Executive Summary

Chapter 1
A message to ministers of finance: health and health research are possibly the best economic investments

Ill health has a major impact on the economic situation and well-being of *an individual in any society*. This is particularly true in the lower income countries (where social safety nets are weak or non-existent) and for the absolute poor, due to the vicious circle of poverty and ill health.

Conversely, improvements in health will boost the individual's level of income (due to lower treatment costs, higher revenue, a longer term increase in revenue due to better work opportunities, and overall growth in revenues due to longer life-expectancy); increase the individual's capacity to acquire an education; increase the family's productive opportunities; and greatly improve the psychological well-being of both the individual and the family. The benefits of good health will be even greater for the absolute poor, as they may transform the vicious circle of poverty into a virtuous circle, with better nutrition, lower risks of unemployment or underemployment, better housing, better use of training opportunities, higher productivity and, overall, better control over their life situation and that of their family.

For an economy as a whole, ill health means irrecoverable losses in production; a less well trained labour force as education and training opportunities are missed by those who are sick; larger health budgets; lower productivity in general; a less competitive economy; lower profitability of enterprises; higher labour force turnover and disruption in the national budget. In the long run, ill health will threaten the survival of the less competitive enterprises as well as the country's ability to attract foreign investment. Employment opportunities in the economy will be lower, increasing the number of unemployed.

Conversely, improvements in health will bring substantial benefits for the economy. These include an increase in production, a better trained and more productive labour force, a more competitive economy, financially more solid enterprises, lower unemployment and a lower rate of disease transmission.

Although the overall process is complex and difficult to quantify, even conservative estimates suggest that health investments often yield the highest rates of return compared to other public investments, as shown by examples such as investments in combating smallpox, polio, onchocerciasis and malaria, where rates of return may reach more than US$ 10 for every dollar invested. This is a multiple of even the highest rates of return in other sectors of the economy, where a return of US$ 1.2-US$ 1.5 for every dollar invested is more the norm (without taking into account the large deficits experienced in some sectors following huge investments, e.g. in the heavy industry, tourism or transportation sectors).

There is therefore both a strong political and economic rationale for governments to invest more in health and health research, as recommended by the Commission on Macroeconomics and Health in its December 2001 Report. This Commission, *recognizing the high rates of return on investments in health for both the individuals and the countries concerned of at least US$ 3 for every dollar invested*, recommended an 80% increase in

the health budget of low-income countries between 2001 and 2015 and a seven-fold increase in donor assistance to these countries for health over the same period.

In view of the major contribution that health can make to the development of the national economy, why are governments not investing a larger proportion of public resources in health? The main reasons are:

- a traditional reluctance to apply concepts of rates of return on investments in health, which meant that the health sector never had the chance to *demonstrate* its considerable contribution to economic growth and development;
- the complexity of the calculations (due to the large number of variables involved);
- the fact that until recently both governments and individuals have considered health to be a consequence of the development process, rather than one of its main engines;
- the fact that health 'pays' as an investment only if a number of key conditions are fulfilled in relation to management, efficiency, effectiveness and equity.

The concept of development has evolved considerably over recent decades, from a focus on physical capital in the 1960s and 1970s, to a greater focus on human capital in the 1980s and 1990s, and finally to the present Millennium Development Goals adopted by the United Nations in September 2000, which focus entirely on poverty, health, education, the environment and development partnerships. In these first years of the new millennium, a distinction is finally being made between tools (economic growth) and ultimate objectives (human development and human security).

