

Chapter 7

Progress in research capacity strengthening

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Section 1

The problem

Although health research is increasingly recognized as one of the driving forces behind development, researchers from low- and middle-income countries continue to lag behind in the quality and volume of their scientific output. As a result, problems specific to the lower income countries do not receive the attention that they should from the research community. The problem is compounded by the fact that many of the communicable diseases prevalent in many lower income countries also constitute a threat to global health. And if research investments in low-income countries are insufficient to help solve their own health problems, they cannot even begin to address those that have a global impact.

Bridging this gap requires renewed and intensified efforts to develop appropriate indigenous research capacity. Capacity development has moved centre stage to become a key factor for sustainable development. It is now high up on the agenda of all development programmes and many low- and middle-income countries now give priority to research capacity strengthening (RCS) within their own national programmes.

Training and institutional development as key elements in RCS were the subject of an extensive study by the Wellcome Trust¹ covering most of the agencies that fund research training both bilaterally and multilaterally. The special focus of the report was malaria in Africa but discussions covered all areas of training. The report found that many funding organizations in industrialized countries have been supporting broad-based research training and institutional development in low- and middle-income countries. However, the study found that overall investment in training by these agencies remained modest, with an aggregate expenditure of US\$261 million identified in 1995-1997 for training in biomedical sciences and health over the three-year period.

Some of those trained had, for different reasons, not returned to their home countries, thereby further contributing to the “brain drain”. However, reports from the training programmes of the WHO Special Programmes – the Special Programme for Research and Training in Tropical Diseases (TDR)² and the Special Programme for Research and Research Training in Human Reproduction (HRP)³ – and from DANIDA⁴ – the Danish government

¹ Beattie, P., Renshaw, M., and Davies, C. (1999) *Strengthening Health Research in the Developing World: Malaria Research Capacity in Africa*, The Wellcome Trust, London.

² World Health Organization (1999) *UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases, Progress in 1997-98*, WHO/TDR, Geneva.

³ World Health Organization (1993) *Reproductive Health: a key to a brighter future*, Special Programme for Research, Development and Research Training in Human Reproduction, WHO, Geneva.

⁴ DANIDA (2000) *Evaluation of DANIDA's Bilateral Programme on Enhancing Research Capacity in Developing Countries (ENRECA)*, Ministry of Foreign Affairs, Denmark.

programme that carries out research training through its bilateral programme of Enhancing Research Capacity in Developing Countries (ENRECA) – have all consistently shown a trainee return rate of over 95%.

On the whole, training opportunities remain fragmentary and low with no coherent international approach. As a result, the level of RCS for all low- and middle-income countries remains low and there is a need for redoubled efforts and concerted action.

The low level of human resources was recognized in the Ad Hoc Committee Report of 1996⁵ as a severe handicap for R&D into health problems in poor countries. RCS has become central to all the initiatives supported by the Global Forum for Health Research and has featured on the agenda for discussion at all annual Forum meetings. The objective of the activities of the Global Forum is to correct the 10/90 gap. In order to shift the balance and increase the 10% of funds available for research on 90% of the world's health problems, a key step is to ensure that researchers from low- and middle-income countries participate actively in research on priority national health problems. In addition, scientists from these countries should be the ones to interpret and present the results of research in forms that can be used as policy and products in their own countries. RCS is now increasingly recognized as central to correcting the 10/90 gap.

The Global Forum has been involved in efforts interpret the results of past efforts at capacity development. For this, information is needed on the following:

- lessons learnt from past efforts at research capacity development by different partners;
- reasons for successes and failures;
- the extent to which these efforts have contributed to self-reliance;
- the extent to which the efforts have been sustainable;
- areas where the efforts have been synergistic and where they may have been counterproductive;
- the extent to which the efforts have helped to train multidisciplinary teams for research in low- and middle-income countries;
- the extent to which the countries have started the process of building up a research coordinating mechanism at the national level bringing together all research institutions to sit with policy-makers, NGOs and representatives of urban and rural population to discuss priority setting, funding research from national sources and evaluation.

