

This compendium of facts and figures relating to the pharmaceutical industry and global health aims to provide a snapshot of the work this industry undertakes today. This publication examines the most recent data on pharmaceutical innovation and global health, access to medicines and healthcare systems, as well as the economic footprint of the pharmaceutical industry. The information presented here confirms the ranking of the research-based pharmaceutical industry as one of the most innovative sectors in the world, which over the past century has played a unique role in developing new and improved medicines and vaccines to prevent and treat diseases.

This is a unique industry. IFPMA members employ over one million of people who are proud to participate in this crucial endeavor. Their work saves millions of lives and helps those suffering from disease to recover and lead more productive ones. IFPMA brings this publication to underline the ongoing commitment of the research-based pharmaceutical industry to improving the quality of life for all of the world's people.

We hope that sharing some of the most recent and relevant facts and figures relating to our work can add value for evidence-based policymaking in the global health arena.



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Key Facts

RESEARCH & DEVELOPMENT

- It takes 10–15 years to develop a medicine or vaccine.
- The research-based pharmaceutical industry currently spends over USD 135 billion on R&D per year.
- In 2011, 35 new pharmaceuticals were launched, out of more than 3,200 compounds in development.
- In 2007–2011, the number of new chemical or biological entities launched on the world market fell to 149 from 196 a decade earlier.
- It costs an average of USD 1.38 billion to develop a single drug.
- In 2011, 5 of the 10 leading global R&D firms were pharmaceutical companies.

INDUSTRY'S CONTRIBUTION TO DISEASES THAT DISPROPORTIONATELY AFFECT THE DEVELOPING WORLD

- Every year, drugs and vaccines prevent at least 3 million deaths from malaria and save 750,000 children from disability.
- Between 2000 and 2006, immunization campaigns helped reduce the number of deaths from measles in Africa by 91%.
- In 2011, there were 94 drugs in the pipeline for malaria and 88 drugs in development for HIV/AIDS.
- In 2011, IFPMA members had 93 ongoing R&D projects related to diseases of the developing world.
- In 2011, Industry was the second largest funder for neglected diseases research, investing over USD 525 million.

THE RESEARCH-BASED PHARMACEUTICAL INDUSTRY'S CONTRIBUTION TO A HEALTHY SOCIETY

- In 2011, the number of drugs in development for particular disease areas were:
 - Cancer 948
 - Cardiovascular disorders 252
 - Diabetes mellitus 212
 - HIV/AIDS 88
 - Rare diseases 460.
- For every USD 24 spent on new drugs for cardiovascular diseases in OECD countries, USD 89 were saved in hospitalization and other healthcare costs.

THE PHARMACEUTICAL MARKET:

- The pharmaceutical market will reach nearly USD 1,200 billion by 2016.
- Leading emerging countries will account for 28% of global spending on pharmaceuticals by 2015, compared to 12% in 2005.
- The US share will decline from 41% in 2005 to 31% in 2015, while Europe's share will fall from 27% in 2005 to 19% in 2015.



Chapter 1

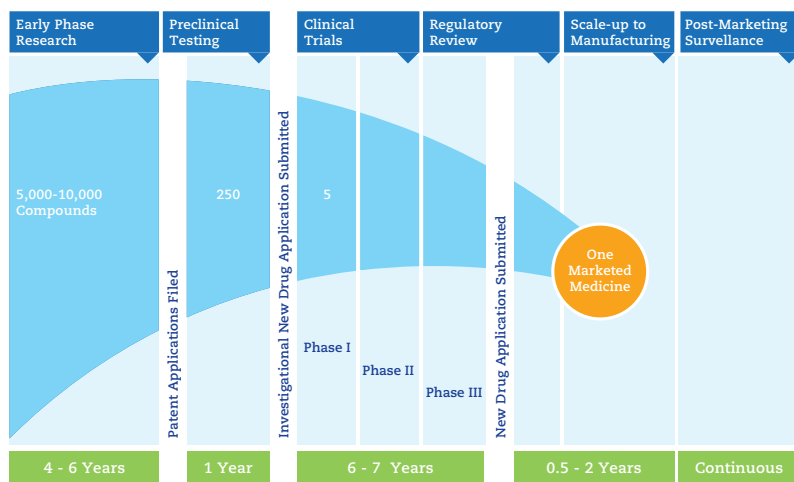
PHARMACEUTICAL INNOVATION AND PUBLIC HEALTH

The research-based pharmaceutical industry plays a unique role in developing new medicines and vaccines to prevent and treat diseases, and improve the lives of patients. Its key contribution to medical progress is turning fundamental research into innovative treatments. Industry's success rests on continuous innovation – for the prevention and treatment of common, complex, and neglected diseases, and for improvements in existing treatments. Despite challenging business conditions, the industry undertakes investments that are considerably more risky than those in other high-technology sectors. By investing billions of dollars and thousands of scientist-hours, it pushes the limits of science, improves global health, and contributes to the prosperity of society.

For the past 100 years, the private sector has produced nearly all the medicines and vaccines on the market. When a pharmaceutical company invests in research and development (R&D) of new medicines and vaccines, it first screens for chemical and biological compounds that exhibit the potential for treating new or existing conditions. Accordingly, for any particular medicine, R&D begins once researchers identify a promising compound among the 5,000–10,000 screened, on average. Researchers then extensively test the compound to ensure its efficacy and safety, a process that can take 10 to 15 years.¹ To illustrate, in 2011, 35 new medicines were launched, while more than 3,200 compounds were at different stages of development.² The difference in these numbers indicates the many research hurdles to be overcome before compounds can be developed into safe and effective medicines.

1 Innovation.org (2007) Drug discovery and development: Understanding the R&D process. Washington DC: Pharmaceutical Research and Manufacturers of America. http://www.innovation.org/drug_discovery/objects/pdf/RD_Brochure.pdf.

2 PhRMA (2012) New drug approvals in 2011. Washington DC: Pharmaceutical Research and Manufacturers of America. <http://www.phrma.org/sites/default/files/422/nda2011.pdf>.

Figure 1: The research and development process³

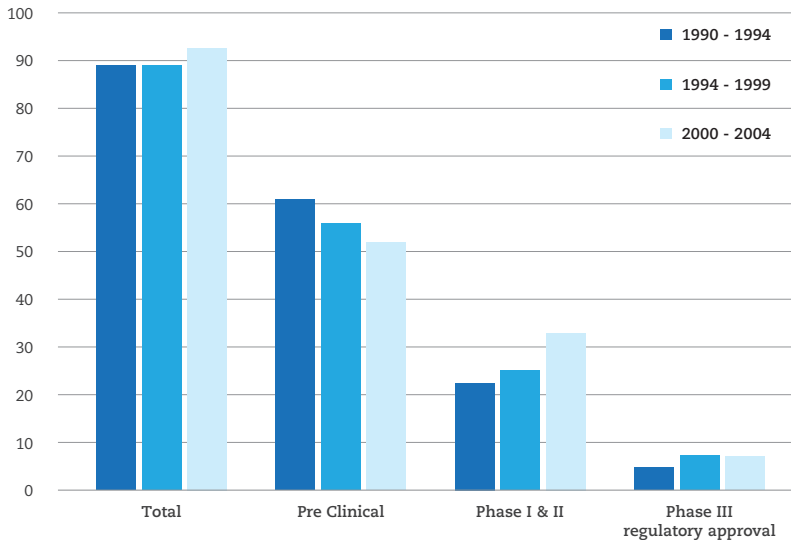
A look into the pharmaceutical industry R&D pipeline

Today, the cost of developing a single drug amounts to over USD 1.3 billion⁴ compared to USD 138 million in 1975. This ten-fold increase reflects the various technical, regulatory and economic challenges facing R&D pipelines. Companies often experience lost R&D investments (that is, R&D expenditures that do not materialize in a market-approved medicine) because pharmaceutical R&D is marked by high failure rates. An early-phase compound may have a promising outlook, but only preclinical and clinical trials will demonstrate its efficacy, quality, and safety. In addition, lost investments may increase when a failure occurs in later R&D phases. A phase III failure is significantly more costly than a preclinical failure because each phase is associated with a certain amount of required investment. In sum, about 4% of investigated compounds become biotherapeutic medicines compared with 14% for small molecules. The research-based pharmaceutical industry is estimated to have spent nearly USD 135 billion globally on pharmaceutical R&D in 2011 (see Chart 2).⁵

³ Adapted from PhRMA (2011) PhRMA industry profile 2011. Washington DC: Pharmaceutical Research and Manufacturers of America, p 12. http://www.phrma.org/sites/default/files/159/phrma_profile_2011_final.pdf.