The shift in focus, in particular since 1990, is so fundamental that it amounts to a revolution in the concept of development, with health, education and environment now at the forefront of development efforts. As a result, a large number of so-called "vertical initiatives" (such as the Global Polio Eradication Initiative, the Global Fund to Fight Tuberculosis, AIDS and Malaria, the WHO "3 by 5" Initiative, the Roll Back Malaria Partnership and the Global Alliance for Vaccines and Immunization) and "horizontal initiatives" (such as the revival of the primary health care movement, the Poverty Reduction Strategy Papers (PRSP) process, the follow-up actions to the Report of the Commission on Macroeconomics and Health, and the human rights movement) have been launched or accelerated in the 1990s. Although the multiplicity of these initiatives can sometimes cause confusion, *these developments are extremely positive and a good illustration of the shift from physical to human capital in the pursuit of the MDGs.*

However, this revolution in development thinking will remain a "paper revolution" and the MDGs will not be reached by 2015, unless the following conditions are fulfilled:

- the vertical and horizontal initiatives referred to above should be well coordinated at country level in order to avoid the risk of duplication, optimize the results and maximize their synergies;
- a reallocation of resources within national budgets and international development assistance should be made at country level to ensure increased funding for health (as recommended by the Commission on Macroeconomics and Health), education and environment, in proportion to the key contributions of these sectors to development;
- since our present stock of knowledge, both at the global and national levels, is insufficient to reach the MDGs or to reach them efficiently by 2015, it is crucial that governments increase their health research budgets to at least 2% of national health

expenditures (as recommended by the 1990 Commission on Health Research and Development).

Chapter 2
An overview of the Global Forum for Health Research

One of the critical roles of health research is to ensure that measures proposed to help break the vicious circle of ill health and poverty are based, as far as possible, on evidence, so that the resources available to finance them are used in the most efficient and effective way possible.

Despite this critical role, health research has suffered from an overall lack of funding and from a huge discrepancy between the allocation of research funding and the diseases or conditions that account for the highest global disease burden. For the past decade, following the ground-breaking work of the Commission on Health Research for Development in 1990, this discrepancy in health research funding has been captured in the expression "the 10/90 gap" – drawing attention to the fact that of the US$ 73 billion invested annually in global health research by the public and private sectors, less than 10% is devoted to research into the health problems that account for 90% of the global disease burden (measured in Disability-Adjusted Life Years or DALYs).

The overall objective of the Global Forum is to help correct the 10/90 gap in health research and focus research efforts on the diseases and risk factors which account for the highest disease burden worldwide yet receive relatively little funding for research.

Efforts to correct the 10/90 gap require the commitment of thousands of institutions and individuals in the North and South. They include government decision-makers, research institutions and universities, multilateral and bilateral agencies, private foundations, private-sector companies, NGOs and the media. Since all of them have an impact on the 10/90 gap they are each considered to be partners in the Global Forum and most of these constituencies are represented on the Foundation Council. No attempt is made to establish formal "membership" of the Global Forum as such, not only because of the practical difficulties involved but also because many of the institutions, for different reasons, would not become members, yet continue to have a large impact on the 10/90 gap. The aim is rather to create a movement for the correction of the 10/90 gap in which partners concerned about the very serious consequences of such misallocation of resources contribute in very different ways to the overall objective.

One of the strategies of the Global Forum in helping to correct the 10/90 gap is the organization of an Annual Forum meeting. The main results of the Annual Forum meetings over the past seven years include:

- a systematic review of progress in correcting the 10/90 gap
- a regular exchange of views on work undertaken to establish a methodology for setting priorities in health research
- an annual report on the work of major networks engaged in efforts to correct the 10/90 gap
- regular discussions on cross-cutting issues in the field of poverty, gender and research capacity strengthening as they relate to the 10/90 gap in health research
- annual presentations of new perspectives on the 10/90 gap in health research
- discussion and definition of priority actions needed for the continued correction of the 10/90 gap
- linkages with larger periodic conferences, such as the Bangkok Conference on Health

Research (2000) and the forthcoming Mexico Summit (2004).

A second strategy is the development of a methodology for setting priorities in health research. Results to date include the development of one such methodology, called the Combined Approach Matrix, and its application to a number of diseases and risk factors, both at the global and country levels. Chapter 4 outlines the development and application of the Combined Approach Matrix (CAM) while Chapter 5 focuses on the measurement of resource flows and the 10/90 gap.

A third strategy of the Global Forum is communication and information about the progress made in correcting the 10/90 gap in health research, through publications, a website, media contacts and participation in key international conferences.

