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# Global Forum for Health Research

HELPING CORRECT THE 10|90 GAP



RCS

## **No Development Without Research** A challenge for research capacity strengthening

Yvo Nuyens

## **No Development Without Research: A challenge for capacity strengthening**

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**NO DEVELOPMENT  
WITHOUT RESEARCH**

**A challenge for capacity strengthening**

By Yvo Nuyens

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## Acknowledgements

The idea for this publication arose out of the work on research capacity strengthening, which Niall McKee did as an intern at the Global Forum for Health Research during the summer of 2004. His brief literature review and interviewing of a number of stakeholders in the area made it clear that a more systematic review and analysis of key issues in research capacity strengthening was warranted, which resulted in the present document.

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## Foreword

Health research is indispensable for improving health and health equity and contributing to overall development. Many developing countries have made substantial investments in building and enhancing their capacities for research in health and related fields, and these efforts have been supported and extended by programmes of development agencies and research institutions located in high-income countries. Activities have included the education and advanced training of individuals, either through scholarships and fellowships to fund studies overseas or increasingly, as local capacities have improved, through training programmes in their own countries or regions. In parallel, investments have been made in establishing and equipping high quality education, training and research centres in developing countries and in extending their capabilities through international twinning arrangements, networks and collaborative research programmes.

Despite decades of such efforts, and notwithstanding some notable examples of success, the overall picture of progress is a mixed one. Too often, the investments have failed to result in significant impact on health policies and practices in countries and concomitantly there has been an overall failure to see the desired levels of improvements in the health of the targeted population. A mutually reinforcing set of factors, including brain drain, lack of sustained investment in research capacity, lack of alignment of funders' goals and researchers' interests with national priorities, and failure by policy-makers and practitioners to use research to inform their decisions, emerge as an interdependent group of cyclical causes and effects. The result is that members of the research community frequently complain that they are undervalued, their potential contribution ignored and that there is an absence of a culture of utilization of research to inform policy; while their work is often regarded as remote and irrelevant by potential users of evidence and innovation.

This publication reviews the literature and surveys the successes and failures of research capacity strengthening in the health field, in the context of its potential to contribute to health, development and equity. It points very clearly to the need for all stakeholders in the field – funders, producers, users and beneficiaries of health research – to be organized into a health research system in which the resources, drivers and priorities are aligned to produce results that are needed, valued and utilized.

The Global Forum for Health Research is grateful to Yvo Nuyens for conducting this thorough, meticulous and well researched review and synthesis of the field of research capacity strengthening. We hope this will be widely useful in contributing to efforts to enhance, sustain and utilize research capacities in developing countries to improve the health of their populations.

Stephen Matlin  
Executive Director  
Global Forum for Health Research

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## Abbreviations and acronyms

<b>CDC</b>	Centers for Disease Control and Prevention, USA
<b>CHSRF</b>	Canadian Health Services Research Foundation
<b>COHRED</b>	Council on Health Research for Development
<b>CTP</b>	Collaborative Training Program for Health Research for Policy, Action and Practice
<b>DANIDA</b>	Danish International Development Agency
<b>DFID</b>	Department for International Development, UK
<b>ENHR</b>	Essential National Health Research
<b>EXTRA</b>	Executive Training for Research Application
<b>FUNSAUD</b>	Mexican Health Foundation Fundación Mexicana para la Salud
<b>GDN</b>	Global Development Network
<b>GEH</b>	Governance, Equity and Health
<b>HINARI</b>	Health InterNetwork Access to Research Initiative
<b>HPSR</b>	Alliance for Health Policy and Systems Research
<b>HRP</b>	UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction
<b>IDRC</b>	International Development Research Centre, Canada
<b>IHPP</b>	International Health Policy Program
<b>INASP</b>	International Network for the Availability of Scientific Publications
<b>INCLEN</b>	International Network for Clinical Epidemiology
<b>LAMP</b>	Leadership and Management Program (INCLEN)
<b>NORAD</b>	Norwegian Agency for Development Cooperation
<b>ODA</b>	Official Development Assistance
<b>ODI</b>	Overseas Development Institute, UK
<b>RAPID</b>	Research and Policy in Development (ODI)
<b>RCS</b>	Research capacity strengthening
<b>SARA</b>	Support for Analysis and Research in Africa
<b>SDC</b>	Swiss Agency for Development and Cooperation
<b>SDO</b>	National Health Service Delivery and Organisation, UK
<b>SEARO</b>	South-East Asia Regional Office (WHO)
<b>SHARED</b>	Scientists for Health and Research for Development
<b>Sida/SAREC</b>	Swedish International Development Cooperation Agency/Department of Research Cooperation
<b>TDR</b>	UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases
<b>ULP</b>	User Liaison Program
<b>UNAIDS</b>	Joint United Nations Programme on HIV/AIDS
<b>UNDP</b>	United Nations Development Programme
<b>UNICEF</b>	United Nations Children's Fund
<b>USAID</b>	United States Agency for International Development
<b>WBI</b>	World Bank Institute
<b>WHA</b>	World Health Assembly
<b>WHO</b>	World Health Organization

## Executive Summary

Health research capacity strengthening (RCS) has been high on both national and international agendas, as is evidenced by a steady stream of peer-reviewed and grey literature, training tools, programmes and grants, workshops, task forces and conferences on various issues in the broad and complex area of RCS. The nearly unanimous consensus among all stakeholders about the vital role of research capacity in bridging the “know-do gap” and in addressing effectively inequities in health research is in sharp contrast with the research capacity reality, where all these actors most of the time seem to be doing their own business and where also equity as an underlying value is getting lost. One programme creates research fellowships for this particular disease; another develops training modules for district staff; a third organizes skills development workshops for better communication with the media, policy-makers or peers; donor agencies have their own priority programmes and clienteles, and the list goes on.

Confronted with this situation of fragmentation, overlapping, incompleteness, selectivity and gaps in research capacity strengthening, this study sets out to identify key issues, problems and challenges in RCS and to bring these pieces together into a conceptual framework or system.

Key issues, problems and challenges are identified through a panoramic, but selective overview of some major players and programmes in research capacity strengthening, and this from the Stockholm Conference of the Commission on Health Research for Development (1990) up to the Ministerial Summit on Health Research in Mexico (2004). For each of the players and programmes under review, a short list of key issues is formulated as a first but essential step in clarifying, describing and organizing ideas (as defined by these players) about research capacity strengthening. The major challenge of this document consisted in bringing these issues into a conceptual framework, which introduces a higher level of abstraction in clarifying, describing and organizing these ideas but at the same time inviting the players to think out-of-the-box. The construction of such a framework has been done in a three-step movement, starting with the classical distinction between the three levels for capacity strengthening: individual level (training), institutional level (development and strengthening of institutions) and macro or system level (enabling environment). The macro or system level brings as a second step the national health research system with its major functions as an organizing framework. The document reviews what capacities and skills are required in support of the functions of governance, financing, creating resources and producing and using research and gives numerous examples from the field to illustrate this. Thirdly, the function of production and utilization of research leads to the notion of the research process as an organizing framework. This framework depicts research as an iterative process in phases, starting with managing the research agenda and ending with utilizing evidence in decision-making in policy and practice. For each phase, capacity strengthening needs are reviewed and examples are given to illustrate ways and strategies to address them.

The document makes some preliminary suggestions on how the proposed framework could be used and how it can contribute to a process of dialogue between the various stakeholders. This dialogue aims to contribute to a consensus about capacities to be developed and to (re)focus research capacity strengthening on equity as a guiding principle for further action.

## Introduction

**Capacity building has been a key instrument in development assistance.**

**Research capacity in the South remains one of the world's unmet challenges.**

The Commission on Health Research for Development, an independent international initiative, was formed in 1987 to recommend how research might improve the health and well-being of the people of the developing world. Following a worldwide analysis of health conditions and health research, the Commission concluded that research is essential both to facilitate health action and to generate new understanding and fresh interventions. In its final report, presented at the Nobel Conference in Stockholm, Sweden (February 1990), the Commission formulated a set of strategies through which the power of research can be harnessed to accelerate health improvements and to overcome health disparities worldwide. Building and sustaining research capacity is one of the proposed strategies.

In November 2004, the World Health Organization brought together in Mexico City a number of ministers of health, ministerial representatives, international organizations, networks, donor agencies, research programmes and institutions from 58 countries in a Ministerial Summit on Health Research. This meeting was held in parallel and partly in common with Forum 8, the 2004 annual meeting of the Global Forum for Health Research. The two meetings shared the theme of health research to achieve the Millennium Development Goals. Both emphasized the crucial but under-recognized part to be played by research in strengthening health systems, improving the equitable distribution of high quality services and advancing human development and recognized the need for a strong, transparent and sustainable national health research system, defined as the people, institutions and activities whose primary purpose is to generate relevant knowledge. Statements put out at the end of the Mexico meetings called for action by all stakeholders in a number of priority areas, one of which was capacity strengthening.

Comparing the Report of the Commission in 1990 with the statements made at the Mexico meetings in 2004, one can hardly ignore the remarkable continuity in scope and content of the policies formulated on both occasions. Indeed, both in 1990 and 2004 research has been clearly defined as an important tool and strategy in addressing **equity** in development. This is illustrated by the title of the Commission's Report (Health Research: essential link to equity in

“Building and sustaining research capacity within developing countries is an essential and effective means of accelerating research contributions to health and development. Nurturing individual scientific competence and leadership, strengthening institutions, establishing strong linkages between research and action agencies, and reinforcing national institutions through international networks are all important elements of capacity building.” (Commission on Health Research for Development)<sup>1</sup>

**“Strategic and long-term efforts in supporting capacity may contribute to change inequalities in research” (Berit Olsson)**

development) and the statement by the Global Forum (Health Research for Equity in Global Health). The same continuity in discourse is further evidenced by the prominent place of capacity strengthening for health research on both occasions. There is an increasing consensus to define research capacity strengthening as “one of the most important activities in the correction of the ‘10/90 gap’”<sup>3</sup> or, as the SAREC Director, Berit Olsson, put it: “strategic and long-term efforts in supporting capacity may contribute to change inequalities in research.”<sup>4</sup>

However, the fact that research capacity strengthening has remained for more than fifteen years in the spotlights of international and national conferences also means that it is not implemented overnight and requires long and systematic efforts.

The continuous interest and efforts in RCS over the last decade is evidenced by a remarkable influx of articles, books and papers, training modules, tools and programmes, conferences, workshops and task forces, all dealing with various issues and aspects in the broad area of RCS. This broad character is for instance illustrated by the much quoted definition of the United Nations Development Programme (UNDP), which defines RCS as “...the process by which individuals, organizations and societies develop abilities (individually and 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”.<sup>5</sup> This definition makes it clear that RCS refers to a broad and complex area, dealing not only with skills and competencies at various levels and by various actors but also with expected outcomes and impacts on policies and programmes. A comprehensive framework which covers the various dimensions, functions and actors in RCS could therefore be helpful to develop a proper understanding of RCS conceptually and to address its major challenges effectively in action terms.

The current study has four main objectives:

- To review some major trends and developments in research capacity strengthening over the last decade, with a focus on developing countries;
- To identify from this review some key issues and outstanding challenges in RCS;
- To provide a conceptual framework for these issues and challenges, linking RCS in a more effective way to the development of a national health research system;
- To contribute to a more documented and comprehensive dialogue about priorities and future directions in RCS between the numerous stakeholders, which could make a significant contribution to research capacity strengthening in developing countries.

## From the Commission in Stockholm (1990) to the Ministerial Summit in Mexico (2004): a panorama of players, programmes and issues

The search for a conceptual framework to address health research capacity strengthening in a comprehensive and systematic way can begin by examining the practice of capacity building over the last fifteen years; which actors have been on the playing field between the Nobel Conference in Stockholm and the Ministerial Summit in Mexico; which strategies or programmes were developed and, more important, which key outstanding issues have been identified by those actors. These issues could indeed be used not only as a reality check for the proposed framework, but also as building blocks for its construction.