In looking at past efforts, the Global Forum and its partners have identified a number of factors that are critical to the successful outcome of RCS. These are shown in Insert 7.1.

⁵ World Health Organization Ad Hoc Committee on Health Research Relating to Future Interventions Options (1996) *Investing in Health Research and Development*. World Health Organization, Geneva (Document TDR/Gen/96.1)

Insert 7.1

Factors critical to successful RCS

- The existence of national scientific leadership.
- Identification of key national health problems and drawing up national research priorities on which RCS should focus.
- Continuity of funding to national research groups.
- Strong commitment and support by the national government (RCS should appear in country development plans).
- Systematic identification and recruitment of talented young scientists, with appropriate gender balance, and provision of high-level training: this should lead to the development of a critical mass of scientists backed by good technical staff and a good *esprit de corps*.
- Provision of appropriate infrastructure, equipment, supplies and communication facilities, for the type of research envisaged.
- Creation of an enabling environment and stable service conditions, including remuneration for the researchers.
- Establishment of good linkages to strong institutions doing similar work in the North and South and fostering of good partnerships and networks (this theme was developed in Bern, Switzerland, during a workshop on 21-22 September 2000⁶ and it constitutes the main strategy of DANIDA support⁷).
- Efforts to help countries build up the capacity to train their own scientists within their own national institutions. The aim is to create a critical mass of researchers from different disciplines to implement national research priorities.

⁶ *Enhancing Research Capacity in Developing and Transition Countries*, Swiss Commission for Research in Partnership with Developing Countries, 2001, KEPE Secretariat, Barenplatz 2, Bern

⁷ DANIDA (2000) *Evaluation of DANIDA's Bilateral Programme on Enhancing Research Capacity in Developing Countries (ENRECA)*, Ministry of Foreign Affairs, Denmark.

Section 2

What are the main challenges?

There have been some gains, even if modest, from RCS over the past two decades. There has been a substantial quantitative and qualitative increase in trainees in some middle- and low-income countries, mainly in the biomedical sciences, together with a favourable gender balance. However, gaps persist in some disciplines, including the social and behavioural sciences, health economics and priority-setting techniques. Other process and outcome measures (successful training outcomes, reintegration in their home countries, number and quality of publications, competitive grants obtained) have been quite

favourable, even if some, such as the volume of publications, remain modest. Some of the trained researchers have received suitable recognition in their own countries and contributed to international research. Others have broadened their research spectrum by undertaking research in other national priority areas of research. A case in point is where scientists trained for work on the immunology of parasitic diseases in the tropics, for example, were moved by their governments to work on HIV/AIDS at the onset of the epidemic in their country. However, many challenges remain. These are summarized in Insert 7.2.

Insert 7.2

Major challenges identified

- Low-income countries are not homogeneous and progress in RCS, as in many other sectors, has been uneven. Some of the more advanced low-income countries have used training opportunities offered through competitive training grant awards to build up their indigenous research capacity much faster than the least-developed countries. The challenge now is to develop strategies for the countries that have made least progress.
 - Many low-income countries do not have a comprehensive health plan in which health research has been suitably prioritized nor have they drawn up coherent programmes for research capacity development. Past efforts at promoting this actively have produced slow responses. The challenge is to get policy-makers to see the necessity for drawing this up as a matter of urgency.
 - There is poor liaison and understanding between researchers located in the universities and research institutes, on the one hand, and administrators and policy-makers, on the other. The challenge is to find ways to bring these two groups closer together.
 - Some developing countries continue to move qualified researchers to administrative posts where their scarce and valuable talents cannot be used either for research or for training others. The challenge is to encourage better deployment of trained personnel.
 - A number of governments in low- and middle-income countries are not engaged in knowledge-based and science-based decision-making. The benefits of research are not fully appreciated and research remains low on the national priority list. The challenge is to build a culture of knowledge-based decision-making in these countries.
 - Past recommendations by the Commission on Health Research for Development on the proportion of national health budgets and foreign aid (health) programmes that should be used for research – 2% and 5% respectively – have been largely ignored. The challenge is to increase national funding for research on national health priorities.
 - Few attempts have been made to measure the results of the important efforts undertaken in the past 10 years in the field of RCS. The challenge is to launch a movement for the systematic measurement of the process, outcome and support of RCS.
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One of the most urgent challenges is to measure the results of the efforts undertaken in the past 20 years so as to identify clearly the reasons for success and failures, identify the most blatant remaining gaps and develop a coherent plan of action at the country level.

