambers of Commerce

For the Fédération des chambres de commerce de l'Afrique centrale, Congo, to strengthen its information and documentation service so that it can collect, process, and disseminate up-to-date information to favour the growth of subregional commercial exchanges and better knowledge of existing opportunities. \$248 850 — 36 months.

87-0042 Atlas of Ethiopia — Phase II

For the Ethiopian Mapping Agency, Addis Ababa, to publish a multicoloured national atlas of Ethiopia and to distribute it to local and international users. \$91 510 — 12 months.

87-0047 Pan American Network on Information and Documentation in Sanitary Engineering and Environmental Sciences: REPIDISCA

For the Pan American Health Organization, USA, to enable the Instituto Nicaraguense de Acueductos y Alcantarillados to establish an information service on sanitary engineering and water management in support of national development. \$43 945 — 24 months.

87-0049 Information services on urbanization (Uruguay)

For the Centro de Informaciones y Estudios del Uruguay, Montevideo, to establish a national bibliographical service on urbanization. \$59 845 — 24 months.

87-0052 Support and improvement for agricultural documentation (Mauritania) — Phase II

For the Société nationale pour le développement rural, Nouakchott, to enable it to attain the level of the documentation institutions in neighbouring countries, and thus fulfill its mandate as a national centre for agricultural documentation and rural development. \$93 715 — 24 months.

87-0055 Computer communications experimentation and training (Asia)

For the Asia Monitor Resource Centre, Hong Kong, to assist, promote, and facilitate the development of appropriate computer-communications techniques in Asia by action-oriented organizations concerned with grass-roots development. \$78 686 — 24 months.

87-0058 Information for rural and urban development (Chile)

For the Centro de Estudios en Tecnologías Apropriadas para América Latina (CETAL), Valparaiso, to establish in CETAL an information service on appropriate technology. \$57 662 — 24 months.

87-0059 Modern management of information systems (Sahel)

For the Institut du Sahel, Mali, to enable the Réseau sahélien d'information et de documentation scientifiques et techniques to organize a seminar to train 17 information specialists in the theoretical and practical aspects of setting up and managing information systems using new technologies. \$90 167 — 6 months.

87-0083 Thai Agricultural Colleges Transfer of Information Cooperative Service: TACTICS

For the Ministry of Education, Bangkok, to enable the Lamphun Agricultural College to upgrade and strengthen the capacity of the agricultural education system to provide information to the teachers, students, and farmers in its agricultural colleges. \$129 000 — 36 months.

87-0089 Public administration information (Latin America) — Phase III

For the Centro Latinoamericano de Administración para el Desarrollo (CLAD), Venezuela, to support government agencies, the academic community, and other units in Latin America and the Caribbean and in Spain by means of a computerized information system based on a Latin American network coordinated by the CLAD Documentation Centre. \$310 000 — 36 months.

87-0090 National information system (Sudan)

For the National Council for Research, Khartoum, to enable its National Documentation Centre to automate its information services and to build a national bibliographic data base for scientific, technological, and socioeconomic information. \$91 700 — 36 months.

87-0093 Asian and Pacific Skill Development Information Network: APSDIN

For the Asian and Pacific Skill Development Programme of the International Labour Office, Pakistan, to establish and strengthen five national vocational-training documentation centres in South and Southeast Asia. \$198 600 — 24 months.

87-0094 African Information Network on Skill Development: AINS

For the Centre interafricain pour le développement de la formation professionnelle (CIADFOR) of the Bureau international du travail, Côte d'Ivoire, to develop an information system based on information units specialized in the training of country members of CIADFOR. \$203 500 — 36 months.

87-0095 Fisheries management information system (Trinidad and Tobago)*

For the Ministry of Food Production, Marine Exploitation, Forestry and the Environment, Port-of-Spain, to enhance its capacity to handle various types of data necessary for marine fishery-resource management through the establishment of a Fisheries Management Information System (FIMIS). \$229 625 — 36 months.

87-0096 Water and sanitation information network (Indonesia)

For the Ministry of Public Works, Jakarta, to enable the Directorate General of Human Settlements to lay the groundwork for establishing a national water-supply and sanitation documentation and information network. \$306 225 — 36 months.

87-0097 African Documentation and Information System on Major Endemic Diseases: ADISMED

For the Organisation de coordination et de coopération pour la lutte contre les grandes endémies (OCCGE), Burkina Faso, to develop and reinforce the documentary structures of OCCGE and to start an interregional network of documentation on major endemic diseases. \$282 225 — 24 months.

87-0098 National documentation centre on public health (Chad)

For the ministère de la Santé publique, N'Djamena, to establish an information and documentation centre on public health through the structure of a national documentation centre on public health. \$175 800 — 24 months.

87-0101 Regional Information Network on Arab Women: preliminary phase

For the American University in Cairo, Egypt, to enable the Social Research Centre to select and approve an appropriate structure or design that would ensure the proper functioning of the Regional Information Network on Arab Women (RINAW). \$90 500 — 18 months.

87-0102 National languages (Benin)

For the Centre nationale de linguistique appliquée, Cotonou, to advance linguistic research with a view to helping the government formulate a policy concerning the official use of national languages. \$80 000 — 24 months.

87-0106 MINISIS Resource Centre (China)

For the Scien-Tech Information Centre, Beijing, to establish a MINISIS Resource Centre in Beijing at an institution with experience in the use of MINISIS especially in library and documentation centre applications. \$112 600 — 24 months.

87-0107 Study Network of Production Systems in West Africa: SNPSWA

For Semi-Arid Food Grain Research and Development Project, Burkina Faso, to enable the West African Farming Systems Research Network to establish an information and documentation system within the coordinating body of SNPSWA. \$203 265 — 24 months.

87-0108 CEHANET (Global)

For the World Health Organization (WHO), Egypt, to enable the regional Centre for Environmental Health Activities (CEHA) to establish a water and sanitation information network (CEHANET) in the eastern Mediterranean region covered by WHO and coordinated by CEHA. \$252 000 — 24 months.

87-0116 Arab Information System on Geology and Mining: AISGM

For the Organisation arabe des ressources minières, Morocco, to establish an Arab network of geological and mining information that will allow it to record and process published and unpublished literature in the field so as to disseminate it efficiently to its users. \$166 415 — 36 months.

87-0117 Information services: Industrial Development Board (Sri Lanka)*

For the Industrial Development Board, Moratuwa, to expand and upgrade its technological information services by developing access to other sources of information and introducing new methods of information dissemination. \$176 715 — 36 months.

87-0127 Bamboo information centre (China)

For the Chinese Academy of Forestry, Beijing, to establish a bamboo information centre. \$154 300 — 36 months.

87-0146 Banana and plantain information network: preliminary phase (Global)

For the International Network for the Improvement of Banana and Plantain (INIBAP), France, to set up an information system to support the needs of users of INIBAP. \$469 000 — 24 months.

87-0157 National data base and data network utilization (Mexico)

For the Instituto Latinoamericano de Estudios Transnacionales, Mexico City, to study and demonstrate how national data-base development and utilization can be improved through cooperative effort and computer-based networking and to carry out experiments with the Mexican national packet-switching network to demonstrate its utility and to promote its utilization. \$41 789 — 18 months.

87-0167 Remote sensing for artisanal fishing of tuna and swordfish (Chile)

For the Universidad Católica de Valparaíso to enable the Escuela de Ciencias del Mar to define a functional methodology for using sea surface-temperature maps that integrate primary production information to assist artisanal fishermen in locating tuna and swordfish. \$71 330 — 24 months.

87-0184 SFIS project analysis and document delivery (Global) — Phase II

For the International Center for Living Aquatic Resources Management, the Philippines, to continue to provide through the Selective Fisheries Information Service (SFIS) the following fisheries information services: a current awareness service, a question-and-answer service, computerized literature searches, a document delivery service, critical evaluations of scientific literature, publication of minireviews, and promotion of the use of other information services and sources in the same field. \$147 600 — 24 months.

87-0189 MINISIS Resource Centre (Maghreb)*

For the Arab League Documentation Centre, Tunisia, by establishing a MINISIS Resource Centre, to enable current and new users of the on-line data-base management system for bibliographic and similar applications to have more efficient access to support services provided in Arabic. \$200 000 — 36 months.

87-0193 National economic and commercial information network (Algeria)*

For the Centre national d'information et de documentation économiques, Algiers, to consolidate and streamline the whole economic information system at the national level to increase its efficiency, to diversify and extend its services, and to initiate decentralization at the regional level. \$95 000 — 18 months.

87-0194 SATIS information systems (Global)

For Socially Appropriate Technology Information Services (SATIS), the Netherlands, to develop a classification system, a thesaurus, a training resource guide, and an inventory of training resources and opportunities. \$268 900 — 36 months.

87-0195 In-shore fisheries information system (Chile)*

For the Ministerio de Economía, Santiago, to enable the Instituto de Fomento Pesquero to assist the Subsecretaría de Pesca in the rational management and development of in-shore fisheries resources by developing and field-testing a prototype fisheries-management information system. \$119 680 — 24 months.

87-0203 Refugee thesaurus (Global)

For the United Nations High Commissioner for Refugees, Switzerland, to produce a multilingual thesaurus on refugees, to be used both within the organization (field and headquarters) and by members in the emerging international refugee documentation network. \$93 300 — 18 months.

87-0214 CLACSO regional social sciences information network (Latin America)*

For the Consejo Latinoamericano de Ciencias Sociales (CLACSO), Argentina, to improve social sciences research in CLACSO in particular and in the region in general, by providing appropriate and effective information services. \$97 000 — 24 months.

87-0217 National Information System for Science and Technology: SINICYT (Costa Rica)

For the Consejo Nacional de Investigaciones Científicas y Tecnológicas, San José, to improve the ability of the Ministerio de Ciencias y Tecnología to coordinate, plan, and implement scientific and technological research policies in response to national needs and priorities as outlined in the National Development Plan. \$88 600 — 24 months.

87-0228 Packet-radio experimentation (Lesotho)*

For the Lesotho Telecommunications Corporation, Maseru, to test and evaluate the use and applicability of packet-radio techniques to rural information dissemination and communications needs. \$149 000 — 24 months.

87-0247 Diploma in library and information studies (South Pacific)*

For the University of the South Pacific, Fiji, to establish a library training program at the undergraduate diploma level for the countries of the region and to conduct regional and national workshops on topics identified as priorities. \$243 500 — 48 months.

87-0248 REDATAM (Latin America and the Caribbean) — Phase II*

For the Comisión Económica para América Latina, Chile, to enable the Centro Latinoamericano de

Demografía to help countries integrate population factors into their development planning and sectoral programs, particularly at the local and regional levels, and to ensure that the 1990 population and housing censuses in Latin America and the Caribbean provide information for this purpose. \$214 700 — 24 months.

87-0253 National information system (Jordan)*

For the Royal Scientific Society, Amman, to enable the Scientific and Technical Information Centre and the Socio-Economic Information Centre to assist in the establishment of a national information system to provide information to the public and private sectors through the creation, management, and coordination of data bases and data centres. \$420 000 — 24 months.

87-0256 International Development Information Network on Research in Progress (Global)*

For the Consejo Latinoamericano de Ciencias Sociales, Argentina; the Association of Development Research and Training Institutes of Asia and the Pacific, Malaysia; the European Association of Development Research and Training Institutes, the Netherlands; and the Conseil pour le développement de la recherche économique et sociale en Afrique, Sénégal, to improve the flow of information on social science research and to foster regional and interregional cooperation in support of the development process. \$274 000 — 36 months.

87-0278 Training course for paraprofessional librarians (Nepal)*

For Tribhuvan University, Kirtipur, to enable its central library to train paraprofessional librarians in the skills required to organize their libraries systematically and serve their clientele. \$51 000 — 24 months.

87-0282 Credit Unions Information System (Latin America)*

For the Fundación Educativa de la Confederación Latinoamericana de Cooperativas de Ahorro y Crédito, Panama, to strengthen and develop credit unions as a component in the development process by providing timely and pertinent information to the members of the movement. \$97 600 — 24 months.

87-0303 DEVINSA (Maldives)*

For the Ministry of Planning and Development, Male, to strengthen the country's information base in support of economic and social development, by participating in the Development Information Network for South Asia (DEVINSA) project. \$31 400 — 24 months.

87-0317 ECOKONWMICS: a microcomputer-based expert system for economic planning and policy-making (the Philippines)*

For the Social Weather Stations Incorporated, Quezon City, to develop a prototype software system that can demonstrate how microcomputers and artificial intelligence techniques can provide

cost-effective solutions to the problem of managing and integrating economic data and models to support planning and policy-making. \$60 000 — 12 months.

87-0339 MINISIS resource persons (Latin America)*

For the Colegio Mayor de Nuestra Señora del Rosario, Colombia, and the Centro de Investigación y Docencia Económicas, Mexico, to demonstrate the effectiveness of MINISIS resource persons as a means of providing training and assistance to new users of MINISIS in a national and regional context and to promote the application of MINISIS as a software tool for information processing throughout Latin America. \$94 180 — 24 months.

87-1012 Patents: technological information (the Caribbean-Canada)

For the Comisión Económica para América Latina y el Caribe, Chile, and Consumer and Corporate Affairs Canada, Ontario, to strengthen and improve the various aspects of industrial property through the use of patent information, thus providing a program for the successful use of technological information from patents for industrial development in the Caribbean region. \$383 955 — 36 months.

87-1019 Poisons information package for developing countries (Global)

For the World Health Organization, Switzerland; the Canadian Centre for Occupational Health and Safety, Ontario; and the Centre de toxicologie du Québec to develop a multilingual (English, French, and Spanish) interactive computerized information package on diagnosis and treatment of poisonings, as well as a framework for storing data on products on the local market and for collecting case data on poisonings, with a view to strengthening the capability of developing countries to prevent and respond to chemical poisonings. \$256 000 — 36 months.

87-1023 Remote sensing contribution to soil mapping (Morocco-Canada)

For the Institut agronomique et vétérinaire Hassan II, Rabat, and the University of Sherbrooke, Quebec, to choose and adopt a methodology based on satellite remote sensing for soil mapping in Morocco and to prepare a Moroccan team of researchers to use it. \$135 355 — 24 months.