⁴ PhRMA. (2012) PhRMA chart pack. Washington DC: Pharmaceutical Research and Manufacturers of America, p 31. http://www.phrma.org/sites/default/files/159/phrma_chart_pack.pdf.

⁵ EvaluatePharma (2012) World preview 2018: Embracing the patent cliff. London: EvaluatePharma, p 15. <https://www.evaluatepharma.com/secure/FileResourceDownload.aspx?id=98a75eab-95f6-41d8-903f-4732848fdf78>.

Chart 1: Pharmaceutical R&D Failure Rates⁶Table 1: Medicines in development for NCDs⁷

	PHASE I	PHASE II	PHASE III	REGULATORY REVIEW	TOTAL
Cancer	654	795	208	25	1682
COPDs and Asthma	34	68	26	3	131
CVDs	117	150	74	16	357
Diabetes	91	107	58	20	276

Rising R&D costs and more stringent testing requirements have been accompanied by a decline in new medicine approvals. The number of new chemical or biological entities (NCEs and NBEs) launched on the world market fell to 149 in the 2007–2011 period compared with 196 a decade earlier.⁸ In addition, once a medicine receives regulatory approval, national

6 Magazzini L, Pammolli F, Riccaboni M (2010) Market structure, sunk costs and scope economies in pharmaceutical R&D. http://www.webmeets.com/files/papers/EARIE/2010/333/MPR_EARIE.pdf.

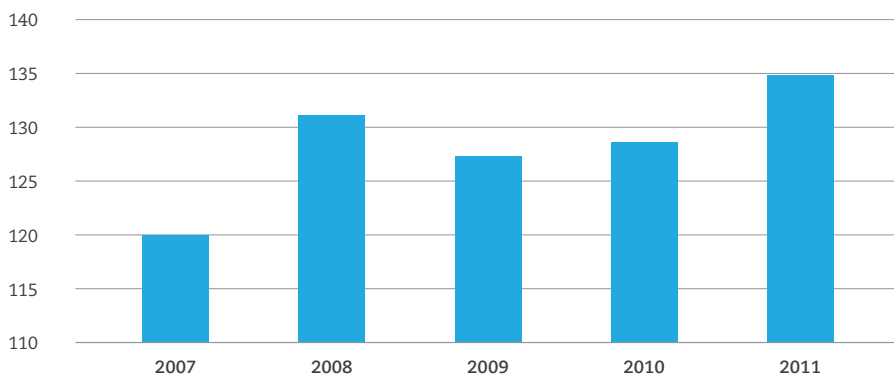
7 IFPMA (2012) Framework for action on NCDs – 2011–12 progress report. Geneva: International Federation of Pharmaceutical Manufacturers and Associations.

8 EFPIA (2012) The pharmaceutical industry in figures 2012. Brussels: European Federation of Pharmaceutical Industries and Associations, p 8. <http://www.efpia.eu/sites/www.efpia.eu/files/EFPIA%20Figures%202012%20Final.pdf>.

health authorities require companies to track and report patients' experiences (referred to as "pharmacovigilance"). These reporting requirements are becoming stricter, raising the investment cost in a given medicine as long as it is being marketed.

Moreover, the research-based pharmaceutical industry is expected to face a substantial drop in revenue in the near future, when many of its patents on "blockbuster" medicines⁹ are due to expire. These challenges have not diminished the industry's innovative drive but have rather encouraged it to adopt new models of innovation.¹⁰ Open collaboration and new business models such as joint ventures between pharmaceutical companies and other external entities are ways to increase the productivity of pharmaceutical research by facilitating partnerships involving academia and the public and private sectors.

Chart 2: Pharmaceutical R&D spending (USD billion)¹¹



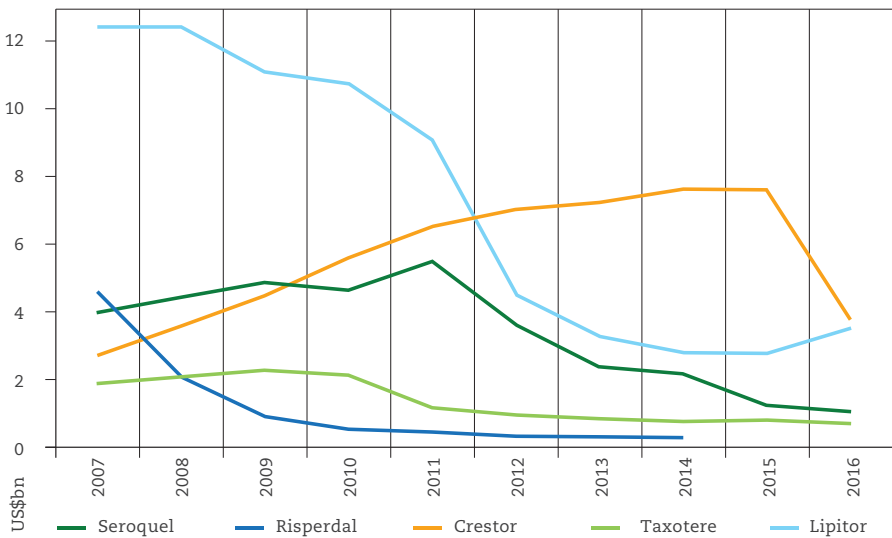
⁹ A blockbuster medicine is one that generates annual sales of at least USD 1 billion for the company that creates it.

¹⁰ PhRMA (2011) PhRMA industry profile 2011. Washington DC: Pharmaceutical Research and Manufacturers of America, p 16. http://www.phrma.org/sites/default/files/159/phrma_profile_2011_final.pdf.

¹¹ EvaluatePharma (2012) World preview 2018: Embracing the patent cliff. London: EvaluatePharma, p 15 <https://www.evaluatepharma.com/secure/FileResourceDownload.aspx?id=98a75eab-95f6-41d8-903f-4732848fdf78>.

Table 2: R&D clinical trial phase complexity¹²

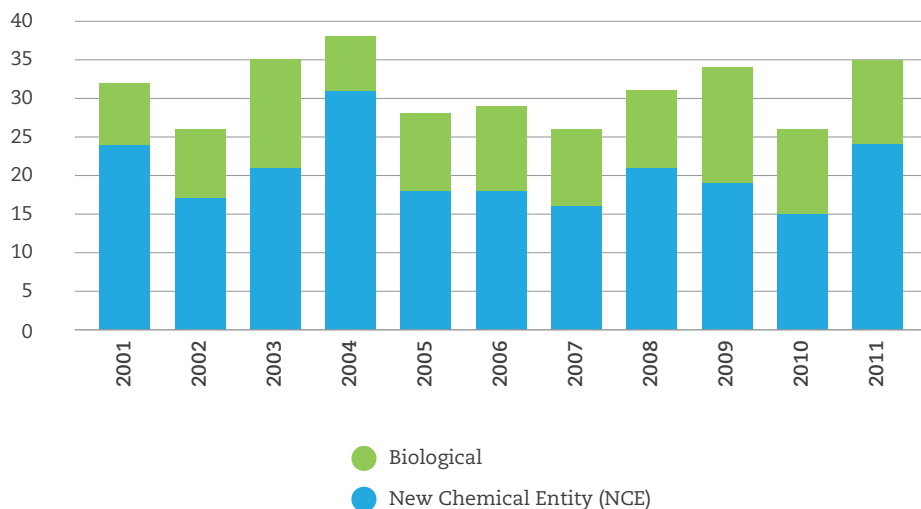
	1999	2005	% CHANGE
Procedures per Trial Protocol (Median) (e.g. bloodwork, routine exams, x-rays, etc.)	96	158	65%
Length of Clinical Trial (Days)	460	780	70%
Clinical Trial-Participant Enrollment Rate (% of volunteers meeting trial criteria)	75%	59%	-21%
Clinical Trial-Participant Retention Rate (% of participants completing trial)	69%	48%	-30%

Chart 3: Effect of patent expiration on global sales of selected “blockbuster” drugs (USD billion)¹³

12 IFPMA (2012) The new frontiers of biopharmaceutical innovation, p. 17, http://www.ifpma.org/fileadmin/content/Publication/2012/IFPMA_New_Frontiers_Biopharma_Innovation_2012_Web.pdf.