Up till now, evaluation of the outcomes of RCS has been limited and focused mainly on the following:

1. Measuring inputs (numbers of trainees, cost of training, size of the research team);
2. Process (institutional arrangements, nature of the training, return of trainees and reintegration in home institutions, use of their knowledge/skills by the national institutions);
3. Outcomes and outputs of training (publications, competitive grants, citation index, collaboration/partnerships, “tools” developed, policy change achieved) at the individual, institutional, national and global levels.

There have been few attempts to measure the performance of trainees using impact indicators. More pertinently, there has been no attempt to measure how often research done by scientists is commissioned by policy-makers in order to provide the evidence needed for important policy decisions. Similarly, there has been little study of how often policy changes have been a direct result of research done in the country (or elsewhere). An important conclusion from this, strongly supported by recent meetings and discussions, is for the need to shift the emphasis of evaluation to measuring the impact of RCS: at the individual researcher level, at the institutional level and, most importantly, at the policy-making (national) level.

In addition, more evaluation studies, particularly impact studies, are needed from partners who have been involved in a broad range of research capacity development. This would help stimulate further discussion on this subject and contribute to better understanding and future planning.

Section 3

Progress made

A number of meetings were held in 2000-2001 to assess progress and needs in RCS. Some of the main developments are summarized below.

1. Annecy meeting, April 2000

A meeting on RCS in developing countries was held in Annecy, France in April 2000,

under the aegis of the WHO, with 80 participants from more than 40 countries (including many low- and middle-income countries) including representatives from the Global Forum, COHRED, WHO/HQ, a number of research institutions and universities in the South and North and bilateral agencies. The objective of the

Insert 7.3

Recommendations from group discussions at the Annecy meeting, April 2000

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- Establishment of the research agenda (including a plan for RCS) should be primarily the responsibility of the developing countries themselves.
 - More attention must be given to strengthening the “demand” for research by governments (decision-makers), the public (community), civil society organizations, the media, the private sector and academic institutions (where future researchers and research users are being trained).
 - All aspects of the research process (not just technical competence) must be strengthened including advocacy and promotion, priority setting, partnership development, facilitating the use of research results, networking and leadership.
 - A “systems view” of RCS is needed, which includes national health research networks and forums and an enabling environment, all of which should lead to the long-term development of a research culture in developing countries.
 - There is a critical need for more effective collaboration between different partners (such as WHO, DfID, Fogarty International, SAREC, DANIDA, IDRC, SDC, World Bank and many other partners) that have played critical roles in enhancing and sustaining RCS in developing countries.
 - New information and communication technologies are important for RCS and should be explored more vigorously.
 - RCS must be more focused on equity-oriented and gender-balanced health research.
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meeting was to provide a forum for debate and discuss new ideas on RCS. Key conclusions reached are summarized in Insert 7.3.

2. Bern workshop, September 2000

In September 2000, an international workshop was held on enhancing research capacity in poor countries and countries in transition. The workshop, in Bern, Switzerland, was sponsored by the Swiss Commission for Research Partnership with Developing Countries. The workshop brought together over 120 scientists and researchers from 52 countries to discuss different approaches to and experience of promoting RCS as a means of contributing to

sustainable development. The participants came from a mixed background of agriculture, environmental sciences, fisheries, engineering, veterinary sciences, and health research. The discussions showed clearly that the process of building research capacity follows the same pattern in all disciplines: building research capacity through research and learning research by doing research, with partnerships playing an important role. Key conclusions from this workshop⁸ include the following:

- (a) RCS remains focused mainly on development of the capacity of individuals and much less on institutional

⁸ *Enhancing Research Capacity in Developing and Transition Countries*, Swiss Commission for Research in Partnership with Developing Countries, 2001, KEPE Secretariat, Barenplatz 2, Bern.