87-1037 Remote sensing and rural-development planning (Mali-Canada)

For the ministère de l'Agriculture, Bamako, and Laval University, Quebec, to improve the skills of the Direction nationale du génie rural of Mali in using remote sensing to identify the best potential locations for agricultural development in the Niger River valley. \$145 303 — 24 months.

Social Sciences

86-0243 Energy policy and planning (eastern and southern Africa)

For the Swedish Agency for Research Cooperation with Developing Countries to support a program of

research and associated training designed to meet immediate and longer-term needs of energy policymakers and planners and to develop necessary skills in energy policy research in the region. \$288 620 — 30 months.

87-0002 Small regional grants (Peru) — Phase II

For the Asociación Peruana para el Fomento de las Ciencias Sociales, Lima, to administer a program of small grants designed to build the research capacity of provincial universities in Peru. \$108 000 — 24 months.

87-0005 Socioeconomic adaptation in Indian communities (Ecuador)

For the Centro Andino de Acción Popular, Quito, to develop a model for understanding processes of change in north Andean peasant communities, with the ultimate aim of developing more appropriate and specific forms of support for these communities. \$87 000 — 18 months.

87-0006 Technological and structural change in the clothing industry (Turkey)

For the Turkish Social Science Association, Ankara, to examine the roots of dynamism of the Turkish clothing complex and to determine the new investments and policy initiatives needed to maintain and improve the competitiveness of the sector. \$43 670 — 18 months.

87-0008 Adjustment and technological change in the metalworking industry (Nicaragua)*

For the Instituto Nicaraguense de Investigaciones Económicas y Sociales, Managua, to analyze the industrial adjustment process within a set of metalworking factories and the implications for industrial development, technology transfer strategies, and planning policies within the sector. \$78 090 — 21 months.

87-0011 Diffusion of locally developed technologies (Sierra Leone)

For the University of Sierra Leone, Freetown, to identify the factors that influence favourably or unfavourably the success of locally developed technologies. \$52 850 — 24 months.

87-0017 OSSREA support: small research grants (East Africa) — Phase V

For the Organization for Social Science Research in Eastern Africa (OSSREA), Ethiopia, to strengthen research capacity in the social sciences by encouraging local scholars to carry out research that contributes to an understanding of social and economic change in countries of eastern and southern Africa. \$284 510 — 24 months.

87-0020 Secondary education (Argentina) — Phase II

For the Facultad Latinoamericana de Ciencias Sociales, Buenos Aires, to strengthen and consolidate an integrated program of research, dissemination, and training activities to increase the understanding of

innovations at the secondary education level as these relate to curricular content. \$199 800 — 30 months.

87-0031 Refugee settlements (Somalia) and refugee research network (Africa and Asia)

For Haqabtir, Mogadishu, to provide a socioeconomic and demographic profile of refugees and nonrefugees in refugee-affected areas of Somalia and to provide funds to enable networking among researchers in Centre-supported refugee projects in Africa and Asia. \$213 000 — 30 months.

87-0040 Seasonal workers and agricultural modernization (Chile)

For the Grupo de Estudios Agro-Regionales, Santiago, to examine the situation of temporary and seasonal workers in the export-fruit regions in Chile with respect to demographic behaviour, the labour market, and access to social services. \$133 000 — 24 months.

87-0045 Monetary policy in low-income primary-producing less-developed countries (Global)

For the Overseas Development Institute, U.K., to gather information on some aspects of monetary policy and to evaluate monetary policy in terms of its success or failure in achieving monetary targets and, more generally, in terms of its role in stabilizing the economy. \$49 000 — 21 months.

87-0050 Impact of new communications technologies (Peru)

For the Centro de Estudios sobre Cultura Transnacional, Lima, to enable the Instituto para América Latina to explore the impact of new television technologies, corporate structures, and interindustry relationships on national television systems in Latin America and to assess the possibilities for developing an economically viable, autonomous television industry in line with national needs and demands. \$90 530 — 18 months.

87-0051 Technological change and agroindustry development (Uruguay)

For the Centro de Investigaciones Económicas, Montevideo, to identify the constraints on and possibilities for improving the efficiency and export potential of agroindustry and to identify the policy framework required to promote technical change. \$80 330 — 18 months.

87-0053 Informal-sector street foods (India)

For the Centre for Studies in Social Sciences, Pune, to assist the government in designing a policy to regulate, supervise, and facilitate street food vending. \$38 440 — 24 months.

87-0054 Informal sector assistance policies (Kenya)

For the University of Nairobi to enable the Department of Urban and Regional Planning to assist with the design of credit and training policies for the informal sector in Kenya. \$77 400 — 24 months.

87-0057 Community-managed organizations (Ecuador)

For the Centro de Educación y Promoción Popular, Quito, to study the conditions under which community-managed programs executed by second-tier peasant organizations succeed or fail. \$56 900 — 12 months.

87-0071 Participation of women in trade unions (Argentina)

For the Instituto Latinoamericano de Estudios Transnacionales, Buenos Aires, to identify the political, social, and ideological factors that marginalize working women from trade-union activities. \$45 630 — 12 months.

87-0074 Social security reform (Jamaica)

For the University of the West Indies, Kingston, to enable the Institute of Social and Economic Research to study the Jamaican National Insurance Scheme and to recommend specific changes to improve its management and place it on a financially sound footing. \$38 300 — 9 months.

87-0075 Hyperinflation, recession, and growth (Bolivia)

For the Universidad Católica Boliviana, La Paz, to enable the Instituto de Investigaciones Socio-Económicas to study the impact of hyperinflation and stabilization efforts on the structure of the Bolivian economy, with particular reference to the manufacturing sector. \$74 000 — 18 months.

87-0076 Resettlement programs and land tenure (the Caribbean) — Phase II

For the University of the West Indies, Barbados, to evaluate the concept and experience of official farming settlements as currently embodied in the policies of the countries concerned. \$61 800 — 18 months.

87-0077 Paths followed by general education students (Côte d'Ivoire)

For the Centre interafricain de recherches et d'études supérieures en sciences de l'éducation, Lomé, to retrace the academic and professional path of the secondary school students who were interviewed in 1979, so as to evaluate the internal and external efficacy of the education system. \$40 700 — 12 months.

87-0078 CDC: research and training program (Egypt) — Phase V

To assist the Cairo Demographic Centre (CDC) in achieving its research and training objectives in 1988 by supporting 10 African students enrolled in the General Diploma, Special Diploma, and Master's Degree programs in demography. \$161 100 — 12 months.

87-0087 Impact of firewood shortages on women's work and on family nutrition (Burkina Faso)

For the Société africaine d'études et de développement, Ouagadougou, to examine the extent to which the increasing scarcity of fuelwood in

Burkina Faso is affecting the workloads of rural women and the nutritional intake of families. \$53 100 — 18 months.

87-0088 Debt management (Nicaragua)*

For the Coordinadora Regional de Investigaciones Económicas y Sociales, Managua, to analyze the management of the Nicaraguan debt. \$26 340 — 18 months.

87-0099 Nonfarm employment (Indonesia)

For the National Planning Agency, Jakarta, to enable its Bureau of Manpower to evaluate ongoing rural nonfarm employment for women in Java. \$89 000 — 14 months.

87-0109 Rural electricity supply in Argentina: diffusion of microhydroelectric power plants

For the Instituto de Economía Energética, Buenos Aires, to examine legal, institutional, and financial mechanisms by which more rural people in Misiones could be supplied with electricity from a combination of centralized and decentralized systems. \$65 950 — 18 months.

87-0112 International consortium for economic research (sub-Saharan Africa)*

For the Rockefeller Foundation, USA, or a corporation instituted for the express purpose of managing this project, to support a multidonor program of macroeconomic research in sub-Saharan Africa. \$750 000 — 36 months.

87-0120 Rental and shared housing (Latin America)*

For the Instituto Universitario de Pesquisas, Brazil; the Pontificia Universidad Católica de Chile; the Centro de la Vivienda y Estudios Urbanos, Mexico; the Centro de Estudios Urbanos, Venezuela; and University College, London, U.K., to analyze the rental and shared housing market in major cities of four Latin American countries (Brazil, Chile, Mexico, and Venezuela) and to make appropriate policy recommendations. \$366 700 — 24 months.

89-0121 Macroeconomic research network (Latin America)

For the Fundación para la Educación Superior y el Desarrollo, Colombia, to support joint research into structural adjustment and the effectiveness of stabilization policies and to implement a program for training young scholars at the participating centres. \$485 000 — 36 months.

87-0125 Educational Research Network of Eastern and Southern Africa — Phase II*

For the University of Botswana; the National University of Lesotho; the University of Swaziland; the Ministry of Education, Tanzania; Makerere University, Uganda; and the University of Zambia to support the Educational Research Network of Eastern and Southern Africa to promote collaboration and information-sharing among researchers at the national, regional, and international levels. \$375 000 — 24 months.

87-0129 Economic policy analysis (Chile) — Phase II

For the Corporación de Investigaciones Económicas para Latinoamérica, Santiago, to contribute to the analysis of the development strategy and policy packages for dealing with current Latin American problems in the short and long term. \$519 620 — 24 months.

87-0139 Contract farming and outgrower schemes (Southeast Asia)*

For the Thai University Research Association; the Ministry of Agriculture, Indonesia; and the University of Malaysia to assess the experience of contract farming and outgrower schemes in selected countries, particularly with respect to smallholder welfare and agricultural development policy. \$247 750 — 24 months.

87-0140 Debt renegotiation (Global) — Phase II

For Alternativas de Desarrollo, Costa Rica, to examine the consequences of cross-conditionality and banking regulation for debt management by less-developed countries. \$155 500 — 24 months.

87-0142 Balance of payments adjustment (Peru) — Phase III

For the Grupo de Análisis para el Desarrollo, Lima, to increase understanding of some of the most pressing macroeconomic problems of the Peruvian economy and to develop means through which alternative policies can be monitored and with which to predict their short-run effects. \$174 500 — 24 months.

87-0143 Urban development and policies (Ecuador) — Phase II

For the Centro de Investigaciones CIUDAD, Quito, to develop a comprehensive understanding of selected urban problems and relevant policies in the context of contemporary urbanization in Ecuador. \$300 000 — 36 months.

87-0144 The grocery basket (Bolivia)

For the Centro de Estudios de la Realidad Económica y Social, La Paz, to determine the evolution of food consumption, the channels of distribution of the main food products, and the survival food strategies used by the population in the major urban and rural centres of the country. \$130 700 — 24 months.

87-0145 Regional socioeconomic impacts of export processing zones (Asia) — Phase II*

For the Centre for Guangdong Social and Economic Development Studies, China; Seoul National University, South Korea; the University of the Philippines in Diliman; and the University of Sydney, Australia, to investigate the social and economic aspects of the subcontracting links that have been established between firms located in export processing zones and rural areas. \$122 900 — 12 months.

87-0150 Adolescent fertility (Cameroon)

For the ministère du Plan et de l'Aménagement du territoire, Yaoundé, to understand the phenomenon of adolescent fertility, its impact on education and maternal and infant mortality, its socioeconomic causes, and its contraceptive implications. \$151 720 — 18 months.

87-0152 Women and agricultural modernization in northeastern Brazil*

For the Fundação Joaquim Nabuco, Recife, to analyze the conditions under which women in northeastern Brazil have been absorbed into irrigation projects so as to assess the impact of agricultural modernization on the traditional status of women, with particular reference to extreme poverty and labour discrimination. \$160 500 — 24 months.

87-0159 Fertility and adolescent sociopsychological behaviour (Mali)

For the École normale supérieure, Bamako, to enable the Institut supérieur de formation et de recherche appliquée to carry out a detailed psychological study of adolescent fertility behaviour. \$93 700 — 24 months.

87-0160 Adolescent fertility (Mauritania)*

For the Direction de la statistique et de la comptabilité de Mauritanie, Nouakchott, to enable the Centre d'études démographiques et sociales to undertake an in-depth study of adolescent fertility, based mainly on data from the national fertility survey. \$52 100 — 24 months.

87-0162 Community organizations (Peru)*

For the Universidad Nacional San Antonio Abad de Cuzco (UNSAAC), to enable the Instituto de Investigación de UNSAAC and the Netherlands Universities Foundation for International Cooperation to study the factors behind the relative success of peasant communities and to consider the adaptations that might make them the organizational alternative of choice for Peruvian rural development. \$68 450 — 18 months.

87-0166 Indian children and reading in primary schools (Guatemala)

For the Universidad del Valle de Guatemala to examine current teaching practices and learning results for both Indian and *ladino* (Spanish-speaking) populations in public schools to develop guidelines aimed at improving children's reading skills. \$21 230 — 12 months.

87-0176 Adolescent fertility (Côte d'Ivoire)*

For the Direction de la statistique, Abidjan, to undertake an in-depth study of the data from the national fertility survey. \$86 400 — 24 months.

87-0181 Consortium Graduate School (the Caribbean) — Phase III

For the University of the West Indies, Jamaica, to support the Consortium Graduate School by offering 15 graduate scholarships, 6 to start the program of studies toward the master's degree program and

9 to support further master's or doctoral research projects. \$76200 — 12 months.

87-0183 Weathering economic crisis (Barbados)

For the University of the West Indies, Bridgetown, to enable the Institute of Social and Economic Research to generate policy-oriented information that may be used to improve the effectiveness of adjustment strategies and, at the same time, reduce the negative effect of recessions on low-income women and their families. \$55610 — 18 months.

87-0202 Balance of payments, savings, and investment (Colombia) — Phase III

For the Fundación para la Educación Superior y el Desarrollo, Bogotá, to study the relationship between financial variables and the performance of production, consumption, investment, employment, and the balance of payments in the Colombian economy. \$128600 — 24 months.

87-0207 Research review and advisory program in education (Southeast Asia) — Phase II*

For the Southeast Asian Research Review and Advisory Group, Malaysia, to maintain and strengthen networking between educational researchers, policymakers, and practitioners in countries of the Association of South East Asian Nations. \$304000 — 36 months.

87-0208 Birth interval dynamics (India) — Phase II*

For the National Council of Applied Economic Research, New Delhi, to identify the factors determining fertility, mortality, and health in India. \$185300 — 36 months.