Before drawing this panorama of players, products and programmes, a brief comment is perhaps appropriate on the attention that health research capacity strengthening has received over the last decade within the scientific literature – a comment which could give a first indication of the importance of this subject, at least within the scientific community. A recent literature search, undertaken by Niall McKee on behalf of the Global Forum,<sup>6</sup> produced two major findings:

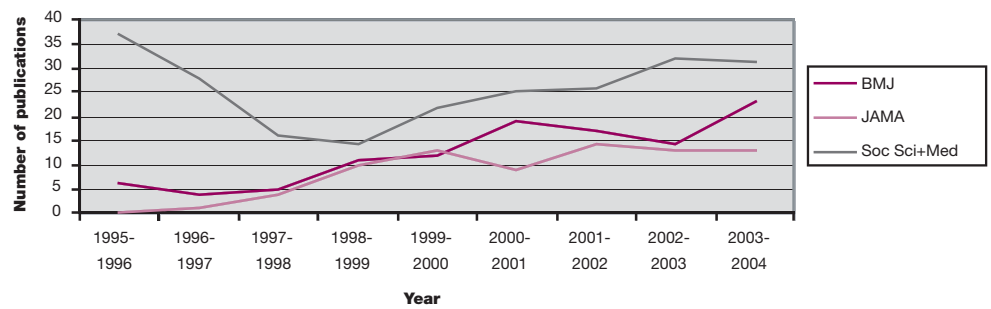
1. The proportion of peer-reviewed materials on research capacity strengthening in relation to the total amount of peer-reviewed materials on health research is relatively small. The results of a search of two databases (Pubmed and Popline) since 1990 are included in Table 1. A possible explanation for this relatively small proportion of materials devoted to RCS is that the majority of publications on it are grey literature, internal reports and documents by UN agencies, international health (research) programmes, bilateral donor agencies, foundations and nongovernmental organizations. It is therefore difficult to assess properly the relative importance given to RCS by the scientific community.
2. The number of articles devoted to RCS in three leading international medical/health journals is constantly growing, but slowly over the last decade. Figure 1 gives the number of articles on RCS published over the last ten years in the *British Medical Journal*, the *Journal of the American Medical Association* and *Social Science and Medicine*.

<b>Table 1</b>	<b>Results for health research</b>	<b>Results for RCS</b>	<b>% of RCS-related articles</b>	
<b>Yearly publications on health research and RCS</b>	Pubmed	12,696	799	6.29%
	Popline	534	16	2.99%

Source: Niall McKee, *Review of research capacity strengthening* (2004)

Whilst the results are not clear cut or definite due to the nature of the selected data, they indicate nevertheless that RCS has been taking a more central place in the production of scientific articles over the last decade, at least as reflected by the analysis of three leading scientific journals.

**Figure 1**  
Yearly publications  
on RCS



Parallel with a (slowly) growing interest in research capacity strengthening in the scientific literature, an increasing number of actors at national, regional and international level have been initiating and/or expanding short-, medium- and occasionally also long-term activities, projects and programmes in research capacity strengthening in developing countries. These players include UN agencies, such as WHO, UNICEF and UNAIDS, international health research programmes, such as the Alliance for Health Policy and Systems Research, the International Network for Clinical Epidemiology (INCLIN), WHO's Special Programmes; global health research advocacy groups, such as the Global Forum for Health Research and the Council on Health Research for Development; regional research networks, such as the African Health Research Forum and the China Health Economics Research and Training Network; donor agencies, such as the International Development Research Centre and Sida/SAREC – and these are only a few examples, not even including the numerous country actors and activities in RCS. Although it could be an interesting learning experience to draw a complete picture of the trees in the RCS forest, the major aim here is to identify key issues to be addressed in RCS and to place these issues into a framework, allowing for a more systematic and synergetic approach. By looking briefly at documents, initiatives and activities of a selected number of players in the field of RCS, some of these key issues can be uncovered and brought to the surface for further analysis and integration within a framework. A distinction has been made between some major players and some actors in specific areas of RCS. This overview will be concluded with a brief comment about the role of the donor community in RCS.

It goes without saying that the following panoramic overview does not pretend to be complete or representative of what happened in RCS during the last fifteen years, nor is it aiming to give a historical analysis of RCS efforts during this period. The gradual uncovering of the complex reality of RCS in its major components and key issues is its single objective.

### Who have been the major players?

#### *Commission and Task Force on Health Research for Development*

**The independent, international Commission on Health Research for Development** noted in its 1990 report that capacity building for research has not been a priority with most donor agencies because it is costly and time-consuming and does not seem to produce immediate results. The Commission therefore included in its Action Agenda “building and sustaining in both developing and industrialized countries individual and institutional research capacity concerned with third-world health problems” as one of its four major components. Furthermore it recommended “that building and sustaining research capacity be integrated as a key objective and powerful instrument for all health and development investments. Primary commitment must come from developing country governments to accord priority and provide sustained support ... Donor-assisted health projects should commit at least 5% of the project budget to research capacity strengthening and research activities”.<sup>7</sup>

Established to carry forward the recommendations of the Commission and to support pilot activities at country level, the **Task Force on Health Research for Development (1991)** evolved a “Strategy for Action in Health and Human Development” or the Essential National Health

Research (ENHR) strategy and included strengthening research capacity as one of the seven elements in this strategy. It was noted that many developing countries still lack the capacity to implement a national plan to conduct research on both country-specific and global health problems “because of defects in their institutions, shortages of trained researchers, limitations of funding, and poor logistic support”.<sup>8</sup> The goal of RCS is to ensure that each country develops the research capacity needed to analyse its health situation, to respond to new challenges and to develop better interventions for prevention, control and treatment.

In view of the enthusiasm with which developing countries and also but to a lesser extent donor agencies embraced the ENHR strategy, the second International Conference on Health Research for Development decided to establish in 1993 the **Council on Health Research for Development (COHRED)** as an international mechanism to facilitate the further implementation of ENHR. From its inception, COHRED placed research capacity strengthening high on its agenda and covered it in a number of publications, organized training and orientation activities on various capacities, such as priority setting, tracking of resource flows, research management and dissemination of research findings. Its Interim Assessment (1997) identified capacity strengthening as one of the four major areas where COHRED should make its next steps. Capacity strengthening, together with advocacy for equity in health research, continues to take a prominent place in COHRED’s Strategic Framework for Action (2003-2007), which emphasizes that “all countries should have the capacity to identify their priorities, to conduct essential research that guides their health policies and practice, and to manage a system through which the efforts of all players can be harmonized”.<sup>9</sup>

**Key points:**

- capacity strengthening at individual, institutional and system level
- capacity strengthening of various stakeholders, including researchers, policy-makers and health-care providers
- capacities to produce, utilize and manage research
- capacity development to be driven by countries
- need for an integrated capacity strengthening plan
- need for long-term investments in capacity development, from both national and international sources.

“The regions where disease burden is greatest, and changing most rapidly, are severely disadvantaged by the small numbers of their scientists, the invisibility of the work of their scientists, and the lack of incentives for excellence and productivity.” (Ad Hoc Committee)<sup>10</sup>

***World Health Organization***

The same year (1990) in which the Commission released its report, the World Health Organization focused its **Technical Discussions at the 43<sup>rd</sup> World Health Assembly** on the “Role of Health Research in the Strategy for Health for All by the Year 2000”, with research capability strengthening as one of the four major themes. The subsequent resolution by the Assembly on “The role of health research” urged Member States, particularly developing countries, “to build and strengthen national research capabilities by investing resources in national institutions, by providing appropriate career opportunities to attract and retain the involvement of their own scientists, and by creating environments that will foster scholarship and creativity”.<sup>11</sup>

Stimulated by this recommendation and also challenged by the work of the Commission on Health Research for Development, WHO intensified its efforts in capacity strengthening, both in its health systems and science and technology programmes, and also at its various organizational levels. Training materials for various stakeholders were developed, specific capacity strengthening programmes, for instance in the areas of tropical diseases, human

**The report emphasizes the importance of strengthening human capacity, fostering an enabling environment and the promotion of collaboration in health research.**

reproduction (see below) and health systems, became stronger and more investments were allocated to RCS.

At the strategic and policy level of the organization, research capacity strengthening was recognized as a vital and essential investment in health and development and received high priority in key policy documents, such as the health research strategy developed by the **Advisory Committee on Health Research**<sup>12</sup> (1997) and in the recommendations of the **Ad Hoc Committee on Health Research Relating to Future Intervention Options** (1996). As one of the institutional responses to the challenges, the Ad Hoc Committee made the following firm statement: “Investors may increase the efficiency of R&D by strengthening national and regional research capacity, through, for example, focusing efforts on areas of comparative advantage, on improvements in the quality of training, and on explicit initiatives to translate results into relevant policies and interventions; by offering incentives to reverse the brain drain, by promoting policies that require research posts to be competitive and based on peer-reviewed allocation of funds; and by making core support for institutions competitive”.<sup>13</sup>

More recently, WHO published the *World Report on Knowledge for Better Health: Strengthening Health Systems*, which was a major input to the Ministerial Summit on Health Research (Mexico, 2004). In taking stock of health research the document highlights a series of inequities in the research process, including in the financing of research (the ‘10/90 gap’), in setting the research agenda (predominance of biomedical and clinical research as well as the influence of pharmaceutical and biotechnology companies), gender bias in health research and inequities in knowledge publication. Focusing strongly on the development of a national health research system, the report identifies health research capacity strengthening as one of the four major functions of the health research system. As key strategies, the report emphasizes the importance of strengthening human capacity, fostering an enabling environment and the promotion of collaboration in health research.

**Key points:**

- capacity strengthening of individuals and institutions in combination with promoting an enabling environment
- not only capacity strengthening, but also capacity retention
- capacity strengthening, not just in technical aspects of research
- capacity strengthening for the demand-side of research
- importance of funding and financial incentives
- need for a more system-oriented and long-term approach.

Whilst the above events, documents and issues all refer to the World Health Organization at the global or headquarters level, it should be recognized that similar or parallel observations could be made at the regional level. The important role of the WHO Regional Offices in RCS is for instance illustrated in the regional building up and planning process towards the International Conference on Health Research for Development in Bangkok (Thailand, 2000), whereby most of these offices played a catalytic role in channelling the country voices towards this international event.

***Global Forum for Health Research***

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. To this end the Global Forum has devoted special sessions on RCS during its annual meetings (Forums), where various capacity strengthening initiatives have been presented and discussed, together with more overall policies and perspectives on RCS. The three editions of **The 10/90 Report on Health Research** (2000, 2001-2002, 2003-2004) also give considerable attention to RCS by identifying major challenges, reviewing progress made and drawing an action agenda for the coming years. *The 10/90 Report 2003-2004* formulated the following major lines for RCS: design a framework for defining RCS needs and impact, establishment of

a network of RCS partners, funding and enabling health research systems.<sup>14</sup> It should be noted that the equity dimension in general and the gender dimension in particular cut across the Global Forum's overall strategy, including research capacity strengthening.

**Key points:**

- need for evaluation of RCS
- RCS agenda at national, regional and global levels
- funding of RCS
- strengthening of macro-environment/national health research system.

The Action Plan, adopted by the International Conference on Health Research for Development (Bangkok, 2000),<sup>15</sup> jointly organized by the Council on Health Research for Development, the Global Forum for Health Research, the World Bank and the World Health Organization, recommended for capacity development the following actions (at national level):

- Research management and leadership training programmes should be established. Funds should be designated for research capacity development in its broadest sense.
- Viable research careers should be developed where they do not exist.
- Capacity development efforts should include all stakeholders – communities, health-care providers, researchers and institutions – but should focus primarily on institutional development.

**Players in specific areas**

Over the last decade the number of players in the health research field and therefore also indirectly in RCS has been increased in a significant way. The latest available *10/90 Report* by the Global Forum<sup>16</sup> lists, in addition to a number of information networks in health research (e.g. HINARI, INASP-Health and SHARED), 17 networks in the priority research areas, of which most have some capacity strengthening component on their agenda. International agencies like the World Bank, UNAIDS, UNICEF and the Global Fund are dealing with some specific aspects in RCS. The World Health Organization has numerous research programmes with research capacity strengthening as a key component or strategy. Most of these programmes are targeting either a specific group (e.g. managers, clinicians, social scientists, district staff) or a specific topic area (e.g. specific disease, human resources, health systems, social determinants). Beside the classical examples of the Special Programmes on tropical diseases research (TDR) and human reproduction research (HRP), there are some more and recent examples of research capacity strengthening in specific areas, like human resources, tuberculosis, operational research in support of “3 by 5” and equity. There are also an increasing number of nongovernmental organizations active in the field of research capacity strengthening for research, which focus also most of the time on specific groups, topical areas or particular capacities, like the International Network for Clinical Epidemiology (INCLIN), the International Forum for Health Social Science, the Alliance for Health Policy and Systems Research (the Alliance), the Equity Network (EQUINET), the Field Epidemiology Training Program (CDC) and so on.

Rather than trying to establish an anthology or even a glossary of all these RCS initiatives, four health research programmes which have RCS as one of their major flagships – INCLIN, TDR, HRP and the Alliance – are briefly reviewed here with the aims of identifying further issues and challenges in RCS and constructing a more comprehensive framework for analysis and action.

### *International Network for Clinical Epidemiology (INCLEN)*

INCLEN was established in 1980 as an initiative to improve health care in developing countries by promoting a population-based framework among health care professionals in the planning, measurement and evaluation of health systems. Its original mission was to train faculty at medical schools in developing countries to think more broadly about the determinants of health, but gradually the programme evolved to include a wide range of health professionals involved in clinical care, preventive care and promotional health, who investigate important issues of equity, efficiency and quality in health care.