- development. Participants expressed the view that sustainability would be enhanced if RCS would systematically take an institutional development view, and go beyond the training of individuals.
- (b) Long-term research support is necessary to ensure good institutional development and building up of a critical mass. The project approach, generally short-term, currently favoured by many partners, is useful for providing quick answers to research questions but has limited capacity to further long-term institutional development goals and the creation of stability and sustainability.
 - (c) Donors need to be flexible in order to adapt to new situations and meet new challenges arising in the field. This often proves problematic since many donors operate under their own national constraints imposed by rules governing their ODA programmes.
 - (d) There was some support for the idea of creating “funding consortia” of donor agencies to jointly support research in clearly identified situations. Others suggested the creation of a “European Foundation for Research” that would allow for concentrated and focused funding and lead to better management, monitoring and evaluation of various support schemes.
 - (e) There was a general plea to make research a key element in all development processes in low- and middle-income countries and raise the status of research as a national priority.

A regional follow-up workshop was organized in Cartagena, Colombia, in November 2001 bringing together scientists and researchers mainly from Latin American countries to exchange research experiences in partnerships in the Latin American context.

The discussion focused on:

- Developing the skills necessary for creating partnerships.
- Identifying and stressing the positive role of academia (universities and research institutes) and the private sector in partnerships particularly in view of the lack of effective liaison between the two sectors in Latin America.
- Ways of dealing with intellectual property rights issues raised.
- Evaluation of North-South research partnerships.

All these are key to enhancing research capacity.

3. The International Conference in Bangkok, October 2000

This conference, among other things, singled out RCS as one of five key strategies for the future of health research (the other four being knowledge production, financing, good governance and public-private partnerships). The conference highlighted country needs (citing experiences from China and Kenya) and the general need for developing leadership for priority setting, for monitoring resource flows and for communication and dissemination of research information. The Conference proceedings have been published as a report⁹.

The Bangkok Conference also saw the launching of the **International Awards to Support Cooperation in Health Research for Development**. The new award was launched by WHO in collaboration with the Rockefeller Foundation. The call for applications for this award resulted in more than 500 proposals from 83 lower-income countries. Following a comprehensive selection process, 10 grantees were selected (see Insert 7.4).

⁹ International Organizing Committee (2001). *Report of the International Conference on Health Research for Development, Bangkok, 10–13 October 2002*.

Insert 7.4

Winners of the International Award to Support Cooperation in Health Research for Development (Bangkok, October 2000)

<ul style="list-style-type: none">• Consumer action for health: a research and action programme for Brazil
<ul style="list-style-type: none">• Health research for a responsive healthcare system in Georgia
<ul style="list-style-type: none">• Strengthening health research in nongovernmental organizations in India
<ul style="list-style-type: none">• Improving the links between reproductive health and health sector reform in Latin America – a regional approach
<ul style="list-style-type: none">• Capability strengthening of the health research network in Nepal
<ul style="list-style-type: none">• South African gender-based violence and health initiative
<ul style="list-style-type: none">• Development of Asia-Pacific national health accounts: regional technical standards for health accounting, assessment of equity in health systems, and establishment of regional health systems database to better assess health systems and develop health sector reform
<ul style="list-style-type: none">• Africa midwives research network (AMRN): strengthening research for midwives in 10 African countries
<ul style="list-style-type: none">• Proposal for strengthening the Tanzania National Health Research Forum: a national mechanism for better health research coordination
<ul style="list-style-type: none">• The Alliance and Research Coordination Network for Evidence-Based Health System Reform in Thailand.

4. Evaluation by DANIDA

DANIDA recently commissioned an external evaluation of its ENRECA programme.¹⁰ The evaluators admitted at the outset that the absence of baseline studies prior to the start of their partnership programmes made “before and after” comparisons difficult. The result of their evaluation is similar to those mentioned in this report. The results are summarized in Insert 7.5.