87-0210 Small-scale aluminum enterprises (Ghana)*

For the National Service Secretariat, Accra, to enable the University of Ghana to study the small-scale aluminum industry in both urban and rural Ghana with regard to the technologies in use and opportunities for employment. \$150710 — 24 months.

87-0213 Review of scientific institutions and public policy (India)*

For the Centre for the Study of Developing Societies, Delhi, to initiate a series of systematic reviews of the development of scientific institutions and infrastructure in India. \$84360 — 30 months.

87-0215 Fertility changes in Southeast Asia

For the UPecon Foundation, the Philippines, to specify and measure the effects of economic growth and socioeconomic development on fertility and fertility change in Southeast Asia. \$62000 — 12 months.

87-0219 Determinants of diarrheal risk (the Philippines)

For Xavier University, Cagayan de Oro City, to enable the Research Institute for Mindanao Culture to

conduct interdisciplinary anthropological research that will assess the risk factors related to childhood diarrheal disease in Mindanao. \$16300 — 12 months.

87-0220 Industrial policy (Ecuador) — Phase II*

For the Centro de Planificación y Estudios Sociales, Quito, to examine the effect of government policies on the pattern of industrial development. \$162630 — 24 months.

87-0251 Local governments in medium-sized cities (Latin America)*

For SUR-Documentación, Estudios, Educación, Chile, to analyze the ability of communities in selected medium-sized cities in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, and Peru to satisfy the needs of the people, particularly those earning the lowest incomes. \$440000 — 24 months.

87-0259 Family environment and child learning (Chile)*

For the Centro de Estudios y Atención del Niño y la Mujer, Santiago, to identify the social and familial variables associated with low achievement in preschool children and to develop an intervention strategy that aims to improve family interactions. \$50000 — 18 months.

87-0265 School-community system for literacy (Uganda)*

For the Institute of Teacher Education, Kampala, to harness the efforts of both school and community to work together to master literacy skills that will improve the quality of life. \$157000 — 24 months.

87-0268 Qualitative research and training on nonformal education (Thailand)*

For the Ministry of Education, Bangkok, to enable its Department of Nonformal Education to develop research capacity among key nonformal educators to collect, validate, and utilize data for planning and management. \$95000 — 30 months.

87-0273 Global impoverishment and sustainable development (Argentina-Canada)*

For the Fundación Bariloche and the University of British Columbia, Vancouver, to review concepts and research methods relating to the problem of global impoverishment. \$53640 — 6 months.

87-0276 Adolescent fertility (Nigeria)*

For the National Population Bureau, Lagos, to undertake an in-depth analysis of adolescent fertility, drawing mainly upon data from the National Fertility Survey. \$89800 — 24 months.

87-0279 National alcohol program: impact and role in a new energy context (Brazil)

For the Universidade Federal do Rio de Janeiro to assess Brazil's national alcohol program in the context of reduced international oil prices and increased domestic oil output, with a view to making policy recommendations concerning the

program's future role in the country's energy system. \$187 040 — 30 months.

87-0280 Employment patterns and social policies in the public sector (Argentina)*

For the Centro de Estudios de Estado y Sociedad, Buenos Aires, to examine the experience of women in public-sector employment in Argentina. \$71 720 — 18 months.

87-0283 Micro- and small-scale enterprise sector (Costa Rica)*

For the Universidad Nacional, Heredia, to enable the Instituto de Estudios Sociales en Población to assess the characteristics and socioeconomic role of micro- and small-scale enterprises (MSEs) in national development and to identify institutional measures to accelerate the development of MSEs. \$74 300 — 15 months.

87-0284 Education and cooperative development (Latin America) — Phase II

For the Consejo de Educación de Adultos de América Latina, Chile, to examine the organizational, structural, and socioeconomic factors influencing the development, practice, and contribution of education in cooperatives. \$89 800 — 22 months.

87-0289 Political economy and stabilization (Turkey)*

For the Turkish Social Science Association, Ankara, to assess the effects of structural adjustment policies on the Turkish working class and peasantry. \$18 600 — 12 months.

87-0295 Migrant remittances (Bangladesh)*

For the Bangladesh Institute of Development Studies, Dhaka, to analyze labour migration to the Middle East to assess the local effects of skilled labour outflow and to analyze the productive use of foreign exchange remitted from earnings abroad. \$41 190 — 12 months.

87-0298 Impact of mining on the socioeconomic status of women (India)

For the Institute of Social Studies Trust, New Delhi, to make a detailed assessment of the costs and benefits of mining in Kumaon, an east-central Himalayan region of India, with a primary focus on its impact on the livelihood of women. \$87 370 — 24 months.

87-0299 Regional review of technical-vocational education (Latin America)*

For the World Bank, USA, to enable the Centro Interamericano de Investigación y Documentación sobre Formación Profesional to undertake a comprehensive assessment of the history, changes, and current practice of technical-vocational training systems in Latin America. \$43 420 — 12 months.

87-0301 Impact of social and economic change on women (Ghana)

For the University of Ghana, Accra, to enable the Institute of African Studies to examine the impact of social and economic change in the Ada Songor

Lagoon region on the reproductive and productive roles of women. \$17 890 — 9 months.

87-0302 Rural teachers and school effectiveness (Chile)*

For the Facultad Latinoamericana de Ciencias Sociales, Santiago, to examine the characteristics of rural teachers and their previous training in relation to their teaching practices and to student learning. \$57 350 — 16 months.

87-0307 Third age and social services (Colombia)*

For the Corporación Centro Regional de Población, Bogotá, to generate information and develop a methodology for the design and implementation of a national policy on the third age based on an analysis of the interrelations between the aging of the population and the development process. \$72 950 — 14 months.

87-0310 Participation and local government (Chile)*

For the Facultad Latinoamericana de Ciencias Sociales, Santiago, to investigate in depth the state policies and programs for the critically poor, and the social activities of nongovernmental organizations in the Santiago metropolitan area. \$82 870 — 24 months.

87-0311 Representative institutions and social policies (Uruguay)*

For PEITHO-Sociedad de Análisis Político, Montevideo, to analyze the political and bureaucratic factors that influence the formulation and implementation of social policies at the level of city government of Montevideo. \$74 130 — 15 months.

87-0312 NGOs and public policies (India)*

For the Society for Participatory Research in Asia, New Delhi, to conceptualize the present and potential role of nongovernmental organizations (NGOs) as promoters of development, actors involved in policy-making and policy implementation, and mechanisms of aggregation of popular demands. \$70 480 — 24 months.

87-0313 Representative institutions and public policies (Argentina)

For the Centro Latinoamericano para el Análisis de la Democracia, Buenos Aires, to analyze and conceptualize the relations between the state, political parties, unions, and business groups and their role in formulating and implementing public policies. \$82 720 — 18 months.

87-0314 Diffusion of improved biomass stoves (China)*

For Tsinghua University, Beijing, to enable the Institute for Techno Economic and Energy Systems Analysis to analyze and evaluate the national experience in developing and diffusing improved cooking stoves. \$84 370 — 24 months.

87-0316 Country review of science and technology policy (Colombia)*

For the Fondo Colombiano de Investigaciones

Científicas y Proyectos Especiales Francisco José de Caldas, Bogotá, to review current science and technology policy in Colombia and to recommend a new long-term science and technology plan for the country. \$103630 — 18 months.

87-0321 Role of the mass media in nonformal education (Argentina)*

For the Centro de Estudios de Estado y Sociedad, Buenos Aires, to describe and analyze the relationship between the educational needs and demands of the disadvantaged sector and the educational role and practice of the mass media operating under the new government policies. \$101 250 — 22 months.

87-0322 Social discrimination and education (Peru)*

For the Pontificia Universidad Católica del Perú, Lima, to enable its Faculty of Social Sciences to identify the existing mechanisms of ethnic-, gender-, and labour-based discrimination in the educational system so as to counteract them and contribute to the achievement of a democratic environment in the educational community. \$86 100 — 18 months.

87-0326 Women, labour markets, and crisis (Dominican Republic)*

For the Centro de Investigación para la Acción Femenina, Santo Domingo, to collect data on the living and working conditions of urban women in the Dominican Republic and on the characteristics of their economic and social participation. \$86 990 — 24 months.

87-0330 Access to land ownership (Kenya)*

For the International Centre of Insect Physiology and Ecology, Nairobi, to create a better understanding of factors determining women's access to and ownership of land and how they affect women's roles in the agricultural household and in management of agricultural production. \$46 820 — 24 months.

87-0332 Consequences of women's migration (Mali)*

For the Institut des sciences humaines, Bamako, to determine the social, economic, and cultural consequences of the exodus of women from rural to urban areas with a view to helping women's groups in both areas to make the migratory experience a positive one. \$75 700 — 24 months.

87-0337 Women and urban poverty (India)*

For the Society for the Promotion of Area Resource Centres, Bombay, to generate a body of knowledge on issues identified by the urban poor, particularly urban women, in such a way that local communities, as well as practitioners elsewhere, can make positive use of it. \$149 290 — 36 months.

87-0340 Labour migration and employment policies (Venezuela)*

For the Ministerio del Trabajo, Caracas, to enable the Instituto de Investigaciones Económicas y

Sociales of the Universidad Católica Andrés Bello to diagnose the migration patterns, occupational characteristics, and training needs of the industrial labour force in two frontier districts. \$15 000 — 8 months.

87-0344 Gender-focused research network (Tanzania)

For the Eastern and Southern African Management Institute, Arusha, to fund participants in the research methodology seminars, so as to enable them to implement research proposals related to women in development, and to encourage the establishment of a network of people interested in women-in-development and related gender issues. \$227 480 — 24 months.

87-1013 Canadian foreign investment through small- and medium-sized enterprises (Argentina-Canada)

For the University of Quebec at Montreal, to enable the Centre de recherche en développement industriel et technologique in cooperation with the Centro de Estudios de Desarrollo y Relaciones Económicas Internacionales, Buenos Aires, to analyze empirically the experience of small- and medium-sized Canadian enterprises. \$63 240 — 12 months.

87-1038 Classroom interaction and student performance (India-Canada)*

For the Educational Research Foundation, Pune, and the University of Alberta, Edmonton, to introduce ethnographic research to a selected group of researchers in India as a method that complements and integrates other methods in educational research (case study, qualitative, behavioural, experimental, and quasi-experimental). \$77 450 — 10 months.

87-1042 Issues in Chinese education (China-Canada) — Phase III*

For the East China Normal University, Shanghai, and the University of Victoria, British Columbia, to examine curriculum, resource materials, classroom methodology, in-school administration, and evaluation of middle-school education in China and to suggest possible areas of reform. \$205 950 — 27 months.

87-1053 Organizations for community participation (Central America and the Caribbean-Canada)*

For the Centro de Estudios sobre América, Cuba; the University of the West Indies (UWI), Jamaica; and York University, Ontario, to enable the Centro de Estudios sobre América, the Institute of Social and Economic Research at UWI, and the Centre for Research on Latin America and the Caribbean at York University to produce a comparative analysis of the present and potential role of organizations for community participation as structures capable of democratizing the process of formulating and implementing public policies in Costa Rica, Cuba, Jamaica, and Nicaragua. \$131 370 — 24 months.

Division activity projects

Apart from the activities described in the preceding pages, IDRC supports numerous 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 field, 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.

Most division activity projects cover the cost of meetings or of consultations directly or indirectly connected with IDRC-funded research. During the past financial year, IDRC approved division activity projects to a total cost of \$6 227 000. The following are examples.

- An agricultural institute in Thailand put the finishing touches to a 600 000-word English-Thai agricultural dictionary.
- Researchers from several Latin American and West Indian countries met to explore ways of improving the conditions of small-scale coffee producers.
- Fifteen researchers met to set up a network of exchanges on crop systems in the West Indies.
- A consultant toured India to study popular education groups involved in community development.
- An international conference with more than 50 participants was held in Ottawa on leishmaniasis, a tropical disease, in June.
- At Manila, an international workshop was held in January on the role of women in providing water and hygiene services.
- Thirty people attended a training workshop on scholarly publishing in the Caribbean.
- A Canadian hydrogeologist visited Burkina Faso to prepare a joint project.
- A study group analyzed the policies applied to combatting the drought in Africa to review the efforts made so far.
- A consultant assisted Ugandan representatives to consider constitutional options.

Fellowships

Pearson fellowships

Pearson fellows pursue a nondegree program in public administration at Carleton University and the University of Ottawa with practical attachment with a government department.

Anassi, Abdelkhalek (Morocco)

Brito, Maria Cecília Wey de (Brazil)

Fadaq, Mohammed Ahmed (Yemen)

Issar, Ranjit (India)

Kikala, Philip (Papua New Guinea)

Luengo, Oscar Humberto (Chile)

Mivuba, Antime (Burundi)

Mkondiwa, George C. (Malawi)

Mukuna, Ka Mukuna Longola (Zaire)

Ouédraogo, Marceline (Burkina Faso)

Palomino Gamarra, Maria Teresa (Peru)

Paranawithana, Upul (Sri Lanka)

Picar Jimenez, Gloria (the Philippines)

Raja Kamarudin, Bin Raja Ahmad (Malaysia)

Salia, Edward K. (Ghana)

Sandhu, Deepak (India)

Sigiliano, Ernesto de Campos (Brazil)

Project-related awards

Abagi, Jared O. (Kenya)

Doctoral studies in educational sociology; Social Science and Humanities Research Council, McGill University, Montreal, PQ, Canada

Buelna, Geraldo (Mexico)

Practical training in advanced wastewater treatment and recovery processes and biotechnologies; Pig and Poultry Research Training Institute, Singapore

Jeng, Momodou (the Gambia)

Doctoral degree in social demography; Department of Sociology, University of Western Ontario, London, ON, Canada

Kabbah, Shecou-Bah (Sierra Leone)

Master's degree in water supply and sanitation; Water and Engineering for Developing Countries,

Loughborough University of Technology, Loughborough, Leics., U.K.

Makambila, Casimir (Congo)

Doctoral thesis in microbiology; Laboratoire de microbiologie, Université de Clermont FD II, France

Mosimanyana, Bernard M. (Botswana)

Doctoral studies in animal science; Faculty of Graduate Studies, University of Guelph, Guelph, ON, Canada

Mpemi, Malijeng Theresia (Lesotho)

Master's degree in agricultural economics; University of Saskatchewan, Saskatoon, SK, Canada

Musi, Mahlape (Lesotho)

Master's degree in education; Queen's University, Kingston, ON, Canada

Mwangi, Joel G. (Kenya)

Training in recent advances in plant tissue culture in crop production and management; Bath, Avon, U.K.