Clinicians, social scientists and biostatisticians from leading medical institutions in the developing world were trained (at Master's level) to create Clinical Epidemiology Units (CEUs) in their own countries that could serve as agents for change. This training was initially done in Clinical Epidemiology Research and Training Centers (CERTCs) in medical schools in Australia, Canada and the United States, but was gradually transferred to developing world CEUs. As many of these CEUs reached a level of maturity and stability with a full faculty training complement, a selected number were upgraded to research and training centres (CERTCs) to train fellows in their respective regions.

INCLEN's contribution to individual and institutional capacity development of the last 25 years is illustrated in the following table:

<b>Table 2</b>	
<b>INCLEN's contribution to individual and institutional capacity development<sup>17</sup></b>	<ul style="list-style-type: none"> <li>• Number of professionals trained: 724 in 28 countries</li> <li>• 71 Clinical Epidemiology Units (CEU) in 28 countries</li> <li>• 24 Clinical Epidemiology Research &amp; Training Centers (CERTC) in 15 countries, offering the following or similar MSc programmes :               <ul style="list-style-type: none"> <li>o MSc in Clinical Epidemiology</li> <li>o MSc in Epidemiology and Biostatistics</li> <li>o MSc in Health Policy and Management</li> <li>o MSc in Clinical Medicine</li> </ul> </li> </ul>

Source: INCLEN, *International Network for Clinical Epidemiology*

“A Forum 6 workshop on clinical trial capacity in low- and middle-income countries identified several areas where substantial capacity development is sorely needed including the areas of planning, good clinical practice norms, ethical reviews, data management and statistical analysis, the ability of indigenous researchers to compete successfully for research funding, even on issues dealing with essential national or regional public health conditions.” (INCLEN)<sup>18</sup>

In its present strategic plan 2003-2007, the INCLEN Trust, established in 2000 and registered as an international nongovernmental organization, has defined strengthening of its “global, regional and national research and capacity building functions” as one of its four major strategies.<sup>19</sup>

### *Special Programme for Research and Training in Tropical Diseases (TDR)*

“While researchers in disease-endemic countries are closer to the problems and may hold the key to solutions, all too often they are handicapped by the lack of essential skills, equipment, access to information, and opportunities to participate in the global research agenda.” (WHO/TDR, Research capacity building in developing countries)<sup>20</sup>

Established in 1975 and currently co-sponsored by UNICEF, UNDP, the World Bank and WHO, the Special Programme for Research and Training in Tropical Diseases (TDR) aims to improve existing and develop new approaches for preventing, diagnosing, treating and controlling neglected infectious diseases which are applicable, acceptable and affordable by developing endemic countries, which can be readily integrated into the health services of these countries, and which focus on the health problems of the poor.

Building research capacity has been a major component of TDR since its inception. In its most recent strategy, TDR has been placing research capacity strengthening at the heart of the programme “underpinning everything it does, from the discovery of new basic knowledge, to the development of new tools, new intervention methods, and new policies for disease control”.<sup>21</sup> Two main tracks in its approach to capacity building have been established. One track (R&D-driven capacity building: RCS-plus) is driven by the R&D output, i.e. leading research institutions, from least as well as more advanced developing countries, are invited to compete for participation in R&D work contributing directly to TDR’s R&D agenda and to build capacities to become more internationally competitive. The other track (Researcher-driven capacity building) has an individual component with “open calls for applications” both for postgraduate degree or specialized training and leadership class, and an institutional component with a support package which is expected to develop research leadership, promote the development of infrastructure and research environment and to foster opportunities for collaboration with more advanced countries.

This new strategy also involved a shift in the allocation of resources for research capacity strengthening. While prior to 2000 funding for individual capacity building (through research and training projects) accounted for nearly half of capacity strengthening activities and budget, this share went sharply down after 2000 and the lion’s share of the budget shifted gradually to strengthening existing research capacity in more developed countries to support research and development in TDR priority areas. This shift in priority in capacity strengthening efforts is illustrated by the following table:

	<b>2000-2001</b>	<b>(%)</b>	<b>2002-2003</b>	<b>(%)</b>	<b>2004-2005</b>	<b>(%)</b>
<b>TDR research capacity building: approved working budget<sup>22</sup></b> (In US\$ thousands)						
Research environment	932	7.1	1,817	16.2	1,746	17.1
Individual academic training	4,800	36.7	2,652	23.7	1,618	15.9
Institutional grants	2,677	20.5	2,669	23.8	2,234	21.9
R&D-related capacity building*	4,680	35.8	4,062	36.3	4,587	45.0
<b>Total</b>	<b>13,089</b>	<b>100.0</b>	<b>11,200</b>	<b>100.0</b>	<b>10,185</b>	<b>100.0</b>

\* includes MIM/TDR grants

Source: F. Zicker

As far as key issues are concerned, a SWOT analysis (strengths, weaknesses, opportunities, threats) which was done in relation to the new TDR research capability strengthening strategy, identified the following threats or issues:

- “continued global focus on quick-fix and operational solutions to public health problems gives research low priority;
- development of research self-reliance is a multifaceted task and it is difficult to measure and attribute impact to investment;
- poor economies of most disease-endemic countries (DECs) maintain public R&D investments at a less than viable level;
- globalization makes high level DEC researchers extremely mobile in search of better opportunities (RCS Strategy 2002-2005) ”.<sup>23</sup>

*Special Programme of Research, Development and Research Training in Human Reproduction (HRP)*

“An integral part of development support is the building-up of national and regional self-reliance through research capacity strengthening” (WHO/HRP, An Investment for the future)<sup>24</sup>

The Special Programme of Research, Development and Research Training in Human Reproduction (HRP) was established by the World Health Organization in 1972, as the main instrument within the United Nations system for the coordination, promotion, conduct and evaluation of international research in human reproduction. Since the beginning, HRP has established a network of institutions, which are involved in both global and national reproductive health research and research training. HRP uses a system of grants to build and strengthen the capacity of developing countries to conduct research on reproductive health and to apply the findings of that research to policy and practice. The main instrument is the long-term institutional development (LID) grant, which offers a technical support package including training, equipment, expert advice and other resources to support a research programme in line with the country’s needs. Other instruments include research training grants, which allow scientists from developing countries to undertake training in an institution other than their own, and grants for resource maintenance, courses, workshops, seminars, and advocacy for best practices through centres of excellence.

The following table gives an idea of the overall output of LID grant recipients by period:<sup>25</sup>

<b>Table 4</b>	<b>OUTPUT</b>	<b>1990-1994</b>	<b>1995-1998</b>	<b>Difference (%)</b>
<b>HRP overall output of LID grant recipients by period</b>	Years spent on research projects	2871	1989	-30
	Staff trained abroad	287	211	-25
	Staff trained in the totality of centres	30527	42717	+40
	Publications and presentations	3178	3423	+8

Source: UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction, *Report of the In-depth Review of Research Capacity Strengthening* (2002)

Among the lessons learned, the most recent External Evaluation report (2003) noted:

- “... it remains a challenge to bridge the gaps between research, policy and action...
- reproductive health research capacity strengthening can be enhanced by supporting leading reproductive health research centres...”<sup>26</sup>

In addition to these lessons, the Report of the In-depth Review of Research Capacity Strengthening recommends that for the period up to 2010 HRP’s research capacity strengthening programmes should be targeted mainly to:

- assist least-developed countries with an expressed commitment to improve the reproductive health status of their populations;
- introduce and strengthen strategies to facilitate the dissemination and utilization of research results to improve programmes and services;
- develop efficient and effective monitoring and evaluation mechanisms that allow a more objective assessment of the impact of the proposed RCS mechanisms.

*Alliance for Health Policy and Systems Research*

As an initiative of the Global Forum for Health Research, the Alliance for Health Policy and Systems Research (HPSR) was launched in early 2000 to promote the generation, dissemination and use of knowledge for enhancing health system performance in developing countries. To

reach these objectives, the Alliance has developed a number of strategies, including encouraging the attainment of a critical mass of researchers in the field of HPSR. In support of the development of such a critical mass, the Alliance launched over the last five years three rounds of calls for research-to-policy studies, combined with capacity strengthening activities in the areas of protocol development, interaction with users and scientific writing. It also recently introduced support to ten teaching programmes in developing and emerging market countries to support health systems research training. Interventions include market research, development of teaching skills and training methods, development of teaching materials, bibliographic and information support, fieldwork costs and evaluation.

The first biennial review of HPSR, issued in 2004 under the title *Strengthening health systems: the role and promise of policy and systems research* identified five key challenges for enhancing health systems research capacity, including:

- capacity strengthening must become a more integral part of national health system development;
- a more comprehensive view of institutional research capacity strengthening is needed;
- more innovative applications of knowledge management should be considered.<sup>27</sup>

### The donor community

#### Oslo meeting on Development Research Funding

“At a meeting in Oslo, in May 2000, participants from the Canadian IDRC, the European Commission and Rockefeller Foundation, as well as representatives of the British, Danish, French, Norwegian, Swedish and Swiss authorities, presented and reviewed their programmes of support for research in developing countries. Participants expressed common concern regarding capacity building and research for development...”<sup>28</sup>

Since official development assistance (ODA) is an important source of health and health research funding for developing countries (bilateral ODA) and multilateral institutions (multilateral ODA), it is clear that a panoramic overview of players in RCS that did not include its investors would be incomplete and biased.

“Official development assistance fell sharply after 1990 and reached an all-time low in 1997 at just 0.22 % of the combined national income of donor agencies. In 2001-02, the trend reversed, resulting in a 7.2 % real increase in ODA. Health ODA rose from US\$ 1.6 billion in 1998 to US\$ 2.7 billion in 2001 of which an estimated US\$ 400.0 million went to health R&D”.<sup>29</sup> Unfortunately, no data are available about the share of these investments going to RCS, but there is enough other evidence about the important role played by bilateral donor agencies. Annual reports of agencies such as CIDA (Canada), DANIDA (Denmark), DFID (UK), DGIS (Netherlands), NORAD (Norway), SDC (Switzerland), Sida/SAREC (Sweden) and USAID (USA) include indeed numerous examples and illustrations of different research capacity strengthening activities in developing countries, supported but at the same time also influenced by these agencies. In addition to the bilateral donors, national research institutions in industrialized countries (e.g. US National Institutes of Health, the Canadian Institutes for Health Research) are expanding their role in international health research and private foundations (e.g. Gates Foundation, Rockefeller Foundation) are playing a growing financial role in health R&D and in shaping research agendas.

Two donor agencies are briefly introduced, illustrating their role in RCS.

### **Research capacity strengthening by IDRC and SAREC**

In addressing building and sustaining research capacity, the Commission noted in its Report: “Developing countries should be able to create their own health research agendas, but their ability to do so has been jeopardized by their heavy reliance on external aid. In partial response to this problem, research development agencies such as IDRC (International Development Research Centre, Canada) and SAREC (Swedish Agency for Research Cooperation with Developing Countries) have committed themselves to supporting developing-country researchers and to strengthening research capacity in developing countries”.<sup>30</sup> Fifteen years later the same two agencies – IDRC and Sida/SAREC – are still playing a leadership role in capacity strengthening for health research.

#### *Swedish Agency for Research Cooperation with Developing Countries (SAREC)*

Research cooperation was introduced in 1975 as part of the general Swedish development cooperation. In 1995, the Swedish Agency for Research Cooperation with Developing Countries (SAREC) became a department within the Swedish International Development Agency (Sida), with the following mandate:

- “support developing countries in their efforts to establish a research community, train researchers and develop methods for planning and indicating priorities for research
- contribute financial and scientific resources to support the production of new knowledge and utilization of research findings
- support scientific cooperation between researchers in Sweden and developing countries”.<sup>31</sup>

The overriding objective of Swedish research cooperation is to strengthen the research capacity of partner countries and promote development-oriented research. The main avenue for strengthening research capacity is under the umbrella of bilateral research cooperation with partner countries and comprises a range of activities, including training PhD students in research projects, building laboratories and modern library facilities, setting up local research funds and mechanisms for allocating priority among research proposals and promoting dialogue on reform of universities and national research systems. Besides providing support to research councils, research institutions and particularly universities, SAREC also provides support for regional research networks and for international research programmes.

In 2005 research capacity strengthening is supported in eleven countries in various regions of the world.

On the occasion of the Mexico meetings (2004), SAREC’s Director Berit Olsson made the following observations regarding research capacity strengthening: “...not all countries can afford huge and sophisticated research facilities but all countries require core functions. Without core facilities and capacities for research, countries are very vulnerable. The value of research does not only lie in its contribution to specific outcomes or products. The process itself is productive. There is a lot of ‘essentiality’ in having research capacity which is process-oriented rather than product-oriented and which is linked to the processes of analysis, formulating hypotheses, understanding the realities surrounding us and connecting to the international world of knowledge. University research also enhances analytical capacity and the searching and questioning mind in higher education.”<sup>32</sup>

#### *International Development Research Centre (IDRC)*

The International Development Research Centre (IDRC) was established by the Parliament of Canada in 1970 as an autonomous public corporation to stimulate and support research by researchers from developing countries on the problems they identify as crucial to their communities. Its initial efforts were concentrated in the fields of agriculture, health, communication, earth and engineering sciences, and social sciences.