In summary, the evaluators concluded that projects work well when:

- Host-country partners select their counterparts.
- Partnership is balanced, with mutual trust between both parties.
- Host-country institution has clear focused research agenda and can select the projects.
- Both parties are enthusiastically committed to the project.

- There is significant level of pre-existing capacity on both sides.
- The human resource base is developed rapidly past the point of a critical mass.
- There is a strong sense of ownership by the staff of host institution.
- Danish staff provide on-site training early.
- In the case of university-based projects, the partner has significant autonomy in decision-making and partners meet regularly

Conversely, results are limited or poor when:

- There is a gross imbalance in funding between North and South. Most of the funding (around 70%) should be in the South.
- There is lack of commitment among the Danish researchers.
- There is over-dependence on one or two individuals in the host institution.

¹⁰ DANIDA (2000) Evaluation of DANIDA's Bilateral Programme on Enhancing Research Capacity in Developing Countries (ENRECA), Ministry of Foreign Affairs, Denmark.

- There is insufficient local interest in the project, leaving responsibility for governance to Denmark.
- The parties cannot work well together.
- The research agenda of the host institution is diffuse and lacking in focus.
- Heavy reliance on Danish inputs in successive phases of the project and sustainability not planned from the beginning.
- Insufficient attention paid to dissemination of findings.
- Too much bureaucracy leads to inflexibility.
- The principles of networking are not understood.
- There is lack of collaboration with other funding partners.

Insert 7.5

Evaluation of the impact of DANIDA's ENRECA Programme

In Denmark

1. Improving knowledge and expertise within existing disciplines by feeding research results generated by ENRECA absorbed into the curriculum of Danish institutions.
2. Widening interest in development studies in Denmark by increasing number of academic staff with interest in the type of work involved.
3. Support for Danish students working for their PhD in development issues.
4. Designating development studies as a priority area of study at Copenhagen University.
5. Setting up by Danish universities of professorships in areas closely connected to development studies.
6. Introducing courses in areas such as international public health, paediatric nutrition, tropical ecology, tropical marine science, applied anthropology and tropical livestock management.
7. This Danish experience echoes those of Norway (NUFU) and Sweden (SAREC).

On target countries

Assessing impact here was found to be much more difficult as clear indicators were not readily available to the evaluators. The time available for this evaluation, particularly the field visits, was insufficient to explore the "economic, social, political, technical and environmental effects/impact of the proposal locally, regionally or nationally". The evaluators assumed that measuring the impact beyond the target group, i.e. the group of people who would benefit directly from the project, would be the nearest to a rigorous impact assessment that could be obtained. The assessments are summarized below:

1. Tanzania-Denmark collaborative research on malaria, filariasis and health sector reform

Here the target group was the staff of the National Institute of Medical Research (NIMR) and the local villages. The assumed impact was the adoption of intensive treatment according to the clinical protocols of malaria developed during the project, the handing out and use of bednets and use of qualified staff in key positions within NIMR. The evaluators verified this impact by demonstrating a decrease in the incidence of disease and a reduction in deaths among villagers during the period of the study, which they attributed to malaria.

2. Accra-Copenhagen research project on malaria

Here the target group was the malaria research community and local malaria-affected children in Ghana. The impact, in the view of the evaluators, was that laboratory examination and treatment of malaria followed the protocols developed and was verified by decreased mortality due to malaria.

3. Project on food and nutrition security in Bangladesh

Here the target groups were farmers in a district and policy-makers in food and nutrition in Bangladesh. Through interviews with farmers and the National Nutrition Council, the evaluators determined that the impact included changes in aquaculture practices and the adoption of a new national nutrition policy.

4. Livestock and helminth research project in East and Southern Africa

The target group for this research was the Ministry of Agriculture and Health and small-scale farmers. Through interviews at the National Institute of Medical Research and the Ministry of Agriculture, the evaluators determined that the impact included the identification of a new pig tapeworm (with public health implications) as well as a reduction in livestock deaths in rural areas and improvement in their nutritional status.

