

Chapter 7

Research capacity strengthening (RCS): progress and perspectives

*Section 1
Definition and dimensions*

*Section 2
The problem*

*Section 3
RCS for what?*

*Section 4
Partners in RCS*

*Section 5
Selected examples of RCS efforts*

*Section 6
Agenda for the coming years*

Section 1

Definition and dimensions

1. Importance of research capacity strengthening to correct the 10/90 gap

Research capacity strengthening (RCS) plays a central role in the process of identification of needs, selection of priorities and development of research strategies that are appropriate and relevant to improving health in individual countries, particularly developing countries.

Health research capacity in many developing countries is weak. As a result, many developing countries are unable to participate fully in national and international health policy development. To ensure that the focus and relevance of the research is maintained, the work is best done within the countries and by the country nationals themselves. Therefore, an integral part of development support is the building-up of national and regional capacity and self-reliance through RCS. This approach should contribute to building a science culture at country level and enable developing countries to build up a critical mass of able and qualified scientists who can undertake research on the priority health problems of the country and participate in the broad international research agenda. This will constitute a crucial step in correcting the 10/90 gap in global research funding since many of the developing countries will get increased funding for their own health problems.

2. Research should not end until people's health improves in a measurable way

A widely accepted definition of health research is “the generation of new knowledge using scientific methods to identify and deal with health problems”.¹ However, a growing number of public health professionals consider that research does not stop at “generation of knowledge” but should complete the logical cycle of benefiting the users, i.e. the full utilization of knowledge to improve health. According to this broader definition, health research should not end until people's health improves in a measurable way.

To ensure and sustain the creation and utilization of research, there is an urgent need to strengthen the health research systems. The Commission on Macroeconomics and Health has argued that mobilizing resources for larger investments in research capacity strengthening is a central issue and is one of the most powerful, cost-effective and sustainable means of advancing health and development.²

3. Definition of research capacity strengthening

The UNDP definition of RCS is: “Research capacity strengthening is the process by which individuals, organizations and societies develop abilities (individually and

¹ Pang T et al. “Knowledge for better health - a conceptual framework and foundation for health research” in *Bulletin of the World Health Organization*, 2003, 81 (11).

² Commission on Macroeconomics and Health. *Macroeconomics and Health: Investing in Health for Economic Development*, WHO, Geneva, December 2001.

collectively) to perform functions effectively, efficiently and in a sustainable manner to define problems, set objectives and priorities, build sustainable institutions and bring solutions to key national problems”.³

This definition brings out all the key elements that are necessary for effective RCS:

- strengthening the abilities of individuals, institutions and countries to perform functions that they would not otherwise have been able to perform;
- not only the abilities of individuals, but of institutions and countries, which draws attention to the central role of institutional

development and to the need to integrate RCS into the development of the national health research systems (including governance, organizational systems, policies, infrastructure, equipment);

- efficiency, effectiveness and sustainability;
- strengthened abilities directed at the definition of national problems and priorities;
- strengthened abilities directed at solving national problems;
- strengthened abilities to utilize the results of research in policy-making and programme delivery.

Section 2

The problem

The Report of the Commission on Health Research for Development (1990), the World Bank's World Development Report (1993) and the Report of the Ad Hoc Committee on Health Research published by WHO in 1996 were unanimous in concluding that developed countries have benefited greatly from the increase in knowledge and the advancement of technology derived from scientific research. However, developing countries, and poor populations in particular, have benefited little from this and are now striving to build indigenous research capacity to study and solve their own health problems.

Inadequacy in capacities for research remains a major impediment for the developing world. Despite over three decades of efforts to build up capacity, during which thousands of scientists from developing countries have been trained, most of the expected breakthroughs have not happened. Large numbers of trained scientists are not working in their countries of origin. Building and retaining indigenous capacity for health research must move to centre stage, as this is vital for sustainable development.⁴

There are many agencies and donors who provide financial support for capacity

³ UNDP. *Technical Advisory Paper No. 2*, 1999.

