ADVANCED EDUCATION AND TRAINING OPTIONS AVAILABLE TO IDRC

A report prepared for

Special Initiatives Division

International Development Research Centre

16 April 2005

Contract #109320

George Tillman Consulting

CONTENTS

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The forces of globalization, rapidly changing technology, and the increasing importance of knowledge have raised the cost of having low capacity in science, technology, and knowledge for development in developing countries.

- Sara E. Farley

I. Introduction

1. Background

IDRC's mission and programs have always included support for advanced education and training[1] of one kind or another, from awards to individuals pursuing degree programs, to a variety of activities designed to enable individuals to learn and strengthen specialized research skills and methodologies.

The section on Foundations and Principles (para. 58) in the Centre's Corporate Strategy 2005-2010 states:

> ....IDRC has focussed on encouraging and supporting developing country researchers to conduct research in their own institutions. In so doing, it has helped the developing regions **"...to build up the research capabilities, the innovative skills and the institutions required to solve their problems."** In persevering with this focus, the Centre will concentrate on building research capacity principally in terms of improving individual researchers' opportunities to undertake research and the methodologies they use to do it....

The Program Framework 2005-2010 (para. 127) states:

> *Fellowships and awards are a sub-set of the competitive granting modality. At IDRC, these are targeted at young researchers, thus extending the Centre's reach to a group that typically is not covered by "regular" projects, which by their nature are aimed at mid-level and senior researchers and policymakers. A number of PI external reviews pointed to the importance of developing young talent, particularly in emerging fields and methodologies. This process creates the talent pool for other Centre endeavours over time and completes the portion of the Centre's research "life-cycle", which has been relatively neglected for a decade or so. In addition to expanding the resources available to support Canadian graduate students to carry out fieldwork in developing countries, a program will be (re-)created to support developing-country graduate students to undertake fieldwork and/or study in a Canadian university.*

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[1] The phrase "advanced education and training" denotes all education and training activities undertaken by individuals at any time after they have completed secondary education. These activities may or may not result in formal credentials or qualifications.

Surveys by various donor agencies, including IDRC, suggest that training aimed at improving research capacity can also strengthen project and research management skills, ICT skills, participation in research networks, relations with external agencies and donors, and other capacities and capabilities.[2]

Terms of Reference

In contracting the current review of the nature and types of advanced education and training activities, the Centre sought to understand what training options are available for its future efforts to strengthen research capacity in the South. The terms of reference directed that this review:

a) describe the structure and modalities of advanced education and training activities used by agencies and organizations, as identified by IDRC, to strengthen research capacities;

b) describe and discuss issues and concerns related to supporting advanced education and training activities for developing country graduate students and young researchers; and

c) examine how various advanced education and training activities may contribute to IDRC's goal of improving research capacity in the South.

Given the large number of programs supporting diverse forms of training, this review does not attempt an exhaustive study – or even a catalogue – of all experiences with advanced education and training activities aimed at improving research capacity in the South. It tries to present a representative overview of main lessons learned and a summary of practicable options.

Procedure

A brief consultation with SID/CTA staff, enquiries with knowledgeable contacts, and material in my own files (including previous reviews for IDRC) yielded a broad list of organizations and agencies with programs in support of training researchers and of developing and strengthening research capacity, as well as general reviews of training and capacity-building in the South. A combination of information from organizations' Websites, and of e-mail correspondence with persons responsible for some programs produced the bulk of information used for this review. In addition, references from contacts and selective Google searching helped in locating a limited selection of additional relevant reviews and policy documents.

I also had discussions in person, by telephone and by e-mail with ten IDRC staff (including two regional office directors and a regional office Program Officer), two former IDRC staff, and two representatives of Universalia Management Group, which is conducting a study of capacity building for the Evaluation Division. Each person discussed the strengths, weaknesses and omissions in IDRC's support to training to date, and suggested options for future support.

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[2] cf. *Project Leader Tracer Study: Key Findings*. 1996; *Enhancing Research Capacity for Development*. 2001.

Information gathering and discussions took place over a period of four to five weeks, during which I flagged and made initial notes of activities and initiatives that seemed particularly interesting in their scope and objectives, and of salient assessments and points of policy. Although after this period information continued to trickle in from individual contacts, I began more careful analysis of the flagged items.

A first draft of this report was delivered to SID for comments and suggestions.

Constraints

The sheer volume of information available comprised the chief constraint on this project, and dictated that it not attempt to develop a complete picture of all programs that support the training of researchers of, and concerned with, the South. The period of some seven weeks allocated for the review, however, proved adequate for developing an indicative picture of the main types of support for training activities. But it is far from exhaustive, and particularly limited with respect to information and communications technology (ICT)-supported distance learning.

2. The Context

2.1 The global environment of training for development

During the post-World War II reconstruction period, bilateral agreements, multilateral accords and private foundations initiated scholarship programmes aimed at creating a relatively small group of highly-qualified graduates destined for responsible positions in government and other public institutions of the South. As advanced education came to be understood as a core factor in social and economic development, bilateral and multilateral aid began to support building higher education institutional capacity in countries of the South. In the 1970s and 1980s this trend included support of joint research among higher education institutions in the North and South, and of global research networks. These activities had two main institutional effects: they further strengthened professional contacts among university researchers around the world, and dramatically increased the opportunities for university studies in countries of the South.

Over the last twenty years, severe budget constraints have weakened many higher education institutions. At the same time, information and communications technology (ICT) has made contact among institutions faster and more complex, complementing physical movement by faculty and students. Globalization and the development of the knowledge economy have created a growing demand for highly-qualified personnel, which opens increased possibilities for international mobility of researchers, while requiring that their training become more job-related and relevant. Doctoral study continues to require the production of a piece of original research, but ability to work in teams and projects, international studies and networking, inter- and multidisciplinary capability, and good IT and communication skills are also necessary.[3] As Sara

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[3] see for example the discussion in *The Europe of Knowledge 2020.*

Farley has noted, "a shift from training and study to a concentration on application and accomplishment" has occurred.[4]

These trends represent only part of a more general consensus that has emerged among many donors and representatives of the South about capacity-building in the South and in particular of the role of science, technology and knowledge for international development. Briefly, the general view is that all programs, projects and activities should give priority to local needs (though only some indicate how and by whom these needs are identified), and should involve South partners and/or recipients in designing, making decisions in, managing and setting priorities (again with only sporadic explanations of how this is to be done).

Similarly, blanket declarations about the importance and necessity of higher education to development and to achieving the Millenium Development Goals echo through many policy and program documents, as does a resolve to ensure that training (including research training) be integrated explicitly and transparently into, or consistent with, the general mandate or mission of organizations. They point to the challenges of globalization and of the knowledge economy, and express nuanced concern with the brain drain, as evidenced by some active measures to encourage return and re-integration of Southern researchers studying and working in the North.

There is also a growing awareness that highly-qualified graduates will find much less opportunity in civil service employment, and that the demand for researchers and scientists is coming increasingly from the private sector. This does not preclude equal attention to building sustainability and reproduction of the professoriate and of the higher education-based researcher corps. As ICT accelerates access to higher education and (research) training, it creates further challenges for the communication and dissemination of knowledge and research results, the privatization of education, competition for students, and ensuring quality of education provision.

Several statements of many can be quoted to illustrate what capacity-building signifies in this environment. The UK Parliamentary Office of Science and Technology[5] argues that: "current approaches to capacity building should be refocused on the network model, operating according to the following principles: responsiveness, (....) coordination, (...) longevity, (...) networks for innovation,(...) and flexibility, (...)." In *Inventing a Better Future*, the InterAcademy Council defines "the S&T capacity of a country as the personnel, infrastructure, investment, and institutional and regulatory framework available to generate activities and acquire scientific knowledge and technological capabilities for addressing with competence and creativity local, national, and international needs."[6] And France's Institut de recherche pour le développement maintains: "Il s'agit de dépasser la logique de transfert des connaissances pour s'intégrer dans une logique d'acquisition des compétences." [7] Training of all kinds, including research training, lies at the core of capacity-building.

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[4] Farley, Sara E. *Support to Science, Technology, and Knowledge for Development.* 2005.

[5] "Scientific capacity in developing countries", POSTnote 216, Parliamentary Office of Science and Technology, March 2004.

[6] InterAcademy Council. *Inventing a Better Future: a Strategy for Building Worldwidecapacities in Science and Technology. Jnauary 2004.*

[7] *IRD brochure de presentation.*

2.2 IDRC and training

Paragraph 4. (1) (b) of the IDRC Act provides the basis for the Centre's support to training by authorizing it "to assist the developing regions to build up the research capabilities, the innovative skills and the institutions required to solve their problems". The Corporate Strategy 2005-2010 quoted above cites it, while the quotation above from the Program Framework 2005-2010 briefly describes the types of its support to training and the rationale for continuing and expanding it.

A 1981 IDRC study defined training as: "organized activity designed specifically to transfer skills and knowledge which are, for the most part, necessary for researchers."[8] Among its concluding remarks, the following seem still to be applicable, though not perhaps definitive:

> ...there is a research mentality which might be considered the ultimate goal of the Centre's research and training activities. The aim might be the generation (and in some countries the re-generation) of a cadre of scientists who consider research a profession and a vocation and apply themselves systematically over time.(p. 84-85)

The 1981 study included a table, reproduced below, that summarized the Centre's use of training methods. Except for internships (though they could be subsumed under as a proxy for apprenticeships in "On-the-job" types), this table suggests that IDRC has changed little in its support to training, at least in general terms. The labels "semi-formal" and "informal" "training", however, have shifted to "informal" and "non-formal" "learning"[9]

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[8] *pp.6-7. Training Policy Study.* The Office of the Vice-President Planning. February 16, 1981.
[9] For a full discussion of types of learning in DRC activities, see Anne Bernard and Greg Armstrong. Framework for Evaluating Capacity Development in IDRC. Prepared for: Evaluation Unit, IDRC. February, 2005.

CENTRE USE OF TRAINING METHODS

	FORMAL	SEMI-FORMAL	INFORMAL
TYPE	Degree: PhD, Msc, MA, Ba, BSc Diploma: Undergrad, Post-grad	Short Courses	On-the-Job (in-service)
CENTRE MECHANISM	Pre-project awards Post-project awards In-project awards Primarily training Projects Fellowship awards	Pre-project In-project Training workshops Training seminars Primarily training projects	Study tours Network projects and workshops Apprenticeships IDRC staff visits Consultancies In-project awards Primarily training projects

IDRC delivers its current support to training activities through two main channels: Centre Training and Awards, and in both CAP and RAP projects. The Centre Training and Awards programs comprise a variety of awards that are intended to further IDRC's corporate objectives, such as Doctoral Research Awards for field research, Internships, and Awards for International Development Journalism.

The bulk of the Centre's training funds are given through IDRC programs and projects to support a broad variety of training activities, selected and designed to respond to the specific needs of each project. These include:

- post-graduate training for senior technical and policy people,
- short course training for junior technical staff in immediate research application skills,
- training of trainers to enable non-researchers to strengthen and apply their capacities as analysts and decision-makers,
- participatory research-based training that extends research partners to "non-research affiliates" (municipalities, non-governmental and civic associations and other partners outside education and research institutions),
- network-based professional development that provides to professional researchers opportunities for practical professional development through an iterative process of developing proposals and conducting research projects on issues of local and regional importance, support to graduate student field work, etc.

The Agropolis and Ecohealth awards are distinct examples of formal training programs managed

by Program Initiatives.

How does IDRC view training in practice?

In interviews, IDRC staff insisted strongly on the necessity for the Centre to support sound training in basic science: formal institution-based post-graduate level acquisition of knowledge, methods and techniques necessary to develop, conduct and assess research, a process culminating in earning a PhD. At a minimum, they felt that the programs managed by Centre Training Awards must be maintained, and if possible extended or expanded; similarly, they believed the Agropolis and Ecohealth awards play an important role in developing a new generation of researchers in areas significant for the Centre. At the same time, they also registered approval of the range and variety of training that is supported in programs and projects. Finding an appropriate dynamic balance between support for formal and other training constitutes a major challenge for IDRC at both the policy and practical levels.

The more general vision of training, and of the ways of supporting it, that emerges from these discussions and brief reviews of Centre-supported projects, goes beyond "the generation ... of a cadre of scientists" with formal qualifications. To be competent and credible, researchers must have the formal training signified by Master and PhD diplomas. Nevertheless, further training is vital; it is not just a supplement, but an integral part of researchers' careers and development, to enable them to work with colleagues and with organizations, communities, policy makers, etc., outside the academic world to address development issues.

Concern with the pertinence of research and the application of research results has broadened the pool of individuals whose training Centre projects support. Thus on one hand, IDRC helps students and formally-trained researchers to develop and enhance the skills necessary for a research career, while on the other hand, it supports training activities that facilitate the transfer of skills and knowledge to non-researchers, and that include them in the design and implementation of research activities.

Support for all forms of training is therefore necessary, because the outcome of training is believed necessary for the achievement of larger social objectives. Training contributes to the capacity of both individuals and institutions to address these objectives effectively and efficiently. The PhD is not the apex, as it were, of a career trajectory, after which learning is less important than discovery and dissemination. Continuing learning reinforces the capacity to conduct research, teach and work with partners outside the academic community. Supporting learning activities of non-researchers within programs and projects enhances their capacity for contributing to the design and implementation of research activities, and to the application of their results. Supporting them through Corporate Awards contributes to awareness and understanding of IDRC and of IDRC-supported research beyond the academic community.