5. Forum 5, October 2001

Two WHO Special Programmes presented the findings of internal evaluations of the outcomes of research capacity development activities within their programmes.

(a) Tropical Disease Research Programme (TDR)

TDR administered questionnaires to over 700 past trainees and to 73 leaders of research groups where the former trainees were located. The questionnaires assessed a variety of factors, using outcome indicators developed during a TDR prospective thematic review¹¹ and focused on individual, institutional and national levels. The following factors were evaluated:

- skills acquired during training
- grants won since return from training
- publication record in home institutions
- interaction with disease control managers in the country
- use of grantees' research results
- further grants received
- improvement in research infrastructure in home institution
- international collaborations developed since return.

The evaluation from these perspectives was positive for all the outcome indicators and showed a much enhanced capacity at individual, institutional and national levels. However a large group of the scientists indicated that the level of their interaction with policy-makers was low. This is not surprising since policy-makers could not be expected to interact with all scientists in a country. However, an equally large

proportion were glad to see the results of their research adopted by policy-makers, an acceptable measure of impact. This was mainly in the areas of new diagnostic techniques and innovative treatment protocols for some major diseases. In its latest five-year strategy, TDR has made further adjustments to its policy of RCS. Under this new policy, 40% of the budget for RCS is reserved for the least-developed countries (10% for individual researchers and 30% for institutional development) and the remaining 60% is reserved for TDR-directed priority research in disease-endemic countries (the so-called RCS-Plus). This offers good protection to the least developed countries and ensures that they continue to receive priority in RCS support.

(b) Programme on Research and Research Training in Human Reproduction (HRP)

In 1999, HRP commissioned an external panel of scientists to carry out an evaluation of its unique network of institutions involved in research on reproductive health. The report, covering the 10-year period from 1988-1998, was available in time for Forum 5. The panel used a global database of institutional performance that had been specially created to assess the effectiveness and impact of the RCS process and major constraints. The outcome of this evaluation was similar to that obtained by TDR. It also pointed to a successful programme by HRP for strengthening capacities in institutions from developing countries to do research covering the full breadth of reproductive health issues. The impact is aptly illustrated by the result from one centre in the AFRO/EMRO Region of the WHO summarized in Insert 7.6.

¹¹ TDR. *Prospective Thematic Review of TDR Research Capacity Strengthening, 15-17 November 1999, Geneva*. TDR/RCS/PTR/00.1

Insert 7.6

Evaluation of a centre in the AFRO/EMRO region of WHO (Department of Obstetrics and Gynaecology at Makerere University, Kampala, Uganda)

When the centre made its application for a long-term institutional development grant (LID) in 1988, the Director wrote: "Due to the political instability and dire economic problems that have gripped this country in the past two decades, there has been minimal research activity in this institution. We now, however, feel confident that with a little outside assistance to start us off, the time is now ripe to revive the much needed research activity." The LID grant was approved and during the ten-year period 1989-1999 the centre developed rapidly. A number of clinical and non-clinical members of staff received high-quality, advanced training in biostatistics, endocrinology, andrology and in medical records keeping. The LID grant played a major catalytic role in building research capacity to allow staff members to undertake multidisciplinary collaborative work with a number of national and international groups. The results of these projects have been published in high-impact peer-reviewed journals and had a major effect in determining national as well as international policies relating to prevention of mother-to-child-transmission of HIV.

The authorities in the Ministry of Health acknowledged in their evaluation the important role that the centre has played in:

- national health policy development
- national reproductive health needs assessment
- training of health personnel for various aspects of reproductive health
- introducing new contraceptive methods
- development of laboratory infrastructure for research.

As for sustainability, the Ministry of Health had proposed "that the Centre should jointly be sponsored by the University and Ministry of Health who should improve on funding, staffing and infrastructure."

(c) Study by the WHO Department of Research Policy and Cooperation

In 2000, the WHO Department of Research Policy and Cooperation distributed a questionnaire to scientists in lower-income

countries asking for their perceived priorities and needs, their constraints and steps to be taken for improvement. The main responses are summarized in Insert 7.7.