⁴ Gezairy HA. Regional Director, WHO, EMRO. Message to the seventh meeting of Heads of Research in EMRO (December 2003).

strengthening in developing countries. Their activities have developed over the last half century, using diverse methods. Despite these capacity-building efforts at national, regional and global levels, evaluations have shown limited results and wide gaps in national research capacity in low- and middle-income countries. There now appears to be a strong convergence of views in favour of more systemic and concerted efforts to accelerate research capacity strengthening in developing countries.

Some of the **major gaps and deficiencies** in research capacity strengthening in many countries can be summarized as follows:

1. **Low priority for research.** The recommendation of the 1990 Commission on Health Research for Development on the proportion of national health budgets and foreign aid that should be devoted to research (respectively 2% and 5% of health budgets) is far from being implemented, with only one or two exceptions. In other words, research is generally low on the national priority list.
2. **Inadequate efforts directed towards prioritization of research problems.** Limited information is available on: (a) the major problems affecting the health of populations at country level (burden of disease); (b) their determinants (at the level of the family/community, health systems, sectors other than health and central government policies); and (c) the cross-cutting issues affecting the health level of that population (poverty, gender, health policies). As a result, there is a high risk that the research efforts of a country (and the research capacity strengthening

efforts) are not directed at the priority health problems of the country. This information is necessary (a) to develop a national health plan and (b) to orient the national health research programme as well as (c) the research capacity strengthening efforts.

3. **Contribution of RCS to health systems performance.** Another challenge has been the transformation of research results into health policies and improvements in the functioning of health systems and health research systems. Results from available evidence show that RCS has had a limited impact on the improvement of policies and the functioning of health systems.
4. **Limited use of existing knowledge.** Serious obstacles are encountered in many countries in the application of the best existing knowledge to the country's health situation.
5. **Less than optimum use of the limited human resources.** In many cases, not only are the human resources in the health and health research sector limited, but less than optimum use is made of them. This problem is further compounded when trained health staff, especially researchers, migrate either overseas or from the public sector to the private sector. The movement of skilled and educated members of a nation to other nations is both a response to the lack of opportunity in the home country and to the availability of opportunity in another country.⁵ A paper presented by Saravia in Forum 6 indicated that higher education in itself was one of the principal conduits of permanent emigration.

⁵ Saravia N, International Centre for Medical Research and Training, Cali, Colombia. Paper presented at Forum 6, Arusha, October 2003.

6. **Limited monitoring and evaluation of results.** Finally, the results of health research (and RCS) are not often evaluated in terms of their inputs, process, outcome and impact on the health of the populations. Some indicators have been developed over the past years. A particularly useful matrix for the evaluation of RCS efforts was developed in the November 1999 TDR seminar on this topic. It is presented in Insert 7.1. Evaluations to date have identified a number of key factors explaining the success or failure of RCS efforts. These are summarized in Insert 7.2.⁶

In summary, there is a consensus among donors and national governments that capacity strengthening efforts so far deployed have neither made a significant impact on the policy and management decisions in most developing countries, nor had an important impact on the health of populations, even though the efforts have substantially increased capacities in a number of them. In addition, it appears that RCS efforts so far have mostly benefited individuals in low-income countries rather than the institutions and the health research systems as a whole in those countries.

Section 3

RCS for what?

Research capacity (and therefore RCS) is a tool to help a country deal with its national health problems, in as effective and efficient a manner as possible. It is therefore part of the national health system and should be integrated in a comprehensive national health plan for the promotion of health and the delivery of health services to the country.

Ideally, a health research system (and the efforts undertaken for its capacity strengthening) should aim at the following specific objectives:

1. **Advocate higher priority for research.** The health research system should be able to demonstrate the contribution made by research to the solution of national problems and the improvement in the country's health situation, thus having the arguments to convince finance ministers and parliaments of the necessity to increase health research budgets to at least 2% of the national health budget and 5% of the foreign aid budget for health.