13 Business Monitor International (2010) Pharmaceutical innovation: Driver of long-term value. Rockville, MD: BMI, p. 7.

Chart 4: Number of new chemical and biological entities approved by the US Food and Drug Administration, 2001–2011¹⁴



Pharmaceutical industry R&D Investments

Of all industrial sectors, the research-based pharmaceutical industry has consistently invested the most in R&D, even in times of economic turmoil and financial crisis. Compared with other high-technology industries, the annual spending by the pharmaceutical industry is five times greater than that of the aerospace and defense industries, 4.5 times more than that of the chemicals industry, and 2.5 times more than that of the software and computer services industry.¹⁵

Innovation cannot happen without a number of enabling conditions, such as access to world-class researchers, political and financial stability, and a regulatory framework that protects and rewards innovation. All countries have the potential to foster innovation and improve the functioning of the innovation process.

14 EvaluatePharma (2012) World preview 2018: Embracing the patent cliff. London: EvaluatePharma, p. 17. <https://www.evaluatepharma.com/secure/FileResourceDownload.aspx?id=98a75eab-95f6-41d8-903f-4732848fdf78>.

15 Joint Research Centre (2011) The 2011 EU industrial R&D investment scoreboard. Brussels: European Commission, p. 32.

A recent study suggested that developing countries are well positioned to take action because innovation is stimulated by early institution of national models that link various stakeholders.¹⁶

Table 3: Enabling factors of pharmaceutical innovation¹⁷

EARLY STAGE RESEARCH	<ul style="list-style-type: none"> • World class research institutions • Highly trained workforce (retained or attracted back to the country) • Clusters of innovative companies providing support on core technologies (high throughput screening, gene sequencing etc.) • Partnership encouraging environment
CLINICAL TRIALS	<ul style="list-style-type: none"> • Efficient regulatory system for appraising clinical trials design • Supportive and well regulated system for enrolment • Strong medical schools and clinicians for designing • Managing and reporting trials design • Growing market receptive to innovation

In the United States, R&D investments of pharmaceutical companies have grown consistently over the past 15 years, and more than doubled the publicly-funded National Institutes of Health's (NIH)¹⁸ expenditures in 2009.¹⁹ Spending on R&D by the research-based pharmaceutical industry in Japan amounts to 17.3% of its sales, in the US to 15.5%, and in the European Union to 14.1%.²⁰ In 2011, the pharmaceutical industry registered 7,683 patents through the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization.²¹ No other business sector has such high levels of R&D intensity.

16 INSEAD, WIPO (2012) The global innovation index 2012: Stronger innovation linkages for global growth. Geneva: World Intellectual Property Organization. http://www.wipo.int/econ_stat/en/economics/gii/.

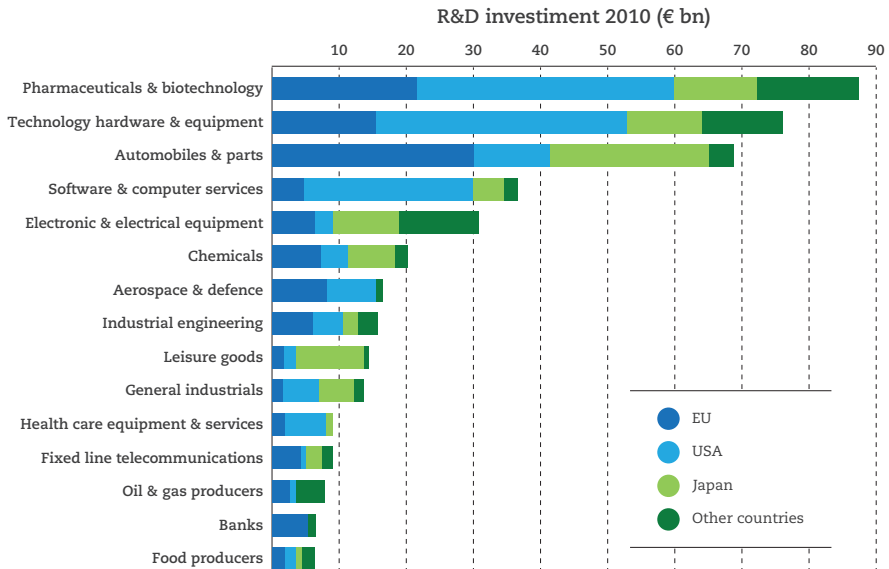
17 Charles River Associates (2012), Policies that encourage innovation in middle-income countries. (Boston, MA: Charles River Associates, 2012).

18 Part of the US Department of Health and Human Services, the National Institutes of Health (NIH) is the US medical research agency, funding universities and research institutions in the US and around the globe.

19 PhRMA (undated) Private and public R&D spending [online]. <http://www.phrma.org/private-public-rd-spending>.

20 Joint Research Centre (2011) The 2011 EU industrial R&D investment scoreboard. Brussels: European Commission, p 39.

21 WIPO (2012) PCT yearly review 2012. Geneva: World Intellectual Property Organization, p 43. http://www.wipo.int/freepublications/en/patents/901/wipo_pub_901_2012.pdf. The PCT provides a unified procedure for filing patent applications to protect inventions in each of the treaty's contracting states.

Chart 5: R&D investments by sector (EUR billion)²²

According to European Commission statistics, 5 of the 10 leading global R&D firms in 2010 were pharmaceutical companies.²³ In 2010, R&D spending by the pharmaceuticals and biotechnology sector grew by 6.2%, strengthening its position as the top R&D investing sector.²⁴ These facts are a clear demonstration of the significant contribution the pharmaceutical sector makes to the world economy.

Pharmaceutical R&D and its impact on Global health

Pharmaceutical R&D has dramatically improved the lives of patients. Medical discoveries big and small have increased life expectancy and resulted in a better quality of life for many. Vaccines have enabled the global eradication of smallpox and the regional elimination of polio and measles. Currently, vaccines save the lives of over 2 million children each year. Between 2000 and 2006, immunization campaigns cut the number of deaths caused by measles by 68%, with a reduction of 91% in Africa. Since 1928, scientists

²² Ibid, p. 20.

²³ Ibid.

²⁴ Ibid, p. 29.

have discovered and developed 19 classes of antibiotics, leading to the treatment and cure of several thousand types of infection and saving over 200 million lives.²⁵ With the help of major medical discoveries, the research-based pharmaceutical industry has developed more than 20 antiretroviral treatments for HIV/AIDS, essential to control of the epidemic. In 2011, there were 94 drugs in the pipeline for malaria,²⁶ 88 drugs in development for HIV/AIDS, 932 for all types of cancer, 200 for diabetes, and 460 for rare diseases.²⁷ It is estimated that medicines prevent at least 3 million deaths from malaria and save 750,000 children from disability every year.²⁸

Figure 2: Medicines in development in 2011 (selected categories)²⁹



Pharmaceutical progress has led to a dramatic decline in death rates for diseases such as HIV/AIDS, cancer, polio, and measles. For example, death rates for HIV/AIDS in the United States have fallen from 16.2 deaths per 100,000 people in 1995 to 3.7 deaths per 100,000

25 Resources for the Future (2008) Extending the cure: Policy responses to the growing threat of antibiotic resistance. Washington DC: Resources for the Future. <http://www.rff.org/RFF/Documents/ETC-06.pdf>.

26 Rughani G (2011) Development of 50 malaria drugs is under threat unless funding expands, British Medical Journal 342:d4158.

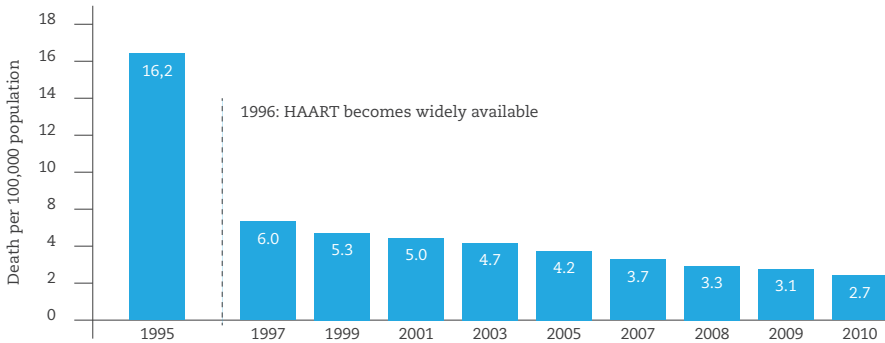
27 PhRMA (2012) PhRMA chart pack. Washington DC: Pharmaceutical Research and Manufacturers of America, p. 16. http://www.phrma.org/sites/default/files/159/phrma_chart_pack.pdf.