Njiru, Daniel M. (Kenya)

Master's degree in agroforestry; University of Nairobi, Nairobi, Kenya

Peng, Chun (China)

Doctoral studies in fish physiology; Department of Zoology, University of Alberta, Edmonton, AB, Canada

Sall, Oumar (Mauritania)

Training in fish breeding; Centre de formation piscicole, Bouaké, Côte d'Ivoire

Sheikh, Omar Mohamed (Somalia)

Master's training in plant breeding and genetics; Tamil Nadu Agricultural University, Coimbatore, India

Sogue, Ousmane (Sénégal)

Studies toward a master's degree in urbanization; University of Montreal, PQ, Canada

Sopeng, Liphoo (Lesotho)

Studies toward a master's degree in agricultural economics; Department of Agricultural Economics, University of Saskatchewan, Saskatoon, SK, Canada

Program-related awards

Achacha, John (Kenya)

Research in dehuller operation training; Rural Industries Innovation Centre, Gaborone, Botswana

Alarcon, Angelica (Guatemala)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Anon, Manmontri (Thailand)

Studies toward a master's of science degree in clinical epidemiology; Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, ON, Canada

Aquino, Luis A. (El Salvador)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Bah, Mamadou (Sénégal)

Studies toward a master's degree in library and information sciences; Faculty of Library and Information Sciences, University of Montreal, PQ, Canada

Banda, Elizabeth E. (Malawi)

Studies toward a doctoral degree in nursing; University of Maryland, Baltimore, MD, USA

Barrera, Rafael A. (El Salvador)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Beltrand, Olga R. (Uruguay)

Studies toward a master's degree in sociology; Centro de Informaciones y Estudios del Uruguay, Department of Sociology, Instituto Universitaria de Pesquisas do Rio de Janeiro, Rio de Janeiro, Brazil

Boyce, Stephen Leo (Barbados)

Studies toward a master's degree in fisheries biology; Department of Biology, University of West Indies, Bridgetown, Barbados

Cai-Yao, Yuan (China)

Vegetable production training; Asian Vegetable Research and Development Center, Bangkok, Thailand

Camará, Iaia (Guinea Bissau)

Technical training, practical exercises, and visits to other documentation centres in the information field; Centro de Informação e Documentação Amílcar Cabral, Lisbon, Portugal

Diallo, Anis (Sénégal)

Research training in aquaculture; Auburn University, Auburn, AL, USA

Dottin, Milagros (Dominica)

Studies toward a master's degree in demography; Centro de Estudios Demográficos y de Desarrollo Urbano, Colegio de México, Mexico

Dumangane, Adélia Sansão (Mozambique)

Technical training, practical exercises, and visits to other documentation centres in the information field; Centro de Informação e Documentação Amílcar Cabral, Lisbon, Portugal

Filmus, Daniel Fernando (Argentina)

Studies toward a master's degree in education; Universidade Federal Fluminense, Niterói, Brazil

Garcia-Vela, Luis A. (Guatemala)

Studies toward a master's degree in food science; University of Guelph, Guelph, ON, Canada

Gasarasi, Charles P. (Tanzania)

Doctoral field research on the effect of Africa's exiles and refugees on inter-African state relations; Department of Political Science, Tulane University, New Orleans, MS, USA

Ghani, Zainal (Malaysia)

Doctoral studies in education; University of Southampton, Southampton, Hants, U.K.

Gnom, Aly (Sénégal)

Research in gynecology and obstetrics; Service de gynécologie-obstétrique, Maternité de la Belle de Mai, Marseille, France

Godínez, Caroline (Guatemala)

Studies toward a master's degree in foods and nutrition; Faculty of Graduate Studies, University of Manitoba, Winnipeg, MB, Canada

Goh, Sing Yau (Malaysia)

Advanced study in theory and application of computer-simulated fluid-flow phenomena; Imperial College, London, U.K.

Gonzalez, Emilio P. (Nicaragua)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Guisado, Chita (Chile)

Studies toward a master's degree in zoology; Universidad Austral de Chile, Valdivia, Chile

Gutierrez, Maria Isabel (Colombia)

Studies toward a master's degree in epidemiology and biostatistics; Department of Epidemiology and Biostatistics, McGill University, Montreal, PQ, Canada

Hasrom, Encik bin Haron (Malaysia)

Training in educational publishing and books; Banff School of Fine Arts, Banff, AB, Canada

Hoanh, Mai Thach (Viet Nam)

Study of root-crops improvement through polycrops techniques; Visayas State College of Agriculture, Baybay, the Philippines

Hong Fu, Yang (China)

Vegetable production training; Asian Vegetable Research and Development Center, Bangkok, Thailand

Hubert, Seri Z. (Côte d'Ivoire)

Doctoral thesis on rural economics; Institut National Agronomique, Paris, France

Injai, Aissatu (Guinea Bissau)

Technical training, practical exercises, and visits to other documentation centres in the information field;

Centro de Informação e Documentação Amílcar Cabral, Lisbon, Portugal

Irias, Jorge A. (Honduras)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Kamal, Medhat El-Sayed (Egypt)

Studies toward a doctoral degree in clinical epidemiology; International Clinical Epidemiology Program, McMaster University, Hamilton, ON, Canada

Kandasamy, Veeranan (India)

Studies in the master's of public health program; Institute of Public Health, University of the Philippines, Manila, the Philippines

Kangsdarn, Devahastin (Thailand)

Research seminar on communication; University of Hawaii, Honolulu, HI, USA

Khanal, Prakash (Nepal)

Training on communication planning; United Nations Development Programme on Development Training and Communication Planning, Bangkok, Thailand

Kimani, Muiruri John (Kenya)

Training course on rural energy planning; Technische Hogeschool Twente, Enschede, the Netherlands

Krawczyk, Nora (Argentina)

Studies toward a doctoral degree in education; Universidade Estadual de Campinas, São Paulo, Brazil

Larrea, Carlos (Ecuador)

Studies toward a doctoral degree in social and political thought; Faculty of Graduate Studies, York University, Downsview, ON, Canada

Mahmood, Syed A. (Bangladesh)

Research and preparation of doctoral thesis in economics; University of Oxford, Oxon., U.K.

Maritim, Gabriel K. (Kenya)

Participate in a nutritional surveillance workshop; World Health Organization Training Centre, Réunion, Mauritius

Martins, Balmira Langa (Mozambique)

Technical training, practical exercises, and visits to other documentation centres in the information field; Centro de Informação e Documentação Amílcar Cabral, Lisbon, Portugal

Morales, Mario R. (Guatemala)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Morris, Kerwyn Leslie (Saint Vincent and the Grenadines)

Studies toward a master's degree in fisheries biology; University of the West Indies, Cave Hill, Barbados

Mtalo, Elifuraha G. (Tanzania)

Studies toward a master's degree in surveying engineering; School of Graduate Studies and Research, University of New Brunswick, Fredericton, NB, Canada

Muacanhia, Thomas (Mozambique)

Training for research methods for aphid ecology; International Centre of Insect Physiology and Ecology, Nairobi, Kenya

Obando, Carlos S. (Costa Rica)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Oyeyinka, Oyebanji (Nigeria)

Studies toward a doctoral degree based on a thesis on technology policy and industrialization technology acquisition; Science and Technology Policy Group, University of Sussex, Brighton, Sussex, U.K.

Pradhan, A.S. (Nepal)

Training in communication planning; United Nations Development Programme on Development Training and Communication Planning, Bangkok, Thailand

Sam-Abbenyi, Amos (Cameroon)

Studies toward a master's degree in community medicine; Department of Social and Preventive Medicine, University of Montreal, PQ, Canada

Sharma, Shiva P. (Nepal)

Field research in Nepal for a doctoral degree in economics; School of Economics, La Trobe University, Melbourne, Australia

Simmons, Vasiti D. (Fiji)

Master's of library studies program and courses in advanced information studies; University of Hawaii, Manoa, HI, USA

Somchit, Chaipakdee (Thailand)

Training in communication and change — information economics; University of Hawaii, Honolulu, HI, USA

Somé, Ytouara Robert (Burkina Faso)

Advanced level management training; Centre africain d'études supérieures en gestion, Dakar, Sénégal

Thomas, Abator (Sierra Leone)

Studies for a master's degree in resources for learning; Department of Library and Information Studies, Loughborough University of Technology, Loughborough, Leics., U.K.

Uribe, Gabriela (Venezuela)

Training in research programs; Centro de Estudios del Desarrollo, Caracas, Venezuela

Valittuti, G. (Costa Rica)

Studies toward a master's degree in sociology; Confederación Universitaria Centroamericana, Universidad de Costa Rica, San José, Costa Rica

Villareal, Michael (the Philippines)

Undertake a master's degree in animal sciences; Central Luzon State University, Los Baños, the Philippines

Wong, Tat Meng (Malaysia)

Studies toward a doctoral degree in seed production and culture technology for bivalves; Pacific Biological Station, Nanaimo, BC, Canada

Wu, Yunying (China)

Studies toward a master's degree in agroforestry; University of the Philippines, Los Baños, the Philippines

Xin, Zhang (China)

Vegetable production training; Asian Vegetable Research and Development Center, Bangkok, Thailand

Yunlai, Xiao (China)

Vegetable production training; Asian Vegetable Research and Development Center, Bangkok, Thailand

Institution-related awards

Abdullah, Ramli B. (Malaysia)

Training course in carp seed production; Asia Pacific Research and Training Centre for Integrated Fish Farming, Network of Aquaculture Centres in Asia-Regional Lead Centre in China, Wuxi, China

Balajadia, Lilibeth C. (the Philippines)

Training course in carp seed production; Asia Pacific Research and Training Centre for Integrated Fish Farming, Network of Aquaculture Centres in Asia-Regional Lead Centre in China, Wuxi, China

Batururimi, Emmanuel (Burundi)

Master's degree in health administration specializing in research and planning; University of Montreal, Montreal, PQ, Canada

Gempis, Carmen L. (the Philippines)

Training course in carp seed production; Asia Pacific Research and Training Centre for Integrated Fish Farming, Network of Aquaculture Centres in Asia-Regional Lead Centre in China, Wuxi, China

Gningue, Youssoupha (Sénégal)

Professional development course in research-training-action; Department of Health Administration, University of Montreal, PQ, Canada

Hongwei, Yu (China)

Studies toward a master's degree in fish diseases; Department of Microbiology, University of Alberta, Edmonton, AB, Canada

Kamya, Elizabeth R. (Uganda)

Training in librarianship and information science; International Graduate Summer School, Aberystwyth, U.K.

Khelifi, H'Mida (Tunisia)

Studies toward a master's degree in economic sciences; University of Montreal, PQ, Canada

Liu, Qingyan (China)

English course for foreign students and master's course in cell biology; Department of Biology, University of New Brunswick, Fredericton, NB, Canada

Mat, Abd Majid B. (Malaysia)

Training course in carp seed production; Asia Pacific Research and Training Centre for Integrated Fish Farming, Network of Aquaculture Centres in Asia-Regional Lead Centre in China, Wuxi, China

Mshigeni, Kelo E. (Tanzania)

Attend meetings of Canadian deans of graduate studies and visit some graduate studies centres in Canada; Canada

Muze, Agnes S. (Tanzania)

Undertake a master's degree in philosophy in publishing; University of Stirling, Stirling, U.K.

National Research Council (Canada)

To allow the Principal Research Officer to travel to Garoua, Cameroon, and to provide training to two field technicians; National Research Council of Canada, Halifax, NS, Canada

Orejana-Acosta, Belen (the Philippines)

Training course in carp seed production; Asia Pacific Research and Training Centre for Integrated Fish Farming, Network of Aquaculture Centres in Asia-Regional Lead Centre in China, Wuxi, China

Ouedraogo, Souleymane (Burkina Faso)

Doctoral program in rural economics; Centre ivoirien de recherches économiques et sociales, Abidjan, Côte d'Ivoire

Semru, Mulugeta (Ethiopia)

Training course in administration; Senior University Administrator's Course, London, ON, Canada

Tchamegnon, Yawovi (Tonga)

Studies to complete a doctoral thesis in school administration; Faculty of Education Sciences, Laval University, Sainte Foy, PQ, Canada

Thabisi, Francinah M. (Lesotho)

Training in librarianship and information science; International Graduate Summer School, Aberystwyth, U.K.