**The programme aims to establish a balance of “competitive requests for proposals, strategic and targeted programs and projects, and support for networks, ‘closing the loop’ or knowledge translation, synthesis and training.”**

In its most recent Corporate Strategy 2005-2010, approved by the Board in April 2005, IDRC reconfirmed “Empowerment through knowledge” as its overall mission, with strengthening the local research capacity of developing countries, fostering the production, dissemination and application of research results and leverage of additional Canadian resources for research for development as major strategic goals. In pursuing these goals, the Centre will assess performance according to four main criteria :

- “building a favourable environment within which research can be carried out and which provides opportunities for individual researchers in the South;
- supporting research that is credible, i.e. scientifically valid and methodologically sound;
- influencing practices, technologies, policies and laws that contribute to sustainable and equitable development and poverty reduction;
- building explicitly Southern agendas into current international policy debates and developmental decision-making at all levels.”<sup>33</sup>

IDRC’s research programmes and projects are managed by three programme areas: Environment and Natural Resource Management, Information and Communication Technologies for Development, and Social and Economic Policy. Within this third area (Social and Economic Policy), the Governance, Equity and Health (GEH) programme has a particular relevance for health research capacity strengthening. Established in 2002 for an initial period of five years, GEH is building a portfolio of projects, programmes and networks in countries in sub-Saharan Africa, Latin America and the Caribbean around three general objectives:

- “Strengthening health systems: to support applied research that will both strengthen and monitor the capacity of governments to ensure equitable financing and delivery of priority public health and health care services, especially to marginalized and underserved populations;
- Promoting civic engagement: to support informed and effective citizen demand and participation throughout the policy-to-practice process;
- Making research matter: to increase the effectiveness of research-to-policy linkages in promoting the dual goal of health and social equity.”<sup>34</sup>

The programme expects to invest significantly in capacity building and aims to establish a balance of “competitive requests for proposals, strategic and targeted programs and projects, and support for networks, ‘closing the loop’ or knowledge translation, synthesis and training.”<sup>35</sup>

### **Conclusion**

The above panoramic and selective overview of products, players and programmes suggests a dynamic and evolving scene, with many lead and supporting actors and constantly new plays being staged, directed most of the time by directors with an international reputation. It also conjures up, however, the image of the increasingly popular summer street theatres, whereby various companies bring their own productions to different squares of the town, and in the best case only meet after the show for a bottle of local wine and then go on for their next show. Dialogue, consultation and even collaboration beforehand to decide on how to respond better to variable interests and needs of various market segments remains for the most part an illusion.

The overview therefore gives credence to one of the recommendations the Global Forum made in the *10/90 Report 2003-2004* in discussing an agenda for the coming years in RCS: “Given the lack of systemic and collaborative approach to RCS efforts, it is important to develop platforms (networks) for debate, synthesis, measurement of results and advocacy for RCS.”<sup>36</sup> Such platforms for action do require, however, a common platform or conceptual framework, which will help to contextualize and to answer questions such as: who should be involved in such debate or dialogue; which experiences, practices, lessons have to be synthesized; which criteria should be used for assessing and measuring which results, what advocacy for which capacities, and so on.

Identifying issues is one step, but bringing them into a framework is an essential next one. Such a framework should help to avoid what seems to be a classical compartmentalization in this area and at the same time promote a more integrated and systemic approach, allowing a more efficient use of scarce resources, particularly in developing countries.

## Substantive issues of research capacity strengthening within a framework: levels, system and process

A review of major issues, as they have been identified in the panoramic overview of products, players and programmes and as they come up in the literature, suggests at least three different ways in which these issues could be addressed in some kind of organizing framework\*<sup>37</sup>

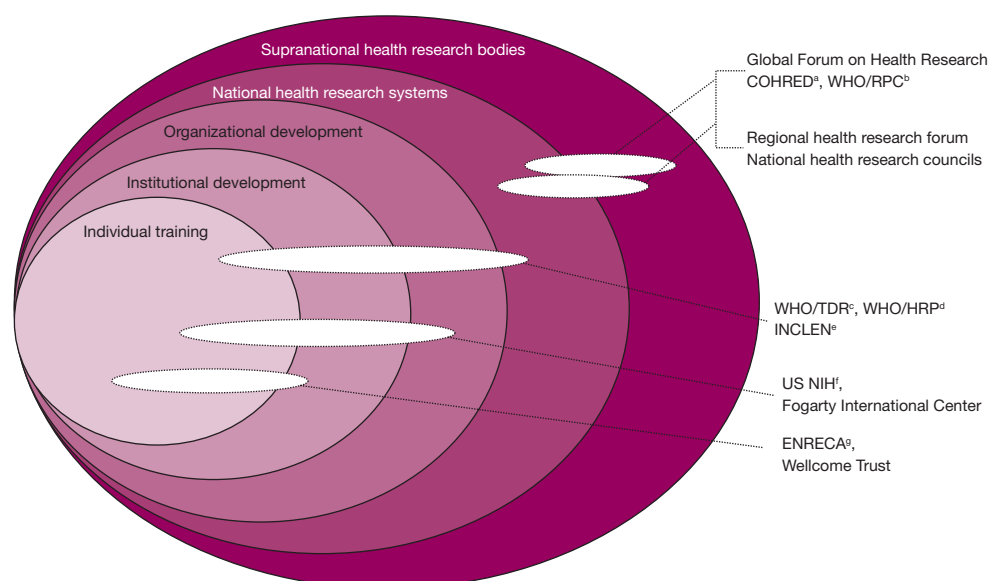
- capacity strengthening at different levels
- capacity strengthening in various functions of the health research system
- capacity strengthening in various phases of the research process.

### Capacity strengthening at different levels

Besides the classical distinction between country, regional and global levels, there is a growing consensus to look at capacity strengthening at country level from three different, complementary perspectives or levels: individual, institutional and system level.

Building and strengthening research capacity requires a combination of short-term and long-term strategies, directed at individuals, institutions, organizations and countries. Recently Marian Lansang has given a clear overview of RCS at these various levels.<sup>38</sup>

**Figure 2**  
Examples of efforts to build research capacity, ranging from individual to global movements



- <sup>a</sup> COHRED: Council on Health Research for Development  
<sup>b</sup> WHO/RPC: WHO Department of Research Policy and Cooperation  
<sup>c</sup> WHO/TDR: Special Programme for Research and Training in Tropical Diseases  
<sup>d</sup> WHO/HRP: Special Programme of Research, Development and Research Training in Reproductive Health  
<sup>e</sup> INCLEN: International Clinical Epidemiology Network  
<sup>f</sup> US NIH: National Institutes of Health, USA  
<sup>g</sup> ENRECA: Enhancing Research Capacity, Danish Ministry of Foreign Affairs

Source: *Bulletin of the World Health Organization* (2004)

\* The terms conceptual models, conceptual frameworks, and conceptual systems often are used synonymously and represent global ideas about a phenomenon. They are used to clarify, describe and organize ideas and could be viewed as the top of the hierarchy.

What do these various levels require in terms of capacity strengthening?

### *The individual level*

A critical mass of researchers competent in the basic, clinical, epidemiological, biostatistical, health systems and policy and social sciences, performing quality research of national relevance and of scientific importance, has to be built, maintained and retained. Capacity-building strategies include graduate and post-graduate training programmes (TDR and HRP as classical examples), learning by doing approaches in the form of development or seed grants (Alliance), hands-on training in ongoing research programmes (Joint Health Systems Research Project for the Southern African Region) or mentorship programmes (Canadian Coalition for Global Health Research) and institutional partnerships between developing and developed and/or developing countries (Task Force on Malaria Research Capability Strengthening in Africa).

Two additional comments about RCS at this level are apposite:

- 1) Capacity strengthening at individual level has focused in the past nearly exclusively on the producers of research, i.e. researchers. Only recently has this focus been enlarged to include other stakeholders, such as:
  - decision-makers and managers, e.g. the Canadian Executive Training for Research Application (EXTRA) is training health service leaders in how to find, assess, interpret and apply research-based evidence;
  - health workers at the various levels of the health system, e.g. the Joint Health Systems Research Project for Southern Africa aims its capacity-strengthening initiatives at higher and middle-level health workers from the provincial and district level;
  - research managers, e.g. WHO Regional Office for South-East Asia has developed a series of training modules on health research management;
  - community members, e.g. the involvement of community-based organizations for health in India in preparing research protocols, data processing and analysis and report writing.
- 2) While technical competence (in protocol development and data analysis) is obviously a key element in capacity strengthening, there is a growing recognition that other aspects of the research process have to be included as well, such as priority setting, networking and leadership, communication, translation and dissemination, advocacy, promotion and negotiation, and partnership development. For instance, a recently published handbook for researchers “Tools for Policy Impact”<sup>39</sup> distinguishes four different tools, for which capacities have to be developed: research tools, context assessment tools, communication tools and policy influence tools.

### *The institutional level*

“Training and institutional development should be closely inter-related in order to get away from building empty research structures with no trained scientists who can use them or, on the contrary, to have trained scientists with no facilities to work in. Both should be developed incrementally.” (Thomas Nchinda, 2002)<sup>40</sup>

Identifying and training the proper balance of individuals with expertise in generating (and using) knowledge is only a very first step in capacity building. In order to maintain the interest and commitment of researchers, the research environment has to be enhanced.

According to Nchinda, success of RCS was found to be associated with capable and committed scientific leadership, continuity of funding of research, ability to attract a core of dedicated young scientists, adequate and appropriate infrastructure for research (building and premises), adequate equipment and supplies including modern communication facilities and

scientific literature, scientific linkage to another institution, and stable conditions of service with adequate remuneration. Most of these “success factors” refer to the institutional environment of individual researchers and illustrate the critical importance of institution building as a different component in RCS. The importance of the institutional level in capacity strengthening is now generally recognized as a key factor for a more sustainable process of capacity strengthening and there are numerous examples of programmes and agencies that illustrate how a critical mass of researchers has been built within academic and research centres and which capacities are required for such centres to perform effectively and efficiently.

For instance, the key strategy for RCS of the Special Programme of Research, Development and Research Training in Human Reproduction (HRP) has been to identify centres within each region that have the potential to develop capacity for research and research training in reproductive health. The Long-term Institutional Development (LID) Grant is the main vehicle for strengthening those centres and includes funds for salaries, laboratory equipment and other infrastructure such as computers and transport, besides support for management and analysis of data. The in-depth review of the programme identified, however, a number of factors that constrain the current research capacity strengthening strategies. Among the constraints, which the review identified, a number are clearly related to the national context or level:

- “absence of a research body responsible for establishing the national reproductive health needs, priorities and agenda, as well as the formulation of reproductive health policies within the country
- an artificial divide between the research community and the service providers
- lack of complementary support from national sources in terms of personnel, infrastructure and administrative support
- the involvement of the stakeholders at every stage of research priority setting, needs assessment, design and execution of projects in a transparent administrative environment is important”.<sup>41</sup>

Those factors give clear evidence to the recognition that the national context or macro environment in which the centres function – or, broader, in which capacity-strengthening efforts take place – affect the effectiveness of any RCS input. This leads to the third and last level in RCS: the macro level.

### *The macro or system level (the health research system)*

“Research capacity is not merely the capacities of individuals or groups to conduct research but also capacities at the level of organization and research management. An organizational framework is needed that can devise strategies for research development, secure funding and allocate resources based on merit and relevance.” (Berit Olsson)<sup>42</sup>

The International Conference on Health Research for Development (Bangkok, 2000) introduced a re-conceptualization of health research, emphasizing strongly a systems approach and defining research not just for and by researchers but as an integral part of long-term health development aimed at reducing inequities. It was argued that “...for health research to contribute effectively to equitable development, it needs to be conducted within a system that has clearly defined goals and is based on shared values”.<sup>43</sup> Equity or “...each citizen’s having equal capabilities for achieving good health outcomes, conditional on respect for human diversity and individual autonomy, and achieved through health action for the unfairly disadvantaged...”<sup>44</sup> is one of such key underlying values of the health research system. It is therefore essential not only to review which capacities are required for the different functions of this system but also if and how the equity value is reflected by these capacities (see below).

The Health Research System Analysis Initiative of WHO/RPC<sup>45</sup> identified the following system characteristics, creating an enabling environment for researchers:

- range and breadth of researchers
- transparency of the funding process
- quality of the workspace and facilities
- encouragement of collaboration with others
- opportunities to present, discuss and publish results
- relevance of health research activities
- remuneration of health researchers
- nurturing of careers
- training and continuing education
- access and sharing of information.