II. A Selection of programs of other organizations

In 2001, the United Kingdom Department for International Development (DFID) published a

brief study by the Overseas Development Institute, *Building Capacity in Southern Research,*[10] which reviewed the activities of 49 organizations. These were categorized as UN Agencies, CGIAR Agencies, Foundations, Coordinating Agencies, Bilateral Programmes (including IDRC), Research Institutions, International NGOs, and Regional NGOs. It followed this review with further studies and public consultations. In September 2004 its Overview of consultations included a statement that its Central Research Department (CRD) "will work with DFID country offices to promote capacity-building - for example jointly with the Wellcome Trust on health research capacity-building in Kenya and Malawi. CRD will also use 'proposals for capacity building' as one of the criteria by which new research management contracts are assessed, and allow doctoral/MSc research to be undertaken within research projects."[11]

In the same year, the Swiss Commission for Research Partnerships with Developing Countries (KFPE) published *Enhancing Research Capacity for Development*, a book-length report of a 2000 conference it had convened on the topic. Not surprisingly, the volume includes more diverse opinions and considers a broader range of issues than does the DFID/ODI study. It lists only 21 major donors, of which but 5 (including IDRC) appear in the DFID/ODI list. Among the conclusions of the conference, participants argued that "the major challenge ..... lies in effective institutional capacity building" and that "it seems necessary to streamline the schemes of many sponsors such as fellowships or lectureships, in order to integrate individual capacity building more successfully into various efforts to promote institutional capacity building. This would most probably be a significant contribution towards achieving the desirable goal of greater impact."[12]

These two documents, their origins, and their conclusions typify the reflections on policy and reconsiderations of programs that many organizations and networks which support the development of research capacity in the South have undertaken within the past 10 years as a result of the changed and changing global environment. Sara E. Farley's 2005 paper confirms these trends.

An extensive list of organizations that support research and research training in and on development, and the URLs of their Websites, appears in Appendix I.

This section summarizes a number of programs and initiatives of a variety of actors that illustrate their decisions about how to respond most effectively to the challenges of this environment. These actors are grouped in four broad and approximative categories: bilateral donors; foundations/private sector programs; multilateral agencies; and networks/institution-based programs.

1. Bilateral donors

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[10] Young, John an d Kannemeyer, Natalie. *Building Capacity In Southern Research: A Study To Map Existing Initiatives. 2001.*
[11] *Synthesis of Comments and DFID Response. 2004.*
[12] Swiss Commission for Research Partnerships with Developing Countries (KFPE)*: Enhancing Research Capacity for Development.2001.*

1.1 United Kingdom

Department for International Development (DFID)

DFID has recently carried out a research consultation and review leading to a new research funding framework, aiming to integrate research with development practice and policy-making processes, to make research more demand-led, and to build the capacity of developing countries. In the social sciences DFID is moving from the Research Centre model to funding large Research Programme Consortia (each between £200,000 and £1m) of 4-6 institutions which link (typically 3) institutions in developing countries with institutions in the north, working on specific themes (currently various aspects of health and poverty and the MDGs; religious faith; governance and economics; education and human development).

Scholarships and Training Grants

The **Prime Minister's Initiative** (PMI) aims to increase international student numbers in higher education to 50,000 and 25,000 in further education by 2005, indicating greater recognition of such schemes' importance

Chevening Scholarships cover postgraduate courses, intensive short courses or specifically tailored courses under the main scheme; and Central Jointly Funded Schemes for fellowships, vocational qualifications and research attachments. Take-up of doctoral awards has declined, while Masters awards have increased.

The **Higher Education Links Scheme** (HELS) links UK universities with 3,200 universities in 48 developing countries. The short exchanges aim to develop research and information infrastructure. HELS is being redesigned as "Development Partnerships in Higher Education" to place greater emphasis on capacity building and sustainability in the developing countries in line with the Millennium Development Goals.

The Commonwealth Scholarship Commission in the United Kingdom (CSC)

In 2000, the CSC reviewed its activities and developed proposals "aimed at bringing awards more in line with the needs of our sponsors." While continuing its existing schemes of General Scholarships, Academic Staff Scholarships, Academic Fellowships, and Split-Site Scholarships, it launched two new programs: Professional Fellowships and Distance Learning Scholarships. These awards are concentrated on specific courses and institutions, and aim both to develop the skills of individuals, and where possible to promote institutional capacity-building in the recipient country. Selection criteria particularly favour courses offered in partnership between a UK and a developing-country provider.

The three-month **Professional Fellowships** aim to enhance the skills of mid-career professionals in developing countries. Priority is given to the broad areas of education, engineering, environment, governance, public health and technology. UK host organizations – charities, local government, public bodies and universities – apply for the awards, stating exactly what their

collaboration will offer. The Fellowships meet only the direct costs of the visit; host organizations cover all other costs.

Over a quarter of CSC awards are held by **distance learning**. These are given for specific postgraduate courses, focused on development needs and based on a strong partnership between UK and overseas providers. The awards allow scholars to study flexibly and enhance their skills while maintaining employment in their home countries.

The Commonwealth **Academic Staff Scholarships** (CASS) enable young staff to undertake formal postgraduate qualifications in the United Kingdom, and **Academic Fellowships** support mid-career staff visits for up to six months for professional updating based in a host academic institution in the United Kingdom.

A tracer study in 2000 found that 75.1% of former CASS and Academic Fellowship award holders were working at senior management or senior academic levels. Profiles in the Directory of Commonwealth Scholars and Fellows demonstrate that senior academics contribute directly to public policy, as experts and consultants, lend their expertise to voluntary organizations, undertake projects for international organizations, or contribute to scientific knowledge at a national or international level.

Institutional Capacity Grants concentrate a maximum of six awards on specific university departments or centres with the potential to make a significant impact on international development issues. They can be taken up at any time over a four-year period.

Split-site awards allow developing country students to spend a year in Britain as part of doctoral study in their home country.

Generally, awards have become more targeted on issues critical to meeting international development targets, and award holders have had more opportunities to acquire generic skills, through a post-training **Skills Enhancement Programme**. Examples include a session by INASP (International Network for the Availability of Scientific Periodicals) on how to access information while based in a developing country; two events to help women award holders to overcome any gender issues on their return home; and a day seminar staged by the UK Research Administrators Network (RAGnet) on how to attract, manage and disseminate the results from externally funded research.

The CSC also administers the **Shared Scholarship Scheme**, through which universities share the cost of developing-country scholarships.

1.2 South-South

Brazil

The National Research Council's **Programa de Estudantes Convênio/Pós-Graduação** offers Master's and PhD scholarships for study in Brazil to students from Latin America and Africa.

The Council has bilateral cooperation agreements for research, development and innovation projects with partner bodies in Argentina, China, Colombia, Costa Rica, Cuba, Equador, India, Mexico, Uruguay, and Venezuela.

India

The *Department of Science and Technology* has **bilateral programmes for the exchange of scientists and training of students** with academies of science from more than 10 countries, including Belarus, Brazil, Bulgaria, China, Hungary, Kyrgyzstan, Malaysia, Mozambique, Myanmar, Russia, Seychelles, South Africa, Sudan, Syria, Turkey, and Ukraine.

The *Jawaharlal Nehru Centre for Advanced Scientific Research*, Bangalore, India, provides **postgraduate and postdoctoral training programmes** for scientists from several countries in the South.

Indian National Science Academy

The **INSA-JRD Tata Fellowships for developing countries** enable 20 scientists and technologists from other developing countries to pursue research in Indian scientific research institutions for periods of three to six months every year. The fellowships cover travel and subsistence costs.

1.3 Sweden

SIDA

The Swedish programmes aim to help universities gain credibility for managing governmental funds for basic research facilities, and become able to attract external funding from the private sector, from foreign donors and from foundations.

SIDA supports research capacity-building in a limited number of countries (12 in 2004). Themes for research projects are set by the local researchers in dialogue with national stakeholders and via a selection process within the university management or a research council. It also supports organisations such as CODESRIA.

Swedish Research Links promotes relations among Swedish and developing country researchers who submit joint applications. Proposals are peer-reviewed and grants allocated for visits and joint activity.

The **Joint Formas – Sida/SAREC funded program for research on sustainable development in developing countries** promotes participation of scientists from Sweden in sustainability research in developing countries. It aims to strengthen the research capacity of developing countries and to promote development-oriented research. Projects comprise a 2-4 month stay per year during one or two years for the main applicant from Sweden at a host research organisation in a developing country. The stay can be distributed on two or more occasions, but no individual

stay should be shorter than 1 month. Main applicants should have a PhD and be employed at a Swedish university or research institute which administers the grant. Projects must have a co-applicant (also PhD), employed by the host organisation, who will actively participate in the research and have one short visit (maximum 2 months) to Sweden.

The *Swedish Foundation for International Cooperation in Research and Higher Education* (STINT) provides scholarships for young researchers (post-docs) and doctoral candidates to open up and widen the networks of institutions that are all too often isolated.

1.4 United States of America

US Department of State FREEDOM Support Act (FSA) Programs

The FSA **Educational Partnerships Program** is designed to strengthen the capabilities of Eurasian institutions of higher learning to contribute to the transitions to democracy and market economies. It provides partial funding of up to $250,000 for a three-year period for exchanges of faculty and administrators for teaching, lecturing, faculty and curriculum development, collaborative research, and research. Funding helps to defray travel and per diem costs and to provide for educational materials, communications, and administrative expenses.

Office of Academic Exchange Programs

Graduate degree programs

Edmund S. Muskie Graduate Fellowship Program and the **Ron Brown Fellowship Program** offer fellowships for Master's degree-level study in the U.S. for students and professionals from Eurasia, and from the Baltic states and Southeast Europe. U.S. host campuses are also selected through a competition process and generally provide tuition waivers of fifty percent.

Faculty Development (Non-Degree) Programs

The **Junior Faculty Development Program Eurasia and Southeast Europe** (JFDP) is a nine-month, non-degree, professional development program followed by a two-month summer practicum, that provides promising junior university faculty with the opportunity to develop new courses and implement curriculum reform at their home institutions, cultivate teaching skills and techniques, expand the information base in their fields of study and become a vehicle for on-going contact and exchange between their home and host institutions. The JFDP Fellowship provides round-trip international and domestic transportation, medical insurance, monthly stipends, and a professional development fund.

1.5 Germany

German funding aims to promote German culture in non-German speaking countries and to promote collaboration between German and international research.

The *German Academic Exchange Service* (DAAD) promotes international academic exchanges of German universities. In 2002 DAAD sponsored 1,891 postgraduates and some senior scientists from Sub-Saharan Africa and 987 German scholarship holders in Africa.
The *Konrad-Adenauer-Stiftung* (KAS) promotes democracy through political education and training, political consultancy and intensive research. Since 1999 KAS has funded an internship programme, run by the South African Institute of International Affairs (SAIIA) in conjunction with the University of the Witwatersrand (Wits). It enables South African Master's students in International Relations, Political Science or Journalism to work at SAIIA.

The *Alexander-von-Humboldt-Foundation*'s (AvH) Georg-Foster-Research-Fellowships enable highly qualified scholars from developing countries holding doctorates to carry out academic projects of their own choice in Germany.

1.6 Japan

The *Ministry of Education, Culture, Sports, Science and Technology* (MEXT - also known as Monbusho) provides a large scale scholarship programme for foreign researchers and students at the undergraduate and postgraduate level within the ODA budget. In 2003 the program budget of 23.5 billion Yen (US$217 million) brought 9,746 foreign students to Japanese universities and institutes. The allocation between the doctoral and master levels is not clear from the data, but 78.6% of all the scholarships (7,664) were at the postgraduate level.

Japan Society for the Promotion of Science (JSPS)

The JSPS program of **research supervision assistance** for promising young Asian researchers wishing to obtain their doctorates through the Ronpaku (Dissertation Ph.D) system includes Bangladesh, China, India, Indonesia, Korea, Malaysia, the Philippines, Thailand and Vietnam.

The **Postdoctoral Fellowships for Research Abroad** sends outstanding young researchers (up to 36 years old) abroad to concentrate on long-term research at universities and other academic research institutions to train and secure talented researchers with an international perspective. There is no restriction on country of tenure.

The **Postdoctoral Fellowship for Foreign Researchers** assists promising, highly qualified, young foreign researchers who have just completed their doctorate. It provides the means to pursue collaborative research for two years under the leadership of Japanese host researchers in Japanese universities and research institutes, thus advancing their own research while promoting scientific advancement in Japan and the counterpart countries through close collaboration in scientific activities. Grants for research costs are available but the proposals must be made by the Japanese host. JSPS also subsidizes Japanese language training, provides a domestic research travel allowance, a settling-in allowance and a maintenance allowance. During their tenure, Fellows may leave Japan for a period of up to 15 days to participate in or present a paper at an international conference, collect items needed in their research, conduct activities to advance their work, and take home leave once during tenures of more than 12 months.

1.7 France

The rationale for financing research centres in developing countries sits within French foreign policy objectives of extending French diplomatic and cultural influence as well as promoting sustainable development. The programme objective is to participate in the development of regional centres that will become competitive research and training institutions. It integrates a policy for training researchers from partner country teams through the exchange of knowledge and transfers of leading edge technologies, short research visits to French and South laboratories, courses on leading research areas and international meetings.

The program **Coopération pour la Recherche Universitaire et Scientifique** (CORUS) of the *Ministère des affaires étrangères* has two main objectives:[13]

-former des élites étrangères dans leur pays, principalement dans le cadre de filières francophones *(hors Afrique subsaharienne)*;

-aider au montage de partenariats inter-établissements en zone de solidarité prioritaire (ZSP)."

The *Institut de recherche pour le développement* (IRD) focuses on applied development studies with a slant towards urban studies, public health, environment, globalisation in an inter-disciplinary, comparative approach. It is present in more than 50 developing countries with representations and centres in 24 countries (20 % of the 2002 budget went to Africa and the Indian Ocean, 52% to France, 12% to the Overseas Territories, 10% to Latin America, and 4% to Asia-Pacific), and provides grants for PhD students as well as operational and salary support for research teams in developing countries.

It has six main programs to support the development of both individual and institutional research capacity: **Bourses d'Insertion de Jeunes chercheurs** (BIJC) or **Bourses post-doctorales**, **Bourses de Soutien de Thèse de Doctorat** (BSTD), **Bourses d'Echanges Scientifiques de Courte Durée** (BESCD), **Bourses de Formation Continue** (BFC), **Création d'une filière de formation supérieure ou son renforcement,** and **Soutien à une société savante ou à un réseau**.

The **Bourses d'Insertion de Jeunes chercheurs** and **Bourses post-doctorales** aim to integrate younger researchers into research teams that already collaborate with the IRD. They are tenable for two years and may be extended for one further year.

Bourses de Soutien de Thèse de Doctorat provide students at the thesis stage under 40 years of age from countries with no or few dotoral programs with up to three years of support. They may take up the award at any research centre in the South or North, but must produce their thesis jointly with an institution in the South.