Xu, Xueliang (China)

Training in fish nutrition; Fisheries and Environmental Services Division, Fisheries and Oceans Research Institute, Halifax, NS, Canada

Young Canadian researchers' awards

Abwunza, Judith M. (University of Toronto)

Undertake research on women and rural development "Logoli women of Western Kenya" for a doctoral thesis in anthropology; Institute of African Studies, Nairobi, Kenya

Beaudet, Pierre (University of Quebec)

Research for a thesis on "The options for socioeconomic development in South Africa after apartheid" to complete the requirements for a doctorate in sociology; Centre d'études africaines, Universidade Eduardo Mondlane, Maputo, Mozambique

Canel, Eduardo (York University)

Research on grass-roots organization among the urban poor in Montevideo for a doctoral thesis in political science at York University; Centro de Informaciones y Estudios del Uruguay, Montevideo, Uruguay

Castel, Josette (Laval University)

Research on the epidemiology of sickle-cell anemia toward a master's degree in experimental medicine in epidemiology; Centre régional de développement sanitaire, Cotonou, Benin

Comor, Emily (University of Toronto)

Research on the expectations and implications of development among various social groups in India toward a doctoral degree in anthropology; Department of Study of Social Sciences, Jawaharlal Nehru University, New Delhi, India

Cundall, Janet (Laval University)

Applied research on alternatives to destructive shifting cultivation toward a doctoral degree in social forestry; Lowlands Agriculture Research Station, Kerevat, Papua New Guinea

Daudelin, Jean (Laval University)

Research on the state regulation of minorities in Nicaragua from 1930 to 1945 toward a doctoral degree in political science; Confederación Universitaria Centroamericana, San José, Costa Rica

Doyer, Jacques (York University)

Field research in Argentina, Chile, and Uruguay on constitutional reform, parliamentary processes, and civil-military relationships in time of turmoil (Argentina 1976-1986) toward a doctoral degree in political science; Facultad Latinoamericana de Ciencias Sociales, Buenos Aires, Argentina

Fleming, Patricia T. (University of Toronto)

Thesis research on psychosocial factors influencing use of mental health services in Zambia toward a doctoral degree in behavioural sciences; Institute for African Studies, University of Zambia, Lusaka, Zambia

Hamilton, Hugh (University of Toronto)

Thesis research on soil organic-matter management and the erodibility of loessal soils in the Province of Shanxi toward a doctoral degree in geography; Shanxi Institute of Soil and Water Conservation, Lishi County, Shanxi Province, China

Kasisi, Robert Bag R. (University of Montreal)

Research on strategy for conserving and using fauna and flora toward a doctoral degree in land management; Parc national de Kahuzi Biega, Institut zairois pour la conservation de la nature, Bukavu, Zaire

King, Geoffrey A. (Canadian Broadcasting System)

Professional training on development issues in Cameroon, Gabon, and Sénégal; Centre international d'études en science et technologie de l'information, Dakar, Sénégal

Martin, Marie-Claude (Laval University)

Research on simulation techniques for commercial policy in developing countries with application to Tunisia toward a master's degree in economics; Institut d'économie quantitative, Tunis, Tunisia

Morissette, Jeannine (Laval University)

Research in Haiti and Benin on self development within projects of the Canadian International Development Agency toward a master's degree in sociology; Assemblée spirituelle nationale des Baha'is d'Haiti, Port-au-Prince, Haiti

Mourah, Lise (Laval University)

Research on the regulation of political culture in Algeria, its codes and functions toward a doctoral degree; Institut des sciences politiques, Université d'Alger, Ben Mehidi, Algeria

Nicholas, Sheila M. (Queen's University)

Research on the role of indigenous businessmen in Zimbabwean development toward a doctoral degree in political science; Department of Rural and Urban Planning, Zimbabwe Institute of Development Studies, Harare, Zimbabwe

Ouardi, Mohammadine (University of Montreal)

Research on the management of interlibrary cooperation in Morocco; École des sciences de l'information, ministère du Plan, Rabat, Morocco

Orbinski, James (McMaster University)

Study on the impact of population attitudes, sexual behaviours, government policy, and health-care infrastructure on human immunodeficiency virus (HIV) contagion in Rwanda, leading to a medical degree; Rwanda Union Mission, Kigali, Rwanda

Pépin, Jacques (University of Manitoba)

Research on epidemiology of human immunodeficient virus (HIV) infection in Kenya; Department of Medical Microbiology, University of Nairobi, and the Kenya Medical Research Institute, Nairobi, Kenya

Pilon, Paul G. (University of Waterloo)

Research on application of remote sensing and geographic information system data for assessing natural resources in northwestern Nigeria toward a doctoral degree in geography; Laboratory for Cartography and Remote Sensing, Department of Geography, Lagos, Nigeria

Protz, Maria (University of Guelph)

Internship in development support communication for rural women in India; Centre for Development of Instructional Technology, New Delhi, India

Roquet, Christine V. (Technical University of Nova Scotia)

Research on the influence of design on social

development through social institutions toward a master's degree in architecture; Universidad Nacional Autónoma de Nicaragua, León, Nicaragua

Rowe, Gerald E. (University of Western Ontario)

Research on the effect of substrate amino acid composition toward a doctoral degree in biochemical engineering; Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional, Mexico

Schild, Veronica Ingrid (University of Toronto)

Research on popular organization and new forms of political participation in Chile toward a doctoral degree in political science; Centro de Indagación y Expresión Cultural y Artística, Santiago, Chile

Talbot, Pierre (Laval University)

Research on the biological recycling of pig manure toward a doctoral degree in biology; Instituto Tecnológico de Sonora, Sonora, Mexico

Tremblay, Johanne (University of Montreal)

Research on the organization of maternal and infant care toward a doctoral degree in anthropology; Chef-Lieu de Croix des Missions, Faculté d'ethnologie, Port-au-Prince, Haiti

Vallance, M.E. (McMaster University)

Research on migration and child nutrition in West New Britain in partial fulfillment of doctoral degree in anthropology; Department of West New Britain, Institute of Medical Research, Goroka, Papua New Guinea

Zakus, John David Lee (University of Toronto)

Research on the organization and evaluation of community participation in primary health-care

programs toward a doctoral degree in health administration; Centro de Investigaciones en Salud Pública, Condesa, Mexico

Gemini award

Mazzitelli, Teresa (*The London Free Press*)

Internship with the Gemini News Service and field research in East Africa; Gemini News Service, London, U.K.

John G. Bene fellowship in social forestry

Martins, Paul (Canada)

Follow-up and dissemination of research results on the development of a linear programming model in India to determine the human carrying capacity of the Central Himalayas; Indian Institute of Forestry Management, Bhopal, India

Other awards

Brunner, Jose (Chile)

Conduct research at IDRC and Canadian universities; Fellowships and Awards Division, IDRC, Ottawa, ON, Canada

Savigliano, Marta (Argentina)

To undertake an internship with the Women in Development Unit; Social Sciences Division, IDRC, Ottawa, ON, Canada

Publications

IDRC Publications

IDRC annual report 1986-1987/Rapport annuel CRDI 1986-1987. IDRC-003/87e,f, 91 + 83 pp.

Recherche à la ferme : participation des paysans au développement de la technologie agricole. Matlon, P., Cantrell, R., King, D., Benoit-Cattin, M. CRDI-189f, 217 pp.

Le rôle de la participation communautaire dans la prestation des services municipaux en Asie. Yeung, Y.M., McGee, T.G., ed. IDRC-238f, 292 pp.

Research methodology for livestock on-farm trials: proceedings of a workshop held at Aleppo, Syria, 25-28 March 1985 (Arabic version). Nordblom, T.L., Ahmed, A.K.H., Potts, G.R., ed. IDRC-242a, 236 pp.

Azúcar: ¿Amenazo o desafío? Evaluación del impacto resultante del desarrollo tecnológico en las industrias sucroquímicas y del jarabe de maíz con alto contenido en fructosa. Thomas, C.Y. IDRC-244s, 147 pp.

Évaluation de l'effet sur la santé : approvisionnement en eau, assainissement et hygiène. Briscoe, J., Feachem, R.G., Rahaman, M.M. IDRC-248f, 84 pp.

Evaluando el impacto en salud: agua, saneamiento y educación sanitaria. Briscoe, J., Feachem, R.G., Rahaman, M.M. IDRC-248s, 84 pp.

Market research for food products and processes in developing countries: proceedings of a workshop held in Singapore, 1-4 April 1986. Young, R.H., MacCormac, C.W., ed. IDRC-249e, xii + 144 pp.

L'enseignement aux enfants démunis : une étude ethnographique en Amérique latine. Avalos, B., réd. IDRC-253f, 193 pp.

Solar drying in Africa: proceedings of a workshop held in Dakar, Sénégal, 21-24 July 1986. Bassey, M.W., Schmidt, O.G., ed. IDRC-255e, ix + 286 pp.

Le séchage solaire en Afrique : compte rendu du colloque tenu à Dakar, Sénégal, du 21 au 24 juillet 1986. Bassey, M.W., Schmidt, O.G., réd. IDRC-255f, ix + 306 pp.

Búsqueda — CIID 1986: socios en la innovación. IDRC-257s, 47 pp.

Tropical root crops: root crops and the African food crisis — proceedings of the third triennial

symposium of the International Society for Tropical Root Crops — Africa Branch held in Owerri, Nigeria, 17-23 August 1986. Terry, E.R., Akoroda, M.O., Arene, O.B., ed. IDRC-258e, ix + 197 pp.

Child health and mortality in sub-Saharan Africa: an annotated bibliography from the 1975-86 literature/Santé et mortalité infantiles en Afrique subsaharienne : bibliographie annotée de la documentation de 1975 à 1986. Mackenzie, F., comp. IDRC-259e,f, x + 223 pp.

Searching — IDRC 1987: research in small countries. IDRC-263e, 36 pp.

Quête d'avenir — CRDI 1987 : la recherche dans les petits pays. IDRC-263f, 40 pp.

Maderas tropicales como material de construcción en los países del Grupo Andino de América del Sur. Keenan, F.J., Tejada, M. IDRC-TS49s, 147 pp.

Relations universitaires du Canada avec la République populaire de Chine depuis 1970 — volume 2 : échanges des universités canadiennes avec la Chine. Singer, M. IDRC-TS54f, xi + 119-568 pp.

Technology transfer and nationalization in Ghana. Adei, S. IDRC-TS55e, xiii + 114 pp.

Mortality and morbidity: the Matlab experience. D'Souza, S., Bhuiya, A., Zimicki, S., Sheikh, K. IDRC-TS56e, 60 pp.

Efecto del descenso de la fecundidad en la mortalidad infantil. Taucher, E. IDRC-TS57s, viii + 56 pp.

Urban energy in Fiji: a survey of Suva's household, industrial, and commercial sectors. Siwatibau, S. IDRC-TS59e, xii + 72 pp.

MINISIS user's group meeting 1986: proceedings of the eighth annual meeting/Réunion du groupe des utilisateurs de MINISIS 1986 : compte rendu de la huitième réunion. IDRC-MR148e,f, viii + 243 pp.

Research priorities for African aquaculture — report of a workshop held in Dakar, Sénégal, October 13-16, 1986. Powles, H., ed. IDRC-MR149e, iv + 172 pp.

Les priorités pour la recherche aquicole en Afrique : compte rendu d'un atelier tenu à Dakar, Sénégal, du 13 au 16 octobre 1986. Powles, H., réd. IDRC-MR149f, iv + 182 pp.

Seminar on the participation of women in water supply and sanitation programs. Zandstra, I., ed. IDRC-MR150e, iv + 72 pp.

Market research methods. West, S.J., Earl, M.D. IDRC-MR151e, 58 pp.

Review of issues and research relating to improved cookstoves. Krugmann, H. IDRC-MR152e, ii + 30 pp.

Oil crops: niger and rapeseed/mustard — proceedings of the third oil crops network workshop held in Addis Ababa, Ethiopia, 6-10 October 1986. Omran, A., ed. IDRC-MR153e, ix + 250 pp.

Canada-Latin America annotated development index: a directory of Canadian organizations working in education/social sciences and Latin American development. Litzgus, J. IDRC-MR154e, iv + 120 pp.

Developing countries and general equilibrium models: a review of the empirical literature. Decaluwé, B., Martens, A. IDRC-MR155e, iv + 104 pp.

TANIT 83: a general equilibrium model for analyzing the customs duties, quotas, and price controls of the Tunisian economy. Bousselmi, N., Decaluwé, B., Ennaifar, A., Monette, M. IDRC-MR156e, iv + 39 pp.

Bean network: proceedings of the second workshop held at Antigua, Guatemala, 1-7 June 1986. Elias, L.G., Edwardson, W., ed. IDRC-MR157e, ii + 260 pp.

Increase of productivity in public administration: the role of information technologies — proceedings of the international meeting held in Dakar, Sénégal, 16-21 June 1986/Accroître la productivité de l'administration publique: le rôle des techniques de l'information — actes de la conférence internationale tenue à Dakar, Sénégal, du 16 au 21 juin 1986. IDRC-MR158e,f, 349 pp.

IDRC handpump network: proceedings of the meeting held in Bangkok, Thailand, 1-3 October 1986. Almario, E.S., ed. IDRC-MR159e, iv + 156 pp.

External funding of development-related research: a survey of some major donors. Lewis, J.P. IDRC-MR160e, vii + 68 pp.

Aide extérieure à la recherche pour le développement: étude de quelques grands organismes d'aide. Lewis, J.P. IDRC-MR160f, viii + 81 pp.

Information technology and education: implications for theory, research, and practice. Papagiannis, G., Douglas, C., Williamson, N., Le Mon, R. IDRC-MR161e, iv + 101 pp.

Economic evaluation and diffusion of renewable energy technologies: case studies from India. Bhatia, R. IDRC-MR162e, iv + 85 pp.

Le haie vive: un modèle d'intégration de l'arbre au système d'exploitation agricole et pastoral. Hien, F., Zigani, G. IDRC-MR163f, iii + 60 pp.

Cage culture research projects: report of a workshop held in Cairo, Egypt, 23-26 October 1985/Projets de recherche sur la pisciculture en cages: compte rendu d'un atelier tenu au Caire, Égypte, du 23 au 26 octobre 1985. Powles, H., ed. IDRC-MR164e,f, v + 182 pp.

Animal feed resources for small-scale livestock producers: proceedings of the second Pastures Network for Eastern and Southern Africa (PANESA) workshop held at the International Laboratory for Research on Animal Diseases, Kabete, Nairobi, Kenya, 11-15 November 1985. Kategile, J.A., Said, A.N., Dzwola, B.H., ed. IDRC-MR165e, iv + 271 pp.

Economic adjustment and long-term development in Uganda. The Uganda Study Team. IDRC-MR166e, xvi + 143 pp.

Estado del arte de la educación indígena en el area andina de América latina. Yáñez Cossio, C. IDRC-MR167s, v + 113 pp.

Oil crops — the Brassica subnetwork: proceedings of the first meeting of the Brassica subnetwork held in Uppsala, Sweden, 7-9 May 1987. Omran, A., ed. IDRC-MR168e, vi + 80 pp.

Lever-operated knapsack and hand-held sprayers used in agriculture in developing countries: a review of their safety and efficacy. Zandstra, I. IDRC-MR169e, iii + 104 pp.

The red soils of East and Southern Africa: proceedings of an international symposium, Harare, Zimbabwe, 24-27 February 1986. Nyamapfene, K., Hussein, J., Asumadu, K., ed. IDRC-MR170e, vii + 498 pp.

Small millets — recommendations for a network: proceedings of the Small Millets Steering Committee meeting, Addis Ababa, Ethiopia, 7-9 October 1987. IDRC-MR171e, vii + 75 pp.

Farming systems research in West Africa: proceedings of the West African Farming Systems Research Network workshop, Dakar, Sénégal, 10-14 March 1986. Abalu, G.O.I., Mutsaers, H., Faye, J., ed. IDRC-MR172e, iv + 119 pp.