A fourth strategy involves measuring results through the monitoring of progress indicators and periodic external evaluations. The most recent external evaluation was carried out in 2001 and the next is scheduled to take place in 2006.

The Global Forum Secretariat is supported by contributions from the World Bank, the Rockefeller Foundation, WHO (in kind) and the governments of Canada, Denmark, the Netherlands, Norway, Sweden and Switzerland. In addition, individual networks supported by the Global Forum receive funding from donors including the Bill and Melinda Gates Foundation, the Institute of Medicine of the US Academy of Sciences (IOM) and the UK Department for International Development (DFID).

Correction of the 10/90 gap can be achieved. But it will depend on the individual and combined efforts of thousands of institutions. This achievement will provide a major contribution to growth, development, the fight against poverty and global security. The Global Forum works as a catalyst to spur such efforts and to monitor results on a regular basis. With the efforts of all partners, it is not unrealistic to anticipate a substantial correction of the 10/90 gap in the next ten years.

Chapter 3
Correcting the 10/90 gap: from the 1990 Commission to the 2004 Mexico Summit

Since 1990, a number of reports and international conferences have focused on the 10/90 gap and made a number of key recommendations on ways of establishing priorities for health research funding:

- In 1990, the Commission on Health Research for Development first identified the 10/90 gap and made far-reaching recommendations for its correction;
- In 1996, the Ad Hoc Committee on Health Research made 17 recommendations on infectious diseases, new and re-emerging microbes, noncommunicable diseases (NCDs), health policies and systems, and institutional arrangements;
- In 2000, the first International Conference on Health Research for Development in Bangkok adopted the Bangkok Action Plan with important recommendations for the correction of the 10/90 gap at the global, regional and national levels.

There is a remarkable consensus between the 1990 Commission, the 1996 Ad Hoc Committee, and the 2000 Bangkok Action Plan on the actions needed to correct the 10/90 gap. All three reports focused on the following five main recommendations, (which led to a number of key developments in the 1990s and early 2000s):

The need to correct the 10/90 gap and set priorities

From a totally unknown concept in 1990, the existence of the 10/90 gap is now widely recognized. Progress has been made in the field of priority setting with the application of the Essential National Health Research (ENHR) approach (with support from the Council on Health Research for Development) and the CAM developed by the Global Forum for Health Research.

The challenges for the coming years are the following:

- The objective should be to move from a 10/90 gap today to a substantially improved situation in 10 years' time.
- Priority-setting exercises are still limited to a few countries and institutions and a major effort is needed to ensure that all countries and institutions base their resource allocations on the burden of diseases, the main determinants of health, and social justice.
- Few priority-setting exercises for health and health research systematically take into account key actors and factors beyond the biomedical field (i.e. the individual, behavioural and community dimensions; sectors other than health which have a profound effect on the health status of a population; and macroeconomic policies); these dimensions need to be systematically included in the priority-setting exercises in the future, to ensure the most effective and efficient use of the limited resources available for health research.
- A major effort will be needed to more systematically link the international and national health research agendas.

The need to build up the capacity of health research systems in developing countries

A number of countries have succeeded in building a substantial research capability and are active partners in international health research. However, a systematic review of the results achieved over the past 10 years and the creation of a "facilitation unit" (as proposed by the 1990 Commission) for developing health research capacity in the least developed countries should be part of the priority agenda for the coming years. Moreover, a systematic comparison should be made between research capacities and priority health problems at the national level, so as to enable countries to ensure the best match between the two.

The need to create international research networks and public-private partnerships

Remarkable progress has been made in recent years in the development of international collaboration to solve major global health problems: between 1995 and 2003, more than 70 public-private partnerships and networks were created (as compared to about a dozen in the 1980s) particularly in the fields of HIV/AIDS, TB, malaria, leishmaniasis, schistosomiasis, pneumococcal disease, sexually transmitted infections (STIs), dengue, meningitis, human trypanosomiasis (sleeping sickness), nutrition, road traffic injuries, health policies and systems, cardiovascular diseases (CVDs), cancer and mental health.

