

## HEALTH INNOVATION SYSTEMS IN DEVELOPING COUNTRIES Towards a Global Strategy for Capacity Building

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### Abstract

There is increasing recognition that the extent to which developing countries will be able to achieve health related Millennium Development Goals (MDGs) and reduce will depend on whether and how well they build their capacities to harness and apply science and technology. This recognition is articulated in such international policy documents as the Plan of Implementation of the World Summit on Sustainable Development (2003), *Innovation: Applying Knowledge in Development* (2005)<sup>1</sup>, and *Our Common Interest* (2005).<sup>2</sup> These contain explicit references to the role that science and technology play in identifying and solving health challenges associated with disease and improving health care systems of developing countries.

Inequalities in public health between developed and developing countries and even within countries are, to a large measure, accounted for by differences in scientific and technological capacities.<sup>3</sup> A formidable challenge for developing countries pertains to building their capacities to generate health innovations—products and processes—for diseases that are largely neglected by the developed countries and private pharmaceutical companies. Some developing countries, for example India, China and Brazil, are accumulating the necessary capacities to conduct research and develop pharmaceutical products and other health innovations. However a majority are characterized by low and in many cases declining scientific capacities.

This paper examines factors that account for the low levels of scientific and technological capacities for improving public health in developing countries. Some of the factors are: *first*, many of these countries have not reviewed and revised their health policies to focus on the role of science and technology. Their policies treat science and technology as exogenous variables to the improvement of health.

*Secondly*, the countries have devoted considerably low, and in many cases declining, funding to health research and innovation. Most of them spend less than 0.5 percent of their Gross Domestic Product (GDP) on health R&D. The low and declining expenditure on health R&D is a manifestation of the low priority that countries have given to science and technology. Private sector's contribution to public health R&D is low or non-existent in many of these countries. Most governments

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<sup>1</sup> Report of Taskforce 10 (Science, Technology and Innovation) of the United Nations Millennium Project.

<sup>2</sup> Report of the Commission for Africa.

<sup>3</sup> Wagstaff, A. (2002), 'Inequalities in Health in Developing Countries: Swimming Against the Tide?' The World Bank, Washington, DC.; and Freeman, P. and Miller, M. (2001), 'Scientific Capacity Building to Improve Population Health: Knowledge as a Global Public Good'. Report Prepared for the WHO Commission on Health and Macroeconomics.

have not instituted specific policy and legal measures to attract private investment in public health R&D.

*Thirdly*, generally there are weak links between public health R&D institutions and private industry. Research results of public R&D activities do not often get accessed and used by pharmaceutical and medical industries. In many cases there is mismatch between health R&D activities on one hand and industrial development goals and strategies on the other.

This paper takes the systems approach to define a national system of health innovation as the network of public and private institutions<sup>4</sup> whose interactions and activities generate and/or use scientific knowledge and produce (as well as apply) technologies to solve specific disease problems. It treats innovation as a social process that is determined by institutional arrangements in which it evolves. Emphasis is placed on institutions supporting technical advances for the discovery and production of medicines in developing countries.

The paper provides an indicative assessment of scientific and technological capacity needs of developing countries to improve public health. It identifies programmatic and institutional measures that are necessary to build scientific and technological capacities. The role regional and international collaboration to establish new institutional arrangements for public health innovation is explored with a focus on networking centres of excellence. The paper recommends that the international community should pull its resources together to assist developing countries, on a regional basis, to create and sustain new forms of health research and innovation institutions. Developing countries will need to do more to improve the science and innovation content of their health policies and programmes.

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<sup>4</sup> We define institutions to encompass policies, rules and organizations