Agroforestería tropical: suplemento bibliográfico no. 1. Monge, C., comp. IDRC-MR173s, 145 pp.

A compendium of energy sources for Tanzania. Mwandosya, M.J., Luhanga, M.L. IDRC-MR176e, iv + 107 pp.

Publications and texts by Centre staff

Bassey, M.W. [1988.] Drying needs: the Sierra Leonean farmers' perception. Paper presented at the

- International Colloquium on Cereals in Warm Regions: Conservation and Processing, Ngaoundere, 22-27 February 1988. IDRC, Dakar. Mimeo, 12 pp.
- _____. 1987. Solar energy systems for rural development. Paper presented at the National Solar Energy Forum for 1987, Lagos, Nigeria, 22-25 April 1987. IDRC, Dakar. Mimeo, 11 pp.
- Daniels, W.D. 1987. Choosing input indicators for research managers. *Scientometrics*, 11(1-2), 17-25.
- Daniels, W.D., Young, A.M. 1987. Approaches to research donor evaluations: a review of the issues. Paper presented at the Research Donor's Group Meeting, Canberra, 10-11 December 1987. IDRC, Ottawa, Ont. Mimeo, 17 pp.
- Davy, F.B. 1987. Framework for aquaculture research under the CGIAR. Paper presented at the Consultative Group on International Agricultural Research Technical Advisory Committee 42nd Meeting, Roma, 16-24 March 1987. IDRC, Singapore. Mimeo, 26 pp.
- de Padua, D. 1987. Grain drying systems: R and D priorities. Paper presented at the ASEAN Food Handling Bureau Consultation Workshop, Bangkok, 24-27 November 1987. IDRC, Singapore. Mimeo, 6 pp.
- Devendra, C. 1987. Feed resources and their relevance in feeding systems in developing countries. Paper presented at the 4th World Conference on Goat Production, Brasilia, 8-13 March 1987. IDRC, Singapore. Mimeo, 26 pp.
- _____. 1987. Flock management in integrated village systems. Paper presented at the 4th World Conference on Goat Production, Brasilia, 8-13 March 1987. IDRC, Singapore. Mimeo, 20 pp.
- _____. 1987. Goats. In *Bioclimatology and the adaptation of livestock*. Elsevier, Amsterdam, the Netherlands. 157-168.
- _____. 1987. Relevance of on-farm animal production research in Asia. In *On-farm animal research: extension and its economic analysis*. Winrock International Institute for Agricultural Development, Morrilton, AR, USA. 13-18.
- _____. 1987. Role of goats in food production systems in industrialised and developing countries. Paper presented at the 4th World Conference on Goat Production, Brasilia, 8-13 March 1987. IDRC, Singapore. Mimeo, 38 pp.
- _____. 1987. Strategies for the effective utilisation of small ruminants and feed resources in the highlands of Asia. Paper presented at the International Centre for Integrated Mountain Development Expert Panel Meeting, Kathmandu, 25-29 May 1987. IDRC, Singapore. 33 pp.
- Devendra, C., Trung, T. Le. [1987.] Options for increasing the utilization of cereal straws. IDRC, Singapore. Mimeo, 40 pp.
- Forget, G. 1987. Projects supported by the International Development Research Centre (IDRC) in developing countries: pesticides and health. In *Proceedings of the Regional ILO Finnish Symposium on Occupational Health and Safety in East Africa, Marangu, Tanzania, 24-28 November 1986*. International Labour Organisation, Helsinki, Finland. 10-12.
- Glover, D.J. [1987.] Industrial policy research in Latin America. IDRC, Ottawa, Ont. Mimeo, 13 pp.
- _____. 1987. Increasing the benefits to smallholders from contract farming: problems for farmers' organizations and policy makers. *World Development*, 15(4), 441-448.
- Head, I.L. 1987. Resolving global problems into the 21st Century: how can science help? — notes for remarks to the Student Pugwash National Conference, Ottawa, Ontario, 12 June 1987. IDRC, Ottawa, Ont. Mimeo, 30 pp.
- _____. 1987. Remarks to the University of the West Indies Graduation Ceremony, Mona, Jamaica, 28 November 1987. IDRC, Ottawa, Ont. Mimeo, 15 pp.
- _____. 1987. World population jumps to five billion. IDRC, Ottawa, Ont. Media Tapes and Transcripts, 12 pp.
- _____. 1988. What kind of world do we live in? — notes for remarks to the 1st National Security Studies Course at the National Defence College, Kingston, Canada, 12 January 1988. IDRC, Ottawa, Ont. Mimeo, 66 pp.
- Hulse, J.H. 1987. Politics of food security. In *Canada and common security*. Group of 78, Ottawa, Ont. 63-66.
- Kiflewahid, B., Mosimanyana, B. 1987. *Lablab (Lablab purpureus)* in by-products based diets for lactating cows in Botswana. Animal Production Research Unit, Gaborone, Botswana. 14 pp.
- King, D. 1987. IDRC support for research on renewable resource management in Southeast Asia. In *Local resource management for livelihood security and livelihood enhancement*. School for Resource and Environmental Studies, Dalhousie University, Halifax, N.S. 4-6.
- Lavergne, R.P. 1987. Aide au développement du Canada au Sénégal : une étude indépendante. Institut Nord Sud, Ottawa, Ont. 185 pp.
- _____. 1987. Canadian development assistance to Sénégal: an independent study. North South Institute, Ottawa, Ont. 173 pp.
- Lendvay, O. 1987. Guía para bibliotecas agrícolas (2a ed.). Asociación Interamericana de Bibliotecarios y Documentalistas Agrícolas, Turrialba, Costa Rica. 168 pp.
- MacDonald, J. 1987. Health worker awareness of cultural health attitudes and practices in rural

Colombia. *International Quarterly of Community Health Education*, 7(3), 211-223.

_____ 1987. Preparing to work in a multicultural society. *Canadian Nurse*, 1987(Sep), 31-32.

MacKay, K.T. 1987. Asian aquacultural research challenges for 2000 A.D. Paper presented at the Asian Science and Technology Congress 1987, Kuala Lumpur, 14-17 October 1987. IDRC, Singapore. Mimeo, 12 p.

_____ 1987. Sweet potato, small farmers and need for cooperative research. Paper presented at the International Sweet Potato Workshop, BayBay, 20-24 May 1987. IDRC, Singapore. Mimeo, 13 pp.

_____ 1988. Why do on-farm rice fish research? Paper presented at the Rice Fish Farming Research and Development Workshop, Ubon, Thailand, 21-25 March 1988. IDRC, Singapore. Mimeo, 10 pp.

MacKay, K.T., Chapman, G., Sollows, J., Niran Thongpan. 1987. Rice fish culture in North East Thailand: stability and sustainability (rev. ed.). Paper presented at the 6th International Conference of the International Federation of Organic Agriculture Movements, Santa Cruz, CA, USA, 18-21 August 1986. IDRC, Singapore. Mimeo, 26 pp.

Omari, I., Moshia, H.J. 1987. Quality of primary education in Tanzania. Man Graphics, Nairobi, Kenya. 127 pp.

Rached, E., Loevinsohn, M. 1987. Soil microbiology: state of the art and AFNS priorities. IDRC, Cairo. Mimeo, 16 pp.

Riley, K.W. 1988. Oilseeds research and development in Bhutan: a report. IDRC, New Delhi. Mimeo, 42 pp.

Riley, K.W., Belayneh, H. [n.d.] Niger seed: *Guizotia abyssinica* Cass. In Oil crops in the world: their breeding and utilization. IDRC, New Delhi. Mimeo.

Riley, K.W., Getinet, A. 1987. Oilseeds germplasm collection in Ethiopia. *Germplasm Newsletter*, 14(Apr), 19-23.

Sastry, C.B. 1987. Agroforestry models and fast growing trees: some observations. Paper presented at the Seminar on Trees and Mycorrhiza, Kuala Lumpur, 13-17 April 1987. IDRC, Singapore. Mimeo, 6 pp.

Schmidt, O.G. 1988. Analysis of progress and achievements in regional dehulling projects. Paper presented at the International Workshop on Policy, Practice and Potential Relating to Uses of Sorghum and Millets, Bulawayo, 8-12 February 1988. IDRC, Nairobi. Mimeo, 17 pp.

Vicencio, R. 1987. Local resources for a human environment. In *Research, resources, and the environment in Third World development*. University of Waterloo, Waterloo, Ont. 71-77.

Weber, E.J. 1987. Understanding Third World food systems. *Canadian Institute of Food Science and Technology Journal*, 20(4), 216-219.

Wing, C.D. 1987. IDRC Information Sciences Division and South Asia. In *Handbook of libraries, archives and information centres in India*. Information Industry Publications, 4, 305-312.

Young, R.H. 1987. Post-harvest fisheries research and the food system in developing countries. Paper presented at the Workshop on Post-Harvest Fishery Losses, Kingston, R.I., 13-16 April 1987. IDRC, New Delhi. Mimeo, 24 pp.

Zaki, A. 1987. Problématique de la recherche forestière en Afrique francophone et aide internationale. CRDI, Dakar. Mimeo, 15 pp.

Publications/Research supported by IDRC

Periodicals¹

Abstract seri/Jaringan Informasi Perikanan Indonesia. Indonesian Fisheries Information System, Jalan Salemba Ray No. 16, Jakarta, Indonesia.

Abstracts on cassava. Communications and Information Support Unit, Centro Internacional de Agricultura Tropical, Apartado Aéreo 6713, Cali, Colombia.

Abstracts on field beans. Communications and Information Support Unit, Centro Internacional de Agricultura Tropical, Apartado Aéreo 6713, Cali, Colombia.

AGE current awareness service. Asian Information Center for Geotechnical Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok 10501, Thailand.

AGE news: a quarterly publication of the Asian Information Center for Geotechnical Engineering. Asian Information Center for Geotechnical Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok 10501, Thailand.

AgInfo link. Agricultural Information Bank for Asia, Southeast Asian Regional Center for Graduate Study and Research in Agriculture, College, Laguna 3720, the Philippines.

ANAI index: African Network of Administrative Information/Index ANAI: Réseau africain d'information administrative. Centre africain de formation et de recherche administratives pour le développement, B.P. 310, Tanger, Maroc.

ANAI newsletter: African Network of Administrative Information/Lettre d'information ANAI: Réseau africain d'information administrative. Centre africain de formation et de recherche

¹Available on request from the address given.

- administratives pour le développement, B.P. 310, Tanger, Maroc.
- Bannanukrom tangkankaset [Thai agricultural bibliography]*. Kasetsart University, Bangkok 10900, Thailand.
- Bibliographical series on coconut*. Coconut Information Centre, Coconut Research Institute, Lunuwila, Sri Lanka.
- Bibliographie sur la population au Sahel*. Institut du Sahel, B.P. 1530, Bamako, Mali.
- Bibliography series*. Brackishwater Aquaculture Information System, Southeast Asian Fisheries Development Center, P.O. Box 256, Iloilo, the Philippines.
- Boletín bibliográfico*. Centro Nacional de Información Agropecuaria, Secretaría Ejecutiva de Planificación Sectorial Agropecuaria y de Recursos Naturales Renovables, Apartado 10094, San José, Costa Rica.
- Boletín bibliográfico*. Consejo Nacional de Población, Centro de Documentación, Camilo Carrillo 114, Jesus Maria, Apartado 10285, Lima, Peru.
- Boletín de alerta*. Centro de Documentación, Centro Latinoamericano de Administración para el Desarrollo, Apartado Postal 4181, Caracas 1010-A, Venezuela.
- Boletín de resúmenes*. Centro de Documentación, Centro Latinoamericano de Administración para el Desarrollo, Apartado Postal 4181, Caracas 1010-A, Venezuela.
- Boletín documental*. Centro de Documentación e Información Agrícola, Facultad de Agronomía, Universidad de San Carlos de Guatemala, Guatemala.
- Brackishwater aquaculture abstracts*. Brackishwater Aquaculture Information System, Southeast Asian Fisheries Development Center, P.O. Box 256, Iloilo, the Philippines.
- BRAIS newsletter*. Brackishwater Aquaculture Information System, Southeast Asian Fisheries Development Center, P.O. Box 256, Iloilo, the Philippines.
- Buffalo Bulletin*. [English and Thai versions.] International Buffalo Information Center, Kasetsart University, Bangkok 10900, Thailand.
- Bulletin du CIPEA*. Centre international pour l'élevage en Afrique, B.P. 5689, Addis-Abeba, Éthiopie.
- CARISPLAN abstracts*. Caribbean Documentation Centre, Office for the Caribbean, Economic Commission for Latin America and the Caribbean, P.O. Box 1113, Port-of-Spain, Trinidad.
- Catálogo colectivo*. Red Latinoamericana de Documentación e Información en Administración Pública, Centro Latinoamericano de Administración para el Desarrollo, Apartado Postal 4181, Caracas 1010-A, Venezuela.
- COCONIS newsletter*. Coconut Information Centre, Coconut Research Institute, Lunuwila, Sri Lanka.
- Contact-O: boletín Interdoc*. Instituto Latinoamericano de Estudios Transnacionales, Casilla 16637, Correo 9, Santiago, Chile.
- Contact-O: Interdoc bulletin*. Centre for Development of Institutional Technology, P.O. Box 5249, New Delhi, India.
- Current awareness bulletin*. Caribbean Documentation Centre, Office for the Caribbean, Economic Commission for Latin America and the Caribbean, P.O. Box 1113, Port-of-Spain, Trinidad.
- Date palm journal*. FAO Regional Project for Palm and Dates Research Centre in the Near East and North Africa, P.O. Box 10085 Karradah Al-Sharkiyah, Baghdad, Iraq.
- Development planning newsletter*. Economic and Social Commission for Asia and the Pacific, United Nations Building, Rajadamnern Avenue, Bangkok 10200, Thailand.
- Devindex Togo: index to literature on economic and social development in Togo/index de la littérature sur le développement économique et social au Togo*. United Nations Economic Commission for Africa, P.O. Box 3001, Addis Ababa, Ethiopia.
- DMR bulletin*. Department of Medical Research, Ministry of Health, 5 Zafar Shah Road, Dagon P.O., Rangoon, Burma.
- DMR current awareness service*. Central Biomedical Library, Department of Medical Research, Ministry of Health, 5 Zafar Shah Road, Dagon P.O., Rangoon, Burma.
- Eastern Africa economic review*. Economics Department, University of Nairobi, P.O. Box 47678, Nairobi, Kenya.
- Faba bean in AGRIS*. International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria.
- FABIS newsletter*. Training and Communications Program, International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria.
- Feedback: ICOMP newsletter on the management of population programmes*. International Council on Management of Population Programmes, 158 Jalan Dahlia, Taman Uda Jaya 68000 Ampang, Kuala Lumpur, Malaysia.
- Glimpse*. Documentation and Information Service Centre, International Centre for Diarrhoeal Disease Research/Bangladesh, G.P.O. Box 128, Dhaka 2, Bangladesh.
- ICDM newsletter*. Information Centre for Development Policy Modelling, Systems Research Institute, 17-A Gultekdi, Pune 411037, India.