Bourses d'Echanges Scientifiques de Courte Durée (BESCD) give South researchers access to

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facilities outside their own country to pursue and validate their research, and/or develop cooperative programs. These 12-month awards may be held over a period of four years; visits may last up to 6 months

Bourses de Formation Continue (BFC) provide researchers, engineers and technicians up to 12 months over 4 years of technical or methodological training, or re-training, in one or more institutions outside their own country, in order to consolidate the knowledge and skills of the research team to which they belong.

The **création d'une filière de formation supérieure ou son renforcement** program allows members of Master's and PhD level training teams to help the development of post-graduate programs in institutions in the South. They may help redefine and reform an academic program, teach courses or supervise students in laboratory work. Support can extend over 6 years, depending on interim evaluations, and includes technical help in organizing and monitoring the project, as well as scientific support from experts and institutional partners.

The **soutien à une société savante ou à un réseau** is given on a case-by-case basis and can extend over a 6 year period.

2. Foundations/Trusts/Private sector
2.1 The UK *Wellcome Trust Population Studies Programme* (PSP) includes a master's fellowship scheme which contains both a taught course and a research project in the fellow's home country is delivered directly through the PSP and indirectly via a block grant to the Centre for Reproductive Biology, University of Edinburgh to run an MSc Research Training Programme in Reproductive Health. A review in 2003 found high satisfaction with the taught element of all courses but some concern about the supervisory support that students received while completing a research project 'back home'. Some of the issues were resolved through better links and continuity between the training institution and the home institution.

Over half the students responded to the review survey. Almost all had completed their MSc degree, and 29% of these had published either in journals or in the 'grey literature', and were almost all in full-time employment. Nearly three quarters were working for the same institution/organisation in their home country where they were based at the time of fellowship application, over two-thirds has been promoted. position. Three were already enrolled on PhD training.

Individual cited enhanced research skills, contact building and career development as the most important benefits of the program.

2.2 The US *Social Science Research Council* (SSRC) supports doctoral students field research, and appears to be working increasingly with scholars in the South, using several modalities. The Youth and Globalization initiative uses a bottom-up, demand-led approach to the priorities coming out of an agenda-setting activity with African scholars linked to CODESRIA and NRF. The Higher Education initiative is much more top-down and is associated with the Partnership for Higher Education in Africa of the Carnegie, Ford, MacArthur and Rockefeller Foundations

2.3 In Africa, the *Rockefeller Foundation*'s support of reform in higher education takes account of ICTs; the emergence of new and academically qualified academic leadership; and the influence of the market on demand for applied disciplines. In comparison, to the mid-1990s, it seems to have scaled back dramatically its individual fellowship schemes in favour of system wide and institutional foci. Almost all of such individual capacity building programs were not tightly aligned with the Foundation's new strategies.

2.4 The *Partnership for Higher Education in Africa* (PHEA) is supported by the Rockefeller, MacArthur, Ford and Carnegie foundations. It covers 7 countries (Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania and Uganda), and has a budget of $100m over 5 years (2000-2005). PHEA includes Individual awards; Training Programmes (e.g. AERC); Research Support; University Programmes (support to departments); Libraries (loan access to journals and digitizing of libraries); Staff development, e.g. doctoral awards, staff exchange; University administration strengthening, e.g. fundraising training, refurbishment, strategic planning; ICT, e.g. campus computer systems, negotiating bandwidth; National/regional university systems, e.g. mitigating HIV/AIDS, database of dissertations, interuniversity consultations with Vice Chancellors, and support to research.

2.5 The *Ford Foundation*'s $300m **International Fellowship Programme** (IFP) supports 3,500 fellows for up to three years of formal at masters and doctoral levels, over ten years between 2001-2010.

It recruits men and women from social groups and communities that historically have had little access to advanced education. This includes women, people who belong to particular ethnic, racial or religious groups, and those who live outside major cities or in countries in conflict or post-conflict situations. Applicants must present a plan specifying how they will apply their studies to social problems or issues in their own countries and commit themselves to working on these issues following the fellowship period.

Fellows may enroll in an appropriate university program anywhere in the world, including their country of residence, in any discipline consistent with the Foundations areas of interest: Asset Building and Community Development; Education, Media, Arts and Culture; and Peace and Social Justice. They receive support for short-term language study and training in research and computer skills prior to graduate school enrollment, attend orientation sessions, and receive placement assistance to those Fellows not yet admitted to graduate school.

Funding covers travel costs, living expenses, tuition and related costs, short-term pre-fellowship training. The program facilitates informal networks through which Fellows may share information and experiences.

The program is explicitly oriented to innovative individuals; it is not concerned with clustering awards for purposes of institutional development. Most of the initial fellowships have gone to activists and leaders in civil society, rather than to junior faculty or others committed to academic careers.

2.6 *Winrock International*

The **John D. Rockefeller 3rd Scholars Program** is a new initiative that will support multi-country teams of mid-career researchers in sustainable agriculture and natural resource management. Its goals are to "build the capacity and leadership skills of Asian researchers to solve pressing development problems through innovative, regional collaboration"; and to "foster problem-focussed, multidisciplinary research that will result in actionable [sic] plans and policies to sustain and restore rural ecosystems."[14]

The program will begin in 2005 with a three-year regional team that will investigate how payments for environmental services (PES) can be made to benefit the rural poor. This pilot team will include up to four mid-career Asian scholars from at least two of the following countries: China, Vietnam, and Thailand.

The team will be advised by an eminent mentor of their choice, and will have access to the expertise of a network of policymakers and scientific leaders including former A/D/C fellows. Research will integrate key stakeholders including development experts, community and organizational representatives from poor areas, and policymakers. Funding will be sufficient for each researcher to be supported by one or more assistants. The team may choose to include participation of researchers or students from Asian countries other than China, Thailand and Vietnam, but not as one of the primary researchers.

3. Multilateral agencies

3.1 UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP)

HRP supports institutional research and technical capacity strengthening through **grants to research institutions, research groups or networks**. This includes grants for individual postgraduate research, training workshops and short courses, including MSc courses and training courses for professional and technical staff. HRP has also supported the development of reproductive health directories, organizes regional workshops on ethical issues in reproductive health research, and helps participants develop medical ethics curricula for medical schools.

A 2003 External evaluation of the HRP 1990-2002 concluded that research capacity strengthening is one of HRP's major achievements: it has created a global research network 123 supported centres in 59 countries in 2000–2001. The scientific output and collaborative research of the centres increased over the period evaluated, and contributed substantially to shaping national policies and practice. But monitoring of research institution capacity and performance was weak. Bridging the gaps between research, policy and action remains a challenge, while it is important to involve a leading research centre as the catalyst for national research capacity strengthening.

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[14] text from the Winrock Foundation Website.

More emphasis is now being placed on supporting networks of centres involved in regional research initiatives, in linking capacity building grants to specific research proposals and in assuring that national and regional research proposals are responsive to priority reproductive health problems at the country or regional level.

3.2 WHO Special Programme for Research and Training in Tropical Diseases (TDR)

TDR's **Research Capability Strengthening** (RCS) strategy for 2002-2005 fosters self-reliance in biomedical and social science research in disease endemic developing countries (DECs). RCS activities aim to contribute to the definition of research priorities, conduct of research, and translation of results into evidence-based health policy. TDR aims to create partnerships, increase networking, and promote equal opportunities, ensuring a gender and geographically balanced generation of scientists.

The objectives of the TDR initiative are, over five years, to produce 20-30 DEC scientists with top level competence in bioinformatics and the capability to conduct local training in Africa, Asia and Latin America; to further establish sustainable regional networks of centres and expertise for the promotion and integration of bioinformatics and DNA technology in basic research and management of tropical diseases in endemic countries; and to establish a distance learning programme for bioinformatics in disease endemic countries.

TDR's activities have included a **train-the-trainers workshop** in bioinformatics and applied genomics, regional training courses in four centres in Africa, Asia and Latin America, and **training grants** for students attending the TDR-supported MSc degree programs at Makerere University, Uganda, the Regional Institute for Public Health, Benin, and the University of Witwatersrand, South Africa. The *MIM (Multilateral Initiative on Malaria in Africa)/TDR RCS Task Force* supports MSc and PhD trainees, short-term training in research methodologies, and upgrading of research facilities.

Career Development Fellowships enable individuals to train *in situ* with relevant partners to develop specialized skills not readily taught in academic centres. These have included fellowships in grants management with the WHO Eastern Mediterranean Office (EMRO) and WHO African Regional Office (AFRO); clinical research and development in partnership with GlaxoSmithKline Biologicals; clinical trials management with the Infectious Disease Research Institute, USA; Internet-based information management with the WHO library; and a fellowship on interactive learning production with the Wellcome Trust, UK. On completion of their fellowships, these individuals return to their home institutes to add to the local capacity and become a valuable resource for TDR and their regions.

TDR is exploring with other networks and partners a longer-term vision to develop **distance learning degree programmes**, initially at Master's level. Discussions include the International Clinical Epidemiology Network (INCLEN), the Partnership for Social Sciences for Malaria Control in Africa (PSSMC), and the International Network of Field Sites with Continuous Demographic Evaluation of Populations and their Health in developing countries (INDEPTH).

To build an integrated and sustainable network of centres in DECs utilizing existing and newly developed infrastructure, the TDR program provides infrastructure support to selected institutes, and training programs in how best to access, organize and manage the material available on the Internet, including HINARI (Health InterNetwork Access to Information).

TDR is developing **CD-based and eventual on-line learning material** for use by DEC scientists.

3.3 World Bank Graduate Scholarship Program (WBGSP) and JJ/WBGSP Partnership Programs

These programs award scholarships to individuals between the ages of 25 and 45 from World Bank member countries for graduate studies in subjects related to economic and social development. The **WBGSP** supports graduate studies in economic and social development. Scholars must return to their home countries on completion of their study programs. The **Partnership Programs** supports programs which combine academic rigour with specialized training in the practical aspects of policy-making. A Secretariat for day-to-day administration is maintained within the World Bank Institute.

Applicants must hold a bachelor's degree or its equivalent in a development-related field; have a superior record in previous academic work; and propose a program of study related to development at the master's level. Priority is given to applicants who have admission to studies in line with the Millenium Development Goals (MDG).

Tracer Studies of the program show so far that nearly all scholars (97 percent) attained the degree for which the scholarship was awarded, and that some obtained two degrees during their scholarship period. Most scholars (87 percent) are either living and working in their home country or another developing country or employed by multilateral development agencies. The return rate for men is nearly the same as the return rate for women. Those who have returned to their home country for employment have assumed responsibilities equal to or greater than those that they had before they accepted the scholarship. More than 35 percent are employed in positions where the primary focus of their work is on policy inputs.

A high proportion of those who have not returned to their home country used their scholarship to obtain doctoral degrees. Degree attainment rate for the doctoral program is 92 percent, whereas for the master's degree and its equivalent is 99%.

Bank loans for education include projects that provide support for the development and strengthening of advanced education and research, including scholarships and fellowships for Master's and PhD students and young faculty. These most often include provisions for periods study and research outside the home country, and for conditions to continue research on return from abroad.

3.4 European Union Marie Curie Fellowships

Five of the six Fellowships programs of the **Marie Curie Fellowships action** include support for participation of "third country" nationals, i.e., those from any country outside the 25 EU Member States and the 8 Associated State to the EU Framework Programme.

All programmes require a host and partner organizations active in research and research training, such as universities, research centres, commercial enterprises (especially SMEs), NGOs, charitable organizations, trusts, etc., including Third country institutions. Typically, funding covers researchers' living allowances, travel expenses, etc., and for the execution of the project in the host organization (including a contribution towards overheads and management-related expenses).

Host Fellowships for Early Stage Research Training (EST) offer structured training and provide complementary skills for researchers with less than 4 years of research experience. They are appointed directly by the host organization for periods between 3 months and 3 years, and can make short visits to other courses, labs and facilities nationally or internationally. Third country researchers cannot represent more than 30% of the number of funded researcher-months.

Outgoing International Fellowships (OIF) enable European researchers to receive training (from one to two years) at a world-class research organization in a third country, and then to apply the experience gained in a return host institution in any Member State or Associated State. They must have at least four years of full-time research experience or be a PhD who is willing to spend a mobility period working in a host institution located in a third country. There is no age limit, but researchers must not have resided or carried out their main activity in the country of the host organisation for more than 12 months in the previous three years.

Incoming International Fellowships (IIF) aim to attract top-class researchers from third countries with at least four years' full-time postgraduate research experience or a PhD to work and undertake research training in Europe with a view to developing research co-operation between Europe and third countries. After the first phase, fellows from developing countries receive assistance to return home for half the duration of the first phase. The reintegration phase applies only to developing country and emerging economy researchers. The host organizations of the reintegration phase must be in developing countries and must assure an effective and long-lasting reintegration of the researcher for at least two years.

There are two kinds of **Transfer of Knowledge (ToK)** fellowships, **Development Scheme** (ToK-DEV) and **Industry-Academia Strategic Partnership Scheme** (ToK-IAP). The first aims to develop the research potential of host entities, while the second aims to create and develop real strategic and durable partnerships between the academic world and the world of enterprise, in particular SMEs. Researchers with more than four years of experience can be recruited, sent away to seek new knowledge (ToK-DEV), or be exchanged mutually between partners (ToK-IAP). Nationals of third countries can be appointed within the ToK scheme as long as they do not represent more than 30% of the number of funded researcher-months.

Conferences and Training Courses (SCF – LCF) implemented either as a **Series of Events** (SCF) or **Large Conferences** (LCF) that provide training primarily to researchers with up to ten

years of experience. Organisers can be located in a third country if the project has at least one other participant established in a Member State or Associated State. Third-country nationals may benefit from the European contribution in any SCF; but only in LCF conferences taking place in a Member State or an Associated State. The proportion of funded researchers from third countries may not exceed 30% of the total funded researchers for each event.

4. Networks/Institution-based programs

Networks in International Capacity Building: Cases from Sub-Saharan Africa[15] is the report of a July 1997 conference convened by the African Economic Research Consortium, the Rockefeller Foundation and the US Social Science Research Council to review the experiences of networks which were designed to strengthen research capacity and produce new knowledge: "creating knowledge and transferring such knowledge and associated skills in their respective fields." They are to be seen as knowledge networks rather than information networks, taking the former to imply social processes that produce as well as exchange knowledge. They are supplements and not substitutes for universities and other national research centres.