28 Ehreth J (2003) The global value of vaccination, Vaccine 21(7–8):596–600.

29 PhRMA (2012) PhRMA industry profile 2012. Washington DC: Pharmaceutical Research and Manufacturers of America, p. 29. http://www.phrma.org/sites/default/files/159/phrma_industry_profile.pdf.

people in 2007, a reduction of over 75%.³⁰ The number of AIDS-related deaths worldwide peaked at 2.1 million in 2004 and has since fallen to an estimated 1.7 million deaths in 2011.³¹ This can be largely attributed to the introduction of new antiretroviral therapies (ARTs) combined with more patients being provided with treatment.

Chart 6: Decline in HIV/AIDS death rates³²



In the past 10 years alone, over 340 medicines have been approved that offer new hope to patients with hard-to-treat diseases.³³ The introduction of innovative drugs usually has a two-fold benefit for society. First, it improves the physical and mental well-being of individuals. Second, it reduces hospitalization and other healthcare costs. Thus, for every dollar spent on prescription drugs in the United States, more than two dollars are saved in hospitalization costs.³⁴

Today, if diagnosed early, leukemia can be driven into remission with a once-daily treatment. High cholesterol and other cardiovascular diseases, which required extensive treatment in the 1970s, can now be easily managed with oral therapy. Meanwhile, improvements in existing cancer treatments have cut annual death rates by half.³⁵

30 PhRMA (2011) PhRMA Chart Pack, p. 6.

31 UNAIDS (undated) AIDSinfo [online database]. Geneva: Joint United Nations Programme on HIV/AIDS. <http://www.unaids.org/en/dataanalysis/datatools/aidsinfo/>.

32 PhRMA (2012) PhRMA industry profile 2012. Washington DC: Pharmaceutical Research and Manufacturers of America, p 3. http://www.phrma.org/track-pdf.php?q=/sites/default/files/159/phrma_industry_profile.pdf.

33 PhRMA. 2011. "PhRMA 2011 Profile. p. 20.

34 Innovation.org (2012) Innovation by the numbers [online]. http://www.innovation.org/index.cfm/ToolsandResources/FactSheets/Innovation_by_the_Numbers#11-Shang.

35 Ibid, p. 7.

Pharmaceutical innovation can also reduce the costs incurred by governments and healthcare systems. For example, every USD 24 spent on new medicines for cardiovascular diseases in OECD countries saves USD 89 in hospitalization costs.³⁶ In this manner, pharmaceutical innovation directly impacts patients' health and indirectly alleviates the unseen economic burden of disease.

R&D for diseases that disproportionately affect the developing world

The World Health Organization has identified 17 neglected tropical diseases (NTDs),³⁷ which form a significant part of the global disease burden and touch the lives of more than 1 billion people.³⁸ Some NTDs can have lifelong consequences for individuals. Others lead to acute infections that can be fatal. These diseases – whose names are not commonly known – include Buruli ulcer disease, dengue, cholera, trachoma, and guinea worm disease, and primarily affect poor people in tropical and subtropical areas.

NTDs demand a distinct business/innovation model because the potential market does not adequately support R&D investments on a commercial basis. In this context, various pharmaceutical companies have collaborated with different stakeholders to form product development partnerships (PDPs), which bring together the expertise and resources of different players including academia, industry, private foundations, and governments. These partnerships are often funded by public or philanthropic organizations, as well as by the research-based pharmaceutical industry. In 2011, the industry contributed about 18.7% of the total research funding for malaria, 48.6% for dengue, and 23.4% tuberculosis.³⁹ Overall, Industry was the second largest funder for neglected diseases research, investing over USD 525 million.⁴⁰

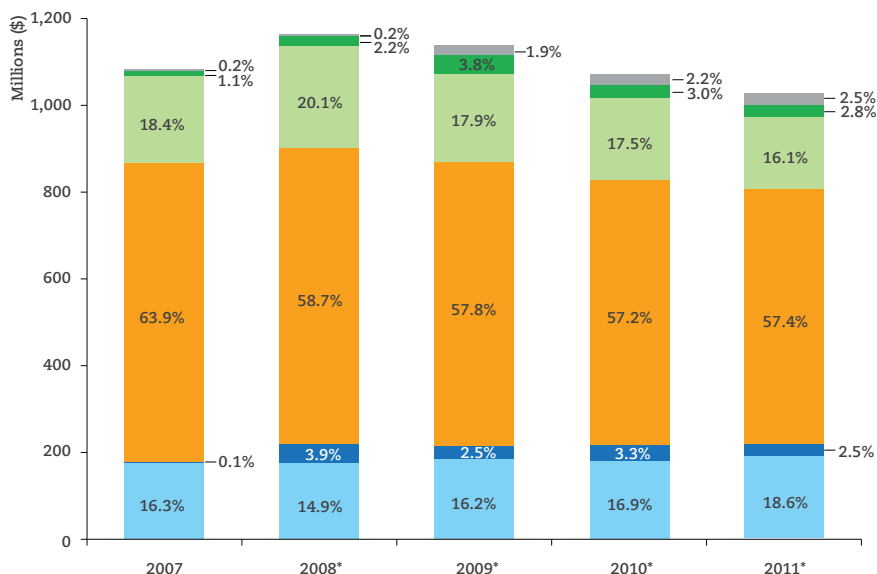
36 Litchenberg FR (2009) Have newer cardiovascular drugs reduced hospitalization? Evidence from longitudinal country-level data on 20 OECD countries, 1995–2003. *Health Economics* 18(5): 519–534.

37 Buruli ulcer, Chagas disease (American trypanosomiasis), cysticercosis, dengue/severe dengue, dracunculiasis (guinea worm disease), echinococcosis, fascioliasis, human African trypanosomiasis (sleeping sickness), leishmaniasis, leprosy, lymphatic filariasis (elephantiasis), onchocerciasis (river blindness), rabies, schistosomiasis, soil-transmitted helminthiasis, trachoma, and yaws.

38 WHO (2010) Working to overcome the global impact of neglected tropical diseases: First WHO report on neglected tropical diseases. Geneva: World Health Organization, p 1. http://whqlibdoc.who.int/hq/2010/WHO_HTML_NTD_2010.2_eng.pdf.

39 Policy Cures (2011) G-FINDER 2011 – Neglected disease research and development: A five year review. London: Policy Cures. http://polycures.org/downloads/GF2012_Report.pdf.

40 Ibid. p.11.

Chart 7: HIV/AIDS R&D funding by product type 2007-2011⁴¹

*Figures are adjusted for inflation and reported in 2007 US dollars

- Unspecified
- Diagnostics
- Microbicides
- Vaccines (Preventive)
- Drugs
- Basic research

These partnerships have proven fruitful and most PDPs currently have a healthy pipeline. For example, the portfolio of the TB Alliance consists of seven drugs in the second phase of clinical trials and two drugs in the third phase of clinical trials.⁴² The Drugs for Neglected Diseases *initiative* (DNDi) aims to deliver 11 to 13 new treatments by 2018 for Chagas disease,

⁴¹ Ibd. p.27

⁴² TB Alliance (2012) TB Alliance pipeline [online]. <http://www.tballiance.org/downloads/Pipeline/TBA-Pipeline-November-2012.pdf>.

malaria, leishmaniasis, helminths, paediatric HIV, and sleeping sickness, of which six are already available – unprecedented progress in the fight against these diseases.⁴³ WIPO Re:Search has facilitated 10 collaborations in its first year to October 2012.⁴⁴

In 2011, IFPMA members had 93 ongoing R&D projects related to diseases of the developing world.⁴⁵ The number of projects, undertaken in house or in PDPs, has steadily increased over the years. Through its many partnerships, the research-based pharmaceutical industry is helping to construct innovative models to develop and deliver essential healthcare for patients living in the poorest areas of the world.

Table 4: Industry R&D for diseases of the developing world, 2005–2011 (Number of ongoing projects)⁴⁶

	2005	2006	2007	2008	2009	2010	2011
Medicines	32	43	50	58	75	91	82
Vaccines	not available	6	8	9	9	11	11

43 DNDi (undated) Diseases & projects. Drugs for Neglected Diseases initiative [online]. <http://www.dndi.org/diseases-projects/diseases.html>.

44 WIPO (2012) WIPO Re:Search marks one-year anniversary with significant growth and promise. World Intellectual Property Organization, press release, October 30 [online]. http://www.wipo.int/pressroom/en/articles/2012/article_0023.html.