IFORD Biblio-Info. Centre de documentation, Institut de formation et de recherche démographiques, B.P. 1556, Yaoundé, Cameroun.

Indice de resúmenes analíticos sobre educación en América Latina y el Caribe. Centro de Investigación y Desarrollo de la Educación, Erasmo Escala No. 1825, Santiago 1, Chile.

INFIS bibliografi seri/Jaringan Informasi Perikanan Indonesia. Indonesian Fisheries Information System, Jalan Salemba Ray No. 16, Jakarta, Indonesia.

INFIS manual seri/Jaringan Informasi Perikanan Indonesia. Indonesian Fisheries Information System, Jalan Salemba Ray No. 16, Jakarta, Indonesia.

INNERTAP renewable energy index. Information Network on New and Renewable Energy Resources and Technologies for Asia and the Pacific, Regional Secretariat, Energy Research and Development Center, Philippine National Oil Company, Quezon City, the Philippines.

Irricab: current annotated bibliography of irrigation. Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, U.K.

Irrinews. International Irrigation Information Center, Volcani Center, P.O. Box 49, Bet Dagan, Israel.

ISDS-SEA bulletin. International Serials Data System, Regional Centre for Southeast Asia, National Library of Thailand, Samsen Road, Bangkok, Thailand.

Journal of ferrocement. International Ferrocement Information Center, Asian Institute of Technology, P.O. Box 2754, Bangkok 10501, Thailand.

LENS newsletter. Documentation Unit, Lentil Experimental News Service, International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria.

Lettre d'information/RESADOC. Division documentation information, Centre de coordination RESADOC/MALI, Institut d'économie rurale, B.P. 258, Bamako, Mali.

LILACS-SP: literatura latinoamericana en ciencias de la salud, salud pública. Biblioteca Regional de Medicina y Ciencias de la Salud, Centro Latinoamericano de Información en Ciencias de la Salud, P.O. Box 20831, CEP 04023, São Paulo, Brazil.

Medical laboratory newsletter. Chiang Mai University, Chiang Mai, Thailand.

Microfichas REDUC. Centro de Investigación y Desarrollo de la Educación, Erasmo Escala No. 1825, Santiago 1, Chile.

Mosquito borne diseases bulletin. Museum and Reference Center of the Tropical Medicine and Public Health Project, Faculty of Tropical Medicine, Mahidol University, 420/6 Rajvithi Road, Bangkok 10400, Thailand.

Naga: the ICLARM quarterly. Library, International Center for Living Aquatic Resources Management, MC P.O. Box 1501, Makati, Manila, the Philippines.

Nenadates news. FAO Regional Project for Palm and Dates Research Centre in the Near East and North Africa, P.O. Box 10085 Karradah Al-Sharkiyah, Baghdad, Iraq.

Network news. Caribbean Technological Consultancy Services Network, Caribbean Development Bank, P.O. Box 408, Wildey, St Michael, Barbados.

Noticias de la red. Red de Documentación en Educación para América Latina y el Caribe, Centro de Investigación y Desarrollo de la Educación, Erasmo Escala No. 1825, Santiago 1, Chile.

PANESA newsletter. Pasture Network for Eastern and Southern Africa, International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ethiopia.

PIC newsletter. Pacific Information Centre, University of the South Pacific Library, P.O. Box 1168, Suva, Fiji.

PLANINDEX: resúmenes de documentos sobre planificación. Centro Latinoamericano de Documentación Económica y Social, Comisión Económica para América Latina, Casilla 179-D, Santiago, Chile.

Rachis. [Arabic and English versions.] International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria.

Resindex: bibliographie sur le Sahel. Institut du Sahel, B.P. 1530, Bamako, Mali.

Resúmenes analíticos en educación. Centro de Investigación y Desarrollo de la Educación, Erasmo Escala No. 1825, Santiago 1, Chile.

Resúmenes analíticos sobre pastos tropicales. Unidad de Biblioteca y Servicios de Documentación, Centro Internacional de Agricultura Tropical, Apartado Aéreo 6713, Cali, Colombia.

RIC bulletin. Rattan Information Centre, Forest Research Institute, Kepong, Selangor, Malaysia.

Root crops digest. Philippine Root Crops Information Service, Philippine Root Crop Research and Training Center, Visca, Leyte, the Philippines, 7127-A.

SAFIS extension manual series. Liaison Office, Southeast Asian Fisheries Development Center, 956 Rama IV Road, Olympia Building, Bangkok, Thailand.

Selección de documentos CLAVE. Centro Latinoamericano de Administración para el Desarrollo, Apartado Postal 4181, Caracas 1010-A, Venezuela.

Servicio de alerta. Centro de Documentación, Asociación Dominicana Pro-bienestar de la Familia,

Socorro Sánchez No. 64, P.O. Box 1053, Santo Domingo, Dominican Republic.

Sistema de Información Biomédica Regional Andina. Federación Panamericana de Asociaciones de Facultades/Escuelas de Medicina, Bogotá, Colombia.

Soybean rust newsletter. Office of Information Services, Asian Vegetable Research and Development Center, P.O. Box 42, Shanhua, Tainan 741, Taiwan.

Tropical grain legume bulletin. International Grain Legume Information Centre, International Institute of Tropical Agriculture, P.M.B. 5320, Ibadan, Nigeria.

TVIS news. Tropical Vegetable Information Service, Asian Vegetable Research and Development Center, P.O. Box 42, Shanhua, Tainan 741, Taiwan.

Waterlines. Intermediate Technology Publications Ltd., 9 King Street, London WC2E 8HN, U.K.

Wheat, barley and triticale bibliography/Bibliografía de trigo, cebada y triticale. Departamento de Comunicaciones, Centro Internacional de Mejoramiento de Maíz y Trigo, Apartado Postal 6-641, 06600 México, D.F., Mexico.

Other publications and texts

Academia de Humanismo Cristiano. 1987. Informe de investigación sobre talleres de educadores 1986-1987: escritos sobre experimentación — investigación en talleres de educadores. Programa Interdisciplinario de Investigaciones en Educación, Santiago, Chile.

Acra, A., Jurdi, M., Mu'alleem, H., Karahagopian, Y., Raffoul, Z. 1987. Solar ultraviolet radiation: assessment and application for drinking water disinfection. Department of Environmental Health, American University of Beirut, Beirut, Lebanon. 205 pp.

Adika, G.H. 1987. Manual of photomapping. Regional Centre for Services in Surveying, Mapping and Remote Sensing, Nairobi, Kenya. 84 pp.

African Training and Research Centre in Administration for Development (CAFRAD). 1987. Introducing the African network of administrative information: background, objectives and prospects. CAFRAD, Tangier, Morocco. 24 pp.

Alvarado M., R., Pemjeam G., A., Aguiló M., A. 1987. Prevalencia de bebedores problema entre los adultos consultantes por morbilidad en postas rurales de la VI Región. Cuadernos de Medicina Social, 28(3), 113-121.

Amara Soonthornhada, Uraiwan Kanungsukkasem, Sirinan Saiprasert. 1987. Time allocation study on rural women: an analysis of productive and reproductive roles. Institute for Population and Social Research, Mahidol University, Bangkok, Thailand. 85 pp.

Amir, P., Knipscheer, H.C. 1987. Extension and its economic analysis. In Proceedings of a seminar on on-farm animal research. Winrock International Institute for Agricultural Development, Morrilton, AR, USA. 116 pp.

Arellano, J.P. 1987. Comparación de los planes de estabilización de Argentina, Brazil y Perú. Corporación de Investigaciones Económicas para Latinoamérica, Santiago, Chile. 23 pp.

Atallah, S., Cheniti, S., Labidi, A. 1987. Contrôle de la pollution des eaux de la Medjerda. Ministre de la santé publique, Tunis, République tunisienne.

Avilés, J., Alain, J.M. 1987. Thésaurus multilingue international en administration publique. Corporation de l'encyclopédie internationale d'administration publique, Montréal, PQ, Canada. 455 pp.

Babarovic, I., Camapana, P., Diaz, C., Duran, E. 1987. Campesinado Mapuche y procesos socio-económicos regionales. Academia de Humanismo Cristiano, Santiago, Chile. 243 pp.

Badiane, E.H.M., Ba, G.D., Dieng, B., Thiakane, S.E. 1987. Éléments de bibliographie médico-sanitaire. Ministère de la santé publique, Dakar, Sénégal. 89 pp.

Barbato de Silva, C., Paolino, C. 1987. CINVE: una década de cambio en la lechería Uruguaya (1975-1985). Centro de Investigaciones Económicas, Montevideo, Uruguay. 320 pp.

Barrig, M., Fort, A. 1987. Ciudad de las mujeres: pobladoras y servicios — el caso de El Agustino. Centro-SUMBI, Lima, Perú. 159 pp.

Bunting, A.H. 1987. Agricultural environments: characterization, classification and mapping. In Proceedings of the Rome Workshop on Agro-ecological Characterization and Mapping, 14-18 April 1986. Commonwealth Agricultural Bureaux International, Oxford, U.K. 335 pp.

Campodónico, H. 1988. Situación y perspectivas de la minería del cobre. Centro de Estudios y Promoción del Desarrollo, Lima, Perú. 236 pp.

Caribbean Development Bank. 1987. Technical information package on solar drying of lumber. Caribbean Development Bank, St Michael, Barbados. 23 pp.

Carrington, L.D. 1987. Creole discourse and social development. [Economic Commission for Latin America and the Caribbean, Santiago, Chile.] 110 pp.

Centre de recherches en sciences humaines et sociales. 1987. Organisation des soins de santé primaires par la collectivité haïtienne. Centre de recherches en sciences humaines et sociales, Port-au-Prince, Haïti. 165 pp.

Centro Andino de Acción Popular (CAAP). 1987. Memoria: curso taller Latinoamericano de

- capacitación en investigación de procesos de aprendizaje y comunicación en sectores indígenas, Cayambe, 26-31 julio 1987. CAAP, Quito, Ecuador. 156 pp.
- Centro Brasileiro de Estudos Latino-Americanos. 1987. National communication policy — Brazil. Centro Brasileiro de Estudos Latino Americanos, Rio de Janeiro, Brazil.
- Cerceda, L.E., Cifuentes, M. 1987. Qué comen los pobres: hábitos alimenticios, estrategias de compra y mecanismos de sobrevivencia. Instituto de Sociología, Pontificia Universidad Católica de Chile, Santiago, Chile. 180 pp.
- Chaouki, M.L., Maoui, R., Benmiloud, M. 1987. Aspects épidémiologiques des troubles liés à la carence iodée sévère. *Revue algérienne de médecine*, 6, 7-13.
- Chiang Mai University. 1987. Proceedings of the Asian Regional Workshop on International Contract Labour, 16-20 November 1987. Chiang Mai University, Chiang Mai, Thailand.
- Commission internationale de juristes (CIJ). 1987. Services juridiques en milieu rural (Afrique de l'Ouest) : rapport d'un séminaire, Lomé, 9-13 février 1987. CIJ, Genève, Suisse. 154 pp.
- Coulbaly, N.O. 1987. Factors affecting adoption of agricultural technologies by small farmers in Sub-Saharan Africa: the case of new varieties of cowpeas around the agricultural research station of Cinzana, Mali. [Department of Agricultural Economics, Michigan State University, East Lansing, MI, USA.] 124 pp.
- Currie, J. 1987. International Development Research Centre (IDRC) assists Government of Trinidad and Tobago to improve land registration information system. *Micro-Notes*, 15(3), 16-17, 20.
- Das Gupta, M. 1987. Selected discrimination against female children in rural Punjab, India. *Population and Development Review*, 13(1), 77-100.
- El Sawy, M.F., Duncan, J., Amer, S., Ruweini, H.E., Brown, N. 1987. Molluscidal properties of *Ambrosia maritima* L. (Compositae): a comparative field trial using dry and freshly harvested plant material. *Tropical Medicine and Parasitology*, 38, 101-105.
- Entel, A., Braslavsky, C. 1987. Cartas al presidente (al Ministro de Educación, al país). Ediciones de la Flor, Buenos Aires, Argentina. 207 p.
- Escover, E.M., Salon, O.T., Smith, I.R. 1987. Economics of tilapia fingerling production and marketing in the Philippines. *Aquaculture and Fisheries Management*, 18, 1-13.
- Ferraz, E.M. 1987. Determinants of perinatal mortality and low birthweight in a city of Northeast Brazil. School of Hygiene and Public Health, Johns Hopkins University, Baltimore, MD, USA. 158 pp.
- French-Davis, R., Raczinsky, D. 1987. Impact of global recession on living standards. Corporación de Investigaciones Económicas para Latinoamérica, Santiago, Chile. 108 pp.
- Figueros, M., Padilla, N., Gutiérrez, H. [1986.] Rotavirus en las diarreas infantiles de Honduras. [Departamento de Microbiología, Universidad Nacional Autónoma de Honduras, Tegucigalpa, Honduras.] 18 pp.
- Florenzano U., R., Pernjean G., A., Seijas B., D. 1987. Prevalencia del uso de alcohol y de otros diagnósticos relacionados al beber problema en servicios de urgencia de Santiago de Chile. *Revista Médica de Chile*, 115, 825-829.
- Forteza, A., Paolino, C. 1987. Complejo agroindustrial lácteo: marcos analíticos. Centro de Investigaciones Económicas, Montevideo, Chile. 38 pp.
- Fuenzalida, V. 1987. Revisión de la experiencia de CENECA en educación para la televisión. [Centro de Investigación y Expresión Cultural y Artística, Santiago, Chile.] 132 pp.
- Gajardo, M., De Andraca, A.M. 1987. Estructura y funcionamiento de la escuela en las zonas rurales. Facultad Latinoamericana de Ciencias Sociales, Santiago, Chile. 116 pp.
- Gasana, O.N., Desta, A. 1987. Index des documents microfichés au Togo. Service de la documentation, Centre international de l'élevage pour Afrique, Addis-Abeba, Éthiopie. 50 pp.
- Gasana, O.N., Mekonnen, A. 1987. Index des documents microfichés par l'équipe CIPEA/CRDI au Niger. Service de la documentation, Centre international de l'élevage pour Afrique, Addis-Abeba, Éthiopie. 149 pp.
- Giacaman, M., Sanzana, P. 1987. Campesinado chileno: bibliografía. Grupo de Investigaciones Agrarias, Santiago, Chile. 141 pp.
- Hainsworth, G., Poerbo, H. 1987. Local resource management towards sustainable development: a summary of the proceedings of the IDRC-EMDI-ITB International Conference, Bandung, Indonesia, 19-22 May 1986. School for Resource and Environmental Studies, Dalhousie University, Halifax, NS, Canada. 69 pp.
- Hall, J.M., Fisher, B.E., Walls, C.C., Hall, S.L., Johnson, H.P. 1987. Vertical distribution and alternation of dikes in a profile through the Troodos ophiolite. Turnergraphic Ltd, Basingstoke, U.K. 3 pp.
- Hall, J.M., Walls, C., Williamson, M., Wang, Bring Xi. 1987. Depth trends in magnetic properties in an area of prolonged cold seawater drawdown in uppermost Troodos-type oceanic crust. *Canadian Journal of Earth Sciences*, 24(5), 941-952.
- Hernández-Rodríguez, H.G. [1987.] Encuesta sobre conocimientos, prácticas y actitudes de los estudiantes de la Universidad Autónoma de San Luis

