



---

# **Draft global strategy and plan of action on public health, innovation and intellectual property**

## **Mapping the funding for research and development for neglected diseases**

### **Report by the Secretariat**

1. This document focuses on the frameworks for financing and funding health research and development of drugs, vaccines and diagnostics for neglected diseases.

2. Data for a comprehensive analysis are not available, and monitoring investment in research and development aimed at meeting the health needs of developing countries is an item in the draft plan of action on public health, innovation and intellectual property.<sup>1</sup> Starting from the financing framework and funding flows for health research generally, this report provides information available on the funding of specific aspects of research related to neglected diseases, including the financing of public–private partnerships for product development related to neglected diseases and the financing of product development for neglected diseases. It also identifies areas that are not funded, and reviews two innovative financing initiatives.

3. In its report, the Commission on Intellectual Property Rights, Innovation and Public Health<sup>2</sup> defined neglected diseases as “disease states where there are inadequate, ineffective or no means to prevent, treat, diagnose or cure them”.

### **Financing architecture and funding for all health research**

4. The data in this section are drawn from the report of the Global Forum for Health Research on financial flows for health research,<sup>3</sup> which gives information on sources and amounts of *all* health research funding in 2003, the latest year for which financial data are available. With the caveat that

---

<sup>1</sup> Document A/PHI/IGWG/2/2, draft plan of action, item 8.2 (c).

<sup>2</sup> Document CIPIH/2006/1.

<sup>3</sup> de Francisco A. and Matlin S. (eds.) *Monitoring Financial Flows for Health Research 2006: the changing landscape of health research for development*. Geneva, Global Forum for Health Research, 2006.

figures are necessarily estimates,<sup>1</sup> the assessment of the total expenditure on research and development for health in 2003 was about US\$ 126 000 million, a substantial increase on the estimate of US\$ 105 900 million for 2001.

5. The Global Forum identified three major components of the current financing framework for research on health generally (i.e. not just on neglected diseases):

- private for-profit sector: US\$ 60 600 million (48%)
- public sector: US\$ 56 100 million (45%)
- private, not-for-profit sector, including private universities, foundations and charities: US\$ 9000 million (7%).

*Private for-profit sector*

6. The private for-profit sector is estimated to be the largest investor in health research globally. Pharmaceutical companies accounted for 50% of overall funds for research for health in high-income countries and 32% in low-income and middle-income countries. Companies based in high-income countries invested in their home countries, in other high-income countries and, to a lesser extent, in low-income and middle-income countries.

*Public sector*

7. Governments are the largest funders after the private sector, accounting in 2003 for 42% of overall health research funds in high-income countries and 59% in low-income and middle-income countries. They support research for health through their allocations to official development assistance, higher education, and direct investments in research and development. Such assistance accounts for 7% of total funds for health research in low-income and middle-income countries.

8. The largest single source of public sector financing for health research is the National Institutes of Health in the United States of America, whose annual allocations in 2005 for infectious diseases totalled around US\$ 3000 million, with HIV/AIDS, tuberculosis and malaria the main beneficiaries.

9. Governments in those low-income and middle-income countries for which data are available spent at least US\$ 2400 million on research and development for health in 2003. In that year, only Argentina and Brazil met the target proposed by the Commission on Health Research for Development in 1990 for expenditures on research and development for health to total at least 2% of national health expenditures.

*Private, not-for-profit sector*

10. The private, not-for-profit sector, which contributes about the same amount of funding in high-income countries as it does in low-income and middle-income countries, is demonstrating an increasingly strong commitment to research and development for health. Almost all the 2003 funding came from private foundations and universities in high-income countries and was spent in these

---

<sup>1</sup> The Commission on Intellectual Property Rights, Innovation and Public Health concluded that the figures from the Global Forum for Health Research should be regarded as indicative only.

countries. By contrast, domestic private foundations and universities in low-income and middle-income countries funded health research costing just US\$ 80 million in 2003. Foreign not-for-profit organizations, such as foundations and universities, provided an estimated US\$ 300 million for research and development for health in low-income and middle-income countries in 2003, a figure that has remained relatively stable since 1998.

### **Financing framework and funding for research for neglected diseases**

11. There does not at present appear to be a comparable assessment of sources and amounts of funding for research for neglected diseases only. This section therefore examines the available evidence.

12. The Commission on Intellectual Property Rights, Innovation and Public Health found that in the past few years the amount of money flowing into research and development for the benefit of developing countries has increased substantially.