45 IFPMA (2011) Pharmaceutical industry R&D for diseases of the developing world: Status report. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. http://www.ifpma.org/fileadmin/content/Global%20Health/NTDs/Status_RnD_for_DDW_Nov2011.pdf.

46 IFPMA (2011) Pharmaceutical industry R&D for diseases of the developing world: Status report. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. http://www.ifpma.org/fileadmin/content/Global%20Health/NTDs/Status_RnD_for_DDW_Nov2011.pdf.

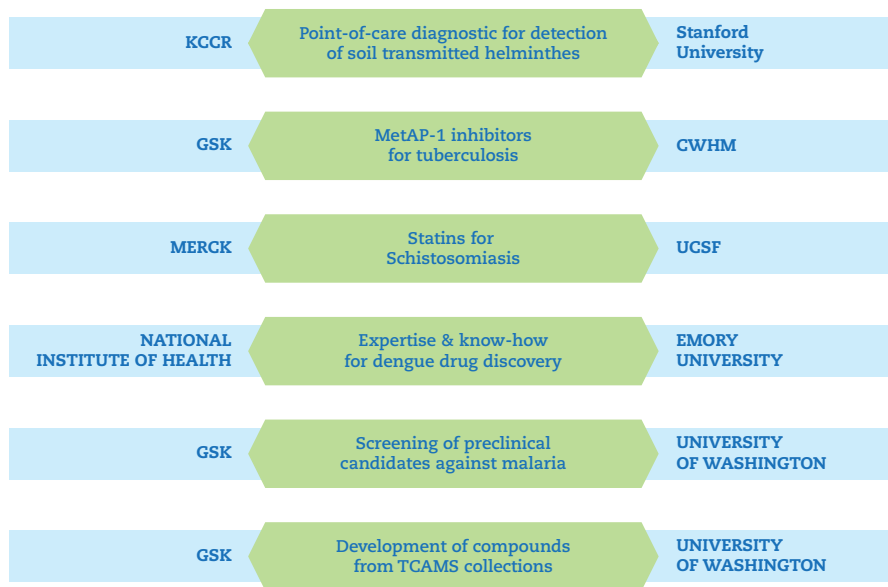
Table 5: Industry R&D for diseases of the developing world (Status overview as of November 2011)⁴⁷

DISEASES	ONGOING MEDICINES R&D PROJECTS	ONGOING VACCINES R&D PROJECTS	APPROVALS SINCE 2005	R&D PROJECTS STOPPED SINCE 2005
Tuberculosis	28	3	0	11
Malaria	29	5	2	18
Other tropical diseases	25	3	3	15
Total	82	11	5	44

Since its beginning, the research-based pharmaceutical industry has been committed to delivering innovative products and expanding the boundaries of medical science. The industry continuously experiments with different models and reinvents its way of doing business to overcome scientific hurdles. Successful partnerships, leading to new treatments to combat diseases in both the developed and developing worlds, hold the key to achieving the global health goals of the future.

⁴⁷ Ibid.

Figure 3: Selected WIPO Re:Search partnerships





Chapter 2

ACCESS TO MEDICINES AND HEALTHCARE SYSTEMS

A robust healthcare system is an important pillar of the development process, and a sound pharmaceuticals policy is a fundamental condition for health systems to perform well.⁴⁸ Health systems are complex mechanisms through which health products, services, and care are delivered to patients.⁴⁹ Their success requires joint effort and collaboration among all the key health actors. As such, the research-based pharmaceutical industry plays an essential role in providing access to medicines and support to the overall healthcare structure.

Distribution of wealth and health outcomes

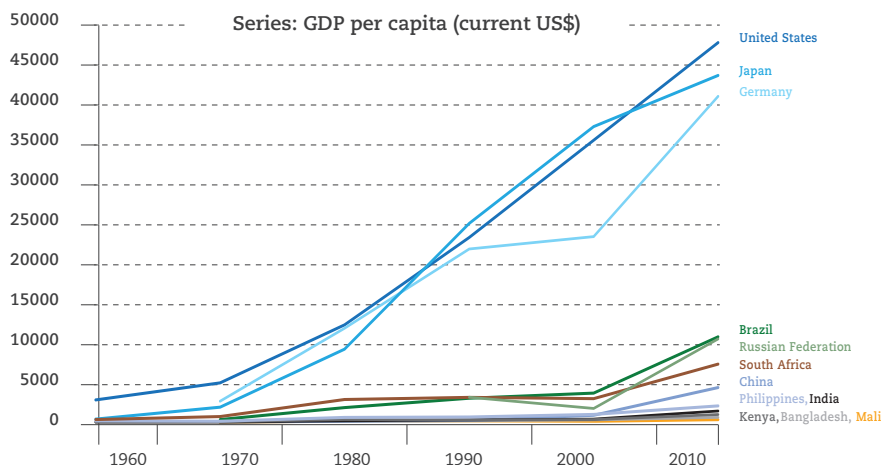
The world is still marked by a sharp disparity in the wealth of countries, which has a major impact on the performance of healthcare systems.

Looking at the regional distribution of wealth, the European Union, North America and Eastern Europe/Central Asia have a GDP per capita between two-and-a-half and five times the world average, whereas sub-Saharan Africa and South Asia have a GDP per capita equivalent to one-eighth of the world average.⁵⁰ People in poor countries have less access to water and sanitation facilities, have lower levels of literacy, and lack adequate infrastructure, including transportation systems that enable travel to healthcare facilities. These elements are essential parts of a healthy economy.

48 WHO (2007) *Everybody's business: Strengthening health systems to improve health outcomes*. Geneva: World Health Organization, p 3. http://www.who.int/healthsystems/strategy/everybodys_business.pdf.

49 IFPMA (2012) *The changing landscape on access to medicines*. Geneva: International Federation of Pharmaceutical Manufacturers and Associations, Chapter 2.

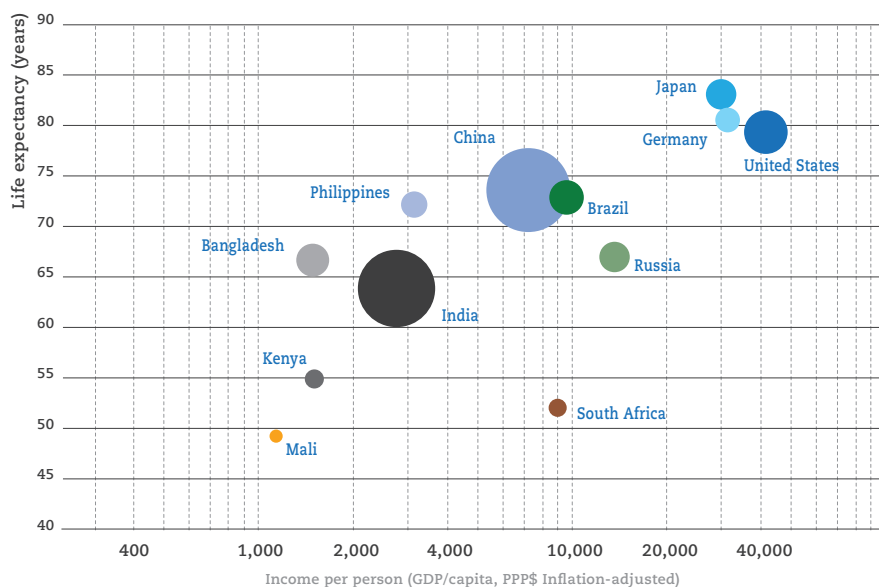
50 World Bank (2012) GDP per capita (current US\$) [online]. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?order=wbapi_data_value_2008+wbapi_data_value&sort=asc.

Chart 8: Evolution of GDP per capita in selected countries⁵¹

Total health expenditures range from 1.9% of GDP in Equatorial Guinea to 15.2% of GDP in the United States. On average, low-income countries spend 5.4% of GDP on financing healthcare systems whereas high-income countries spend more than 11 % on health. The disparities are also significant in terms of healthcare workers. There are 2.8 physicians per 10,000 inhabitants in low-income countries compared with 28.6 in high-income countries. Likewise, low-income countries have about 13 hospital beds per 10,000 inhabitants whereas the average for high-income countries is 59.⁵²

⁵¹ Ibid.

⁵² WHO (2011) WHO statistics 2011. Geneva: World Health Organization, pp 124–125, 136. http://www.who.int/whosis/whostat/EN_WHS2011_Part2.pdf.