The report cites a number of "profession-enhancing strategies" specific to these networks. These include providing a critical mass of professional peer review not available at the national level that sustains peer pressure for learning and excellence and ameliorating professional isolation; providing an effective mechanism for keeping in touch with the rapidly changing frontier of knowledge; and providing a cost-effective means for specialized training and skill formation often not viable at the national level. The USHEPiA project was identified as one of several successful examples of an African capacity-building networks.

4.1 *University Science, Humanities and Engineering Partnerships in Africa (USHEPiA)*

USHEPiA developed as a co-operative programme involving Makerere University (Uganda); Jomo Kenyatta University for Agriculture & Technology, the University of Nairobi (Kenya); the University of Dar es Salaam (Tanzania); the University of Zambia; the University of Zimbabwe; the University of Botswana; and the University of Cape Town (South Africa). Its fellowships have allowed staff at the participating universities to work for higher degrees using the "sandwich model" in which the Fellow alternates between the partner universities. The programme's management structure links supervisors at each university with the aim of fostering of research capacity within participating universities. Supervisor visits have often given rise to further activity, such as seminars, lectures, external examining and research co-operation.

A report of the Association for the Development of Education in Africa (ADEA) Working Group On Higher Education noted a number of "difficulties" encountered by the project. These include communication problems, inexperience in assessing the prior qualifications of some Fellow candidates, some Fellows needing remedial coursework or training, failure to define adequately

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[15] Prewitt, K. (e d.), *Networks in International Capacity Building: Cases from Sub Saharan Africa*, SSRC Working Papers, 2, 1998

the division of labour and responsibilities between joint supervisors, occasional absence of a qualified staff member at the partner university, inadequate salaries at home universities, and pressures of local work and responsibilities making it difficult for fellows to complete their work on return home.

A later evaluation by Fine (Fine, 1997:40-1) noted the flexible determination of budgets, active involvement by supervisors in the selection of Fellows, and the attractiveness for staff of an expanding student network as particular success factors.

In an interview at IDRC headquarters on February 22, 2005, however, Stephen McGurk reported that the USHEPiA network has ceased operation, and that discussions are taking place to develop from the lessons learned a new network with similar aims.

4.2 The *African Economic Research Consortium (AERC)* strengthens local capacity for conducting independent, rigorous inquiry into problems related to the management of economies in sub-Saharan Africa. Its training programme includes a collaborative masters programme (CMAP) and a collaborative PhD programme. 21 universities in 16 countries participate in the Masters programme, with 100 Masters students coming together in Nairobi for elective courses. There are CMAP spin-offs for Nigeria and for Francophone Africa. The collaborative PhD is based on 4 universities – one for each region of Africa (UCT, Dar, Ibadan and Yaounde II), plus 4 other participating universities (Wits, Nairobi, Cocody and Benin). The goal is 400 doctorates in economics over a 15 year period in total.

4.3 *CODESRIA* provides a wide range of programmes for building capacity, e.g. small grants for thesis writing; annual summer schools or 'institutes'; short term intensive methodological courses; and advanced research fellowships.

4.4 *OSSREA*, based at Addis Ababa University, Ethiopia, is now 25 years old. It covers 21 countries, with national chapter and liaison offices. Its main objectives are: individual and collaborative research; training of African researchers and establishment of institutions dedicated to research and training; provision of a special fund for research grants and training fellowships; dialogue between research and policy; and dialogue between research and African development organizations.

4.5 The *African Institute for Mathematical Sciences (AIMS)* is a collaborative project between three South African universities, Cape Town, Stellenbosch and the Western Cape, with the University of Cambridge, UK, the University of Oxford, UK, and the University of Paris-Sud-XI, France. It offers a one- year postgraduate diploma course designed to develop strong mathematical and computing problem- solving skills. Courses, which include quantum physics, epidemiological modelling and financial mathematics, are taught by eminent lecturers from Africa, the three collaborating European universities and elsewhere. Students with degrees in mathematics, science or engineering are recruited from across Africa. Its first course, which began in September 2003, included 30 students from 15 countries.

4.6 *Early Childhood Development Virtual University (ECDVU)* Masters degree program (University of Victoria).

The goals of the ECDVU Masters degree Program included building ECD capacity, promoting ECD leadership, stimulating supportive ECD networks within and across participating African countries, and addressing a major gap in research studies on ECD in Sub-Saharan Africa (SSA).

The Program involves both African and Western ECD organizations and specialists. National ECD Committees in Africa proposed 30 candidates who were respected mid-level ECD professionals with at least eight years of service, held full-time ECD employment, demonstrated a potential for leadership, and had at least 10 years of active work ahead. Of the 27 graduates, 22 (82 percent) were women, and all worked and continue to work full time in ECD areas.

Program delivery included: preparatory computer and information technology (IT) support; eight courses mounted on WebCT; textbooks, CD ROMs with course and other materials that were couriered to Africa; three two-week long seminars in Africa that also provided course credits; assignments that included local studies; frequent email support from ECDVU's Cohort Manager; active dialogue among participants and their instructors; and support for the preparation and completion of major projects or theses. ECDVU's culturally appropriate "generative curriculum" methodology was used. This model unites local child rearing knowledge and traditions with national and Western literatures and it takes an integrated approach to ECD. Both active and reflective analytic instructional strategies were used. A comprehensive internal monitoring and evaluation system was designed and implemented effectively.

The results of the project noted by both an external and an internal evaluation include all but one graduate continuing in the field in SSA, and 96 percent remaining in their home country. 63 percent had been promoted; their colleagues reported that 95 percent of the learners advanced national policy agendas through participating in policy forums, advocacy activities, and drafting policies. 78 percent of participants reported they had improved their research skills. The research topics they selected were be centrally important to ECD in SSA. Ninety-six percent of the respondents reported that through the ECDVU Program they have become involved in further research on ECD. 57 percent of the graduates are involved in from two to five research projects.

4.7 The *Abdus Salam International Centre for Theoretical Physics (ICTP).*

The ICTP has a range of programs to enable developing country scientists to make short-term visits to the Centre over extended periods, as well as two longer-term scholarship schemes.

The **Associate Scheme Awards** provides six-year Junior, Regular and Senior Associates (scientists from and working in developing countries) access to the Centre's facilities and external partners, three 42-90 day visits to Trieste, a limited living allowance and an annual book budget. The **Diploma/Post Graduate Programmes** offer 10 annual scholarships in each of three Diploma Programmes of one year pre-PhD training for younger participants from developing countries where high-quality advanced scientific training is less accessible.

The **ICTP-IAEA Sandwich Training Educational Programme** (STEP) offers IAEA fellowships to Ph.D. candidates from developing IAEA member States. Advisors from both the

home and host institutes jointly supervise the fellows' research. Fellowships are awarded for a period of at least three months to be spent at host institutes during the first year, and are renewable for two additional successive years. They include a stipend intended to cover lodging and living expenses during each stay at the host institute as well as travel costs and medical insurance.

The **ICTP-ELETTRA Users Programme** offers access to the synchrotron radiation facility ELETTRA in Trieste in the years 2002-2006 to scientists who are citizens of developing countries and work in those countries.

The **SESAME Project** comprises the cooperative research program in which trainees join existing research groups in Synchrotron Laboratories; and a training program in which trainees join technical teams of laboratories to work together to acquire the expertise for preparing the projects and operating the beamlines.

The ICTP **Federation Scheme** consists of agreements with 132 scientific institutes in 43 developing countries that enables junior scientists to visit the ICTP for a total of 60 to 150 days over a three-year period, on a cost-sharing basis.

4.8 *Third World Academy of Science (TWAS)*

TWAS South-South Fellowships for Research and Advanced Training allows young developing country scientists to spend three to twelve months at a research institution in a developing country other than their own. They are then encouraged to return to their home countries to continue their careers. TWAS covers international low-cost airfare plus up to USD300.00/month subsistence; the host institution provides research facilities, accommodation and food. Brazil, China and India each have agreed to fund 50 of these fellowships a year.

The Third World Organization for Women in Science (TWOWS) **Young Women Scientists Fellowship Programme** helps female students from sub-Saharan Africa and LDCs to pursue postgraduate degrees at centres of excellence in the South located in countries other than their own. The programme is supported by the Swedish International Development Cooperation Agency's Department for Research Cooperation (Sida- SAREC).

The **ICSU-TWAS-UNESCO-UNU/IAS Visiting Scientist Programme** aims to enable institutions and research groups in the South, especially those with limited outside contacts, to establish long-term links with world leaders in science and so help develop capacity-building in their country. Prospective host institutions in developing countries invite internationally renowned experts in areas of science other than mathematics and physics to give lectures and seminars to research students, supervise students, conduct research, discuss future collaborative partnerships and strengthen host institution existing activities and/or help establish new lines of research. Visits last a minimum of one month. The program covers travel costs and an honorarium of US$500; the host institution covers local expenses.

4.9 *Fogarty International Center (FIC)*

International Research Scientist Development Award (IRSDA) for U.S. postdoctoral biomedical and behavioural scientists in the formative stages of their careers provides recipients with a period of mentored research as part of a strong, established collaboration between a U.S. sponsor and a leading developing country scientist at an internationally recognized research institution in a developing country. The award aims to help recipients pursue an international research career, involving ongoing collaboration with developing country scientists, on research to reduce the impact of a major global health challenge.

The FIC has a long-term strategy to support centres of research excellence in developing countries that address global health research priorities. This support is envisioned to:
-    -Attract new research talent to global health research and enhance multi-disciplinary synergy among the research collaborators at the U.S. and foreign site,

- Leverage existing research and training support for developing country scientists and U.S. scientists committed to international research,

- Support the coalescence of the critical, sustainable components necessary to move developing country institutions with significant potential to new levels of research excellence, and

- Stimulate a more effective translation of the results of research on global health problems into practical public health actions.

The IRSD awards are intended to help forge collaborative relationships between established, developing country researchers and outstanding U.S. junior scientists, who are potential future heads of basic, clinical and behavioural/social health research programs in the U.S.. Collaborations are expected to lead to advances that will reduce the impact of global health problems and narrow the gap in health disparities between developed and developing countries.

III. Operational issues and considerations

1. Administration of support

From an administrative point of view, formal training and professional development differ in three main ways:

- in their duration: formal training generally takes much longer.

- in their structure: formal training is more structured in order to ensure a stable standard of quality; diploma and degree programs therefore can be seen as "stand-alone" activities, whereas professional development activities must have some relation to ongoing activities of researchers and/or of projects in which they are engaged.

- in their outcomes: the production of a sanctioned research thesis signals the beginning of a

career; professional development activities, however recognized, do not carry the same *gravitas*, yet they are equally important in maintaining a research career.

The mechanisms for providing support vary. Scholarships, fellowships and internships are awarded to mostly younger individuals through competitive schemes. Support for professional development activities, on the other hand, are awarded both to organizations or groups, and to individuals at any stage of their careers. They may be allocated on a competitive basis, but in many cases are not (e.g. where networks receive support to ensure participation of their members). Support for sabbaticants, resident scholars, senior fellowships, visiting scientists, etc. - all awards made to recognize recipients' achievements – are made by invitation; decisions on invitations are generally made at senior levels of organizations with advice that can come from both inside and outside the organization.

Managing and administering support for advanced education and training activities, of whatever kind, is generally very labour intensive.[16] Organizations face significant challenges in finding an appropriate and acceptable balance between the inherent risks and benefits, especially as it is often difficult to quantify the benefits. The risks are chiefly economic, but they also include effects on the organization's image and reputation. The benefits derive initially from the successful completion of the learning activity, however measured or signified (usually by the recognition or acknowledgment of the recipient's acquisition of new learning and skills); and also reflect on image and reputation. In the longer term, establishment and enhancement of the research and development capacity and capabilities of the institution, organization, networks and community in which the learner works and resides are imputed as benefits of the training activity.

Investing in any learning activity signals a belief that it will have desirable results that in some way contribute to the mandate and objectives of the organization. Administrative mechanisms and processes are hence designed and implemented with a view to minimizing risks and maximizing benefits.

Operations manuals comprise complete descriptions of the administration tasks that support training activities. These tasks are too numerous to describe and discuss here in any detail. A general appreciation of the extent of administration tasks involved in supporting both formal and professional development training activities, however, can be derived from an indicative listing of what the main tasks comprise, once a program or mechanism has been developed.

Main categories of administration

   a) publicity and application procedures: targeting information to reach the desired audience and ensure transparency of the process; designing application forms to ensure receipt of

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[16] [16] cf. Anne Bernard . *Adult Learning and Capacity Development in IDRC: A Concept Paper.* p. 58 .

information that responds adequately and fully to criteria; screening applications for eligibility; etc.

b) selection: developing criteria and assessment tools; assessing applications by multiple variations of reviewers (external and internal professional reviewers; professional program officers; administrative officers; program/project team; program/project advisory committee or coordinating body; etc.); multiple variations of final decision-making; recording and reporting decisions; setting up candidate files; etc.

c) implementation: verification; notification and announcements; organizational arrangements (records, schedules, allocation of responsibilities); contracts/grants; authorizations (for field placements, travel, acquisitions, etc.); payments; etc.; monitoring (reporting, assessment, warning procedure, authorization) completion (final reports, theses, closing accounts); etc.

d) follow-up: program evaluation; tracking former recipients; tracer studies; developing alumni networks; etc.

Scholarships and fellowships for formal, graduate-level degree education often provide support for from 2 to 4 years, and generally are taken up outside the student's home country. Increasingly, however, funders are endorsing field research and placements of varying duration in the home country or region as a significant added value. Split-site programs resulting in either joint degrees or home institution degrees include at least one academic year spent at a partner institution. Some programs allow only limited time outside the home institution to provide access to specialized facilities and resources. In all these modalities, ICT use is encouraged and supported to varying degrees, in order to give participants access to a broader range of resources and professional contacts.

Administering support to professional development activities

Professional development activities – the non-formal and informal events beyond formal sanction in which researchers participate – may last from a day (e.g. a workshop) to up to a month (e.g. special institutes, study tours), or occur intermittently (e.g. a series of meetings, an ICT-mediated module or discussion).