⁶ Adapted from Nchinda TC. in *Social Science and Medicine* 54 (2002) 1699-1711.

Insert 7.1

Evaluation criteria and potential indicators of impact for research capability strengthening*

	Individual	Institutional	National	Global
Impact RCS	Incorporation of research results in policy documents and country programmes. Incorporation of individual into policy-making bodies at national, regional, global level.	Cumulative (individual) involvement in national, regional, global level policy-making bodies. Incorporation of institutional representatives into national policy-making bodies (consultations).	Implementation of policy at national level. Budget allocation for research and continuity over time (%GNP).	Implementation of evidence-based policy at regional, global level.
Outcome RCS	Publications: national, international. Citation index. Grants: number, magnitude, diversity of source. Trainees, undergraduate, postgraduate, % women. Collaboration with established international groups. Awards. Tools/patents. Collaborative projects.	Total number of publications and citation frequency over time. Number of national, international trainees. International grants: number, diversity, magnitude and over time. Participation in inter-institutional networks. Proportion of projects that are inter- or trans-disciplinary. Proportion of projects that are collaborative.	Product. Policies. Tools. Introduction of health-improving instruments. Evidence (research results) for policy development. Institutionalization of guidelines.	Product. Policies. Tools. Introduction of health-improving instruments. Evidence (research results) for policy development. Institutionalization of guidelines.
Process	Success in training. Reintegration to home country over time. Promotion record.	Number of funded activities and level of funding: - local - national - regional - international Number of functional research groups. Number of principal investigators within supported centre.	National commitment to research. Existence of national research council. Research included as line item in national budget.	Regional networks in priority research areas.

Source: TDR, Seminar, November 1999.

* Conclusions of the Prospective Thematic Review of TDR Research Capability Strengthening

Insert 7.2

Reasons for success and failure of RCS

Success was found to be associated with the following factors:

- Capable and committed scientific leadership
- Continuity of funding for research
- Ability to attract a core of dedicated young scientists and provide them with independent research funding
- Adequate and appropriate infrastructure for research (building and premises)
- Adequate equipment and supplies including modern communication facilities and scientific literature
- Scientific linkage to another (stronger) institution in the South or in the North
- Stable conditions of service with adequate remuneration.

Failure was associated with the following factors:

- Weak scientific leadership, including diverting scientists to other non-scientific tasks
- Strong external (usually political) influences on the running of the institution
- Strong adverse socio-political climate creating frustration among the scientists
- Poor remuneration, compelling the scientists either to seek other sources of remuneration to augment their income or leave the country
- Inappropriate service conditions, prompting the departure of scientists.

Source: Nchinda TC in *Social Science and Medicine*, 54 (2002) 1699-1711.

2. **Identify national health research priorities.** Based on a systematic study of the major problems affecting the country's health, their determinants (at the various levels) and the cross-cutting issues affecting the health level of that population (e.g. poverty, gender, health policies).

3. **Translate health research into action.** Systematic attempt to link research to policy and to the delivery of health interventions.

4. **Systematically apply existing knowledge.** Systematic monitoring of the application

of existing knowledge to the country's health problems.

5. **Develop an efficient and effective research environment.** Monitoring of the research system in all its components to ensure effective and efficient delivery of health-promoting research products.

6. **Systematic monitoring and evaluation of the results of the system and of its strengthening.** In terms of inputs, process, outcome and impact on people's health.

Section 4

Partners in RCS

1. National level

National medical research councils and academic institutes all over the world are the vanguard and the biggest contributors to health research and RCS. They remain at the forefront of efforts to strengthen health research capacity. In the last two years, Brazil, Cuba, Indonesia, the Philippines, Tanzania, Thailand and South Africa have analysed their research systems successfully and developed capacity-building plans. The Pakistan Medical Research Council and its partners requested the Global Forum to provide support for identifying national health research priorities. Many other efforts are under way by various national medical research councils and their national and international partners to move forward the RCS agenda.