The challenge for the future will be to ensure their continued viability, efficient delivery of products and strong linkage with the national health systems, and to systematically reinforce the positive links and mutual support between the horizontal and vertical partnerships and networks.

The need to increase funding for health research by developing countries

All three reports recommended that developing countries substantially increase their health research budgets to ultimately reach the target of 2% of national health expenditures. They also recommended that

international development agencies invest 5% of their health budget in health research and capacity building. However, a study undertaken by the Global Forum for Health Research and other institutions found that only Brazil and Cuba approached the 2% mark. Most other countries invest only a fraction of the 2% recommended (see also Chapter 5). Very limited information is available on investments in health research financed by international development agencies as a proportion of their health budget.

A systematic effort is needed in the coming years to measure the allocation of health research funds by disease and by health determinant for all countries and institutions, based on the first preliminary efforts undertaken over the past few years. Furthermore, the work of the Commission on Macroeconomics and Health should be systematically pursued at country level to document the high benefits for each country and for the world as a whole of prioritizing health research at the global, regional and national levels and of redirecting health research from low- to high-priority projects.

The need to create health research forums to monitor progress in health research

The 1990 Commission and the 1996 Ad Hoc Committee recommended the creation of an independent forum for investors in international health research to monitor the progress made in the correction of the 10/90 gap. The 2000 Bangkok Action Plan went further and recommended that this central forum for health research be complemented by regional as well as national health research forums. Following the creation in 1993 of the Council on Health Research for Development (COHRED) to advocate for the ENHR strategy and the Global Forum for Health Research in 1998 with a mandate to "help correct the 10/90 gap", the following actions were taken: the Asia-Pacific Health Research Forum was created in 2000 (followed by the South Asian Forum for Health Research in 2003, as a special chapter of the Asia-Pacific Health Research Forum). The African Health Research Forum was created in 2002. Numerous collaboration meetings have been held in the Central and Latin American region, as well as in francophone Africa and Central Asian countries. At the national level, a few countries (e.g. Ecuador and Tanzania) have launched a National Health Research Forum.

However, the regional and national health research forums are still at a very early stage and will require support from the international community, both financially and technically. These are great challenges for the coming years but very promising investments.

Chapter 4: Priority setting in health research

The need to set priorities

The process of setting priorities in health research is as critical as conducting the research itself. Since the funding available for health research is low in comparison to its very high potential benefits, it is essential that it is based on a rational priority-setting process.

The failure in almost every country to establish a process for priority setting based on the burden and determinants of diseases has led to a situation in which only about 10% of global funding for health research from all sources is devoted to 90% of the world's health problems (measured in DALYs). To make matters worse, the 10% of research funds available are not even used as effectively as they could be and need to be better prioritized.

In everyday life, setting priorities is a difficult process. This is even more so in the field of health research, where a very large number of different factors and actors enter into the equation. The use of a sound methodology and a scientific process are critical to ensure the identification of the research priorities which will make the greatest contribution to people's health. Thus, in order to make the results as objective as possible, i.e. as representative as possible of the priorities of a local community, a nation or the global population, it is essential (i) to adopt a priority-setting process which is as transparent and participatory as possible, and (ii) to apply a methodology which is as scientific as possible – even though both are costly in terms of the financial and human resources needed.

The various methodologies for setting priorities developed in the 1990s

Since the Commission on Health Research for Development in 1990, priority-setting exercises have used various methods and processes. This chapter reviews priority-setting methodologies (process and methods) used by the Essential National Health Research Task Force (1991), the Ad Hoc Committee on Health Research (1996), the Advisory Committee on Health Research (1997), the National Institutes of Health (US), the Human Reproduction Programme of WHO and the Global Forum for Health Research.

The methodology of the Combined Approach Matrix (CAM)

In proposing the CAM in 2000, the Global Forum attempted to combine the main advantages of the various methodologies for priority setting proposed in the 1990s, in particular those proposed by the ENHR approach, the Ad Hoc Committee on Health Research and the Advisory Committee on Health Research. The developments in the methodology over the past three years are presented in Section 3, while Section 4 deals with the concrete application of the matrix for identifying priorities. Section 5 discusses the technical issues surrounding the economic dimensions of priority setting.