The administration tasks for professional development activities roughly parallel those sketched above for formal training programs. Main variations occur in selection procedures, monitoring and follow-up procedures; in many cases these are not as rigorous as for formal training. A major difference lies in the organizational tasks involved when the funding body, in addition to providing funds, shares or has the entire responsibility for the activity.

Administering support to sabbaticants, etc.

Invitational awards vary in duration, but seem never to exceed 12 months; some may be renewed. Their administration involves assisting recipients to establish themselves at the organization

(which may include travel and finding suitable accommodation as well as providing office space, etc.), ensuring access to facilities, paying stipends, receiving reports, and providing any other assistance that the terms of the invitation may offer, such as collaborating with the organization's staff.

No naked scholarships

For many years, donors allocated few resources to support for scholarship and fellowship holders beyond ensuring the payment of their awards, contact with the host institution to ensure enrolment, and purchasing travel tickets. Recipients had to manage most problems unassisted; these arrangements became colloquially known as "naked scholarships".

Professional development activities, on the other hand, seemed to carry with them "accompanying" effects, such as advice from senior colleagues and continuing contact and collaboration with other participants, particularly through the networks they generate and maintain among participants.

The reviews of programs by many donors, stakeholders and interested scholars and scientists over the last decade have confirmed a general acknowledgement and awareness that the sink or swim approach ignores too many risks and jeopardizes many benefits of formal training. Funders now try actively to connect award holders with a community of research, if not to integrate them into ongoing projects and programs. These efforts, of course, are highly labour-intensive.

This concern for the longer-term effects of training activities, and consequent attention to encouraging and nurturing personal and institutional links through support to collaboration stems at least in part from reflection about how support to training realizes the mandates of organizations, and helps them achieve their goals. The specific design and execution of programs and their administration varies from organization to organization. But most reviews and articulations of new or revised programs reveal concern to have a vision of training goals that is coherent and consistent with the core mandate, and to develop solid and clear guiding principles and agreed processes for interpreting and applying them.

2. Direct costs

Donors may finance training activities in full or only in part, as grants or loans, and may share costs with other donors, as in the Partnership for Higher Education in Africa program. Tuition fees and living costs form the basic cost of scholarships and fellowships for formal training programs (undergraduate and post-graduate studies). The table above draws on a variety of sources to give a rudimentary appreciation of the range of these costs.[17] It reflects a little of the

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[17] IDP Education Australia.Media Briefing. *Comparative Costs of Higher Education for International Students 2004*; AUCC/Alberta Learning Information Service 2005; government and institution Websites.

emergence of certain institutions in the South as capable not only of providing credible academic programs but also of delivering them effectively at lower cost.

Indicative study and living costs in selected countries (C$)		
Country	**Tuition Fees**	**Living costs**
Australia	$11,700	$11,550
Canada	$7,100	$8,100
Japan (Waseda)	$17,000	$9,500
New Zealand	$14,000-$32,000	$10,770
United Kingdom	$14,800	$12,600
United States (public)	$12,200	$10,400
United States (private)	$20,500	$11,600
Brazil	$6,700	$3,500
China	$2,000-$3,000	$6,400
Hong Kong	$6,700	$8,780
India	$750-$2,500	$1,800
Malaysia	$6,000-$10,000	$4,500
Thailand	$1,000	$3,600

It is also worth noting that all students from SADC countries and post-graduate and post-diploma students from other foreign countries are subsidised by the South African Government at the same level as South African students. It estimates that the overall annual costs for post-graduate students are between US$3,500-3,800.

The Third World Academy of Sciences has pointed out a very interesting development in capital costs:

> The cost of obtaining a high performance computer workstation for multiple user access with an uninterrupted power supply, internet connection, email facility and on- line access to journals and databases is now equivalent to the cost of a high quality motorcar
> – less than US$50,000. This has made information and communication technologies (ICTs) available to many colleges, universities and research centres in developing

countries."[18]

It is unlikely that costs raise any serious questions for organizations which have a well-articulated policy or guiding principles on training that follow clearly from their mandate. Once they have decided to support a specific training activity, they must meet basic costs to ensure proper implementation; their concerns will focus on the transparency, efficiency and effectiveness of administration.

3. Operations

As many variations exist in how training activities are organized as there are types of training activities. They may be run entirely as operations independent of any other activity, which is generally possible only in the case of training for formal qualifications and specialized "summer" institutes. Or they may be conceived as essential components of programs, such as the WHO Special Programme for Research and Training in Tropical Diseases. Or they may be organized as supports to a variety of programs and projects focussing on general themes, such as the collaborative Masters and PhD programs of the African Economic Research Consortium.

Any of these may operate through the collaboration of several institutions and organizations, be based in one institution or managed jointly by two, involve fieldwork in home and host countries or regions, or include distance education components.

The effect on a donor's administration, costs, and image, of how training activities within programs or projects, or as independent activities, operate need to be carefully considered.

Guidelines based on the organization's mission and mandate can help clarify the appropriateness of a proposal.

IV. Ancillary matters / issues

A number of issues exist in the background, as it were, of any consideration of options for training. These arise from the general environment of advanced education and training, and its relation to the larger socio-economic environment. Two of these relate to capacity-building and maintenance; two others relate to the employment of researchers.

Two issues related to capacity-building

Co-ordination among donors

It is important for organizations to have a coherent vision of training goals based in their core mandate, so that supported training activities have a clear relation to their other activities and programs. Recent reviews and consultations of the role of research, science and technology in

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[18] pp . 37 –38, *Building Scientific Capacity. A TWAS Perspective.* 2004.

development have noted that although the mandates of diverse funders share common concerns, the specific interpretations and expressions of those mandates differ. This causes confusion and administrative burdens for the recipient institutions. Organizations need to examine how their support to training relates to and affects not only the recipients, but also the activities of other donors. Ideally, their efforts should be coordinated under the guidance of recipient institutions and organizations to ensure optimum use of resources to enhance sustainable research capacity.

Support services and processes

While the education and training of researchers lies at the core of building the capacity of universities and research institutions of the South, a variety of support services and processes are equally vital to maintaining and strengthening both individual and institutional research capacity. Chief among these is the collection of elements that allow for the development, maintenance and dissemination of information and data: laboratories and equipment, libraries, databases and journals. Support to training activities that fails to take account of costs related to these elements, and that fails to ensure access to the most up to date ones during the life of the activity, vitiates much of the value of the training. The ease and nature of access to those that will be available for researchers following the training activity must also be assessed in designing any support program.

The methods for developing, storing and retrieving information and data, whether in databases, libraries or journals, continue to be modified by information and communications technologies. Where the processes have been digitized, electronic access to these repositories is in theory available anywhere, although consulting a Web database

from an Internet café leaves much to be desired in comparison to doing so from a dedicated telecentre.[19].

 The Third World Academy of Sciences puts the issue succinctly:

> Apart from research programmes, there is a need to train technicians and engineers in trouble-shooting, maintaining, and upgrading scientific equipment in use in laboratories in the South. Such technical training programmes should operate in several ways: through purchase-time agreements with manufacturers for the training of technicians in user countries; arrangements with centres of excellence in the South for technician exchange and training; and the organization of periodic workshops for technicians, including virtual classes provided via the internet.[20]

Two issues related to the employment of researchers

Global mobility of researchers

Well-qualified researchers have increasing opportunities for international mobility. The growth of the global economy, including the rise of the knowledge economy, has seen multinational corporations (MNCs) move from siting assembly and production facilities to countries in the South to moving many intellectual functions there as well, as these countries (particularly in south and south-east Asia) experience the development of a critical mass of highly-qualified personnel (HQP). At the same time, expanding indigenous industries and business compete on the same labour market. These factors also act as a pull to draw expatriate professionals back home, or to home regions.[21] Security measures introduced after the September 11 2001 attacks in the United States add a push to these forces so that the international movement of both students and recent graduates has diversified, complementing an increased South-South movement that had already begun. At least one university in Africa is reported to be "developing a program to "train for export."[22]

Trends in university financing in many countries have created a large number of adjunct posts, temporary positions whose contracts are seldom renewed from year to year, making for both push and pull. The public and private and civil sectors all require a broad range of knowledge workers. Immigration programs in many countries juggle with measures to attract them and to

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[19] *cf. ".....access to knowledge without the capacity to use it is worthless. Countries lacking adequate infrastructure to capture and u se the increasing amount of accessible know ledge and information stand n o chance to benefit from it. The needed infrastructure is a mix of human capacity, hardware, institutions, incentives, policies and investments. Finding ways to create and strengthen the infrastructure where it is absent is not simple, but the costs of inaction make it an imperative task." In Strategic Approaches to Science and Technology in Development, 2003.*

[20] *pp. 26-7 in Building Scientific Capacity, 2004.*

[21] cf. "For decades you had to leave India to be a professional. Now you can plug into the world from India. You don't have to go to work for Goldman Sachs." In Thomas L. Friedman, "It's a Flat World, After All", 2005.

[22] Comment in a 29 November 2004 e-mail from Constance J. Freeman to Tim Dottridge.

control the numbers that permanently settle. MNCs offer generous salaries and benefits, but also access to the latest technologies and laboratories, both in the South and the North. Yet universities in developing countries will continue to struggle to recruit staff with advanced degrees, while the lack of adequately trained staffs leading to declining quality of instruction.[23]

With greater mobility of HQP, and efforts to create more attractive environments in the South, networks can be seen not only as bridges among researchers across the globe, but also as channels for creating employment opportunities as well as for finding employment.

Standards and recognition of qualifications

The international mobility and employability of researchers depend upon the quality of their work, which is signalled initially in the labour market by their qualifications – a graduate degree from an "established" institution serves as a proxy for the formal recognition of qualifications. Field work in the South has become increasingly accepted and encouraged as necessary for the credibility of a research degree. Individual participation in professional development activities – seminars, workshops, summer/winter institutes, conferences, study tours, and networks – add value to the extent that they are well organized and run by reputable professionals.

Capacity-building aims to strengthen and maintain research excellence as a foundation for establishing and securing instruction at an internationally-recognized standard. Support to formal training activities contributes to the development of the recognized knowledge and skills of individuals. Support to professional development activities contributes to the strengthening and maintenance of the quality standards of advanced education institutions.

UNESCO coordinates inter-governmental discussions, information-sharing and conventions on the recognition of qualifications. The increase and diversity of international student and HQP mobility since the 1980s has led to a gradual development of instruments and procedures for understanding qualifications across jurisdictions, and of networks of information centres which in some cases provide opinions on the equivalence of foreign qualifications. In collaboration with the Council of Europe and the European Commission, UNESCO coordinates two networks that facilitate the movement of students and academics among European countries by trying to ensure that acquired knowledge and skills are given due recognition. A similar network has evolved in the Asia-Pacific region, while efforts continue in other regions to harmonize methods of assessing and recognizing qualifications.

The World Bank provides support to accreditation components of its higher education and research projects, and participates in discussions with donors and specialized professional associations about establishing an international qualifications framework.[24]

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[23] *pp. 16-17 Constructing Knowledge Societies, 2002.*

[24] *cf.p. xxx, Constructing Knowledge Societies. 2002.*

V. General policy considerations

1. IDRC policy and objectives

The evolution of IDRC support to a broad range of training activities has occurred without specific policy guidelines or a clear articulation of the Centre's principles and objectives concerning training. Discussions with staff, and observations in the Small Grants Review and in Anne Bernard's paper about support to training as an element in capacity-building indicate an iterative process based on values specific to IDRC's approach, in response to the assessed and perceived needs of the "client" group of the particular Centre unit providing the funds.[25] Colloquially, this could be characterized as "cutting the cloth according to your needs", assuming that the resulting "garment" will fit appropriately into the IDRC "wardrobe".

This looseness can perhaps provide some basis for considering whether and how particular training activities address the Centre's mandate. The Small Grants review concluded that these grants had certain salient elements "that can be understood as operationalizing the Centre's mandate and program policies, such as capacity building, devolution or introducing new methodologies." These were identified as:

> concern with basic scientific standards, devolution of program/project management, concern with participatory methodologies, introduction/ strengthening of gender issues and methodologies, introduction/support of multidisciplinarity, introducing/testing of concepts and methodologies (including training established researchers), reinforcing/consolidating/broadening the reach of successful results (includes training young researchers), dissemination and application of research results, and concern with the influence and effect of research and research results on policy and practice.[26]

Again, these characteristics go well beyond the "generation ... of a cadre of scientists who consider research a profession and a vocation and apply themselves systematically over time."

2. Policy and objectives of other agencies

A few donors articulate their reasons for supporting training more explicitly than others. Their reviews of previous experience identify both risks and benefits, and generally outline how they understand training contributes to capacity-building. Whether their programs focus on a particular region (such as sub-Saharan Africa), general themes (such as population health), or specific issues (such as developing a cadre of specialists), or require that individual applicants specify the type and focus of the training (as in some scholarship programs), the specification of particular goals

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[25] *cf. "Capacity to d o and use research is clearly a principal feature of its vision and mandate. How ever, while it is also clear that systematic support to the development of such capacity, and tracking its effectiveness and outcomes, are encouraged and allowed, that they are guided or directed is less so."Anne Bernard, Situating Capacity Development in IDRC. 2005.*

[26] George Tillman. *Review of the Small Grants Mechanism.* 2003.

and objectives enables the systematic monitoring and evaluating of their support for training, and ensures the coordination of that support with their other programs and with their mandate.