#### *Developed country funding*

13. The Commission noted some developed country interest in international health. For example, a study it commissioned estimated that the share of research and development expenditure on tropical diseases by the National Institutes of Health in the United States of America had increased to as much as US\$ 1000 million (more than 4% of the total) in 2004.<sup>1</sup> Between 2002 and 2006, about €450.4 million was provided under the Sixth framework programme of the European Community for research, technological development and demonstration activities for a range of research activities related to AIDS, malaria and tuberculosis. In 2002–2003 the Medical Research Council in the United Kingdom of Great Britain and Northern Ireland spent an estimated £22.5 million, more than 6% of its total expenditure, on research relevant to developing countries. Interest among public funders in developed countries has increased for all stages of research.

14. In its report, however, the Commission noted an “acute concern about sustainability, particularly in respect of HIV/AIDS treatments”. The Noordwijk Medicines Agenda, agreed on at the OECD High Level Forum on Medicines for Neglected and Emerging Infectious Diseases (Noordwijk-aan-Zee, Netherlands, 20–21 June 2007), acknowledged that “OECD governments have taken promising initial steps to establish long-term predictable financing to meet the Millennium Development Goals, but more effort is required” and called for actions to improve the “predictability and transparency of funding including official development assistance”, and to ensure that “there is sustained high level political support and adequate funding for activities of the WHO Intergovernmental Working Group on Public Health, Innovation and Intellectual Property including implementation of the Global Strategy and Plan of Action”.

#### *Foundations and public–private partnerships*

15. By comparison with the financing framework for all research on health, the framework for funding by foundations and public–private partnerships differs somewhat. Funding from the public and private for-profit sectors remains important, yet research specifically on neglected diseases relies heavily on the contribution of public–private partnerships. The Commission noted the significance of

---

<sup>1</sup> CIPHI study: Lanjouw JO and MacLeod M. *Statistical Trends in Pharmaceutical Research for Poor Countries* ([http://www.who.int/intellectualproperty/studies/Lanjouw\\_Statistical%20Trends.pdf](http://www.who.int/intellectualproperty/studies/Lanjouw_Statistical%20Trends.pdf)).

the emergence within the past decade of such partnerships for product development and the resulting substantial increase in the number of products being developed for diseases and conditions predominantly affecting developing countries.

16. The Commission concluded that “foundations ... have ploughed funds into this field on an unprecedented scale.” A study it commissioned<sup>1</sup> found that US\$ 1200 million was contributed to 24 public–private partnerships for product development between 1996 and 2005, of which about US\$ 900 million alone (76%) was given by private non-profit foundations. Of the rest, 21% was provided by governments and governmental agencies and 3% by private entities. The Bill & Melinda Gates Foundation, founded only in 2000, was the largest single contributor with total contributions of US\$ 714 million (more than 60% of the total), providing funding to 17 (71%) of the 24 partnerships – in nine cases being the sole funding source.

17. However, the Commission warned that public–private partnerships are “still at an experimental stage as their sustainability remains uncertain. A response to the problems posed by the lack of innovation on the diseases of the poor requires a deeper involvement of governments themselves in finding and implementing solutions.” The Noordwijk Medicines Agenda also acknowledged that “product development partnerships are an innovative and potentially successful model of collaborative [research and development, but that they] lack long term sustainable financing and alone are not sufficient to foster innovation throughout the entire innovation cycle, from the test tube to the patient”.

#### *UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases*

18. When the Special Programme was founded in 1975, the estimated global annual research budget on tropical infectious diseases was only about US\$ 30 million, with the Special Programme’s US\$ 20 million annual budget representing two thirds of total global expenditure.<sup>2</sup> Today its budget of about US\$ 50 million represents a lower proportion. The Special Programme has played a pivotal role, supporting more than half the new medicines for tropical diseases that have come on the market in the past three decades and exerting considerable influence through private and public partners on the costs set for these products. This investment also includes the costs of post-registration research for ensuring adequate use of these products. Such investment is usually not included in the research and development expenditure for products for neglected diseases. In addition, the Special Programme has helped create several public–private partnerships: the Medicines for Malaria Venture, the Global Alliance for TB Drug Development, the Drugs for Neglected Diseases initiative and the Foundation for Innovative New Diagnostics.