The development, strengthening and maintenance of such an enabling environment require leadership and management skills and the process of articulating those “new” research capacities has started only recently. Capacities at this macro-level of the health research system include: strategic planning, research priority setting, knowledge management, advocacy and demand creation, consensus building and negotiation, resource generation and allocation, partnership building across many stakeholders, communication, including virtual forms of networking, financial management and systems performance assessment.<sup>46</sup>

### **Capacity strengthening in various functions (of the health research system)**

In reviewing the various levels on which capacity strengthening takes place (and should take place), the notion of the health research system was introduced to refer to the broader, macro, enabling environment for research. Capacity strengthening refers indeed not only to individual researchers and research institutions, but also to the health research system as a whole.

The health research system can be defined as a concept “that integrates and coordinates the objectives, structures, stakeholders, processes, cultures and outcomes of health research towards the development of equity in health and in the national health system.” (Cha-am, 2002)

In analogy with the conceptualization of the national health system by Murray and Frenk,<sup>47</sup> four major functions can be distinguished for the health research system (Bangkok, 2000 & Pang, 2003):

- stewardship or governance, which encompasses “a range of activities intended to ensure that the health research system demonstrates quality leadership, is productive, has strategic directions and operates in a coherent manner”;
- financing, which refers to securing funds, both national and external, and to allocating these funds to institutional or individual providers to deliver research products;
- resource generation or “the production, maintenance, improvement and retention (of capacities) of individuals, institutions and infrastructure, required for the production, utilization and management of health research”;
- production and utilization of research, which includes the production of new research and the synthesis of existing research and the utilization of research in policy, practice and action.

The execution of the above functions implies a series of activities, for which a number of specific competencies of specific stakeholders are required, at specific stages of the research process. What does this mean in practical terms?

#### ***Stewardship***

Stewardship implies setting, implementing and monitoring the rules of the health research system, assuring an equitable playing field for all actors in the system and defining its strategies.

The capacities required to implement this function include:

- Skills to formulate a vision, mission, goal and policy for health research  
*Example:* the WHO/SEARO Modules on Health Research Management (2003) include modules on “Leadership and management” and on “Policies, priorities and plans for health research systems”.
- Skills to prioritize health research, using appropriate methodologies and approaches  
*Example:* both the Global Forum and COHRED developed training manuals, respectively “The Combined Approach Matrix – a priority setting tool for health research” (2004) and “A manual for research priority setting using the ENHR strategy” (2000), and facilitated related capacity-strengthening activities in a number of countries for various target groups.
- Capacity to address ethical considerations in research projects  
*Example:* in 2000 WHO/TDR introduced its *Operational Guidelines for Ethics Committees that review biomedical research* which provide guidance for the development of the constitution, composition and procedures of ethics committees and ethical review systems (2000).
- Capacity to collect, analyse and use information to assess and evaluate the various aspects and steps in the research process  
*Example:* the WHO Health Research System Analysis Initiative established a so-called benchmarking system, including 14 core indicators and 42 descriptive variables, to assess (the implementation of) the functions of the health research system; this benchmarking system, together with a portfolio of additional approaches (policy reviews, media coverage assessments, etc.) has been used in a number of country workshops.<sup>48</sup>
- Finally, the capacity to design and implement policies, which address in an effective way existing inequities in health research, including the financing of research, setting the research agenda, the gender bias and inequities in knowledge publication and utilization.

Specific target groups, which should develop and strengthen these capacities, include:

- policy-makers (ministers, permanent secretaries) within the ministries of health, science and technology, education
- senior managers within the same departments
- health research managers within academic departments, research institutions, research networks.

Although the above activities and capacities are required throughout the research process, they have a particular relevance for an appropriate start of the process.

### **Financing**

#### **Oslo meeting on Development Research Funding**

“... the North-South knowledge gap cannot be bridged unless more consideration is given to development issues in regular research funding, as well as research in regular development funding”<sup>49</sup>

The function of financing in the health research system refers to strategies and approaches for mobilization of funds for research from both national and external sources as well as to the allocation and use of these funds according to nationally agreed priorities and respecting an appropriate balance between various types of research (basic, clinical, health systems and policy research, social science research).

Capacities dealing with financing include:

- Skills to mobilize funds for research from national or international sources, which covers identification and approaching of appropriate donors, proposal writing, negotiation skills, etc.

*Examples* are given, for instance, by the Alliance for Health Policy and Systems Research, which developed a number of tools to apply successfully to “Research to evidence” and “Young researchers” grants and organized a series of training workshops on “Designing the Winning Protocol”. Another example is the Global Development Network (GDN), a network of research and policy institutes working together to address the problems of national and regional development, which published an online “Toolkit: Proposal writing and fundraising”. This toolkit provides tips and practical suggestions for applying for funding and proposal writing, based on interviews with experienced research fundraisers.

- Skills to identify the sources and uses of health R&D funds, to capture the fund flow of major players and to assess if health R&D are aligned with national priorities

*Example:* while the Global Forum developed the methodology for “Monitoring Financial Flows for Health Research” (2004), the Center for Economic Policy Research of the Philippines published a “Manual on Tracking Country Resource Flows for Health Research and Development” (2000), which was used (among others) by COHRED in a number of country capacity-development workshops.

- Skills to prepare budgets and to handle a system of financial management at the programme and project level and to ensure accountability

*Example:* the WHO/SEARO Modules on Research Management include a specific training module on “Research financing and its management”, while the GDN Toolkit has a special section on “Budgeting”.

Target groups, for which capacities in the area of financing have a particular relevance, include:

- senior managers within ministries of health, science and technology, financing
- health research managers within academic departments, research institutions and networks.

Financing capacities play an important role during the planning phase as well in the monitoring of the research (process).

### **Resource generation**

Creating and sustaining human, institutional and infrastructural resources for health research is a further function of the health research system.

“This capacity-strengthening function is not only concerned with bringing new researchers and institutions into the system, but also to further develop and sustain the existing human and physical capacity to conduct, absorb, and utilize health research.”<sup>50</sup> (Pang, 2003)

Capacities to be considered for this function include:

- Skills to assess gaps and needs for individuals, institutions and infrastructure within the health research system and to develop a comprehensive plan for research capacity development, strengthening and retention

*Example:* Volume 4 of the Health Systems Research Training Series on “Managing Health Systems Research” published by WHO and IDRC (1992) includes a module on “Human Resource Development Strategies”. Used in a number of country, regional and interregional workshops, the module aims to strengthen skills in assessing training needs of various target groups (policy-makers, health workers, researchers, researchers and trainers) in different phases of the research process.

- Skills to plan, organize and implement capacity-strengthening activities, addressing the needs of various stakeholders

*Example:* the “Workshop Training Guide and Resource Units”, published by the Alliance for Health Policy and Systems Research within the context of the Collaborative Training Programme (CTP), is a tool for facilitators to plan and organize training activities in getting research into policy and practice (2004).

Another example can be found in the “Leadership class”, one of the two components in TDR’s research-driven, capacity-building programme, which emphasizes the “development of research culture within the public health sector”.

- While both examples refer to capacity-strengthening activities for the production of research, skills also have to be strengthened in involving communities, and more in particular marginalized groups, in the research process. RCS means also empowering communities and marginalized groups, themselves, to define their health needs and seek solutions to them through research. “One possibility is what is known in some North American and European countries as science shops. They function as a link between universities and communities in larger society: non-commercial organizations define problems for research and contact the science shop, which in turn links graduate students and their supervisors with these potential users of research.”<sup>51</sup>

Capacities in resource generation are required from both senior managers within ministerial departments and health research managers in universities and research organizations. As for financing, capacities in resource generation are essential for the planning and to a lesser extent also for the implementation of the research process.

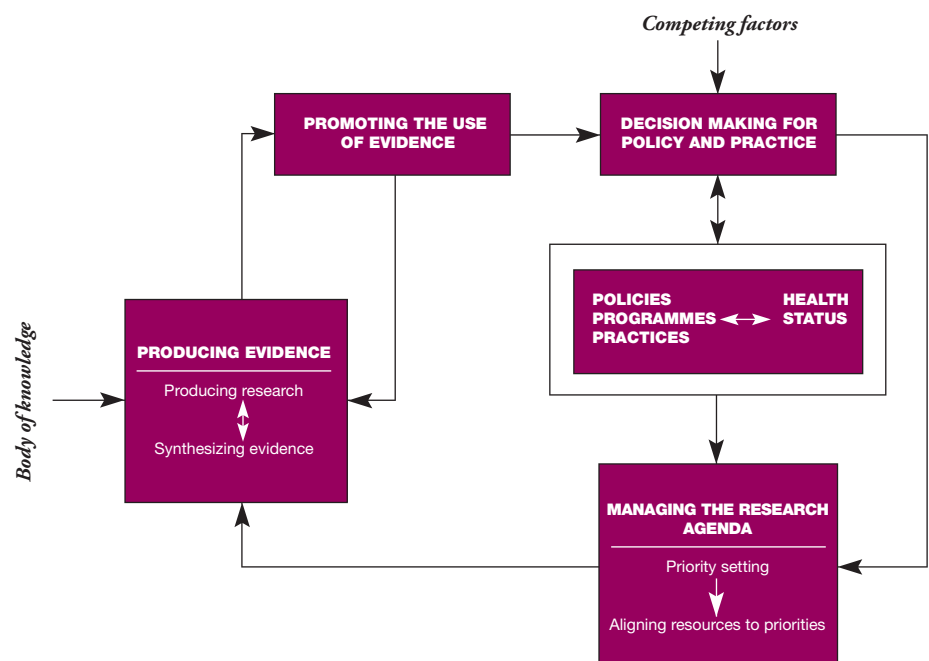
**Production and utilization of research**

While stewardship, financing and creating resources are important and essential “enabling variables” for research, the production of research remains the hard core, the *raison d’être* of any health research system. But in the same way as the major function of the health system is to produce health services leading to better health, the health research system is producing research to improve health as well. Utilization of research is therefore an integral part of this core function.

**Capacity strengthening in various phases of the research process**

Looking at research both in its production and utilization dimension, research can be conceptualized as an iterative and cyclical process, a continuum with various steps steering the process from knowledge production towards the use of this knowledge into policy, practice and action.

**Figure 3**  
**Research to policy and practice: steps in an iterative cyclical process**<sup>52</sup>



Source: Alliance for Health Policy and Systems Research, *Strengthening Health Systems* (2004)

Figure 3 distinguishes the following key steps in this process:

- managing the research agenda
- producing evidence
- promoting the use of evidence
- utilizing evidence in policy, practice and action.

These steps are not discrete, mutually exclusive entities, but “...rather, they should be regarded as conceptual stepping-stones that are useful for identifying barriers in the process and for developing strategies to overcome those barriers”. Since some of these strategies have a capacity-strengthening component, the four phases will now be briefly reviewed and scanned for these components.

### *Managing the research agenda*

Managing the research agenda includes two sub-components: setting priorities for research and aligning resources towards research priorities.

“The appearance of more than 30 new infectious diseases for the first time in human beings since 1979 – an average of about one new disease a year – and the lessons drawn show that a strong health research capacity remains a vital defence strategy... Many of the improvements are dependent on expanded health research that is better prioritised and more carefully focused.”<sup>53</sup>

Regarding the setting of priorities, it is widely acknowledged that “ensuring the participation of stakeholders in the priority-setting process can be the key to facilitating ownership and subsequent implementation and use of research”. Various categories of stakeholders have been identified – e.g. decision-makers, health workers, researchers, communities, professional associations, media – for which a number of capacity strengthening tools and activities have been developed (see above, under stewardship). However, there are a number of outstanding issues in research priority setting, which are challenges for capacity strengthening in this area:<sup>54</sup>

- Although there is a gradual shift away from an incremental approach whereby existing priorities and practices are extrapolated to the future toward a more rational and evidence-based priority setting, lack of data and the poor quality of available information in combination with weak country capacities to collect and analyse relevant information represent serious obstacles to a country-driven process of priority setting. The remarkable increase in the availability and use of information and communication technologies (ICTs) creates opportunities to correct this situation, but this would require from developing countries a vast investment in both the technology and the human capacity to use ICTs.
- Context- and culturally-sensitive priority setting would require an iterative process from community and sub-national levels (district, province, region) towards the national level (and back). However, the capacities to use the methodologies and approaches for priority setting, developed and improved over the last decade, have been mostly, if not exclusively, established at the national level, which leaves a capacity gap at the lower levels of the health system.
- Keeping in mind the Commission’s message that “any process designed to set priorities should not lose sight of the fundamental questions: whose voices are heard, whose views prevail and, thus, whose health interests are advanced”, countries have made conscientious efforts to involve all stakeholders, to make priority setting a participatory and transparent process. These efforts, however, have been mostly organized in a trial-and-error way, without relying on an existing body of knowledge of how to involve effectively different stakeholders, particularly communities, in such a process and without applying this knowledge in appropriate capacity-strengthening initiatives.