In summary, the Combined Approach Matrix is a tool (i) to help classify, organize and present the large body of information which enters into the priority-setting process; (ii) to identify gaps in health research; and, on this basis, (iii) to identify health research priorities, using a process which should include the main stakeholders in health and health research. The prioritization process in health research should encompass all factors affecting people's health, i.e. not only basic, biomedical, clinical and laboratory research, but also health systems, demography, social and behavioural sciences, economics, management, macroeconomic policies and sectors other than health which have a major impact on health in the country.

The process of the Combined Approach Matrix

Health research priorities should be established by local communities, based on the local burden of disease and determined through a participatory process involving the use of scientific tools. National authorities should then identify the national health research priorities, based on information about the national burden of disease and the results of the priority-setting exercises of the local communities, again through a participatory process and the use of scientific tools. The definition of the national and local priorities and actual research activities should be the result of an iterative process between the two levels, the ultimate result being based on comparative advantages. International organizations and institutions with a global remit should then identify global health research priorities, based on the global burden of disease and the national priorities defined

by as many countries as possible, using a participatory process and scientific tools. Here also, the definition of the global and national health research priorities should be the result of an iterative process between the two levels, the ultimate result being based on comparative advantages.

Examples of the application of the CAM methodology are reviewed in the chapter. It has been applied both at the global level and country level (India, Pakistan) and for both diseases and risk factors.

Priority setting is a long-term effort. The information will inevitably be partial in the first exercises, probably even sketchy in some cases, but the tool should demonstrate its usefulness at an early stage by highlighting the most important gaps in the information needed to make the best possible use of the limited resources available for health research in order to have the largest possible impact on people's health (i.e. the largest number of healthy life-years saved) for a given research budget.

Chapter 5
Progress in measuring the 10/90 gap

Measuring resource flows

Although a crucial input for setting priorities in health research, there is very limited information about resource flows for health research and little awareness of the usefulness of such information. Major obstacles are the lack of financial and human resources as well as the lack of tested methodologies for monitoring spending on health research at the country level.

In 1999, the Global Forum and partners embarked on a project to collect information with the goal of improving priority setting through developing a database of internationally comparable statistics on global resource flows for health research. The results of the first phase of this project were reported in the Global Forum publication *Monitoring financial flows for health research* which tracked resources for the year 1998.

The report estimated that global funding for health research (private and public sources) amounted to at least US$ 73.5 billion in 1998 (i.e. about 2.7% of total health expenditures worldwide). National governments invested at least US$ 37 billion (50% of the total) and the pharmaceutical industry US$ 30.5 billion (42%). Private, non-profit and university funds provided the remaining US$ 6 billion (8%). At the country level, only Brazil and Cuba approached the level of 2% of national health expenditures recommended by the Commission on Health Research for Development, with most low- and middle-income countries investing well under 1%.

In relation to the second phase of the study, the 2001 Report of the Global Forum recommended research in the following four areas:

- measure resource flows in additional developing countries and countries in transition;
- encourage the entities already compiling health statistics to pay detailed attention to the monitoring of health research investments;
- periodically obtain disaggregated data from large investors in developed countries including ODA agencies, foundations and pharmaceutical companies;
- ask partners with established interests and expertise in specific diseases to do periodic studies of resource flows for the high-burden diseases.

The Global Forum and partners are currently updating the information on financial flows for health research. The results are expected to be available at Forum 8 and the World

Summit on Health Research in November 2004 in Mexico.

In their efforts to improve the information on R&D investments in health research, the Global Forum and its partners have attempted to standardize the methodology. This effort will require national "champions" who are able to build an informed constituency bringing together producers and users of such data.

Measuring the 10/90 gap

The ultimate objective of measuring resource flows in health research is to make a judgement as to whether the limited research resources are allocated in the most efficient and effective way, *given the major health problems affecting a country or the world as a whole*. Although there has been no comprehensive review of financing flows relating to disease burden for all diseases, the evidence available indicates huge discrepancies between the burden of diseases and the allocation of research funds.