#### *Private sector funding*

19. The International Federation of Pharmaceutical Manufacturers and Associations notes that the increase in private sector funding has been paralleled by the growing interest among pharmaceutical companies to contribute actively to solving health problems of the world’s poorest populations.<sup>3</sup> Some global companies have established dedicated centres for research and development targeting neglected

---

<sup>1</sup> CIPHI study: Ziemba E, *Public–Private Partnerships for Product Development: Financial, scientific and managerial issues as challenges to future success*, SHARED INC (<http://www.who.int/intellectualproperty/studies/Ziemba.pdf>).

<sup>2</sup> UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. *Making a Difference – 30 Years of Research and Capacity Building in Tropical Diseases*. Geneva, World Health Organization, 2007.

<sup>3</sup> Azaïs B, Gajewski, M. *Research and development for neglected diseases: lessons learned and remaining challenges*. Geneva, International Federation of Pharmaceutical Manufacturers & Associations, 2005.

diseases: AstraZeneca's Bangalore Research Institute (Bangalore, India), the Novartis Institute for Tropical Diseases (Singapore, also supported by the Singapore Economic Development Board), and GlaxoSmithKline's Drug Discovery Centre for Diseases of the Developing World (Tres Cantos, Spain). By contributing resources, expertise and technology, pharmaceutical companies are major pillars of successful partnerships for research and product development. The Federation argues that these contributions make up a substantial part of the resources available to public-private partnerships, representing at least the equivalent of the institutional funding of those partnerships.

#### *Research on drugs for neglected diseases*

20. A report in 2005 on drug research and development for neglected diseases<sup>1</sup> identified four public-private partnerships plus the Special Programme active in this field and concluded that together they managed 75% of all identified drug development projects on neglected diseases. That study also noted the importance of the public-private partnerships as resource allocators. Excluding the Special Programme's expenditure, the partnerships cumulatively spent US\$ 76 million on research and development in 2004–2005, of which two thirds went to industry: 35% to the major pharmaceutical companies and 30% to small ones; the remaining third went to public and academic groups in order to support the translation of basic research into lead compounds for potential medicines.

21. These four public-private partnerships for research and development into medicines for neglected diseases receive little public funding: only 16% (US\$ 43 million) from governments of OECD countries and 3% from organizations in the United Nations system over the five years to 2005. The bulk of their funding (US\$ 212 million or 79%) came from four philanthropic organizations: the Bill & Melinda Gates Foundation (the major donor, providing 59% or US\$ 159 million), *Médecins sans Frontières*, the Rockefeller Foundation and the Wellcome Trust.

#### *Policy coherence and harmonization of financing of research and development*

22. In recent years an important aspect of development assistance for health generally has been the need to improve aid effectiveness through greater alignment and harmonization. This concern reflected in the Paris Declaration on Aid Effectiveness in 2005, and in a set of best practice principles for engagement of global health partnerships at country level developed by WHO on the basis of that Declaration.<sup>2</sup>

23. Specifically in relation to neglected diseases the Noordwijk Medicines Agenda called for greater coherence of policies on tackling neglected and emerging infectious diseases and for action "[to] explore synergies and complementarities between research and development financing to support research and development in developing countries by harmonizing OECD Official Development Assistance mechanisms".

---

<sup>1</sup> Moran M et al., *The new landscape of neglected disease drug development*. London, Wellcome Trust, 2005. The study considered medicines for leishmaniasis, schistosomiasis, onchocerciasis, lymphatic filariasis, Chagas disease, malaria, leprosy, African trypanosomiasis, tuberculosis and dengue. It excluded developing country activity in drug development.

<sup>2</sup> Document WHO/HSS/healthsystems/2007.2.

## Gaps in Financing

24. Despite the increased funding for research on neglected diseases described above, there remain major gaps in financing; those for research and development on tuberculosis and malaria are discussed below. The Commission noted the need for more resources but did not quantify it.

### *Research and development for tuberculosis*

25. The Commission commented that the Stop TB Partnership's *Global plan to Stop TB: 2006–2015*<sup>1</sup> made a comprehensive attempt to estimate additional resource requirements for a particular disease. The plan estimates that US\$ 9000 million need to be invested over the period 2006–2015 in research and development for new tools for use against tuberculosis: vaccines, medicines and diagnostics. When the plan was written in late 2005, available funding was estimated at US\$ 2800 million, leaving a gap of US\$ 6100 million to be filled. By far the largest amount still required was for new medicines against tuberculosis: against the total funding needed of US\$ 4800 million, the shortfall was US\$ 4200 million. Financing for new tuberculosis vaccines was better; against the total funding needed for research and development of US\$ 3600 million, US\$ 2100 million was available, leaving a gap of US\$ 1500 million to be filled. The sums required for new diagnostics for tuberculosis were less substantial but nonetheless there was a considerable shortfall: of the US\$ 500 million needed, only US\$ 100 million was available.