The World Health Organization's Tropical Disease Research program states:

> The mission of RCS (Research Capability Strengthening) is to foster self-reliance in biomedical and social science research in disease endemic developing countries (DECs) by building a critical mass of human resources, institution capacity, and a conducive environment able to respond to public health research needs.
>
> RCS activities aim to contribute to the definition of research priorities, conduct of research, and translation of results into evidence-based health policy.[27]

The Wellcome Trust describes the purpose of its Master's scheme more extensively:

> .• To strengthen scientific research capacity in developing countries by supporting research training as part of a Master's degree relevant to the Wellcome Trust's HCPC programme.
> .• To facilitate the development of links between internationally recognized centres of excellence in research training and local research-active teams or field-based research programmes.
>
> These awards are intended to provide a flexible approach to Master's research training, which could be formal taught courses, part-time, modular or distance learning programmes at internationally recognised centres of excellence in research training (excluding those in the USA). Research training must be combined with undertaking a research project in a research-active setting or within existing research programmes in developing countries. Both the research training and the research project should be tailored to the needs of the candidate and his/her career aspirations, in the context of local public health issues and/or allied to the programme of research to which the candidate will be attached.[28]

The Commonwealth Scholarship Commission's (CSC) distance learning scholarships and professional fellowships focus on specific areas and professions of relevance to development, concentrating on specific courses and institutions. They aim to promote institutional capacity-building in the recipient country as well as to develop the skills of individuals. The CSC has consulted its sponsors, alumni and other stakeholders about what kind of scholarship provision can best promote the future prosperity of developing countries, whether it can find ways to link developing individuals with increasing the capacity of developing-country institutions, what benefits the United Kingdom derives from offering scholarships, and how they could be

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[27] p.66, Sixteenth Programme Rep ort Area E - "Partnerships and capacity building"

[28] "Master's research training fellowship" from the Wellcome Trust Web site accessed January 25, 2005.

Enhanced.[29]

This latter concern reflects a theme common to many donors: while they support training activities as necessary to capacity-building and development, they also seek a return on their investment to themselves and, in the case of government agencies, to their country. Thus, for example, the U.S. Department of State Educational Partnerships Program is designed to strengthen the capabilities of Eurasian institutions of higher learning to contribute to the transitions to democracy and market economies.[30]

In France, the Haut Conseil pour la Coopération Internationale links training to social and economic development:

> La formation professionnelle et technique est un atout important pour l'aide au développement économique par son impact sur la rentabilité des entreprises, pour la lutte contre les inégalités par l'aide qu'elle peut apporter à l'insertion d'un plus grand nombre de jeunes et pour le renforcement des sociétés civiles par le dialogue qu'elle permet d'instaurer entre les Etats et les mondes professionnel et associatif.[31]

In 2002, TWAS and ICSU in collaboration with IFS and LEAD held a Science Forum on Capacity Building in Science and Technology which concluded, *inter alia*:

> Networks of scientists are one the most important ways to tackle capacity building. They provide sharing of produced scientific knowledge, identification of common interests, understanding of impacts, dissemination and information gathering and support through sharing of facilities.
>
> They should also provide an essential further step: "institutional networks". Institutionalization brings more than sharing: a process towards a common research agenda, more human capacity and more resources and synergies for institutional growth.
>
> Centers of Excellence have a role but integrated in solid institutional networks. They are catalysts of research, they provide capacity building opportunities and peer revision..... The objectives should be to develop the social contract with science, supporting endogenous capacities and using diversity to sustain development.[32]

The growth of the knowledge economy, including the research activity in private sector

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[29] 44th Annual Report to the Secretary of State for International Development, 2003.

[30] US Department of State FREEDOM Support Act (FSA) Programs

[31] in I.1., La coopération française en matière de formation professionnelle dans les pays de la zone de solidarité prioritaire (ZSP) 8 octobre 2001

[32] from Summary Points. *Science Forum. Capacity Building in Science and Technology*.2002.

biotechnology and nanotechnology companies, adds a further dimension to general policy considerations about the place of training in the current global context. Where IDRC's involvement with and encouragement of participatory action-research methodologies is geared to enabling local communities to orient research and direct the application of its results, these firms depend on both basic and applied research to develop and market products. Industry-university partnerships in these areas can contribute resources for the education and training of researchers.

VI. Options

1. Summary of IDRC support for training

IDRC support to training within programs and projects tends to focus on the objectives of the program or project, rather than on any explicit guiding principles. It appears to be based on the assumption (sometimes explicitly stated in justifying the award of funds) that the training activities contribute to research capacity in aid to development. The Corporate Awards administered by the CTAP provide recipients support that is intended to enable them to develop or strengthen specific skills, such as training in methodology.

A synopsis of the Corporate Awards, and summary examples of training activities in some projects,[33] will serve to illustrate the general types of the Centre's support to training.

The **Corporate Awards Program** includes the following awards:

   -Doctoral Research Awards for field research
   -Canadian Window on International Development Awards (Master's and PhD levels)
   -John G. Bene Fellowship in Community Forestry: Trees and People (Master's and
    PhD levels) -The Bentley Fellowship (Master's and PhD levels)
   -Internship Awards: Centre Internships, Gender Unit Internships, and International
   -Internship Programs for young Canadians
   -The Pearson Fellowship
   -Centre Sabbatical Awards
   -IDRC Awards for International Development Journalism
   -Special Programs: Post-Doctoral Awards and Canada-Latin America Research Links
    Program

Examples of training activities supported within Program Initiatives projects:

A mix of a broad variety of training:

   A successful *inland fisheries research project* in Nepal included post-graduate training in
   Canada for senior technical and policy people; short course training for junior technical
   staff in immediate research application skills; training for sustained application of the

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[33] these are derived from Anne Bernard's *Adult Learning and Capacity Development in IDRC: A Concept Paper* February 2005 and George Tillman's 2003 *Small Grants Review.*

technology (cage culture) through outreach to fisher communities and strengthening the Fish Growers' Association; and workshops and publications to serve the broader dissemination task of "encapsulating the current state of knowledge" for wider use.

Training geared to local community-defined needs:

The *Fondo Mink'a de Cholavi project* focussed on helping organizations to learn new methods and procedures of thinking and acting through working with poor rural communities. It planned activities in response to the demands of community decision-makers, so that participants learned by doing and observing the results of applied research. As they conducted research into, and improve their understanding of, how change happens, and how the dynamics of poverty and exclusion work globally and locally to affect people's capacity to act, these organizations at the same time strengthened their own capacities to unlearn previous ways of thinking and acting and learn new ones.

Training of trainers:

Participatory development communication/PDC through the banana/NRM project in Uganda enabled farmers to strengthen and apply, in a permanent way, their capacities as analysts and decision-makers in an agricultural sector with considerable potential for health and economic development, but serious economic, biological and management problems. Those farmers would then learn to address, to share and to facilitate the uptake of the PDC approach with other farmers. It is a good example of a learner-based capacity development model.

Strategically targeted training:

The *agro-pastoralist project* in Yunnan, aimed at strengthening stakeholder capacities to understand what was happening to make extension ineffective, addressed at least four very different types of learners and their unique perspectives on both the reality and the power relationship within it: researchers, extension agents, farmers and, presumably, the political-business community.

Participatory research-based training:

The main capacity goal of the *Malawi HIV/AIDS project* was the enhanced ability of communities to care for their AIDS-orphaned children. Community was defined as those people, families, health and social service workers and agency (UNICEF, World Vision) personnel in a position to support at-risk children – or who could be in such a position with training support. In this case, the use of a Participatory Research methodology might have been optimistic, when even knowing who was to learn what, for what end, and starting from what level of readiness, was a major task.

Technical training:

> A *Community Control of Acute Respiratory Infections project* in Cuba involved basic, task-oriented training for participating doctors and nurses in the methodology of the data collection; for home visitors and social workers in interviewing techniques; and for junior research team members in statistical analysis relevant to epidemiology study. None of these people were intended to become professional researchers able to conceive and manage independent studies through the training exercises.

Network-based professional development:

> The *Economic and Environment Program for South-East Asia* (EEPSEA) gives research awards through twice-yearly competitions to enable younger researcher to develop their skills and learn new methodologies. Award holders present their designs, and preliminary and concluding results at regular meetings. The program has developed a significant regional network of environmental economists.

> The *African Economic Research Consortium* (AERC) is another IDRC-initiated network that provides to professional economists opportunities for practical professional development through an iterative process of developing proposals and conducting research projects on issues of local and regional importance.

Support to graduate student field work:

> *AGROPOLIS - International Graduate Research Awards* Program in Urban Agriculture supports innovative masters, doctoral, and post-doctoral field research that is designed and implemented in collaboration with non-academic partners.

> *Ecosystem Approaches to Human Health Training Awards* support Master's or PhD field work that explores the interaction between various components of an ecosystem, and how these components influence the prevalence of health problems among human populations. They are also designed to encourage collaboration with the institutional partners who will be the end-users of the research.

2. Options

The options for advanced education and training activities have evolved considerably since the 1981 Training Policy Study. While individuals are the primary participants in and beneficiaries of advanced education and training, the types and forms of relationships that these activities can have with other means of improving research capacity must also be considered when selecting particular options. Training can be delivered in increasingly flexible ways.

The Swiss report, *Enhancing Research Capacity for development*, in an echo of IDRC's approach to the full range of learning activities, includes the following paragraph about enhancing and relating training and research:

Support for training of scientists and quality research remain the main pillars of strategies to strengthen research institutions. Formal academic training and education has to be promoted at all levels to produce a critical mass of scientists and research institutions. At the same time, formal and informal training should be embedded in concrete research projects and regional, national and international networks to enhance research experience and exposure to the international scientific community.[34]

The increased mobility of HQP, labour market demands for PhDs, and ICT-enabled learning dissemination and training have created a global environment in which individual researchers can have much broader career choices than before. The regular references in reviews and designs of new programs in support of training to orientation, re-integration, field study, etc. illustrate efforts to ensure that formal training is part not only of an individual trajectory, but of a context defined by the research needs of the student and researcher's home country and region. Seen in this context, networks or consortia of Southern institutions (with or without involvement of Northern institutions) seem like incipient replacements of training in North. They may represent a transition and transformation of training provision as Southern institutions increase and strengthen their capacity.

It is not surprising that these shifts in the global environment coincide with questions and issues that are being raised about the role of science and technology in the knowledge economy: what are appropriate strategies? how can and should donors coordinate their activities? what role should the private sector play? what role do Southern institutions and donors play? how does training contribute to building research capacity? how does ICT affect learning and the dissemination and application of knowledge? And so on.

Some options for IDRC

1. IDRC needs to **articulate how it conceives training within its mandate and mission**, what it means by training in programmatic terms, what it assumes about its effects, and what it seeks to bring about as a result. In doing so, it will begin to understand and (re)define its niche and strategic advantage in the support of training in and on the South.

Several elements in the Centre's record suggest one way to start such an examination.

One, its support of networks is mentioned regularly in reviews of their own programs by other donors, as an example to be emulated. The development of networks or consortia of South institutions to provide research training and enhance collaboration confirms that they have definite value.

Second, flexibility has been a hallmark of its approach to designing and implementing projects and activities.

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[34] p. 36. *Enhancing Research Capacity for Development.* 2001.

Third, the Ecohealth and Agropolis awards programs provide models of how formal post-graduate level training can be used to help create a next generation of researchers and orient them to specific priority fields.

Understanding how and why these elements characterize IDRC, and to what degree they express its mandate, should help in developing principles of a strategy for guiding – not directing – staff choices of training options.

2. IDRC should **continue support for Master's and PhD level training** as fundamental to developing and strengthening research capacity in the South, and necessary to foster Canadian research capacity on and for the South. Equally, it should examine carefully how to support training in methods and tools for using that knowledge to develop applications. Above all, the Centre has to keep the long term in view: else it has no credibility as research centre.

3. IDRC is only one donor among many; and a relatively small one. It should **consider how it wishes to coordinate its support to training activities with that of other donors**, including private sector bodies. Sharing in funding is one option; housing a secretariat is another; and administering a program on behalf of other donors is yet another. The Centre has experience with all three models. What factors help determine which one to choose in a given situation?

4. IDRC should **continue and expend its projects, investigations and experimentations with ICT-supported learning**, both in formal training and in professional development. ICT will only continue to increase in availability, variety and effectiveness.

Several leading researchers in ICT-assisted learning indicate that little is known about its effectiveness in post-graduate training – whether for formal qualifications or for professional development. The recent impact evaluation of the University of Victoria *Early Childhood Development Virtual University* project suggests this to be one case worth learning from (the executive summary of the evaluation appears as Appendix III).

Current proposals and considerations illustrating some options:

   A collaboration with another donor/sponsor:

   The proposal for a *Global Health Research Partnership Program* has two main components.
   a) The *Teasdale Scholars in Global Health Research* would provide either graduate or post-graduate level scholarships for young people from both Canada and developing countries to engage in health research on pressing or emerging global health challenges, and also establish a program of Canada-Africa Research Chairs modeled on the Canada Research Chairs to strengthen African institutional and individual capacity.
   b) A *Canadian Global Health Research Partnership Network* would support teams and institutions that are crucial to developing and implementing sustainable solutions to global health challenges. The program would use mutually beneficial international partnerships to support promising individuals and strengthen research environments so

that they become more attractive and productive.

A consortium-based Master's program:

The proposal for a *Masters Program for Strengthening Capacity for Agricultural Research and Applied Economics in Eastern, Central and Southern Africa* arises from the work of the Agricultural Economics Education Board (AEEB) comprised of the Heads of Departments of Agricultural Economics from Public Universities in 12 countries in Eastern, Central and Southern Africa. It would involve a two-year program at accredited universities, and includes a third semester at the University of Pretoria for courses in institutional and behavioural economics, specialized fields of study and related electives. This use of a shared facility will maximize the use of available regional human and capital resources, and enhance close links among learners and the teaching staff. Support elements would include scholarships for students in countries with no accredited university, improving ICT facilities, establishing and maintaining a regional journal in Agricultural Economics, book publishing; funding collaborative research, and strengthening outreach programs to allow for feedback.

Ideas for ICT training and professional development:

The ICTD program is discussing a variety of training activities, including: a) a five day workshop with telecentre technologists and Voice Over Internet Protocol (VOIP) experts that would result in a commercializable VOIP service at the telecentre where the workshop is held, a collaboratively authored manual based on the work done during the workshop, and local workshops on VOIP in telecentres offered by participants when they return to their home location. b) The development of simplified, modular versions of up to 10 key telecentre manager support documents dealing with technical and management issues, to be translated into five official African languages and disseminated online and offline. c) In partnership with CIUEM and SchoolNet Mozambique, use Mozambique as a 'laboratory' to test how a national support network / helpnet might work. Document the process and model thoroughly with an aim to understanding cost structures and delivery models, and feeding into a similar process for other countries. d) Link the South Africa digital villages project to the Uganda Africa e-riders project to test shared, roaming support as a model for telecentres. Again, document the cost structures and delivery model thoroughly.