Insert 7.7

Results from WHO/RPC study: responses to the questionnaire

What should be the <i>primary objective</i> of RCS initiatives in developing countries?	<ul style="list-style-type: none">• funding of research (33%)• strengthening capacity in the research process (e.g. grant writing, research methodology, communication of research) (27%)• better research policy (23%)• postgraduate training (17%)
What would be the best strategy to improve health research capacity in developing countries?	<ul style="list-style-type: none">• improve research environment (50%)• provide research funding (48%)• build capacity (37%)• improve networking and communication (24%)• provide incentives (13%)• other reasons (14%)
What are the main constraints faced by researchers in developing countries?	<ul style="list-style-type: none">• lack of funds (69%)• lack of enabling environment (66%)• lack of capacity (42%)
Who should be the target of RCS initiatives in developing countries?	<ul style="list-style-type: none">• individuals with potential (36%)• institutions (35%)• national and regional networks of researchers (19%)• research managers (7%)• policy-makers (3%)
What type of activities should RCS initiatives be targeting in order to have a sustainable impact?	<ul style="list-style-type: none">• training courses (31%)• promoting research networks (21%)• research funding for mid-career scientists (16%)• postgraduate fellowships (11%)• research funding for young scientists (10%)• internships (9%)• awards (2%)
How should research funding be spent optimally?	<ul style="list-style-type: none">• technical support (30%)• equipment (28%)• salary supplementation (17%)• reagents and consumables (13%)• computers and internet access (9%)• travel to conferences (3%)
What should be the major criteria for funding of research grants?	<ul style="list-style-type: none">• national priority (82%)• track record of researcher (60%)• study design (41%)• sustainability (15%)• multidisciplinary (11%)
Is there a medical/health research council in your country?	<ul style="list-style-type: none">• yes (74%)• no (22%)• don't know (4%)
Does your country have a good database on health research capacity?	<ul style="list-style-type: none">• no (51%)• yes (39%)• don't know (10%)

These three reports, presented in a session at Forum 5 (and available on the Global Forum website www.globalforumhealth.org and from the respective WHO departments) were discussed by a panel of five developing-

country researchers, who highlighted constraints to RCS within the context of their own countries and institutions. The main recommendations from this discussion are summarized in Insert 7.8.

Insert 7.8

Summary of panel discussion on RCS at Forum 5

Recommendations

- Continued support should be provided to research centres (purchase of equipment, supplies including journals) and to individual scientists in developing countries (research grants, training opportunities, inputs and strong peer support from appropriate consultants).
- Efforts should be made to establish a network of institutions involved in similar research to ensure greater interaction between them.
- Performance indicators should be used to assess the output of scientists and their centres.
- Regular review should be undertaken of ongoing scientific activities.
- RCS should be an integral part of national development and should feature as a national priority with an appropriate budget allocation.
- There should always be a training component to research funding for development activities.
- Training should always be carried out through research, care being taken to ensure that the research is in keeping with national research priorities.
- RCS should include both training and institutional development.
- There should be a stronger focus on national health research priorities.
- There should be an adequate balance in health research between the central, regional and district levels.
- Medical research councils, where they exist, must improve their visibility and obtain adequate financial resources to fund research in accordance with national priorities.
- More effort should go into securing local funds for research and training.
- More established researchers in developing countries should pursue training younger scientists more systematically and vigorously in order to ensure a rapid build-up of a critical mass of researchers in diversified fields.
- Partnerships, both North-South and South-South, should be fostered.

Constraints

- Inadequate resources for research (funding, equipment, reagents and reference material, including electronic communication and the Internet).
- Non-conducive research environment (particularly in the area of remuneration and career structure).
- Insufficient training in certain key disciplines (particularly the behavioural sciences and health economics).
- Tendency of governments to prefer the use of expatriate experts rather than local scientists for health problems of national importance.