### *Research and development for malaria*

26. The Commission found that comprehensive analyses on similar lines to the estimations by the Stop TB Partnership were not available for other diseases. However, it quoted a report that US\$ 323 million had been invested in research and development on malaria in 2004.<sup>2</sup> Of this sum, 37% was for antimalarial drug discovery and development, 24% for vaccine development and trials, 17% for implementation research, 16% for basic research, 4% for vector control and <1% for development of malaria diagnostics. The Commission argued that if research and development on malaria were funded at the average rate for all medical conditions in relation to the global burden of disease, it should receive more than US\$ 3000 million annually, on the basis that malaria currently accounts for 3.1% of the global disease burden but only 0.3% of the investment into health-related research and development.

27. The quoted study also analysed the donors. Overall, the public sector (predominantly government and multilateral funding agencies) contributed US\$ 181 million (56%), the private, not-for-profit sector (mainly philanthropic organizations) contributed US\$ 103 million (32%) and the private for-profit sector (industry) contributed US\$ 39 million (12%) mostly in internal research and development by pharmaceutical and biotechnology companies. The two largest contributors, together providing 49% of the total, were the National Institute of Allergy and Infectious Diseases (United States of America) and the Bill & Melinda Gates Foundation.

---

<sup>1</sup> Stop TB Partnership. *The global plan to Stop TB: 2006–2015*. Geneva, World Health Organization, 2006.

<sup>2</sup> Malaria R&D Alliance. *Malaria research and development: an assessment of global investment*. Seattle, Washington, United States of America, PATH, 2005.

## Other financing initiatives

28. Two innovative financing initiatives have recently been introduced in order to stimulate and support research or its implementation: the Grand Challenges in Global Health Initiative and the advance market commitments.

### *Grand Challenges in Global Health Initiative*

29. In 2003, the Bill & Melinda Gates Foundation and the Foundation for the National Institutes of Health launched the Grand Challenges in Global Health Initiative. With the Canadian Institutes of Health Research and the Wellcome Trust now as partners, the initiative aims to stimulate investigators to solve key health-related research problems pertinent to developing countries and accelerate significantly the development of affordable, practical solutions. The goal is to create “deliverable technologies” – health tools that are effective, inexpensive to produce, easy to distribute, and simple to use in developing countries. Fourteen Grand Challenges have been identified, linked to seven broad goals, including improving childhood vaccines, creating new vaccines, improving drug treatment of infectious diseases, and curing latent and chronic infections.

30. The initiative is supported by a US\$ 450 million commitment from the Bill & Melinda Gates Foundation, US\$ 27.1 million from the Wellcome Trust, and US\$ 4.5 million from the Canadian Institutes of Health Research. By June 2005, it had offered 43 grants totalling US\$ 436.6 million to teams of scientists working in 33 countries on a broad range of research projects.

### *Advance market commitments*

31. An advance market commitment for vaccines is a mechanism to attract private-sector investment in new vaccine products for developing countries. It takes the form of a financial commitment to subsidize the future purchase (up to an agreed price) of a vaccine not yet available if an appropriate vaccine is developed and demanded by developing countries. Bound by legal agreements, sponsor countries or foundations agree to provide financial commitments to subsidize the purchase cost of future vaccines for a period of time, and vaccine manufacturers agree to meet criteria for vaccine effectiveness and to provide the vaccines at affordable prices. A commitment is not a purchase guarantee, as industry will receive the subsidized price only if the product meets targeted standards and if developing countries demand the product.

32. The mechanism is designed to establish a market that biotechnology and pharmaceutical companies currently perceive to be too small and unpredictable. It is structured so as to maintain incentives for second, third or more entrants into the market in order to promote continued research on new and improved vaccines and continued investment in vaccine capacity. Such commitments are expected to stimulate market competition and improve the quality, and reduce the cost of, immunization programmes.

33. The pilot advance market commitment for pneumococcal vaccines was launched in February 2007, with commitments of US\$ 1500 million from the governments of Canada, Italy, Norway, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the Bill & Melinda Gates Foundation. Payments are expected to begin in 2010, and to continue over a period of 9–10 years. The GAVI Alliance hosts the Advance Market Commitment secretariat and provides programmatic functions; the World Bank provides administrative and financial functions.

= = =