Chart 9: Correlation between income per person and life expectancy, 2011⁵³

These divergences in wealth and resources have a decisive impact on people's health. In low-income countries, 75 out of 1,000 children die before their fifth birthday compared with six out of 1,000 in high-income countries (see also Annex 2). The strong link between wealth and health is also reflected in average life expectancy – 57 years in low-income countries compared with 80 years in high-income countries, a stark difference of 23 years.⁵⁴

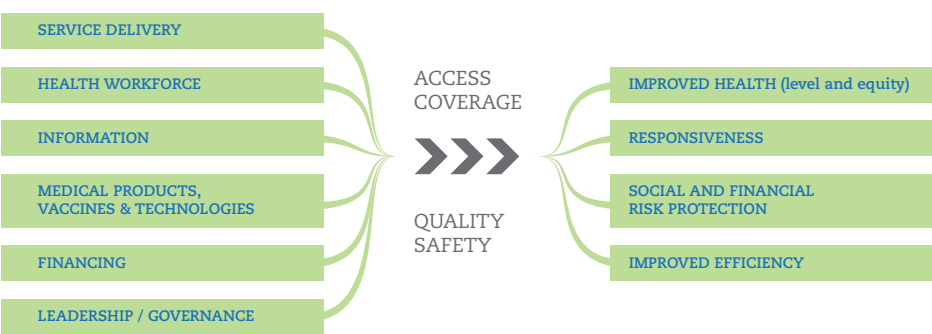
53 Gapminder (undated) Global trends: Wealth & health of nations (user modified) [online]. <http://www.gapminder.org>.

54 WHO Statistics 2011, op. cit. p. 54.

Healthcare spending and workforce

According to the WHO, a health system is built on six building blocks: service delivery; health workforce; information; medical products, vaccines, and technologies; financing; and leadership/governance (see also Annex 2).⁵⁵ A well-functioning healthcare system also promotes productive relationships between governments, patients, and the healthcare industry.

Figure 4: The WHO health system framework⁵⁶



The pharmaceutical industry plays a pivotal role in any healthcare system, by providing medicines and vaccines for most health interventions. A well-performing healthcare system must ensure that pharmaceutical products meet quality requirements and are properly procured, distributed to the different healthcare facilities, and prescribed by properly trained professionals.

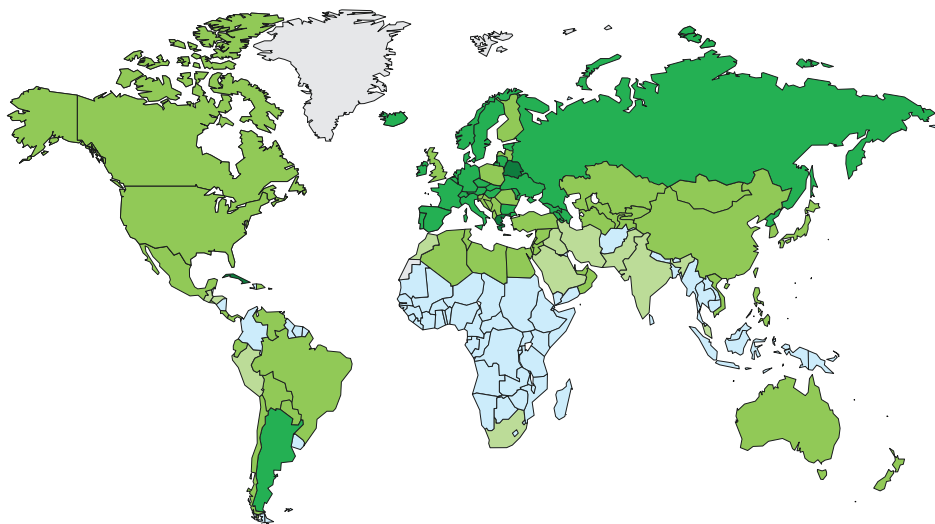
Doctors, nurses, and other health professionals form the cornerstone of healthcare systems. Not only do they diagnose, treat, and follow up patients with the right care, they also facilitate adequate patient adherence to treatment. Taking the wrong medicines or not adhering to appropriate treatments can have deleterious effects on patients' health. However, the availability of physicians varies greatly; in Spain, there are 3.75 doctors for every 1,000 inhabitants, while in Ghana there are only 0.85.⁵⁷

55 WHO (2007) Everybody's business: Strengthening health systems to improve health outcomes, p. 3.

56 WHO (2007) Everybody's business: Strengthening health systems to improve health outcomes. Geneva: World Health Organization, p 3. http://www.who.int/healthsystems/strategy/everybodys_business.pdf.

57 WHO (undated) Global health observatory data depository [online]. <http://apps.who.int/ghodata/#>.

Figure 5: Relative density of doctors per 1,000 population, latest available year⁵⁸

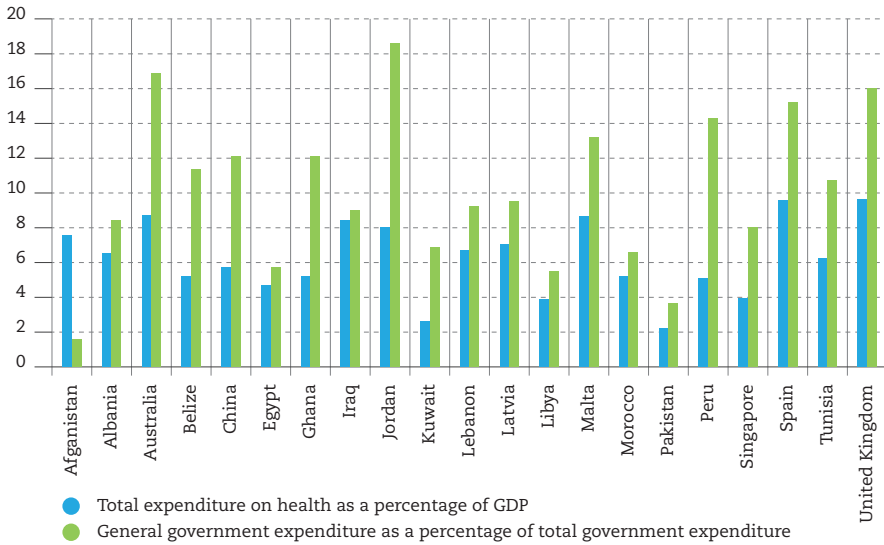


In terms of funding, performing healthcare systems require sufficient allocation of resources by government and/or the private sector. Unfortunately, public health and the strengthening of healthcare systems are not seen as important priorities in many countries, and the resources made available to health vary significantly from country to country (see Figure 13). For example, in 2010 Jordan invested about 8% of its GDP on health, which amounts to 18.6% of total government expenditure. In the same year, Pakistan invested only 2.2% and 3.6% respectively.⁵⁹

⁵⁸ Ibid.

⁵⁹ Ibid.

Chart 10: Total health expenditure as a percentage of GDP and government spending, 2010⁶⁰



Strong healthcare systems also require strategic long-term planning and political commitment. Health authorities should not only facilitate necessary resources, but also procure medicines effectively and minimize inefficiencies and unnecessary mark-ups in the supply chain, such as taxes and tariffs. Strengthening healthcare systems is one of the targets set by the UN Millennium Development Goals (MDGs).

Barriers to access to medicines and healthcare

The most obvious and fundamental barriers to access to healthcare and medicines arise from poverty. The poor health infrastructure in developing countries is accompanied by serious shortages of doctors, nurses, and pharmacists, among other factors.

In addition, developing countries, especially least-developed countries, often have high mark-up costs that inflate unnecessarily the prices of essential medicines. These include distribution costs, import tariffs, port charges, importers' margins, value-added taxes on medicines, and high margins in the wholesale and retail components of the supply chain.

⁶⁰ WHO Global health observatory data depository, op. cit.