Appendix I

Some organizations that support research and research training in and on development, and the URLs of their Websites

UN Agencies

Food and Agriculture Organization (FAO): http://www.fao.org/ UNDP/UNFPA/WHO/World
Bank Special Programme of Research, Development and
 Research Training in Human Reproduction (HRP): http://www.who.int/hrp/
United Nations Educational, Scientific and Cultural Organisation (UNESCO):
 http://www.unesco.org/
UNEP World Conservation Monitoring Centre (UNEP/WCMC): http://www.unep-wcmc.org/
United Nations Research Institute for Social Development (UNRISD): http://www.unrisd.org/
United Nations University (UNU): http://www.unu.edu/
World Bank Graduate Scholarship Program (WBGSP) and JJ/WBGSP Partnership Programs:
 http://www.worldbank.org/wbi/scholarships/index.html
World Health Organisation (WHO): http://www.who.int/
WHO Special Programme for Research and Training in Tropical Diseases (TDR):
 http://www.who.int/tdr/

Foundations

The Alexander-von-Humboldt-Foundation (AvH): www.humboldt-foundation.de/en/
CAB INTERNATIONAL, CABI: www.cabi.org/
Charles Stewart Mott Foundation (CSMF): http://www.mott.org/
Ford Foundation (FF): http://www.fordfound.org/
The International Programme of the Carnegie Corporation (CC): http://www.ceip.org/
The Konrad-Adenauer-Stiftung (KAS): www1.kas.de/stiftung/englisch/intro.html
Rockefeller Foundation (RF): http://www.rockfound.org/
Volkswagen Foundation: www.volkswagen-stiftung.de/english/basicinf.htm
Wellcome Trust: http://www.wellcome.ac.uk/
Winrock International: http://www.winrock.org/

CGIAR Agencies

Consultative Group on International Agricultural Research (CGIAR): http://www.cgiar.org/
The International Centre of Insect Physiology and Ecology (ICIPE): http://www.icipe.org/
The International Service for National Agricultural Research (ISNAR):
 http://www.cgiar.org/isnar/

Coordinating Agencies

The Abdus Salam International Centre for Theoretical Physics (ICTP): www.ictp.trieste.it/
The Federation of Institutes for International Education in the Netherlands (FION):
http://www.fion.nl/fion.html
The Netherlands Development Assistance Research Council (RAWOO): http://www.rawoo.nl/
The Netherlands Organization for International Co-operation in Higher Education (NUFFIC):
http://www.nuffic.nl/ The SAIL Foundation (SAIL): http://www.fion.nl/sail.html
The Swiss Commission for Research Partnerships with Developing Countries (KFPE):
http://www.kfpe.ch/

Bilateral Programmes

Brazilian National Research Council:
http://www.cnpq.br/areas/cooperacaointernacional/africa.htm
The Commonwealth Scholarship Commission in the United Kingdom (CSC):
http://www.csfp-online.org
Danish Ministry of Foreign Affairs, DANIDA:
http://www.um.dk/en/menu/DevelopmentPolicy/DanishDevelopmentPolicy/DanishDevelop
mentPolicy
Deutsche Forschungsgemeinschaft (DFG): www.dfg.de/
Dutch Ministry of Foreign Affairs (DGIS):
www.minbuza.nl/english/menu.asp?Key=257572&Pad=
European Commission, Development Directorate-General, CORDIS (Marie Curie Programme):
http://www.cordis.lu/fp6/inco.htm
European Union - Marie Curie Fellowships: www.cordis.lu/improving/home.html German
Academic Exchange Service (DAAD): www.daad.org/
Haut Conseil de la Coopération Internationale: http://www.hcci.gouv.fr/index.html
Indian Department of Science and Technology:
http://www.nstmis-dst.org.international/index.asp
India National Science Academy: http://www.insaindia.org/
Institut de recherche pour le développement (IRD) : http://www.dsf.ird.fr/
Japan Ministry of Education, Culture, Sports, Science and Technology (MEXT/Monbusho):
www.mext.go.jp/english/
Japan Society for the Promotion of Science (JSPS): www.jsps.go.jp/e-home.htm
The Nile Basin Research Programme (NBRP): http://www.svf.uib.no/sfu/nile/index.htm
Norwegian Agency for Development Cooperation, NORAD (Centre for International University
Cooperation): www.siu.no/norad/
The Norwegian Council for Higher Education's Programme for Development
Research and Education (NUFU): http://www.siu.no/vev.nsf/info/NUFU-6D948
The Programme for Enhancement of Research Capacity in Developing Countries
(ENRICA):
http://www.danida.dk/
  The Swedish Foundation for International Cooperation in Research and
    Higher Education (STINT): www.stint.se/index.php?lang=1
  The Swedish International Development Co-operation Agency Sida/SAREC):
    http://www.sida.se/

Swiss Agency for Development and Cooperation (SDC): www.sdc-gov.ch
Swiss National Science Foundation (SNSF): www.snf.ch/default_en.asp
The Swiss Science Agency (SSA): www.snhta.ch/institutions/detail.php?inst_id=13
United Kingdom Department for International Development (DFID): www.dfid.gov.uk/
US Department of State FREEDOM Support Act (FSA) Programs:
    http://exchanges.state.gov/education/acadexchange/

Research Institutions

The Duke Center for International Development (DCID): http://www.pubpol.duke.edu/dcid/
Early Childhood Development Virtual University (ECDVU): www.ecdvu.org/
Fogarty International Center (FIC): http://www.nih.gov/fic
The Harvard Institute for International Development (HIID): http://www.hiid.harvard.edu/
The International Development Research Centre (IDRC): http://www.idrc.ca/
The International Institute for Infrastructural Hydraulic and Environmental Engineering, Delft
    (IHE-DELFT): http://www.ihe.nl/
The Institute of Social Studies, The Netherlands (IIS): http://www.iss.nl/
The Natural Resources Insitute (NRI): http://www.nri.org/
The Overseas Development Institute (ODI):
    http://www.odi.org.uk/RAPID/Projects/R0008/Organisations/FION.html
The Overseas Development Group (ODG): http://www.uea.ac.uk/dev/ODG
US Social Science Research Council (SSRC): www.ssrc.org/

International NGOs

The Global Development Network (GDN): http://www.gdnet.org/
The Institute of International Education, Inc.: http://www.iie.org/
The InterAcademy Panel on International Issues (IAP):
    http://www4.nationalacademies.org/oia/iap/iaphome.nsf?OpenDatabase
International Council for Science (ICSU): www.icsu.org/
International Foundation for Science (IFS): www.ifs.se/
International Fund for Agricultural Development (IFAD): www.ifad.org/
The International Network for the Availability of Scientific Publications (INASP):
    http://www.inasp.org.uk/
The International Union of Forest Research Organisations (IUFRO): http://iufro.boku.ac.at
The International Union of Nutritional Science (IUNS): http://www.iuns.org/
The International Union of Pure and Applied Chemistry (IUPAC): http://www.iupac.org/
The Third World Academy of Sciences (TWAS): http://www.ictp.trieste.it/%7Etwas
The Third World Network of Scientific Organisations (TWNSO):
    http://www.ictp.trieste.it/%7Etwas/TWNSOGeneral.html
The World Association of Industrial and Technological Research Organisations (WAITRO):
    http://waitro.dti.dk/

Regional NGOs

The African Capacity Building Foundation (ACBF): http://www.acbf-pact.org/noframe/brief.htm

The Africa Economic Research Consortium (AERC): http://www.aercafrica.org/

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA): http://www.odi.org.uk/RAPID/Projects/R0008/Organisations/SidaSAREC.html

The Council for the Development of Social Science Research in Africa (CODESRIA): http://www.sas.upenn.edu/African_Studies/codesria/codes_Menu.html

The Economy and Environment Program for Southeast Asia (EEPSA): http://www.eepsea.org/

The European Association of Development Research and Training Institutes (EADRI): http://www.eadi.org/

The European Centre for Development Policy Management (ECDPM): http://www.oneworld.org/ecdpm/

The Organization for Social Science Research in Eastern and Southern Africa (OSSREA): http://www.ossrea.org/

The Secretariat for Institutional Support for Socio-Economic Research in Africa (SISERA): http://www.idrc.ca/sisera/

The University Science, Humanities and Engineering Partnerships in Africa Programme (USHEPiA): http://www.uct.ac.za/misc/iapo/ushepia/middle.htm

Other web sites about capacity building or related topics

Capacity Indonesia - The Capacity Building for Decentralization in Indonesia (C.B.D.I.) Project: http://www-rcf.usc.edu/%7Ecbdi/links/intdev.html

Capacity.org: http://www.capacity.org/

The Community Development Resource Association (CDRA): http://www.cdra.org.za/

Evaluating Capacity: http://www.cgiar.org/isnar/ecd/index.htm

The Institute of Development Studies: http://www.ids.ac.uk/

The North-South Institute: http://www.nsi-ins.ca/

Appendix II

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Appendix III

The *Early Childhood Development Virtual University* (ECDVU) *Masters degree program* (University of Victoria) was a three-year (January 1, 2002 - December 31, 2004) program funded by CIDA. This executive summary of the Impact Evaluation was sent to me by Arlene Zuckernick of the ECDVU faculty on February 24, 2005.

ECDVU IMPACT EVALUATION EXECUTIVE SUMM ARY

The ECDVU Program for Sub-Saharan Africa (SSA) is a Masters degree program that seeks to *develop African ECD leadership capacity as a key strategy in support of child, family and community wellbeing and broader social and economic development.*

Conducted by the School of Child and Youth Care of the University of Victoria in Victoria, British Columbia, ECDVU works in close collaboration with governments, non-governmental organizations (NGOs) and organizations in SSA. ECDVU Program design and development work that began in 1999 was based on 10 years of prior international work and ECD training activities with Canadian First Nations (Indigenous) communities. The first three-year delivery phase extended from August 2001 through August 2004. Thirty participants commenced the program in 2001, and 27 students (90 percent) from 10 countries graduated, including 22 learners with Master's degrees and 5 with Bachelor's degrees. This external evaluation presents the impacts of the ECDVU Program not only on the participants themselves but also on their professional relationships, the development of ECD in their countries and region, activities for achieving Education for All (EFA), and contributions to Poverty Reduction Strategies (PRS) in their countries. It also offers recommendations for the future.

Program Goals and Organization

The goals of the ECDVU Program included building ECD capacity, promoting ECD leadership, and stimulating supportive ECD networks within and across participating African countries. ECDVU also had the implicit goal of addressing a major gap in research studies on ECD in SSA. ECDVU is more than a traditional training program. ECDVU must be assessed not only as a graduate studies program with regard to program completion rates, cost per participant and academic effectiveness but also in terms of building ECD capacity, leadership, and networks in Africa.

The ECDVU Program includes the active participation of both African and Western ECD organizations and specialists. National ECD Committees in Africa, African members of participants' committees, instructors, and members of the African Advisory Committee complemented the small Core Team at the University of Victoria. Ten countries were selected in the Horn, Eastern, Southern, and Western regions of Africa. Each had significant needs for expanding and improving ECD.[35] National ECD Committees were formed, and they identified and proposed candidates for ECDVU. They sought candidates who were dedicated to improving ECD in their nations, were respected mid-level ECD professionals with at least eight years of service, held full-time ECD employment, demonstrated a potential for leadership, and had at least 10 years of active work ahead. Of the 30 initial participants, three dropped out during the first year for personal reasons. Of the 27 graduates, 22 (82 percent) were women, and all worked and continue to work full time in ECD areas.

Program design and development work began in September 1999, along with extensive fundraising for development and delivery costs. Program delivery included: preparatory computer and information technology (IT) support; eight courses mounted on WebCT; textbooks, CD ROMs with course and other materials that were couriered to Africa; three two-week long seminars in Africa that also provided course credits; assignments that included local studies; frequent email support from ECDVU's Cohort Manager; active dialogue among participants and their instructors; and support for the preparation and completion of major projects or theses. ECDVU's culturally appropriate "generative curriculum" methodology was used. This model unites local child rearing knowledge and traditions with national and Western literatures and it takes an integrated approach to ECD. Both

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[35] Five countries provided four participants each (Ghana, Malawi, Nigeria, Tanzania and Uganda). Two countries provided two candidates (Lesotho and Eritrea) and three nations provided only and one candidate (The Gambia, Kenya, and Zambia).

active and reflective analytic instructional strategies were used. A comprehensive internal monitoring and evaluation system was designed and implemented effectively.

Internal Evaluation Results

The ECDVU Core Team assessed program activities and participant achievements. The internal Evaluation Report will be made available on the ECDVU website. The internal evaluation found that the following results were achieved:

- ECDVU successfully graduated 90 percent of its entrants when most distance learning programs in Africa suffer 50 percent or greater attrition.
- All but one of the ECDVU graduates continue to be employed in ECD in SSA. Thus "brain drain" was virtually completely avoided. Only 15 percent of the learners changed employers during the program, and 96 percent remained in their home country.
- A "Community of Learners" was created. Two-thirds of participants interacted through emails with other learners on a weekly or biweekly basis.
- Participants dramatically increased their organizations' number of partners during the program.
- All learners reported that due to the program they had become more confident in their ECD knowledge and skills.
- Some 66 percent of their colleagues reported that participants had experienced a "positive change" regarding their knowledge of ECD, and an additional 26 percent noted that they had a "somewhat positive change."
- All of the learners stated they had increased their IT skills, and 76 percent of them felt that their proficiency had become "above average/significant."
- Some 78 percent of participants reported they had improved their research skills.
- A total of 89 percent noted they had achieved "above average" to "significant improvement" in their skills for taking an integrated approach to ECD (IECD).
- Participants were perceived to have increased their value and status as ECD professionals, and 63 percent of them reported they had been promoted.
- According to their colleagues, 95 percent of the learners advanced national policy agendas through participating in policy forums, advocacy activities, and drafting policies.
- Their colleagues also noted that a total of 70 percent of the participants disseminated knowledge gained in the ECDVU Program through creating new instructional materials and curricula.
- Their colleagues reported that 87 percent of the learners were involved in developing new programs, several of which became model programs that were replicated throughout their countries.
- Virtually all of the participants were involved with community-level programs.
- A total of 87 percent of their colleagues felt that participants worked with people in other sectors more than they had previously, and 91 percent said they worked with new ECD groups.
- Some 72 percent of the participants' colleagues were aware of learners' involvement with networks in other countries.
- Participants expressed strong support for ECDVU to undertake a Phase II.