While research intensity is quite high for diseases that occur in both rich and poor countries, it is very limited for diseases that occur exclusively or predominantly in low- and middle-income countries. For example, of the 1233 drugs that reached the global market between 1975 and 1997, only 13 (1%) were for use in combating tropical infectious diseases, which primarily affect the poor. These differences are important in view of the fact that 85% of the world's population live in low- and middle-income countries.

As a result of the demographic and epidemiological transitions experienced in low- and middle-income countries, these countries stand to benefit increasingly from the research undertaken in high-income countries. However, the direct transferability of findings from high-income countries to low- and middle-income countries is limited.

Although substantial progress has been made in the understanding of the 10/90 gap and a number of strategies have been developed since 1990 to combat the problem (see also Chapter 3), the 10/90 gap in health research persists. Very determined efforts by all governments will be needed in the coming years to correct it through efforts to: (a) systematically link investments in health research to the burden of disease, both at the national and global levels; (b) establish strong links between basic research and the development of remedies for high-burden diseases and risk factors; and (c) invest research funds in improving the functioning of health systems and services.

The establishment of an International Health Statistics Institute would provide a means to develop standardized methodologies and working definitions across the various institutions and countries; collect and collate information received on a routine basis; produce reports and disseminate information; and act as a partner for capacity building at national and international levels.

Chapter 6
Gender, the MDGs and health research

Gender and development

The Global Forum believes that a systematic approach to gender issues must be a central part of its strategy to help correct the 10/90 gap. It is estimated that around 70% of the world's poor are women. The health of these women is often adversely affected not only by their poverty but also by the gender inequalities that continue to divide many of the world's poorest countries. In response, the Global Forum is committed to achieving greater gender sensitivity in all its work.

However, efforts to ensure greater gender sensitivity in health research do not relate exclusively to women. Men's health too is affected in fundamental ways by both their sex and their gender. Unless these differences are taken seriously, the delivery of public health services will be severely constrained – both in their efficacy and their equity.

Sex and health

The biological differences between women and men are reflected in the health problems they experience. Some of these stem from male and female reproductive functioning, with women facing major hazards as a result of their capacity for pregnancy and childbearing. This gives them 'special needs' for care, which have to be met if they are to realize their potential for health. Other conditions not directly connected with sexual or reproductive functioning are nonetheless sex-specific because they affect particular organs (cancers of the prostate and cervix, for example).

Over one third of the years of healthy life lost by women in developing countries are caused by reproductive health problems, especially those related to pregnancy and sexually transmitted diseases. The most immediate indicators of this burden are maternal mortality and morbidity rates. Around 600 000 women die each year as a result of pregnancy and childbearing and many times this number are permanently disabled. The immediate cause of these huge losses is lack of access to effective sexual and reproductive health services, especially in rural areas. However they also reflect more basic social and economic inequalities between women and men.

Gender and health

Beyond biological differences, differences in the living and working conditions of men and women, in the nature of their duties, and their entitlement to resources will put women and men at differential risk of developing some health problems while protecting them from others. As well as being a major determinant of health, gender also influences the access of individuals to health care and the quality of the treatment received.

Sex and gender are major determinants of health in both women and men. They are closely linked with other variables such as age, race and socioeconomic status in shaping biological vulnerability, exposure to health risks, experiences of disease and disability, and access to medical care and public health services. Researchers who ignore these differences run the risk of doing bad science. Failure to incorporate sex and gender in research designs can result in failures of both effectiveness and efficiency.

Gender and the Millennium Development Goals (MDGs)

In September 2000, 189 nations adopted the United Nations Millennium Declaration, an ambitious document affirming the right of every human being to development and laying out a path towards freedom from want for every woman, man and child.

The MDGs explicitly acknowledge that gender can have a major impact on development, helping to promote it in some cases while seriously retarding it in others.

Overall, it is clear that the MDGs cannot be reached without an explicit, coordinated and systematic focus on the gender dimension of all MDGs. Gender equality is not just one goal, but also a means to achieving each goal. Without a fully integrated gender perspective in the reporting, campaigning, analysis and implementation of policies and strategies developed towards achieving the 2015 target, the MDGs will not be realized and governmental commitments made through the United Nations will remain unfulfilled.