Similarly, civil society organizations are showing an interest in strengthening their own research capacity. A recent success story is from India, where in 2003 more than 200 community-based organizations were helped through a Rockefeller research award to develop their capacities in research methodologies, analyses and report writing.⁷ This research grant has successfully demonstrated that there is enormous potential for capacity building through civil society organizations. A summary of the project is described in Insert 7.3.

2. International level

It can be agreed that most research grants in

one way or another contribute to strengthening the research capacity of an individual scientist or, in some cases, of an institution. On this basis, most donor agencies and large foundations can be included among RCS partners. Very varied strategies have been used in these RCS efforts. An attempt is made to list them below (in no particular order):

- Support for the establishment of a research agenda (including a plan for RCS).
- Support for national health research networks.
- Improved use of the new information and communication technologies.
- Training of individual researchers through university scholarships.
- Programme support for specific diseases or risk factors.
- Funding consortia for specific research problems.
- Equipment of research facilities.
- Integration of a research component in health programmes, including health sector reform programmes.
- Training in research management and process (grant writing, research methodology, policies).
- Internships.
- Pairing of research institutions in the North and the South.
- Involving CSOs and local communities in the research efforts.
- Support for national and regional health research networks and forums.
- Monitoring and evaluation of results.

⁷ Yesudian CAK. *Strengthening health research in NGOs in India. Results of a Rockefeller Foundation Award*, India, Tata Institute of Social Sciences, 2003.

Insert 7.3

Developing research capacity in community-based organizations for health in India

In India, community-based organizations (CBOs) are grassroots organizations working among the poorest populations in tribal, rural and slum communities. These CBOs can contribute much to finding the best solutions to local problems through research.

This insert briefly explains the process and the outcome of an experiment in developing research skills among CBOs, which was funded through a Rockefeller Award and carried out with some of the CBOs involved in delivering community health services in remote parts of the country.

Instead of selecting the potential CBOs, a strategy of self-selection was adopted. A database of 2667 CBOs was established and a one-page questionnaire was sent to each CBO inviting them to join a health CBO network. A total of 517 CBOs responded and were sent a detailed questionnaire to find out about their research capacity. Of these, 208 CBOs responded and they formed the new health research CBO network.

Seven research method modules were prepared to cover the whole research process and were delivered in four training workshops. After each training workshop, the CBOs went back to implement the module.

A survey research manual was prepared entitled “User Friendly Survey Research and Statistics for Health Workers: A Primer”. This explained the various steps in research and provided examples. In the first training programme, 157 CBOs out of the 208 in the health CBO network participated in eight workshops to prepare the research proposal. This was followed by training in data processing and analysis. The last phase involved a training workshop on report writing.

The research areas included child health, adolescent health, women’s health and communicable and noncommunicable diseases. At the end of the project, an evaluation of the research capacity development exercise was carried out, which revealed that the health CBOs were confident in independently formulating a research problem and designing a research project. They also gained skills in data collection. However, a majority were not confident in using the data processing skills they were taught. Similarly, they needed more assistance in writing research reports. Although many CBOs dropped out at different stages of the project, they gained important research skills for their work in the field.

The three-year action research project brought to light some revealing facts about RCS.

- First, complex health research can be demystified and simplified.
- Second, grassroots workers assimilated research skills, as these were taught in instalments of theory and practice. The principle of “doing is learning” worked well with the CBOs.
- Third, since the research problems were those that were of concern to the CBOs, their involvement in learning was intense. Finally, the learning and application of research skills increased their capacity to plan, organize, implement and monitor community health care programmes, systematically leading to better results.

Source: Adapted from Yesudian CAK. Strengthening health research in NGOs in India. Results of a Rockefeller Foundation Award, India, Tata Institute of Social Sciences, 2003.