**The transit from research priorities to research products requires the alignment of human, institutional and fiscal resources.**

- While equity is included in most lists of possible criteria for priority setting, it has not been used very effectively. Questions such as how to operationalize equity as a criterion for priority setting and what information to collect have not been addressed properly and the capacities to do so are still lacking.

The transit from research priorities to research products requires the alignment of human, institutional and fiscal resources. Such alignment is less evident than one might think or expect, since several critical barriers hamper researchers in embarking on priority research. Here are a few challenges for capacity strengthening to align resources more effectively to research priorities:

- In spite of all recent efforts and progress in priority setting, hardly any investment has been made in developing and strengthening country capacities to transform research priorities into a research portfolio with specific research questions and proposals. This transformation process requires indeed a mobilization of potential producers for the research portfolio, the construction of teams with the requisite skills for the portfolio and a consultation process between producers and potential users. And most countries have not yet developed capacities in support of such transformation process in a systematic or systemic way.
- Even with nationally identified and agreed research priorities, researchers tend to cluster around particular topics and ignore others: "...this clustering behaviour is reinforced by the reward systems of science, that leads too many researchers to enter "research races" with particularly lucrative prizes, and too few to enter little known, but socially beneficial research endeavours". To address this internal brain drain, Harrison and Neufeld<sup>55</sup> suggest to enable and support, to strengthen the capacities of research leaders to forge "research and learning networks" shaped by national priority-setting processes.
- Considering that research efforts "follow the money", allocation or re-allocation of fiscal resources to fill investment gaps are an essential condition for the implementation of research priorities. The work of the Global Forum to monitor financial flows for health research has demonstrated at the global level the importance of understanding the connections among sources of funding for health research, applications of these resources and the priorities to which they are directed. The same is also valid, however, for the country level: there is an urgent need to translate and adapt the "global" methodology to specific country needs and to intensify capacity-strengthening efforts, narrowing in this way a growing "country/global gap".

***Producing evidence***

The production of evidence encompasses two types of activity: production of priority research and synthesis of research to produce a body of knowledge.

Regarding the production of research, it is now widely accepted that research must not only be of high quality, employing a variety of research designs and methodologies drawing from various scientific disciplines, but also it should be relevant and should bring direct or indirect solutions to (priority) problems. International research programmes like WHO/TDR, WHO/HRP, the International Clinical Epidemiology Network and the Alliance for Health Policy and Systems Research have been building over the last decade a critical mass within academic and research centres to produce priority research. Although these international initiatives in combination with numerous regional and country training programmes have definitely increased the pool of researchers in developing countries and therefore also the production of research in those countries, there are nevertheless a number of critical issues, which have a direct consequence for capacity strengthening. Some of them are briefly reviewed below:

- To assess the relevance and validity of research, to maintain standards of scientific quality and to ensure its potential to contribute to solving priority problems, peer review is a useful research management tool. Many countries have established scientific

peer-review processes to assess the quality, and sometimes also relevance, of research proposals and to give feedback to researchers. However, systematic and comprehensive capacity-strengthening initiatives to train peer reviewers, to organize and evaluate peer-review mechanisms and to practise peer-review methodologies, remain the exception, particularly in developing countries and represent therefore a “capacity gap”.

- National capacities in developing countries to produce priority research are affected by the “brain drain” phenomenon. This refers in the first place to the issue of internal brain drain, whereby researchers “are being pirated to work within their own countries by multinational pharmaceutical companies and international health agencies... This phenomenon has resulted in low national health research capacities and a small number of well trained and competent individuals being stretched thin, taking on a variety of responsibilities”.<sup>56</sup> And of course there is also the external brain drain, caused by migration of researchers from the South to the North and contributing to the ‘10/90 gap’ in health research worldwide. A 2002 article in the *British Medical Journal* called for a forum of governments and international organizations to address the problem of brain drain since “migration of medical professionals from developing countries has become a major concern.”<sup>57</sup>
- The international market of capacity-strengthening programmes has been affected by the well known tension and competition between comprehensive and selective (primary) health care, with the result that capacity-strengthening activities at country level have been strongly compartmentalized or even “balkanized”. Research-capacity strengthening at country level is mostly organized in vertical programmes around specific diseases (e.g., tropical diseases, HIV/AIDS, TB), health services and/or systems (e.g., health reform, health policies, financing) or disciplines (e.g., epidemiology, public health, social sciences) and this process is reinforced by the priorities of donor agencies and the organizational supply by international agencies. This leads, as is also well known, to fragmentation and duplication. The multiplication of research capacity strengthening activities at country level and its inadequate coordination can involve significant costs, which are borne by both researchers and the donor agencies which fund them. Researchers have to run from one training course to the next and this time and effort cannot be spent on research itself, thus detracting from research productivity. For the donor agency, the costs are equally significant since anything that reduces the efficiency of the researcher produces a comparable reduction in the efficiency of any support provided to his or her research.<sup>58</sup> The vertical organization of capacity-strengthening activities also means a serious barrier for the development of a comprehensive and integrated national research-capacity strengthening programme.

Two comments about the synthesis of research to produce a body of evidence:

- It is now widely recognized that the results of a single research project are seldom sufficient to generate changes in policy or practice: “findings from several research studies need to be validated and synthesized to produce a body of evidence that would provide a foundation for evidence-based policies and practices. Therefore methodologies and mechanisms are required to review and synthesize research...this includes scientifically acceptable methods of synthesis and validation, the expertise to apply such methods, and mechanisms for disseminating such evidence.”<sup>59</sup> Usually one refers here to the work of the Cochrane Collaboration, which is an international coalition of clinicians and consumers working mainly through the Internet to design, conduct, report, disseminate and criticize systematic reviews in specific areas of clinical practice. In spite of the promising work of the Cochrane Effective Practice and Organisation of Care group, methodologies and capacities for this kind of synthesis work have been mostly developed for clinical practice areas, while the experiences and capacities for synthesizing various types of research evidence for policy and management purposes remain largely undeveloped. In

addition one could raise the question if and to what extent capacities for synthesizing research have been on the agenda of RCS in most developing countries.

- The capacity to synthesize research is evidently related to the accessibility of information in general, scientific and research information in particular. The information explosion and the increasing availability and use of ICTs create new opportunities to this end. The UNDP/Human Development Report (1999) gives, however, evidence that this information technology creates another form of global polarization and contributes to widening disparities, not only in availability of these technologies, but also in the capacities to use them.

### *Promoting the use of evidence*

Traditionally researchers identified their peers or the research community at large as the prime and even exclusive user of their products. Publication in a preferably peer-reviewed journal and presentation of the research in a scientific conference was – and still is – in most cases the end point of a research project. The “publish or perish” syndrome refers to the sometimes mechanical-causal relationship between number of publications and advancement in academic career, including eligibility for grants and funding. It is therefore not surprising that several research programmes and agencies have invested in capacity strengthening in communicating with the scientific community through initiatives such as workshops for scientific writing, including report writing as part of proposal development programmes, toolkits for scientific presentations, etc.

Over the past fifteen years WHO/HRP has, for instance, organized workshops in some thirty countries in Latin America, Africa and Asia for basic and social scientists on preparing scientific articles for publication in international journals.

In the last decade, however, there has been a growing recognition that the knowledge generated through research is a public good and therefore should be shared and applied or used. There is also recognition that there are multiple potential users of research evidence.

“Advocacy for intellectuals does not compromise scientific independence or objective opinion, yet it goes out and sells its ideas and does not sit in its ivory towers.”<sup>60</sup>

To maximize the chances that research evidence will be used, it first has to reach potential users, it has to be disseminated either passively (e.g. newsletters, websites, mass media) or more actively (e.g. workshops, specific meetings with opinion leaders, audit). The challenge of dissemination is to improve the accessibility of research findings to those one tries to reach. This means to identify clearly who are the intended and potential users of the research; to ensure the physical availability of research materials to as large as proportion of the target audiences as possible; and to make research findings comprehensible to those who receive them.

Promoting the use of evidence and more particularly the dissemination of research findings has a number of implications for capacity strengthening, of which some are briefly reviewed below:

#### *Who are the (potential) users of research?*

Recent works about getting research into policy and practice and national health research systems answer this question by referring to policy-makers and senior health managers, health-care providers, the private sector, international health and research organizations, community and civic groups and the general public. The reality of health research reveals, however, a more complicated picture with type, content and aim of the research project as major variables for a changing “black box” of stakeholders, influencing and to-be-influenced users of research.

The following table gives a simple illustration of such a black box of stakeholders.

**Table 5**

**Stakeholder characteristics for the development of a comprehensive national alcohol policy<sup>61</sup>**

Stakeholders	Characteristics	Involvement in the issue	Interest in the issue	Influence/ power	Position	Impact of issue on actor
National Institute of Alcohol (NIA)	Coordinates national activities in alcohol research, prevention and treatment	High	Low	Supportive	High	
National Public Health Institute (NPHI)	National centre of public health with strong support from MOH, alcohol has been a neglected public health issues, although now included in a new strategic plan	Low-medium	Medium	Non-mobilized	Low-medium	
Transport and Road Safety Division of the Police (TRSDP)	Faced with alcohol problems in everyday practice; has not articulated specific policies around alcohol	Medium	Medium-high	Supportive	Medium	
Association of Spirit Producers (ASP)	Has a market interest in maximizing alcohol sales; is worried about decreasing market share; currently is an influential lobby group	Low	High	Opposed	High	

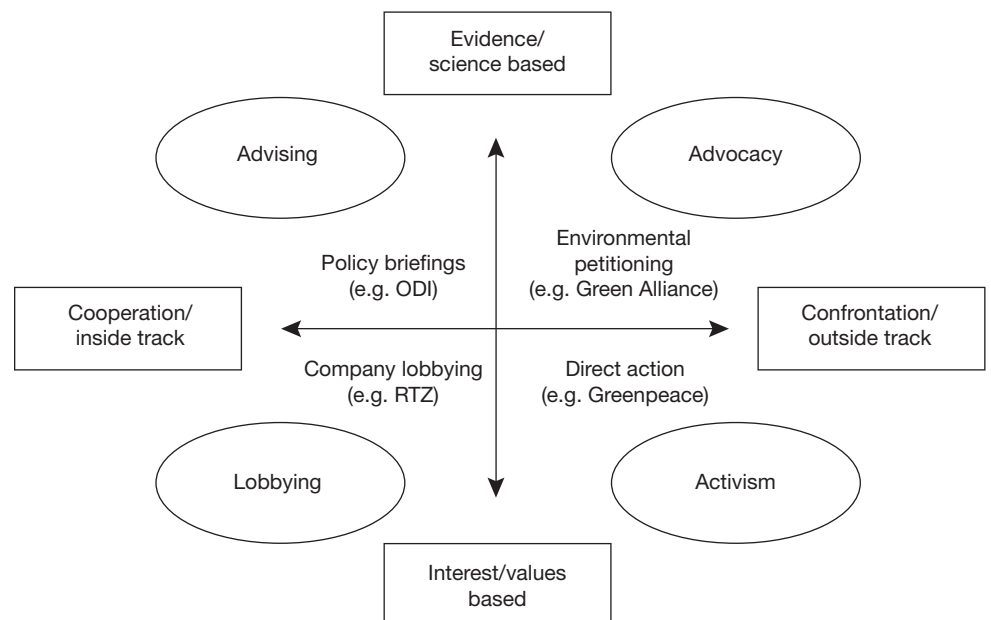
Source: Z. Varvasovszky and R. Brugha, *A Stakeholders Analysis* (2000)

This example makes it clear that any research dissemination strategy requires a proper identification of stakeholders or potential users. The methodology for stakeholder analysis exists, but for the time being it does not seem to take a prominent place in RCS efforts and remains an underdeveloped but strategically important skill in promoting evidence.

*What influencing techniques/approaches are available to promote the use of evidence?*

The primary objective of promoting the use of evidence being to influence public policy, professional practice and public opinion, there exists a variety of influencing techniques. The recently published handbook for researchers on *Tools for Policy Impact* identifies two important dimensions to be considered here: the balance between confrontation and cooperation, and rational evidence versus value or interest-based argument. On the basis of these two dimensions, four categories of (policy) influence can be identified: advising, advocacy, lobbying and activism.

**Figure 4**  
**Tools and organizations on the cooperation/ evidence axis<sup>62</sup>**



Source: D. Start and I. Hovland, *Tools for Policy Impact: a handbook for researchers* (2004)

Depending on what the researcher wants to achieve with his/her research dissemination, a choice has to be made between confrontation and cooperation. Cooperation – the practice favoured by advising and lobbying – aims to build constructive, working relations with policy-makers in order to develop solutions to complex problems, while the confrontation method seeks to obtain change via pressure, pointing out problems rather than offering solutions. Both methods require specific, but different capacities, which are gradually being addressed in training packages and programmes.