The specific MDG on gender equality (Goal 3: promote gender equality and empower women) has been integrated in a single target calling for the elimination of gender inequality in all levels of education by 2015. Many have pointed out that access to education is an important signpost for gender equality. But as the Beijing Platform for Action recognized, there are many other dimensions of gender equality (or "critical areas of concern") that are equally crucial and need to be addressed. The United Nations and civil society should ensure that the wide-ranging commitments made in the Beijing Platform for Action and the 1979 Convention on the Elimination of All Forms of Discrimination against Women remain on the political agenda.

One of the main challenges facing the inclusion of gender in all processes leading to the achievement of the MDGs is to ensure that the system of national MDG reports takes national commitments to women into account.

Chapter 7
Research capacity strengthening: progress and perspectives

Research capacity strengthening (RCS) is one of the most important activities in the correction of the 10/90 gap. RCS plays a central role in the process of identification of needs, the selection of priorities and the development of research strategies that are most appropriate and relevant to improving health in individual countries, particularly in low- and middle-income countries.

The Report of the Commission for Health Research and Development (1990), the World Bank's World Development Report (1993) and the Report of the WHO Ad Hoc Committee on Health Research published in 1996 were unanimous in concluding that high-income countries have benefited greatly from the increase in knowledge and the advancement of technology derived from scientific research. However, due to limited research capabilities, many developing countries have been unable to benefit to the same extent and develop their own solutions to the problems confronting them. To ensure that the focus and relevance of the research is maintained, the work is best done within the countries and by the country nationals themselves. Efforts to build up national and regional capacity should contribute much to establishing a science culture at country level, and enabling developing countries to build a critical mass of able and qualified scientists who can undertake research on the priority health problems of the country and participate in the broad international research agenda. This will constitute a crucial step in correcting the 10/90 gap in global research funding.

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

Some of the major gaps and deficiencies in research capacity strengthening in many countries include the following: low priority for research; inadequate efforts towards prioritization of research problems; limited impact of RCS on the improvement of policies and the functioning of health systems; limited use of existing knowledge; less than optimum use of the limited human resources; and limited monitoring and evaluation of results.

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

specific objectives: advocate higher priority for research; identify national health research priorities; translate health research into action; systematically apply existing knowledge; develop an efficient and effective research environment; and systematically monitor and evaluate the results of the system and of its strengthening.

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

- *Design a framework for defining RCS needs and impact:* interested RCS partners should join forces to further articulate the definitions, discuss the challenges and future strategies, and develop an evaluation framework for RCS.
- *Establish a network of RCS partners as a platform for debate, synthesis, measurement of results, and advocacy:* given the lack of a systemic and collaborative approach to RCS efforts, it is important to develop platforms (networks) for debate, synthesis, measurement of results and advocacy for RCS. At the regional and national levels, there is a particularly important role to be played by the Regional and National Health Research Forums in support of the RCS agenda. The Global Forum will seek opportunities to discuss with its partners the development of a RCS agenda at the national, regional and global levels.
- *Funding RCS efforts:* to be successful, such efforts require a strong political commitment from national governments and international donors. National and international financing of RCS efforts should be included in the ongoing discussions on an international health research fund.
- *Supporting efforts to develop an enabling environment for* RCS: RCS partners should help developing countries create favourable policies and conditions for the development of sustainable health research systems.

Chapter 8
Information networks in health research: an overview

An editorial in the *Bulletin of the World Health Organization* (December 2003) highlighted the progress made during the last 25 years in both health and information technology, pointing out that the world as a whole had made "tremendous strides in life expectancy and disease control, together with an explosion of information technology and techniques." However, the editorial drew attention to the fact that large sections of humanity have been cut off from this progress, not only as a result of the 'digital divide' but also by a 'knowledge divide'. This chapter looks at both sides of this communication gap.