Section 5

Selected examples of RCS efforts

1. Global Forum for Health Research

In its first years of activity, the Global Forum's role in the RCS field has been focused on the following:

- Development of a priority-setting method: before undertaking a major RCS effort, a country should determine its health research priorities based on analysis of the burden of diseases and risk factors, a cost-effectiveness analysis, and an analysis of its comparative advantages. The Combined Approach Matrix developed by the Global Forum permits national authorities to identify research priorities and the areas in which RCS investments would be most productive for improving the health situation of the country.
- The Global Forum's annual meeting provides a platform for exchange of ideas regarding the development of a systemic approach to RCS efforts.
- Project work and financing: the Global Forum contributed to RCS in a number of projects co-financed in 1998-2003; it also contributed to the Collaborative Training Program (CTP) with INCLIN, COHRED and the Alliance for Health Policy and Systems Research.⁸
- Advocacy: the Global Forum is a strong advocate for RCS efforts and for developing a systemic approach to RCS development.

A brief summary of the RCS topics discussed at Forum 6 (November 2002) and Forum 7

(December 2003) is presented below:

Forum 6, November 2002

The main thrust of the session on RCS at Forum 6 was to measure the results of RCS and the sustainability of the efforts. The following issues were highlighted:

- The huge costs of the brain drain and the need for strategies to reduce and possibly control this problem.
- The good results of partnership grants in which the principal investigator was a researcher in the developing country institution.
- The complementarity between individual training and institutional capacity development.
- The importance of PhD research within the country in order to address the national health problems.
- The critical role of the enabling environment at the country level for good research (policies, infrastructure, salaries, equipment, supplies).
- The need to encourage external donors to systematically include capacity-building components in their bilaterally-funded projects.
- The need to define the expected outcomes and impacts of RCS programmes from the outset.
- The importance of monitoring the outcomes, impacts and sustainability of research through measurable indicators.

⁸ CTP Modules are resource materials for priority setting in health research, knowledge management and advocacy and leadership. Available on the Alliance website: www.alliance-hpsr.org.

Forum 7, December 2003

Beyond the conclusions drawn in Forum 6, the RCS sessions in Forum 7 drew attention to the following:

- The issues of sustainability and the brain drain are becoming even greater challenges in the light of the adverse and deteriorating political and socioeconomic conditions prevailing in many developing countries, especially those in Africa.
- The sustainability of health research may be improved by establishing regional networks of health research scientists with a regional umbrella for RCS governance.
- The promises to invest in RCS made by the international organizations and national governments have not been kept. The role of the Global Forum as a global advocacy voice should be further strengthened.
- Efforts should be made to launch research endowment funds with equal participation from national governments.
- A mechanism for improved coordination of RCS efforts should be developed, both at the country and global levels, with strong involvement of the Global Forum.
- There is a need to document success stories in RCS and follow the example of TDR in this respect.⁹
- RCS impact assessment methodologies are weak and should be systematically developed in discussions at the national, regional and global levels.

2. Tropical Disease Research Programme (TDR)

Since its establishment 25 years ago, TDR has continued to invest substantially and strategically in creating or boosting research capacity in developing countries, as an explicit objective of the programme.

Measured in terms of numbers assisted, TDR support for capacity building has encompassed over 1200 individuals from over 400 institutes in 80 countries.

Within TDR's 2002-2005 Strategy, RCS activities will, to a far greater extent than before, be driven by the TDR research and development (R&D) agenda.¹⁰ The new strategy aims to increase the involvement of scientists from developing disease-endemic countries in all stages of the R&D process, optimizing the development of more relevant and affordable intervention tools, strategies and policies for disease control.

The new RCS strategy is part of the overall restructuring of TDR to fine tune and develop measures to evaluate the impact of its capacity-building activities. Three major lines of business will be pursued:

- individual training and career development
- institutional programmes
- targeted R&D initiatives (60% of TDR's RCS budget).