Two examples of capacity strengthening tools in advocacy (confrontation method):

- Using the experience derived from an analysis of several USAID projects in Africa, the SARA project (Support for Analysis and Research in Africa) published a training guide in advocacy “for researchers interested in promoting their findings”;
- The Resource Modules, published by the Collaborative Training Program for Health Research for Policy, Action and Practice, contain a unit on “Advocacy: a new skill for the research community”, which includes a number of tools and resources, case studies and recommended readings.

More experiences have been accumulated in the cooperation approach with a focus on advising, dialogue and persuasion, which resulted in a number of capacity- strengthening tools and initiatives. For instance, the Canadian Health Services Research Foundation has built up over the last decade an impressive record of workshops, training programmes, documents and resources, dealing with knowledge transfer and brokering. Other programmes, like the Alliance for Health Policy and Systems Research, the WHO-based TDR and HRP Special Programmes and the International Health Policy Program (IHPP) have been organizing training activities and/or developing resource materials in diffusing and communicating research to those outside the research domain. A most innovative example comes from the Global Development Network (GDN), a UK-based network of research and policy institutes, which facilitates knowledge sharing among researchers and policy-makers and disseminates development knowledge to the public and policy-makers. This network recently published a toolkit “Disseminating research online”, providing broad tips and practical suggestions for communicating academic research using the Internet (see Tools and Resources, in Select Bibliography).

*Which channels or pathways to choose for promoting the use of evidence?*

A recently published Synthesis Note, *Spreading the word: disseminating research findings*, gives a systematic overview of different pathways for disseminating or promoting the use of evidence, specifying the relative merits of these pathways.

<b>Table 6</b> <b>Relative merits of different dissemination pathways<sup>63</sup></b>	<b>Pathway</b>	<b>Advantage/s</b>	<b>Disadvantage/s</b>
	<b>Working documents</b>	<ul style="list-style-type: none"> <li>• target research findings to particular groups</li> </ul>	<ul style="list-style-type: none"> <li>• limited audience</li> </ul>
	<b>Research reports</b>	<ul style="list-style-type: none"> <li>• single reference point for all aspects of the research</li> </ul>	<ul style="list-style-type: none"> <li>• limited audience</li> </ul>
	<b>Academic, refereed journal</b>	<ul style="list-style-type: none"> <li>• wide impact on intellectual networks</li> </ul>	<ul style="list-style-type: none"> <li>• limited audience</li> </ul>
	<b>Professional journal</b>	<ul style="list-style-type: none"> <li>• practitioner oriented audience</li> </ul>	<ul style="list-style-type: none"> <li>• lacks academic rigour</li> </ul>
	<b>Conference, workshop, seminar</b>	<ul style="list-style-type: none"> <li>• learning and networking of professionals</li> </ul>	<ul style="list-style-type: none"> <li>• expense</li> </ul>
	<b>Training manual</b>	<ul style="list-style-type: none"> <li>• applied knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• limited audience</li> <li>• expense</li> </ul>
	<b>Networking</b>	<ul style="list-style-type: none"> <li>• reaches members who share common research interests</li> <li>• interaction, discussion and review of findings</li> </ul>	<ul style="list-style-type: none"> <li>• low active participation</li> <li>• strong incentives needed for participation</li> <li>• time consuming to manage</li> </ul>
	<b>Internet, e-mail</b>	<ul style="list-style-type: none"> <li>• immediate, convenient</li> <li>• wide interest in electronic media</li> </ul>	<ul style="list-style-type: none"> <li>• limited access in South</li> <li>• underdeveloped potential</li> <li>• expense</li> </ul>
	<b>Intermediaries</b>	<ul style="list-style-type: none"> <li>• research based on local norms</li> </ul>	<ul style="list-style-type: none"> <li>• different agendas of intermediaries and project</li> </ul>
	<b>Population/mass media</b>	<ul style="list-style-type: none"> <li>• reaches wide audience</li> <li>• bottom up influence</li> </ul>	<ul style="list-style-type: none"> <li>• diluted core message</li> </ul>
	<b>Participatory techniques</b>	<ul style="list-style-type: none"> <li>• practical guidance at community level</li> </ul>	<ul style="list-style-type: none"> <li>• time consuming</li> </ul>

It is clear that the selection of a specific pathway or – as it will mostly be the case – combination of pathways depends on the specific information needs of the users of the information, but also on the ways in which the various groups receive information. For instance: just as traditional academic journals are not the best channel of communication with most decision-makers, roundtables or seminars are not the best pathway to reach community groups. Assessing the information needs of various groups of users, knowing how these users (prefer to) receive information, choosing the right timing (for instance by staggering the dissemination of information), evaluating the impact of the chosen pathway(s), are all aspects of a dissemination process which require specific capacities and skills. These skills and capacities are now being addressed through a number of training tools and activities, particularly in the marketing and advertising world, but are still waiting to be translated and adapted to the world of health research capacity strengthening.

### *Utilizing evidence in policy, practice and action*

“NO RESEARCH WITHOUT DEVELOPMENT  
NO DEVELOPMENT WITHOUT RESEARCH”

Asking the right questions and allocating resources to address them, producing and/or synthesizing high quality research projects and promoting the use of the research outcomes are major phases in a process leading to its ultimate phase: increased evidence-based policies, practices and actions in the broad field of health and the organization, management and delivery of health services. At the same time these phases play a role as conditioning factors or determinants for evidence-based decision making and refer to capacities of how to increase the use of evidence at various levels of human action. Are there any more and different capacities to be considered for an increased utilization of evidence? This question will be briefly reviewed from three different perspectives: decision-makers, the research community, institutional mechanisms for producers and users.

For each perspective some specific examples and experiences in research capacity strengthening will be included and also possible gaps identified.

“Research must move beyond refined descriptions of the problem of health inequities to focus on identifying and promoting effective solutions. Genuinely pro-equity research must be action-oriented; it must accompany, support and accelerate practical interventions and policy change. To adopt such an approach will entail changes in health research priorities and methods.”<sup>64</sup>

### *Can capacities of decision-makers be strengthened?*

There is a growing recognition that the capacities of decision-makers to use research information more systematically should and could be strengthened. They would need to appreciate the potential benefits, recognize how best to obtain reliable and trustworthy information suited to their current needs and understand how to use such information.

Which capacities in particular have to be strengthened? In the self-assessment tool, which the Canadian Health Services Research Foundation developed to help health service and policy organizations evaluate their capacity to use research results, the four following basic skills were identified:

Acquire research: can the organization find the research results it needs?

Assess research: can the organization assess if the research is reliable and of high quality, and if it is relevant and applicable?

Adapt its format: can the organization present the evidence to appropriate decision-makers in a useful format, which synthesizes recommendations, conclusions and key issues?

Apply it in decisions: does the organization have the skills, structures, processes and culture to promote and use research evidence in decision-making?<sup>65</sup>

Along with this self-assessment tool, the Foundation created a range of resources and organized a series of workshops and training activities in the use of evidence for managers and policy-makers. One of these activities deserves some particular attention, since it deals with a long-term and innovative programme in capacity strengthening for “mid-career nurse, physician, and other health services executives currently occupying senior leadership and management positions.”

The Executive Training for Research Application (EXTRA) is a fellowship programme whose aim is to build capacity for evidence-based decision-making in the management of Canadian health-care delivery. Started in 2004 and continuing for at least 10 years, 24 participants a year are enrolling in a two-year EXTRA fellowship, held concurrently and complementarily with a job in a home organization.

Over the 10-year span of the programme EXTRA hopes to produce a significant number of executive leaders of the health system trained in research use and to develop a community of practice that will continue beyond the fellowship programme. In view of its unique and innovative character, high priority should be given to an assessment of the relevance and feasibility of this programme for other countries, particularly developing ones.

The User Liaison Program (ULP) of the Agency for Health Research and Quality provides another example of a capacity strengthening initiative for decision-makers. Established in 1978, the aims of the programme were then and are still to disseminate (health systems) research on priority topics to State and local officials, to build capacity of policy-makers to use research and understand its potential, and to inform the Agency about research needed by State and local officials. The ULP flagship course is an intensive week-long workshop for 30-35 senior officials using case studies and exercises to provide frameworks on how to use research and analytical methods and how to manage the use of research and data in the decision-making process. In addition ULP holds shorter workshops on relevant policy issues and has added most recently audio conferences to its portfolio to reach a larger audience.

Along the same lines the World Bank Institute (WBI) has developed high quality flagship courses on specific current policy issues “the core courses attract key policy-makers and researchers in developing countries and provide a vehicle for the application of concepts and the most recent evidence from research. They also serve to establish linkages between key national decision-makers, researchers and international experts who are able to facilitate the international exchange of learning. The courses are adapted and replicated in regional centres aimed at rapidly expanding the capacity strengthening efforts.”<sup>66</sup>

A final example of capacity strengthening of decision-makers in the use of research is provided by the Joint Health Systems Research Project for the Southern African Region.<sup>67</sup> This project has been rather exceptional in terms of its target groups. It was realized that the active involvement of health workers, managers and decision-makers in the research process was crucial for reasons of cost-effectiveness as well as for optimal utilization of the research results. Higher and middle-level (public) health workers from the provincial and district level (medical

officers, nurses, midwives, health inspectors, etc.) were therefore trained in the production of research and between 1987 and 1997 a critical mass of some 1200 health workers/decision-makers/researchers was developed. Through this approach, producers and users of research became more or less the same actors, and it is therefore not surprising that an inter-country peer review in 1993 revealed that of the roughly 150 recommendations resulting from the studies under review two-thirds were fully or partially implemented. Keeping in mind that turning decision-makers into producers of research is only feasible at certain levels and under specific conditions, this seems nevertheless to be an effective capacity-strengthening strategy which increases the chances for the use of evidence in decision-making.

*What about capacities of the research community?*

The above analysis and description of research in terms of a process with phases has already given evidence of an expanding scope of research activities and related capacities and skills to be acquired by the researcher in order to perform those (new) activities. The underlying assumption is that the performance of these activities, like setting of priorities, allocating of resources, the production of relevant and quality research, an effective and client-tailored dissemination, etc., will make a difference in the use of evidence in decision-making.

This expanded scope of research activities can be divided into:

- pre-project activities to understand the relative priority and social context of proposed research;
- intra-project activities that establish and maintain close but appropriate linkages with potential users without compromising the scientific rigour of research;
- post-project activities including planned promotion of the use of research findings;
- peri-project activities that could be regarded as the entrepreneur role of the researcher in building trust, credibility and supportive relationships with decision-makers and with stakeholders who influence the decision-making process.<sup>68</sup>

*What does this mean in terms of capacity strengthening of researchers?*

Since the expanded scope of research activities and its implications for the role and capacities of the researcher is relatively new, it is not surprising that most capacity-strengthening efforts have not as yet incorporated this new reality. There are, however, a few exceptions and one comes from the British Overseas Development Institute (ODI). Based on over five years of theoretical and case study research, ODI's Research and Policy in Development (RAPID) programme has developed a simple analytical framework and practical tools that can help researchers in their expanded tasks. The framework identifies four major and inter-related factors which determine whether research-based evidence is likely to be adopted by policy-makers and practitioners: the political context, the evidence, the links between policy and research communities and the external context. Based on a series of case studies and international workshops, the (RAPID) framework has been translating these four factors or areas into a number of questions, dealing with what researchers need to know, what researchers need to do and how to do it (see Table 7).

Taking into account that the conditions of the political context, the evidence, the links and the external factors vary greatly according to the particular situation of countries, it is clear that further testing of this framework in a variety of specific contexts will facilitate the development of practical applications. In the meantime, however, the framework is instrumental in articulating and systematizing new capacities, which would help researchers in playing a more active and effective role in the use of evidence in decision-making and practice.