The digital divide

The digital divide describes the inequality of access to information and communications technologies (ICTs) such as the Internet, e-mail and satellite telephone systems. In December 2003, the World Summit on the Information Society (WSIS) drew world attention to the digital divide in seeking to "foster a clear statement of political will and concrete plan of action to shape the future of the global information society and to promote the urgently needed access of all countries to information, knowledge and communication technologies for development."

The WSIS event attracted 11 000 participants (including 11 heads of state) from 176 countries who endorsed a Declaration of Principles and a Plan of Action. The Summit sought commitment to bring together the

public and private sectors with civil society to establish ICTs as a priority. The WSIS Plan of Action sets important goals for bridging the digital divide, including connecting all villages, schools, hospitals and governments with ICT by 2015 and ensuring that at least half the world's people are within reach of ICT. The roles and responsibilities of all stakeholders, including government and the private sector, are laid out in the plan.

The knowledge divide

While ICTs have great potential for bridging the digital divide, additional action is needed to bridge the knowledge divide, e.g. information networks and mechanisms to ensure that the information is actually shared and used by the population which currently has no access to that knowledge. Information must be accessible in both directions: just as researchers in the South need to be able to access and contribute to journals published in the North, equally researchers in the North need access to knowledge sources in the South. Bridging this divide is so important that this sharing of knowledge is recognized as a prerequisite for achieving the Millennium Development Goals by 2015.

The WSIS Action Plan lists a number of important actions to be taken in the coming years to bridge the knowledge gap, including the promotion of collaborative efforts by governments, health professionals and international organizations for creating reliable, timely, high quality and affordable health care and health information systems and for promoting continuous medical training, education and research through the use of ICTs (article 18).

Very substantial efforts have been made in recent years in this respect by two different groups: (a) publishers who have offered developing country users online access to the full text of priced journals for free or at low cost and free online access to aggregations of full-text journals or parts of these journals; (b) networks of scientists who have offered information on their specialized websites (see Inserts 8.2 and 8.3 for selected listings).

The activities of the following three global networks of particular relevance to the Global Forum's own work on the 10/90 gap and to the objectives and targets of the MDGs are presented in the chapter:

- Health InterNetwork Access to Research Initiative (**HINARI**) facilitates free or low-cost electronic access to published information (in journals) in biomedicine and related social sciences.
- International Network for the Availability of Scientific Information (**INASP-Health**) provides a network promoting increased access to information for health care providers and researchers in developing countries and countries in transition.
- Scientists for Health and Research for Development (**SHARED**) makes possible sharing of information on projects, people and organizations as well as searching for and matching specific terms between linked databases.

In 2004, a global initiative – entitled 'Information for effective healthcare in developing countries: a global review of progress and ways forward' – will mobilize stakeholders in the health information field with the aim of reviewing and synthesizing lessons learned and developing an agenda for future actions.

Chapter 9
Some networks in the priority research areas

The chapter reviews some of the priority areas recommended in chapter 4, describing the size of the problem and the results of efforts to

build networks which focus on these priority areas (including their objectives, partners, governance, strategies and activities).

Since it would be impossible to review all research efforts currently under way, this chapter describes the efforts undertaken by international networks in only some of the priority research areas. Some of these efforts were supported by the Global Forum for Health Research, others not. They are categorized into four groups:

A Networks focusing on diseases and conditions
1. Global Alliance for Cancer Control
2. Global Alliance for TB Drug Development
3. HIV/AIDS
4. Initiative for Cardiovascular Health Research in Developing Countries
5. Medicines for Malaria Venture
6. Mental and Neurological Health
7. Multilateral Initiative on Malaria
8. Reproductive Health
9. Road Traffic Injuries Research Network
10. Roll Back Malaria Partnership
11. TDR

B Networks focusing on determinants (risk factors)
12. Child Health and Nutrition Research Initiative
13. Sexual Violence Research Initiative

C Networks focusing on priority-setting methodologies

D Networks focusing on policies and cross-cutting issues
14. Alliance for Health Policy and Systems Research
15. Council on Health Research for Development
16. Initiative on Public-Private Partnerships for Health