- Potosí (México) sobre anticoncepción 1986-1987. Facultad de Medicina, Universidad Autónoma de San Luis Potosí, San Luis Potosí, Mexico. 50 pp.
- Hla Kyi, Daw, Nyunt Nyunt Swe, Daw. 1987. Annotated bibliography of health literature on Burma (1981-85). [Publications Division, Department of Medical Research, Rangoon, Burma.]
- Institute of Geography. 1987. Proceedings of International Workshop on Geographic Information System, Beijing, 25-28 May 1987. Chinese Academy of Science and State Planning Commission, Beijing, China.
- Institute of Southeast Asian Studies. 1987. ASEAN: the tasks ahead. Institute of Southeast Asian Studies, Singapore. 80 pp.
- Instituto Latinoamericano de Estudios Transnacionales (ILET). 1987. Contact-O: cómo diseñar redes de comunicación. ILET, Santiago, Chile. 16 pp.
- International Centre for Integrated Mountain Development (ICIMOD). 1987. Mountain agriculture and crop genetic resources: report of the International Workshop on Mountain Agriculture and Crop Genetic Resources. ICIMOD, Kathmandu, Nepal. 47 pp.
- International Federation for Family Health (IFFH). 1987. IFFH study of the intrauterine quinacrine pellet method of non-surgical female sterilization: IFFH overall research report. IFFH, Bandung, Indonesia.
- International Fund for Agricultural Development (IFAD). 1987. Strengthening national wheat and rice research systems. IFAD, Rome, Italy. 55 pp.
- International Livestock Centre for Africa (ILCA). 1987. Index to livestock literature microfiched by the ILCA/IDRC team in the Gambia. Documentation Services, ILCA, Addis Ababa, Ethiopia. 41 pp.
- Islam, M.R. 1985. Choice of technique in cotton textiles and its impact on employment in Bangladesh. [University of Strathclyde, Glasgow, U.K..] 307 pp.
- Kann, U., Lenglet, F., Mannathoko, C., Nhlekisana, P., Macheng, V. 1986. Educational research in Botswana 1977-1986: an annotated bibliography. University of Botswana, Gaborone, Botswana.
- Kong, S.K., Chi, I.C., Cho, A.J., Meng, K.H., Wilkens, K.L. 1987. Vasectomy and cardiovascular deaths in Korean men. Institute for Population and Health, Seoul, South Korea. 32 pp.
- Kwankam, S.Y. 1987. Advanced communication technologies in education. Paper presented at the Workshop on Distance Learning, University of Yaoundé, June 8-13 1987. Université de Yaoundé, Yaoundé, Cameroon. 70 pp.
- Lam, S.K., Devi, S., Pang, T. 1987. Detection of specific IgM in dengue infection. Southeast Asian Journal of Tropical Medicine and Public Health, 18(4), 532-538.
- Larrea M., C., Espinosa, M., Sylva, P. 1987. Banano en el Ecuador: transnacionales, modernización y subdesarrollo. Corporación Editora Nacional, Quito, Ecuador. 285 pp.
- Lawani, S.M. 1987. Ortega hypothesis, individual differences, and cumulative advantage. *Scientometrics*, 12(5-6), 321-323.
- Leal Q., F.J., Franco R., G., Cordoba C., F., Gómez, E.C., Rodríguez, G. 1987. Agentes etiológicos de la enfermedad diarreica aguda y su relación con el estado nutricional. Hospital Infantil Universitario "Lorencita Villegas de Santos," Bogotá, Colombia. 68 pp.
- Lee, H.I., Cheong, W.H. [n.d.] Preliminary *Aedes aegypti* larval survey in the suburbs of Kuala Lumpur City. *Tropical Biomedicine*, 4, 111-118.
- Leslie, J. 1987. Time costs and time savings to women of the child survival revolution. International Center for Research on Women, Washington, DC, USA. 41 pp.
- Lowe, H., Whyte, M., Jackson, C. 1987. Caribbean Energy Information System (CEIS): an assessment of the resources and needs of the participating countries; a mission report. Commonwealth Science Council, Commonwealth Secretariat, London, U.K. 93 pp.
- Loxley, J., Kyesimira, Y. [1986.] Economic adjustment and long term development in Uganda. IDRC, Ottawa, ON, Canada. Mimeo, 140 pp.
- Macadar, L., Lorenzo, F., Laens, S., Hintermeister, A. 1987. Proyecto: reestructuración económica (Uruguay) — informe de investigación. Centro de Investigaciones Económicas, Montevideo, Uruguay.
- Magendzo, S., Serrano, A. 1987. Transferencia y apropiación en proyectos de educación popular: identidad del educador popular — seis relatos de vida. [Academia de Humanismo Cristiano, Santiago, Chile.] 96 pp.
- Mamon, C.R., Rose, R., Maligalig, R.F., Bayabos, L., Barril, M. 1987. Survey on selected Philippine agricultural research information systems and services: executive summary. [Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development, Los Baños, the Philippines.] 32 pp.
- Miranda O., M. 1987. Perspectivas y obstáculos para implementar un programa de educación para la recepción activa. Centro de Indagación y Expresión Cultural y Artística, Santiago, Chile. 76 pp.
- Mochebelele, M.T. 1987. Economic analysis of the Lesotho dairy industry: a spatial equilibrium model. College of Graduate Studies and Research, University of Saskatchewan, Saskatoon, SK, Canada. 147 pp.
- Mohd. Shahwahid Haji Othman, Fidelis Edwin Bajau 1987. Profile of the *Bumiputra* rattan furniture

- manufacturing industry in peninsular Malaysia. Rattan Information Centre, Forest Research Institute, Kepong, Malaysia. 23 pp.
- Mumba, E.C. 1987. Integrated nonformal education in Zambia: the case of Chipata District. University of British Columbia, Vancouver, BC, Canada. 225 pp.
- Muñoz, O., Ortega, H. 1987. Agricultura chilena y la política económica 1974-86. Corporación de Investigaciones Económicas para Latinoamérica, Santiago, Chile. 38 pp.
- Nelson, J.G., Knight, K.D. 1987. Research, resources and the environment in Third World development. Department of Geography, University of Waterloo, Waterloo, ON, Canada. 218 pp.
- Onibokun, A.G., Egunjobi, L. 1987. Public utilities and social services in Nigerian urban centres: problems and guidelines for action. Nigerian Institute of Social and Economic Research, Ibadan, Nigeria. 25 pp.
- Onn, F.C. 1987. Household demographic and economic impact of population development programs in three program areas in Peninsular Malaysia (rev. ed.). [University of Malaya, Kuala Lumpur, Malaysia.] 145 pp.
- Pang, T. 1987. Dengue haemorrhagic fever: virus or host response? *BioEssays*, 6(3), 141-144.
- _____ 1987. Ilmu pengetahuan dan teknologi dalam pembangunan ekonomi: suatu pandangan umum. *Analisa*, 3, 307-318.
- _____ 1987. Studies into the immunopathogenesis and laboratory diagnosis of dengue haemorrhagic fever. *Annals of the Academy of Medicine*, 16(4), 612-616.
- Pemjean G., A., Florenzano U., R., Manzia, J., Orpinas K., P., Urbina G., I. 1987. Prevalencia del beber problema en tres servicios de medicina interna de Santiago de Chile. *Revista Médica de Chile*, 115, 731-736.
- Poujol, E.R., Figueroa, M., Galo, C.M., Banegas, M., Alvarenga, S.T. [1986.] Bacterias productoras de diarreas infantiles en Honduras. Departamento de Microbiología, Universidad Nacional Autónoma de Honduras, Tegucigalpa, Honduras. 27 pp.
- Pusat Penelitian Atma Jaya. 1987. Early detection of high risk pregnancy. Pusat Penelitian, Universitas Katolik Indonesia, Jakarta, Indonesia. 10 pp.
- Rajaratnam, A. 1987. Community water purification practices using *Strychnos potatorum*. [Christian Medical College and Hospital, Tamil Nadu, India.] 45 pp.
- Rana, P.B., Albuero, F.A. 1987. Economic stabilization policies in ASEAN countries. ASEAN Economic Research Unit, Institute of Southeast Asian Studies, Singapore. 169 pp.
- Red Latinoamericana de Documentación en Educación. 1987. Resúmenes analíticos sobre educación y alfabetización en contextos heterolingüísticos. Red Latinoamericana de Documentación e Información en Educación, Santiago, Chile. 258 pp.
- RESADOC. 1987. Catalogue collectif de documents de références. Centre de coordination du RESADOC, Bamako, Mali.
- Rodríguez Villacorta, L., García de Fernández, J. 1987. Resúmenes analíticos sobre población. Centro de Documentación en Comunicación Educativa, Lima, Peru. 120 pp.
- Roy-Campbell, Z.M., Qorro, M.P. 1987. Survey of the reading competence in English of secondary school students in Tanzania. Department of Foreign Languages and Linguistics, University of Dar es Salaam, Dar es Salaam, Tanzania. 150 pp.
- Sahni, B.S. 1987. Issues in public sector analysis. Shastri Indo-Canadian Institute, Calgary, AL, Canada. 491 pp.
- Sanchez, A. 1987. Non-tariff barriers and trade in ASEAN. Institute of Southeast Asian Studies, Singapore. 131 pp.
- Satia, B.P.N. 1987. Reconnaissance survey of aquaculture practices in the West and North West Provinces of the Republic of Cameroon. Department of Fisheries, Ministry of Livestock Fisheries and Animal Industries, Yaoundé, Cameroon. 56 pp.
- Schoemaker, J.F. 1987. Stratégies de survie et procréation : une étude des bidonvilles d'Asunción (Paraguay). Université de Montréal, Montréal, PQ, Canada. 325 pp.
- Sénégal, ministère de la Santé publique. 1987. Bibliographie spéciale sur le paludisme. Ministère de la Santé publique, Dakar, Sénégal. 15 pp.
- Suan Sim, T., Dutka, B.J. 1987. Coliphage counts: are they necessary to maintain drinking water safety? *MIRCEN Journal*, 3, 223-225.
- Sukhit Phaosavasdi. 1987. Syphilis in pregnancy: a study in Thailand. Department of Obstetrics and Gynecology, Chulalongkorn University, Bangkok, Thailand. 132 pp.
- Swanberg, U.S.O., Fredrikzon, B., Gebre-Hiwot, B., Tadesse, W.W. 1987. Sorghum in a mixed diet for preschool children: good acceptability with and without simple reduction of dietary bulk. *Journal of Tropical Pediatrics*, 33, 181-185.
- Tadros, H.R., Feteeha, M., Hibbard, A. 1987. Squatter produce market vendors in Egypt. Social Research Center, American University in Cairo, Cairo, Egypt. 92 pp.
- Tshibaka, T.B. 1986. Effects of trade and exchange rate policies on agriculture in Zaire. International Food Policy Research Institute, Washington, DC, USA. 65 pp.
- Tun Pe, Phillips, R.E., Warrell, D.A., Moore, R.A., Tin Nu Swe. 1987. Acute and chronic pituitary

failure resembling Sheenan's syndrome following bites by Russell's viper in Burma. *Lancet*, 1987(Oct), 763-767.

Tun Pe, Tin Nu Swe, Myint Lwin, Warrell, D.A., Than Win. 1987. Efficacy of tourniquets as a first aid measure for Russell's viper bites in Burma. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 81, 403-405.

Université de Bangui. 1986. Actes du Séminaire national sur la contribution des sciences sociales au développement de la République centrafricaine, Bangui, du 7 au 12 avril 1986. Direction des affaires académiques et de la coopération, Université de Bangui, Bangui, République centrafricaine.

University of the South Pacific. 1987. Pacific collection periodicals. Pacific Information Centre, University of the South Pacific, Suva, Fiji. 144 pp.

Yonsei University. 1988. Intra-industry trade in the Pacific Basin. Yonsei University, Seoul, South Korea.

Zamora, D.V., Gabuelo, W.P., Arisola, A.T. 1987. Grouper abstracts. Brackishwater Aquaculture Information System, Tigbauan, Iloilo, the Philippines. 95 pp.

Zovatto G., D. 1987. Derechos humanos en el sistema interamericano: recopilación de instrumentos básicos. Instituto Interamericano de Derechos Humanos, San José, Costa Rica. 357 pp.