<b>Table 7</b> <b>How to influence policy and practice</b> <sup>69</sup>	<b>What researchers need to know</b>	<b>What researchers need to do</b>	<b>How to do it</b>
	<p><b>Political context</b></p> <ul style="list-style-type: none"> <li>Who are the policy-makers?</li> <li>Is there policy-makers demand for new ideas?</li> <li>What are the sources/strengths of resistance?</li> <li>What is the policy-making process?</li> <li>What are the opportunities and timing for input into formal processes?</li> </ul>	<ul style="list-style-type: none"> <li>Get to know the policy-makers, their agendas and their constraints</li> <li>Identify potential supporters and opponents.</li> <li>Keep an eye on the horizon and prepare for opportunities in regular policy processes.</li> <li>Look out for – and react to – unexpected policy windows.</li> </ul>	<ul style="list-style-type: none"> <li>Work with the policy-makers.</li> <li>Seek commissions.</li> <li>Line up research programmes with high-profile policy events.</li> <li>Reserve resources to be able to move quickly to respond to policy windows.</li> <li>Allow sufficient time and resources</li> </ul>
	<p><b>Evidence</b></p> <ul style="list-style-type: none"> <li>What is the current theory?</li> <li>What are the prevailing narratives?</li> <li>How divergent is the new evidence?</li> <li>What sort of evidence will convince policymakers?</li> </ul>	<ul style="list-style-type: none"> <li>Establish credibility over the long term.</li> <li>Provide practical solutions to problems.</li> <li>Establish legitimacy</li> <li>Build a convincing case and present clear policy options.</li> <li>Package new ideas in familiar theory or narratives.</li> <li>Communicate effectively.</li> </ul>	<ul style="list-style-type: none"> <li>Build up programmes of high-quality work.</li> <li>Action-research and Pilot projects to demonstrate benefits of new approaches.</li> <li>Use participatory approaches to help with legitimacy and implementation.</li> <li>Clear strategy for communication from the start.</li> <li>Face-to-face communication.</li> </ul>
	<p><b>Links</b></p> <ul style="list-style-type: none"> <li>Who are the key stakeholders?</li> <li>What links and networks exist between them?</li> <li>Who are the intermediaries, and do they have influence?</li> <li>Whose side are they on?</li> </ul>	<ul style="list-style-type: none"> <li>Get to know the other stakeholders.</li> <li>Establish a presence in existing networks.</li> <li>Build coalitions with like-minded stakeholders.</li> <li>Build new policy networks.</li> </ul>	<ul style="list-style-type: none"> <li>Partnerships between researchers, policy-makers and policy end-users.</li> <li>Identify key networkers and salesmen.</li> <li>Use informal contacts.</li> </ul>
	<p><b>External influences</b></p> <ul style="list-style-type: none"> <li>Who are main international actors in the policy process?</li> <li>What influence do they have?</li> <li>What are their aid priorities?</li> <li>What are their research priorities and mechanisms?</li> <li>What are the policies of the donors funding the research?</li> </ul>	<ul style="list-style-type: none"> <li>Get to know the donors, their priorities and constraints.</li> <li>Identify potential supporters, key individuals and networks.</li> <li>Establish credibility.</li> <li>Keep an eye on donor policy and look out for policy windows.</li> </ul>	<ul style="list-style-type: none"> <li>Develop extensive background on donor policies.</li> <li>Orient communications to suit donor priorities and language.</li> <li>Cooperate with donors and seek commissions.</li> <li>Contact (regularly) key individuals.</li> </ul>

Source: RAPID, *Bridging Research and Policy in International Development: An analytical and practical framework* (2004)

### *Can institutional mechanisms help?*

“The key to producing good questions which meet decision-makers’ needs is to create and maintain high-quality ongoing interactions between research and decision-maker partners.”<sup>70</sup>

“ If policy-makers and researchers develop links over a long period and build trust and credibility, utilization of research evidence is more likely.”<sup>71</sup>

“...the way to close the gap between evidence and clinical practice is by working in partnerships with consumers, health professionals, organizations, researchers and policy-makers. Facilitating interactions between these various groups should increase the use of research findings and lead to research agendas that more accurately reflect the priorities of the users of research.”<sup>72</sup>

“Equity-oriented research may explore new modes of collaboration between researchers, political decision-makers and affected communities. It may and should try to build closer linkages between bottom-up knowledge generation and social mobilisation processes at the community level; university-based researchers in developed and developing countries; national policy-makers...”<sup>73</sup>

The above citations reinforce the notion that besides strengthening capacities of researchers and decision-makers the development and strengthening of institutional mechanisms could have a positive impact on the use of evidence in policy and practice.

The Alliance for Health Policy and Systems Research identified and reviewed in a recent workshop (Talloires, 2002) the structure and functions of various “research-to-policy” mechanisms and institutions. It also included in its CTP Resource Modules a number of illustrative examples of organizational arrangements, notably: the Mexican Health Foundation (FUNSALUD), the National Coordinating Centre for National Health Service Delivery and Organisation, Research and Development (UK) and the China Health Development Forum and China Health Economics and Training Network.<sup>74</sup>

*What lessons can be learned from these examples and experiences?*

1. The above and related experiences give strong evidence of the country-specific character of most organizational arrangements: they depend very much on the overall political system, the status of the national health research system and the existing tradition and culture of knowledge sharing.
2. Linking research to policy and action can be the exclusive function of an organizational arrangement (e.g., the US User Liaison Program, see above), one among other functions (e.g., the UK SDO) or a latent function (e.g., the Tanzania Health Research Forum).
3. The organizational arrangement can refer to an institution (e.g., the London School of Hygiene and Tropical Medicine for the UK SDO), a network (e.g., the China Health Economics and Training Network) or a programme (e.g., the Brokering Program of the Canadian Health Services Research Foundation).
4. The institutional mechanism can be organized by the government (e.g., the Uganda Health Research Council), be strongly government sponsored (e.g., the US User Liaison Program) or organized by civil society (e.g., the Mexican Health Foundation, the Colombian Health Association, the Tata Institute of Health in Mumbai).
5. Although most mechanisms are at national level, there are a few illustrations at regional and global level. A regional example is provided by the European Observatory on Health Systems and Policies, which acts as a bridge between “academic analysis and the practicalities of decision-making” by organizing policy dialogues and workshops. The Global Forum for Health Research is an example of a mechanism linking the various stakeholders at global level.

Although organizational arrangements to support evidence-based decision-making will have – due to their strong country-specific character – variable functions, tasks and activities, they all have “knowledge brokering” as a major item on their agendas.

*What does knowledge brokering refer to?*

The Brokering Program of the Canadian Health Services Research Foundation, which has been championing this concept over the last couple of years, gives the following definition on its website:<sup>75</sup>

“Knowledge brokering links decision-makers and researchers, facilitating their interaction so that they are able to better understand each other’s goals and professional cultures, influence each other’s work, forge new partnerships, and promote the use of research-based evidence in decision-making. Knowledge brokering activities include finding the right players to influence research use in decision-making, bringing these players together, creating and helping to sustain relationships among them, and helping them in collaborative problem-solving.”

Knowledge brokering is about bringing people together, acting as a go-between between people, connecting people to share and exchange knowledge, with three important shifts in emphasis:

1. The focus is not on the convenor, middleman or broker, but on the activity of brokering.
2. While knowledge transfer or translation is more or less the same as dissemination from producer to user, knowledge brokering refers to a continuous process of sharing and exchange of information.
3. If the essence of knowledge brokering is “getting the right mix of people and information together to tackle the right issue at the right time”, then the dyad “researcher – decision-maker” has to be expanded to the network of “providers and users of knowledge”.

*What core skills or capacities are required for people involved in brokering?*

A Canadian Health Services Research Foundation national consultation and literature review<sup>76</sup> identified the following core skills for people involved in knowledge brokering: evidence gathering (including expertise in searching the web), critical appraisal (ability to assess information for its quality, relevance and applicability), personal attributes (imaginative, intuitive, inquisitive and inspirational leaders), mediation (marketing skills, diplomacy, team building), communication (ability to process information), curiosity and listening. While these skills refer essentially to capacities and competencies of individuals involved in brokering activities, the same consultation emphasized the importance of networking and networks. Another review of research to policy strategies, this time by the Canadian Coalition for Global Health Research (2003),<sup>77</sup> made a similar observation by referring to the crucial role networks can play “in overcoming the barriers to knowledge transfer and use in the research to policy process”. Being the new “frontier” of institutional arrangements for the use of evidence in decision-making, more systematic attention should be given to the network and networking approach and the required competencies.

Some, but certainly not all of both individual and institutional capacities involved in brokering and networking, are being addressed in recent capacity-strengthening materials and activities. A few examples:

- The Brokering Program of the Canadian Health Services Research Foundation has published a number of reports and presentations, developed a knowledge-brokering literature database, and organized a number of national and regional workshops and professional development days ([www.chsrf.ca/brokering](http://www.chsrf.ca/brokering)).
- An African health research leadership programme was launched in 2005 by the African Health Research Forum, aimed at strengthening leadership and management capacities of country teams of researchers and users of research ([www.afhrf.org](http://www.afhrf.org)).
- The resource materials, published (2004) by the Collaborative Training Program on Health Research for Policy, Action and Practice, include modules on leadership, communicating knowledge, advocacy, knowledge networks and electronic tools for managing knowledge ([www.alliance-hpsr.org](http://www.alliance-hpsr.org)).
- Created in 2001 by INCLEN Trust, the Leadership and Management Program (LAMP) developed a series of training modules and organized at the annual INCLEN Global Meeting in 2004 a Leadership and Management School ([www.inclen.org](http://www.inclen.org)).

The above examples illustrate the recent and selective status in the development of capacity strengthening initiatives in this (last) phase of the research process and call for more systematic and intensified efforts from all stakeholders.



## **A framework for research capacity strengthening: where do we go from here?**

In the previous pages an effort has been made to bring together within a comprehensive and logical framework the substantive issues in research capacity strengthening, as they were partially identified in the panoramic overview of products, players and programmes. The reason for doing so is self-evident: the virtually unanimous consensus among actors and stakeholders about the vital role of research capacity in bridging the “know-do gap” and in addressing effective inequities in health research is in sharp contrast with the research capacity reality, where all these actors seem to be doing their own business and where also equity as an underlying value is more or less completely lost. One programme creates research fellowships for this particular disease, another develops training modules for district staff, a third organizes joint workshops for researchers and policy-makers; there are skills development workshops for better communication with the media, policy-makers, peers; donors aim at still different clientele, a website publishes case studies on getting research to policy and practice, and the list goes on.

The impression of fragmentation, overlapping, incompleteness, selectiveness and gaps in research capacity strengthening has been confirmed in the effort to slot these pieces into an overarching framework. This has been done in a three-step movement, starting with the classical distinction of the three levels for capacity strengthening: individuals, institutions and the macro-environment. Focusing on the macro level or the enabling environment brought in – as a second step – the national health research system as a framework to address issues and efforts in research capacity strengthening. These can be aligned according to its four major functions: governance, financing, creating resources and producing and using research. Third and lastly, the production and utilization of research led to the notion of the research process as an organizing framework. Capacity strengthening needs and efforts can then be systematized following the four major phases in the process: from managing the research agenda to utilizing evidence in decision-making in policy and practice.

These organizing frameworks could play a catalytic role in developing efforts in capacity strengthening that are more integrated and less fragmented, more coordinated and less vertical, more long-term and sustainable, less one-shot and unplanned, more client-oriented and less donor-driven. There can, of course, be too much of a good thing like coordination and integration. To have all research capacity strengthening developed along a single line of activity could be less productive than a more diversified strategy, should the one line selected not prove as promising as initially anticipated. However, the dangers of lack of or inadequate coordination probably appear much more urgent than do the dangers of over-coordination. Just as UNAIDS has recently promoted the “three ones” principle for the coordination of national HIV/AIDS responses (one action framework, one coordinating authority and one monitoring and evaluation system), similar principles could guide future efforts in addressing health research capacity strengthening.

As a first step towards a more comprehensive approach, a process of dialogue could be considered between the various stakeholders involved in research capacity strengthening. Such a dialogue should gradually lead to an awareness and consensus about capacities to be developed and strengthened at various levels and in the different phases of the research process, but should also (re)focus research capacity strengthening in a more systematic way on equity as the underlying value and guiding principle for further action.

A first step in this direction could be a substantive effort to bring marginalized groups to centre stage in the various phases of the research process and to make priority investments in the development of capacities to do this. A stronger health research system in support of a more effective national health system, based on equity, would be the overarching aim of this process.

With this objective in mind, it is clear that capacity strengthening is primarily the responsibility of countries themselves and that the process of dialogue should start at the country level and bring all stakeholders – government, academia, research institutions, bilateral and international agencies, donor agencies, civic society, the private sector, professional associations and mass media – to the table to develop a common view and work out a joint agenda for action.

Regional groups or networks and global organizations, including North-South partnerships, should not supplant this country work but should facilitate the process of dialogue and undertake only those activities that cannot be carried out effectively at country level – for instance by targeting particular capacity needs, for which a critical mass at country level is not (yet) available. In addition, regional and global levels could provide broad platforms for exchanging country experiences, identifying best practices and promoting and advocating for a more comprehensive and systemic approach to capacity strengthening in and by countries.

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- The Cochrane Collaboration, Consumer Network, [www.cochrane.org/consumers](http://www.cochrane.org/consumers), Effective Practice and Organisation of Care Group [www.epoc.uottawa.ca](http://www.epoc.uottawa.ca)
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# Global Forum for Health Research

HELPING CORRECT THE 10|90 GAP

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