6. Other developments

(a) Some countries have started to show an interest in evaluating their RCS efforts. One of these is the Health Research Council for Pakistan. The council plans to evaluate about 69 PhDs trained in Pakistan through different agencies over the period 1986-1996. Questionnaires and focal group discussions will focus on issues such as:

- grantees' productivity (publications record)
- grants won
- cost of training.

They are being encouraged to use the indicators mentioned in the references^{12,13}. A very preliminary report of their evaluation was presented at the International Conference in Bangkok.¹⁴

(b) A survey by the *Lancet*¹⁵ in South-East Asia and Africa draws attention to the barriers to publications by developing-country scientists under the following headings:

- low research outputs and lower publication rates by researchers of developing countries
- editorial bias that treated articles from developing countries unfavourably
- inadequate scientific data
- inadequate access to information.

These findings are at the very heart of RCS since they involve training and the scientific competence of developing-country researchers to do good research and publish their findings.

Section 4

Future objectives for RCS

The main objectives of RCS should be to assist developing countries:

- To define their national research agenda and to establish priorities through a broad national consultative process.
- To continue to develop sustainable national
- research institutions and train a wide range of multidisciplinary researchers with the varying skills needed to provide the evidence for dealing with national health problems, maintaining an appropriate gender balance.
- To foster an enabling environment for

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

¹³ TDR *Prospective Thematic Review of TDR Research Capacity Strengthening, 15-17 November 1999*, Geneva. TDR/RCS/PTR/00.1

¹⁴ *Capacity Development for Health Research in Pakistan: Evaluating a decade of effort*, Provincial Health Services Academy, Peshawar, Pakistan, October 2000

¹⁵ R. Horton, (2000) "North and South: bridging the information gap", *The Lancet*, 355: 2231-26

Insert 7.9

Evaluation criteria and potential indicators of impact for research capability strengthening¹⁶

	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, regional, 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: <ul style="list-style-type: none"> • local (state) • 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

¹⁶ Conclusions of the Prospective Thematic Review of TDR Research Capability Strengthening.

researchers that will allow them to continue research in their home countries, with appropriate remuneration and conditions of service.

- To build up a research culture and the practice of science-based and evidence-based decision-making in the country and society.
- To facilitate dialogue between researchers and policy-makers to ensure the transfer of research results into policies.
- To involve local communities as well as civil society organizations and the media in this process in order to build up the widest possible consensus for this important agenda.
- To consolidate past gains and focus even more strongly on development of South-South and South-North partnerships to enhance research capacity development.

There is currently strong support for accelerated action to boost RCS in low-income countries. This is a priority since improving the quality and quantity of scientific research in low- and middle-income countries is critical for national development and self-reliance. Competence and technical capacity is needed in these countries to enable them to participate fully in research activities globally and to meet their own national agenda. Increased efforts are also needed to speed up the implementation of research findings. This depends on the competence of researchers and the ability of policy-makers to make use of the outcomes of research either for health interventions or for policy change as necessary. Meanwhile, governments should commission research on key health problems in order to obtain the information needed to inform policy decisions.

In addition, a redoubling of efforts is needed to ensure the full and systematic evaluation of RCS activities to date. This will require a form of evaluation that goes beyond measuring the process and outcome of capacity development to measure its impact as well. The assessment should be as objective as possible and focus on individual researchers, the national research institutions, the national policy-making level and the global health research system level. Indicators for measuring impact tend to be difficult to determine and some of them could be controversial. However, some indicators have been developed^{17,18} and field application is needed in different settings in order to document their possible validity. 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 7.9. This incorporates indicators of process, outcome and impact, distinguishing between the individual, institutional, national and global levels.

In the long run, RCS should contribute to building up a critical mass of researchers and establishing a science culture in low- and middle-income countries and elsewhere. In addition, RCS should enable developing countries to undertake research on their own health problems and participate in the global research agenda. This constitutes an important and positive step in correcting the 10/90 gap.

¹⁷ Global Forum for Health Research. *The 10/90 Report on Health Research 2000*.

¹⁸ TDR *Prospective Thematic Review of TDR Research Capacity Strengthening, 15-17 November 1999, Geneva*. TDR/RCS/PTR/00.1