Capabilities to be promoted will cover a broad range of activities, including supporting an enabling institutional framework within national health research systems, development of managerial capacity, R&D skills in biomedical and socioeconomic areas, and capacity to advocate for the integration of research results into policy and practice. Success indicators will be based on critical outcomes such as leadership, relevant scientific productivity and self-reliance.

3. Department of Research Policy and Cooperation (WHO/RPC)

More than ever before, RCS is now a priority

⁹ TDR. *Investing in Health and Development: Research* (TDR/RCS/GEN/03.1).

¹⁰ TDR. *Research Capacity Strengthening Strategy 2002-2005*.

capacity building in developing countries. WHO/TDR, 2003

agenda for WHO/RPC. The Health Research System Analysis (HRSA) work that RPC has initiated and is coordinating across a large number of WHO Member States since 2002 is to describe, analyse and strengthen the research capacity of national health systems. Case studies using qualitative and quantitative approaches, as well as the development of an approach to benchmark national health research systems (phase 1) are currently in progress. This collective work will provide new insights to improve the alignment of health research policies with the critical challenges facing health systems, and help strengthen capacities to produce research, synthesize research and other forms of knowledge, and apply knowledge to improve health systems and health outcomes (phase 2).

The creation of an enabling environment in which researchers can flourish is often a key factor in facilitating capacity development. However, with the existence of disparate health needs and contexts among nations, an operational view of what makes up an enabling environment has proved to be somewhat elusive. In an effort to define the characteristics of an enabling environment,

the HRSA Pilot Study Group has identified 10 “domains” as primary targets for description, analysis and strengthening. These domains are described in Insert 7.4.

Generalizations regarding effective models for RCS with respect to the 10 domains in low- and middle-income countries will be useful for application in cross-national programmes aimed at enhancing research capacity. Specific strategies for capacity strengthening are likely to vary and reflect the specific country situations.

In collaboration with many partners, the HRSA Group is currently conducting a pilot study involving 13 low- and middle-income countries (Brazil, Cameroon, Costa Rica, Indonesia, Iran, Kazakhstan, Laos, Malaysia, Pakistan, the Russian Federation, Senegal, Tanzania and Thailand) to determine the validity of these breakdowns, understand national priorities for strengthening different domains and document potential best practices from the perspective of the various actors involved (researchers, policy-makers and other “users” or beneficiaries of health research).

Insert 7.4

Characteristics of an enabling environment for researchers (Health Research System Analysis Initiative, WHO/ RPC)

- **Range and breadth of health researchers:** establish teams of researchers including a variety of health research disciplines ranging from basic science and health systems to social science and epidemiology.
- **Transparency of the funding process:** adopt a merit-based, accountable funding process with clear criteria and timely processing.
- **Quality of the work space and facilities:** provide functional work spaces with access to relevant technologies and materials.
- **Encouragement of collaboration with others:** promote collaboration both home and abroad among researchers as well as between researchers (“producers”) and those who draw on the fruits of research (“users”), including policy-makers, the media and the public.
- **Opportunities to present, discuss and publish results:** provide opportunities and incentives to discuss and present work in progress or completed as well as published results.
- **Relevance of health research activities to health problems and health systems:** address priority areas of research, current or projected health problems, and health problems of disadvantaged or poor populations, both on national and global levels.
- **Remuneration of health researchers:** provide adequate salary and benefits to attract and retain trained health researchers.
- **Nurturing of careers:** recognize work contribution, provide opportunities for mentoring and leadership for young and mid-level researchers.
- **Training and continuing education:** provide up-to-date training on national and international approaches to health research and establish a ‘continuous education’ programme.
- **Access and sharing of information:** ensure access to national, regional and international publications, electronic information sources and reference databases on a range of health research disciplines.