Where they coincide, the findings of the internal evaluation parallel those of the external evaluation. Thus the program's internal evaluation results can be given full credibility.

External Evaluation

ECDVU courses, methods, materials, dialogues, major projects and theses were reviewed carefully, and they were found to be culturally appropriate and of exemplary quality. ECDVU's "generative curriculum" and methods would be valuable for students in any world region. The curriculum is eminently flexible and enables participants to learn about ECD in their own cultural contexts while reviewing the history and current status of ECD concepts, activities and research throughout the world. Research topics selected by participants were found to be centrally important to ECD in SSA.

The ECDVU Program selected appropriate countries and participants for Phase I. However, there is a notable need for additional graduate training in most of the 10 nations that were selected, and especially in those countries that lack in-country graduate ECD programs. At the same time, a high level of demand for the program was found in Francophone countries of West and Central Africa.

The program had a strong impact upon improving the employment and status of participants in their countries thereby helping ensure the development of a sustainable ECD capacity in those nations and the SSA region. NGOs are important for ECD expansion and improvement, and Country Teams with three to four participants tended to include people employed in NGOs. Smaller Country Teams of participants were found to have less country-level impact than larger ones, but in the case of the two countries with single participants a strong foundation for a larger Phase II team was put in place.

ECDVU is beginning to produce quality publications, from major projects and theses of the graduates to articles for technical journals. Other publications are currently being prepared. A review of many program documents revealed that during their time in the program and immediately thereafter, ECDVU participants made a surprisingly large number of important national and sub-national contributions to ECD policy, training and program development.

With respect to financial management, the ECDVU Program appears to have utilized very sound, transparent and effective accounting and budgeting procedures. Significant in-kind support in Africa was attracted to the program. The average three-year cost per ECDVU participant was found to be roughly between $27,000 and $30,000. This cost is from $18,000 to $34,000 below the cost of Masters degree training in U.S. public universities. In addition to high program retention and brain drain avoidance, participants continued to work in their home countries and engaged in culturally appropriate studies that they immediately applied to their professional work in ECD. Even though the ECDVU Program is unique, well designed, has a low cost per participant, is competently managed, and is fully sustainable on a technical level, it is not as yet financially sustainable over the long-term. Given its track record of success, the University of Victoria and its partners deserve expanded support as they move to develop a long-term plan for financial self-sufficiency.

To confirm the results of the internal evaluation and ask some questions beyond its scope, a qualitative, open-ended questionnaire was emailed to program graduates. Of the 27 participants, 23 (85 percent) responded to the questionnaire [questionnaires went out over Christmas, making contacts more difficult]. The graduates noted they had faced many obstacles to developing ECD in their nations before joining the program and they listed numerous ways that ECDVU had helped them to overcome those obstacles.

Virtually all participants became involved with ECD policy development, advocacy and implementation during their studies, thereby demonstrating ECDVU's impact on ECD policy development in SSA. All of the 23 respondents were involved in training activities, ranging from one to 11, and 17 participants conducted five or more training activities each during and immediately after the program ended. It is striking to note that 65 percent of the graduates were involved in program design, and 52 percent were involved in program implementation. All but two of the 23 respondents were involved in developing or advocating the use of an integrated approach to ECD (IECD). This level of commitment to holistic approaches and inter-sectoral coordination and program development demonstrates that graduates perceive IECD to be useful and appropriate in SSA. Some 83 percent of the graduates noted that they are applying and/or teaching others coordination and leadership skills they learned through the program. All but one of the 23 graduates noted that they planned to use IT to conduct ECD activities showing that the program was successful in promoting the use of IT for ECD development. Some 87 percent of the graduates stated that they had become involved in ECD networks or partnerships in their nations. Quite likely, significantly more impact could be achieved in ECD policy development, advocacy, training, program development, and networking in SSA through continuing and expanding the ECDVU Program.

The field of ECD in SSA has a very limited literature. Each study by ECDVU participants or graduates promises to make a contribution to advancing the understanding of ECD in SSA. Ninety-six percent of the respondents reported that through the ECDVU Program they have become involved in further research on ECD. Several noted they eagerly want to expand their research activities. A total of 57 percent of the graduates are involved in from two to five research projects.

Even though ECDVU did not have explicit goals for participant involvement in EFA or PRS activities before the program began, it is striking to note that 70 percent have become involved in EFA activities and 87 percent in PRS activities. Many

graduates are providing ECD knowledge and concepts for EFA and PRS documents, implementation and evaluations. This is an area for more work during ECDVU's Phase II.

The ECDVU Program has the goal of contributing to building networks and partnerships within and among SSA countries and other world regions. In contrast to involvement in EFA and PRS and in-country networking, the development of networks with other countries of SSA or the world was somewhat lower. Only 57 percent noted they had developed new international relationships in addition to the network within ECDVU. However, the program has begun to help expand existing regional networks as well as to develop new sub-regional networks. During Phase II, the program could build upon the valuable base of networks that has been established.

With respect to their future goals, all respondents spontaneously noted that their interest in and dedication to ECD had increased greatly due to ECDVU Program participation. Fifteen graduates listed three or more new goals. The graduates feel strongly about the importance of advocating for ECD, and they stated that they hope to help increase investment in ECD in SSA. ECDVU was successful in building a strong personal commitment to ECD in all of the 23 participants who responded to the questionnaire.

It is clear that graduates feel strongly attached to the ECDVU Program and they want to continue receiving supportive services. However, ECDVU currently lacks a fund to provide long-term support and networking. Graduates also want to contribute to the long-term development of the ECDVU Program in Africa both as individuals and as Country Teams. Graduates appear to have a reached a fairly high level of consensus that the ECDVU Program at the University of Victoria should establish higher education partnerships and additional partnerships with governments and NGOs in Africa. Graduates repeatedly and enthusiastically praised the quality of the ECDVU Program. They especially lauded their professors, the courses and materials, the Cohort Manager and the regional seminars. Even though the recommendations for program improvement were relatively few, the suggestions were valuable. For example, although Phase I of the ECDVU Program was successful without an orientation seminar, several graduates said such a seminar would have been helpful.

Finally the "ECDVU Program Keys for Building ECD Capacity in SSA" were assessed to see if they had been applied in Phase I in SSA. It was found that they had been fully and successfully applied and that they were the essential characteristics of the program.

Recommendations

Following is a synthesis of the major recommendations:
· **Size of Country Team s.** Typically, each Country Team should have at least three to five people in order to achieve wide-ranging country impact. As new countries are added to the program, in some cases it may be advisable to begin with only one or two participants; however, to the degree possible, this should be the exception.
· **Country Selection.** ECDVU should place a high priority on building upon its existing sound base of operations, with graduates helping to support future cohorts. Programs for one country at a time could also be considered. However, to the extent possible, emphasis should be given to multiple-country strategies in SSA.
· **The Language Dimension of Country Selection.** If at all possible, Phase II should respond to the strong demand from countries of Francophone West and Central Africa for participation in the ECDVU Program. It would be advisable for ECDVU to build university partnerships with Francophone universities in Canada and West Africa.
· **Higher Education Partnerships.** Linking country selection to the establishment of higher education partnerships with the goal of developing strategic national and sub-regional ECD training services could help to institutionalize ECDVU within SSA more rapidly. Higher education partnerships between ECDVU at the University of Victoria and the University of Education at Winneba, Ghana and Chancellor College, Malawi have been initiated. Support should be provided for these partnerships while ECDVU continues to explore other partnerships in each subregion.
· **National ECD Committees.** To achieve national-level impact, it is valuable to have strong National ECD Committees that support participants' Country Teams. For Phase II, membership criteria should be established for National Committees to ensure balanced representation and a guidance manual should be provided. Committees should support and review Country Teams and program participants.
· **Country Strategies.** ECDVU is sufficiently mature that it could help governments, National ECD Committees, national ECD Networks, universities, ECDVU Alumni groups and Phase II Country Teams work together to design and establish a National ECD Training Strategy linked to current ECD and other relevant policies or policy planning processes and to other training resources in the region.

· **Advisory Groups.** Each of the Advisory Groups played valuable roles in advising the program. They should be maintained and strengthened.

· **Participant Selection.** The open, transparent and balanced system for candidate identification and selection should be rigorously maintained. Care should be taken to avoid individual control of the selection process.

· **Size of Cohorts.** Consider having a larger Phase II with two simultaneous cohorts of from 25 to 30 participants each. The position of Senior Cohort Manager could be created along with employing an additional Cohort Manager for adequate support.

· **Gender and Specialization of Participants.** To improve gender equity, every effort should be made to recruit more male ECD leaders for Phase II. Also, ECDVU would benefit from having specialists in juridical protection, health planning and program development, nutritional assessment and program development, and sanitation.

· **Participants' Committees.** The roles of African ECD professors and specialists could be further expanded and strengthened, especially if higher education partnerships are established. Selected ECDVU graduates could become mentors and guides.

· **Alumni Support and Guidance.** ECDVU Program alumni could help to prepare a "Guide for Participants" and a "Manual for Mentoring Participants." Graduates could mentor participants, provide information, assist with seminars, and prepare articles.

· **Alumni Leadership.** An Association of ECDVU Alumni and Friends, based in Africa, could be established and led by alumni. It would constitute a "community of learners" focused on ECD policy, practice and publication in SSA.

· **Program Contents, Methods and Media.** Most of the comprehensive courses of Phase I can be used again with minor changes and expansions. Course content related to ECD policy planning could be strengthened. More emphasis could be given to the topics of health, nutrition, sanitation and juridical protection to ensure that integrated ECD skills are taught. Consideration should be given to preparing a course on HIV/AIDS and ECD. Greater emphasis should be given to inserting ECD in Millennium Development Goals, EFA and PRS activities. ECDVU should begin training in research methods by the second semester of the course. Also, it would be advisable to provide continuing short-term research workshops in SSA that would include alumni and others. They could have the twin goals of building collaborative research projects and supporting a growing research community. In response to alumni requests, ECDVU could establish partnerships with other Ph.D. granting institutions and an African university to provide Ph.D. level training in ECD in Africa. The types of media employed are appropriate to African connectivity challenges and should be maintained.

· **Face-to-Face Seminars.** A seminar at the opening of the program would be ideal if were to be financially feasible but it is not essential.

· **One-Yea r Programs and Regional Institutes or Workshops.** Using the course and communications base developed to date, ECDVU potentially could provide shorter-term or one-year "certificate" courses for trainer of trainers. This training could be provided through e-learning as well as face-to-face seminars. However, short courses should not be considered as a substitute for the ECDVU graduate program that plays an essential and qualitatively different role in capacity building.

· **Major Projects and Theses.** The topics of the major projects and theses could be selected at an earlier point, and design work could begin during the second semester when research methods begin to be taught. This would give participants who work more time they need to complete significant research projects of high quality.

· **Potential Program Publications and Products.** ECDVU Program contents, methods and results merit the preparation of a book of readings contributed by ECDVU participants and professors. Such a book should be made available in SSA and other world regions and placed on the ECDVU website. Separate funding should be sought to establish an ECDVU published series, such as *Foundations of ECD in SSA* or a similar title. This series could serve as textbooks and reading resources for ECD courses in universities, teacher training colleges and training seminars in SSA and other world regions. Threaded discussions on key ECD topics could be held if support were to be made available for the discussion guide and related web costs.

· **Program Organization.** The roles of the Program Administrator and Cohort Manager should be maintained. The program has reached a level of maturity that requires a greater decentralization of roles and responsibilities. Funding uncertainties that kept the Core Team numbers overly restricted throughout Phase I should be stabilized to the extent possible. As increased funding becomes available, additional technical as well as administrative support will be needed to ensure the Director is able to continue playing essential leadership roles.

· **Financial Support.** *The expertise, methods, organization and years of experience of the ECDVU Core Team is unique.* It would be extremely difficult and costly to try to duplicate this capacity in any other institutional setting. The ECDVU Program merits receiving an endowment of at least US$5 million to ensure that developmental, support, evaluation, administrative costs and bridging and follow-up funds are in place, and the highly effective Core Team is expanded over time. The program also merits receiving expanded funding support for core program development and delivery services. The diversified approach to project by project financing should be maintained. To achieve sustainable ECDVU Programs in SSA, new funding will be required to develop strong higher education and other institutional partnerships.

· **Cost per Participant.** The program should make every effort to keep the cost per participant in the range of from $27,000 to $30,000, and maintain low attrition rates in order to demonstrate continuing cost-effectiveness. Additional program components,

such as higher education partnerships, should be budgeted separately.

· **Cost-Effectiv eness.** Because ECDVU's current cost per participant is from $10,000 to $13,000 lower than international training costs for Master's degree students in Canada and the U.S., the program is highly competitive for attracting international training dollars. ECDVU should inform all major bilateral and multilateral donors that it is able to provide regional and national-level training programs that are low in cost and cost-effective in terms of student retention and national ECD impact.
· **Budgeting for Program Follow-up Expenses.** It is advisable for ECDVU to encourage donors to provide approximately $100,000 in additional funding for program completion, evaluation, follow-up, and bridging expenses.
· **The Longitudinal Study Option.** Regular follow-up activities should continue with ECDVU alumni in order to assess the medium and longer-term impact of Phase I of the ECDVU program. Funding support should be sought for this effort.

In conclusion, the ECDVU Program was the product of a rich partnership between many actors in Africa with the University of Victoria to support activities for improving ECD in SSA. In terms of participants' activities and accomplishments, ECDVU amply fulfilled its major goals of building ECD capacity, promoting ECD leadership, and stimulating supportive ECD Networks in several countries and promoting inter-regional collaboration. It is also making a significant impact upon policy and program development for Education for All and Poverty Reduction Strategies. In addition, ECDVU is beginning to achieve the goal of expanding the range and types of literature available on ECD in SSA.

By any measure ECDVU has been singularly successful in meeting and exceeding all of its objectives. Based on ECDVU's outstanding track record of success, there is every reason to believe that future activities will achieve even greater results for expanding and improving ECD in SSA.