Table 6: Examples of “hidden” costs of pharmaceutical procurement⁶¹

	SRI LANKA	KENYA	TANZANIA	SOUTH AFRICA	BRAZIL	ARMENIA	KOSOVO	NEPAL	MAURITIUS	AVERAGE
Import tariff	0%	0%	10%		11.7%	0%	1%	4%	5%	
Port charges	4%	8%	1%				4%			
Clearance and freight		1%	2%					1.5%	5%	
Pre-shipment inspection		2.75%	1.2%							
Pharmacy board fee			2%							
Importers' margins	25%						15%	10%		
VAT				14%	18%	20%	0%			
Central government tax										
State government tax					6%					
Wholesaler	8.5%	15%	0%	21.2%	7%	25%	15%	10%	14%	
Retail	16.3%	20%	50%	50%	22%	25%	25%	16%	27%	
Total markup	63.9%	54.2%	74.3%	74%	82.3%	87.5%	73.6%	48%	59.6%	68.6%

A lack of health literacy can further hinder access to medicines. Moreover, poor people with limited or no access to adequate nutrition, safe water, and sanitation are also unable to buy even basic health products and services. Contrary to widespread belief, it is rarely high-tech solutions but rather primary care interventions that successfully combat poverty-related diseases. Poverty alleviation in general consists of targeted

61 Levison L, Laing R (2003) The hidden costs of essential medicines. Essential Drugs Monitor 033. <http://apps.who.int/medicinedocs/en/d/js4941e/4.8.html#js4941e.4.8>.

interventions. Some of these programs include better nutrition for mothers, mass vaccination campaigns, access to basic antibiotics, bed nets for malaria prevention, and condom use programs to prevent the spread of HIV/AIDS and other sexually transmitted diseases. These efforts are highly effective in reducing preventable mortality.

Table 7: Selected infrastructure indicators, 2008⁶²

REGION	ROADS, PAVED (% OF TOTAL ROADS)	IMPROVED SANITATION FACILITIES (% OF POPULATION WITH ACCESS)	IMPROVED WATER SOURCE (% OF POPULATION WITH ACCESS)
Arab World	75.18	75.37	81.51
East Asia & Pacific	47.62	62.93	89.02
Europe & Central Asia	87.97	94.13	98.01
Latin America & Caribbean (all income levels)	33.28	79.45	93.40
North America	53.62	100.00	99.10
South Asia	58.93	35.57	86.64
Sub-Saharan Africa	18.30	31.36	59.72
Heavily indebted poor countries (HIPC)	19.00	27.47	57.70
Least developed countries	19.00	36.16	61.09
Low income	14.12	35.47	63.11
Lower middle income	29.26	45.44	84.32
Upper middle income	50.50	67.83	91.50
Middle income	45.00	56.45	87.84
High income	87.28	99.52	99.56
World	49.10	60.62	86.82

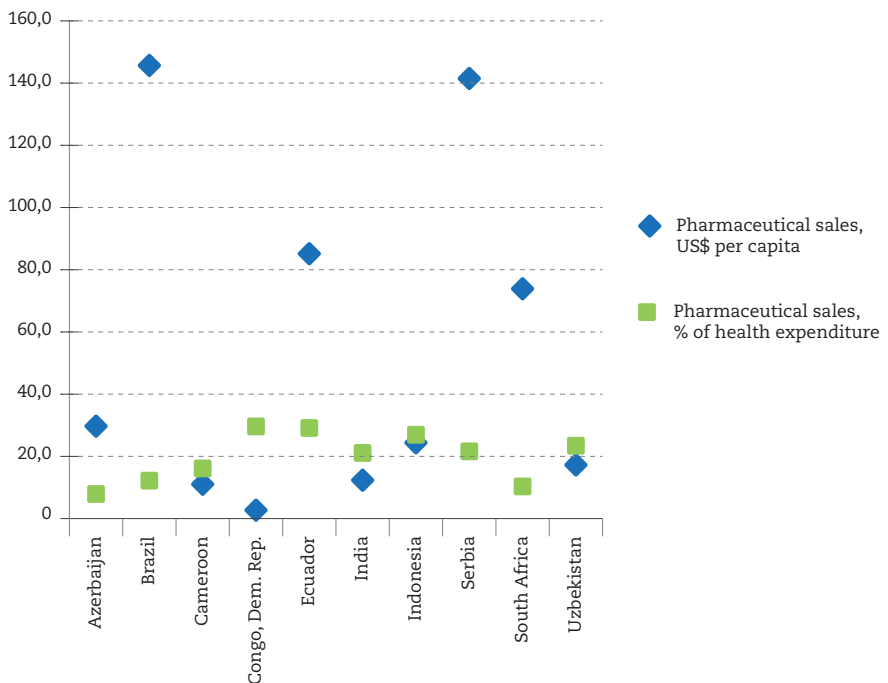
⁶² World Bank (2011) World Bank development indicators. <http://data.worldbank.org/data-catalog/world-development-indicators>.

The role of pharmaceutical products in healthcare

The MDGs highlight the imperative to adopt collaborative approaches. In particular, Goal 8 promotes global partnership for development, and Target 8e specifically aims to, “in co-operation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries.” Collaboration is now integral to of the research-based pharmaceutical industry’s approach to improving the effectiveness of healthcare systems.

The pharmaceutical industry constitutes one of the building blocks of an effective and well-functioning healthcare system. As demonstrated below, pharmaceutical products, such as medicines and vaccines, are fundamental and require appropriate financing. However, pharmaceutical expenditure is only a small percentage of total health expenditure.

Chart 11: Pharmaceutical sales and health expenditures in selected low- and middle-income countries, 2011⁶³



⁶³ Business Monitor International (2012) BMI pharmaceutical and healthcare database. [online] <http://www.businessmonitor.com/industry/pharma.html>.

Innovative drugs can help to control increasing costs within a healthcare system. For every 24 dollars spent on new drugs for cardiovascular diseases in OECD countries, 89 dollars were saved in hospitalization and other healthcare costs.⁶⁴ Prior to the creation of antibiotics used to treat peptic ulcers, the treatment for the disease consisted of major surgery and costly assistance with recovery, requiring as much as USD 17,000 and over 300 days of treatment.⁶⁵ Antibiotics cut the cost of treating ulcers to less than USD 1,000.⁶⁶ In addition, patients enjoy a better quality of life and a non-invasive, safer course of treatment.

Chart 12: Cost of newer cardiovascular drugs compared to savings in hospitalization in 20 OECD countries, 1995-2003⁶⁷

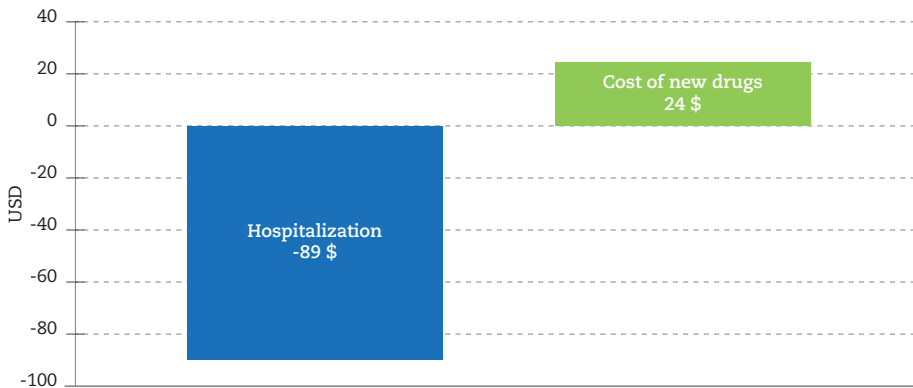


Table 8: Annual hospitalization and deaths avoided through use of antihypersensitive medications⁶⁸

	ACTUAL HOSPITALIZATIONS AVOIDED	ANNUAL PREMATURE DEATHS AVOIDED
Actual prevention:		
Based on current treatment rates	833,000	86,000
Potential additional prevention: If untreated patients received recommended medicines	420,000	89,000

64 Lichtenberg FR (2009) Have newer cardiovascular drugs reduced hospitalization?

65 Centers for Disease Control and Prevention (1998) *Helicobacter pylori* and Peptic Ulcer Disease [online]. <http://www.cdc.gov/ulcer/economic.htm>.

66 Ibid.

67 Lichtenberg FR (2009) Have newer cardiovascular drugs reduced hospitalization? Evidence from longitudinal country-level data on 20 OECD countries, 1995-2003. *Health Economics* 18(5): 519-534.

68 Cutler DM et al (2007) The value of hypertensive drugs: A perspective on medical innovation. *Health Affairs* 26(1): 97-110.

Pharmaceutical industry's contribution

Research-based pharmaceutical companies make a unique contribution to improving global health through the innovative medicines they develop. In addition, they have a strong track record of sustaining programs to improve the health of patients in low- and middle-income countries. These initiatives strengthen local healthcare capacity, educate patients and populations at risk, and conduct research and development (R&D) in diseases of the developing world. Companies work alone or in partnerships with different stakeholders to make their products more accessible to poor communities, via donations of high-quality medicines or through differential pricing schemes. Furthermore, several of companies are committed to licensing their technologies to quality generic producers, while many others commit to expanding their own production and distribution capacities to meet the needs of patients.