Source: Health Research System Analysis Initiative, WHO/ RPC

Section 6

Agenda for the coming years

The importance of RCS in health research has been underestimated. A review by the Commission on Macroeconomics and Health suggests that, compared to other sectors (e.g. energy, transport, agriculture) which have long been considered strategic for national development and economic competitiveness, little effort has been invested worldwide in collecting data, deciding what to measure or compare, shaping indicators and documenting lessons about how to build, strengthen and sustain scientific capacity for health research – either within or among countries.¹¹

The Global Forum attaches much importance to RCS to help correct the 10/90 gap and seeks to explore ways in which it could contribute to the greater efficiency and effectiveness of RCS efforts along the following lines:

1. Design a framework for defining RCS needs and impact

RCS partners should explore the wishes of interested partners to further articulate the definitions, discuss the challenges and future strategies, and intensify efforts to develop an evaluation framework for RCS. In 1999, TDR developed a framework and indicators of impact for RCS in disease-endemic developing countries (see Insert 7.1).¹² The Global Forum will continue to work with its

partners to refine these indicators and design an evaluation framework.

2. Establishment of a network of RCS partners as a platform for debate, synthesis, measurement of results and advocacy

Given the lack of a systemic and collaborative approach to RCS efforts, it is important to develop platforms (networks) for debate, synthesis, measurement of results and advocacy for RCS. Encouraging researchers to join national, regional and global networks is a way to overcome isolation and increase motivation. Locally managed research is likely to be more relevant to local policy-makers and to be more closely linked to politically feasible reforms and policies and more acceptable to policy-makers and civil society.

At the national and regional levels, there is a particularly important role to be played by the Regional and National Health Research Forums in support of the RCS agenda. The Global Forum will seek opportunities to discuss with its partners the development of a RCS agenda at the national, regional and global levels.

3. Funding RCS efforts

To be successful, such efforts require a strong political commitment from national governments and international donors.

¹¹ Freeman P and Miller M. Commission on Macroeconomics and Health. *CMH Working Paper Series*. Paper No. WG2:3, 2001.

¹² Global Forum for Health Research. *The 10/90 Report on Health Research 2000*, Geneva, 2000.

National and international financing of RCS efforts should be included in the ongoing discussions on an international health research fund.¹³

4. Enabling health research systems

RCS partners should help developing countries create favourable policies and conditions for the development of sustainable health research systems.

A daunting challenge for most developing countries remains the loss of health professionals moving from the public to the private sector and from low- to high-income countries.¹⁴ As highlighted above, this has considerably limited the capacity of developing countries to study their own problems, to participate in international health research on problems of priority interest to them, and to participate in the political debates and decisions on global health governance.¹⁵

RCS partners need to devise strategies to ensure that qualified professionals stay in the

national health research system. An example of such good practice is TDR's re-entry grants to enable returning scientists to initiate independent research in their home institutions.¹⁶

Another good example is Brazil, where it was demonstrated that the factors that promote migration (poor and unstable compensation, inadequate working conditions, weak leadership and adverse socio-political climate) are also associated with the failure of attempts to build research capacity in developing countries. In response, by mitigating these factors through investment in education and R&D, Brazil promoted in-country opportunities which discouraged emigration. As a result, Brazil now has the capacity to generate over 6000 doctoral graduates each year. Today over 90% of doctoral graduates receive their degree from Brazilian universities, as compared to 60% in 1985.

¹³ Commission on Macroeconomics and Health. op.cit.

¹⁴ "The nonprofit groups, foreign governments and international organizations that have come to help Botswana cope with its AIDS crisis have hired away many skilled health professionals in the country's public health system with offers of better pay and benefits." (Festus G. Mogae, President of Botswana, November 2003).

¹⁵ Sitthi-amorn C et al. "Strengthening health research capacity in developing countries: a critical element for achieving health equity," in *British Medical Journal*, 30 September 2000.

¹⁶ WHO/TDR. *Tropical Disease Research, A Global Partnership at Work: New Approaches to Research Capability Strengthening*, Geneva, 1988.