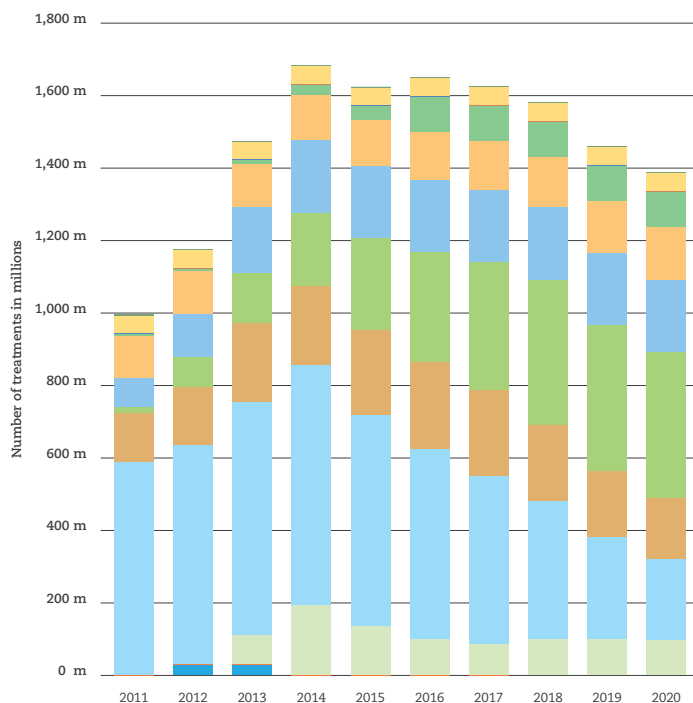
The contribution of the research-based pharmaceutical industry is vital in the fight against neglected tropical diseases (NTDs).⁶⁹ At least 1 billion people – one person in seven – suffer from tropical diseases such as Buruli ulcer, cholera, dengue, lymphatic filariasis, onchocerciasis, schistosomiasis, trachoma, and African trypanosomiasis (sleeping sickness). These diseases, many of which are vector-borne, primarily affect poor people in tropical and subtropical areas. Some affect individuals for life, causing disability and disfigurement that often leads to stigmatization; this can itself lead to social exclusion and jeopardize mental health. Other diseases are acute infections, with transient, severe, and sometimes fatal outcomes.

Research-based pharmaceutical companies are producing some medicines free of charge and or are donating unlimited supplies of drugs for many neglected tropical diseases. In January 2012, 13 pharmaceutical companies, the governments of the US, the UK and the United Arab Emirates, the Bill and Melinda Gates Foundation, the World Bank, and other global health organizations launched a new collaboration to accelerate progress toward eliminating or controlling 10 NTDs by the end of the decade. The group announced that they would sustain or expand existing drug donation programs to meet demand through 2020; share expertise and compounds to accelerate R&D for new drugs; and provide more than USD 785 million to support R&D efforts and strengthen drug distribution and implementation programs.

Research-based pharmaceutical companies have pledged to donate 14 billion treatments over the 10 years from 2011 to 2020. This commitment builds on already existing initiatives on NTDs that have been drastically changing the lives of those affected.⁷⁰

69 WHO (2012) Neglected tropical diseases: Contribution of pharmaceutical companies to the control of neglected tropical diseases. World Health Organization [online]. http://www.who.int/neglected_diseases/pharma_contribution/en/index.html.

70 IFPMA (2012) Ending neglected tropical diseases. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. <http://www.ifpma.org/fileadmin/content/Publication/2012/IFPMA-NTD-NewLogoJUNE2.pdf>.

Chart 13: Treatments donated and sold at cost in developing countries⁷¹

¹ Nifurtimox, generally used as 2nd-line drug.

² The Bill and Melinda Gates foundation is also contributing.

Human African trypanosomiasis: Pentamidine/Melarsopro/Eflornithine(Sanofi)	Soil transmitted helminthiasis: Albendazole (GlaxoSmithKline)
Trachoma: Zithromax® (Pfizer)	Lymphatic filariasis: Mectizan® (Ivermectin) (Merck & Co., Inc.)
Fascioliasis: Egaten (Triclabendazole) (Novartis)	Lymphatic filariasis: Albendazole (GlaxoSmithKline)
Leprosy: Rimactane/Lamprene (Novartis)	Lymphatic filariasis: Diethylcarbamazine citrate (Eisai)
Schistosomiasis: Praziquantel (Merck KGaA)	Chagas: Nifurtimox ¹ (Bayer)
Onchocerciasis: Mectizan (Ivermectin) (Merck & Co., Inc.)	Lymphatic filariasis: Diethylcarbamazine citrate (Eisai/Sanofi ²)
Soil transmitted helminthiasis: Mebendazole (Johnson & Johnson)	

2011	988,119,804
2012	1,138,161,660
2013	1,466,004,495
2014	1,673,246,832
2015	1,674,129,890
2016	1,639,148,067
2017	1,615,598,662
2018	1,571,679,388
2019	1,450,229,614
2020	1,379,734,967
Total 2011-2020	14,536,053,379
Average per Year	1,453,605,338

71 IFPMA (2012) Ending neglected tropical diseases. Geneva: International Federation of Pharmaceutical Manufacturers and Associations, p 2. <http://www.ifpma.org/fileadmin/content/Publication/2012/IFPMA-NTD-NewLogoJUNE2.pdf>.

HIV/AIDS, while not specifically considered an NTD, disproportionately affects developing countries. Given the serious nature of this epidemic, the research-based pharmaceutical industry, international organizations, and various other stakeholders have committed to combat its spread. Pharmaceutical companies are involved in partnerships that foster access to antiretrovirals (ARVs), capacity building, and education.

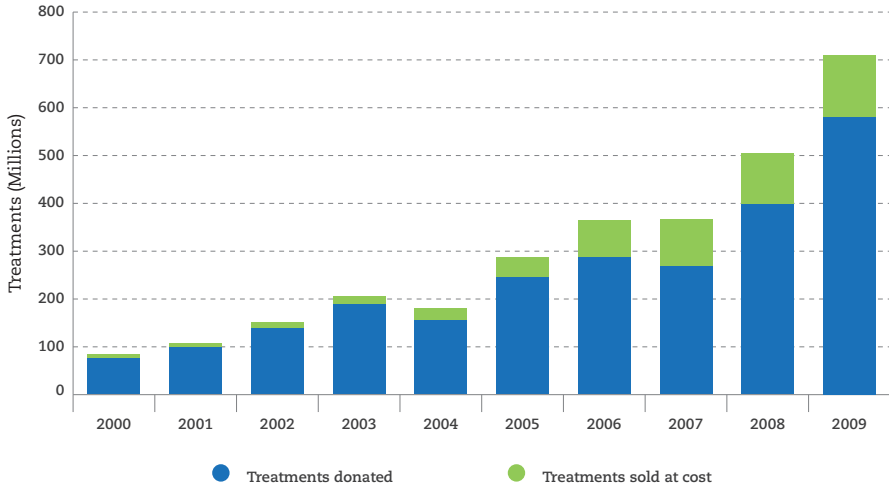
Table 9: Selected Pharmaceutical Partnerships⁷²

COMPANY	PARTNERSHIP	START YEAR	BENEFICIARY COUNTRIES
Bristol-Myers Squibb	Secure the future®	1999	22
Abbott	Abbott Fund Program for Supporting Children Affected by AIDS	2000	7
Abbott	Partnership with BIPAI to Support Children Affected by AIDS	2000	4
Pfizer	Diflucan® Partnership	2000	60
MSD	African Comprehensive HIV/AIDS Partnerships (ACHAP)	2000	1
Abbott	Program to Strengthen Tanzania's Health Care System	2001	1
Bristol-Myers Squibb	HIV Global ACCESS Program	2001	59
Abbott	Rapid HIV Test Donation Program	2002	40
Boehringer Ingelheim, Roche	AAI - Accelerating Access Initiative	2002	156
Roche	Access to Diagnostics and Anti-retroviral Treatments	2002	88
Roche	AmpliCare Initiative	2002	58
Pfizer	Infectious Diseases Institute	2002	1
Novartis	Regional Psychosocial Support Initiative	2002	13
Merck KGaA, Gilead, Bristol-Myers Squibb	Atripla® Fixed-Dose Combination	2003	66
Boehringer Ingelheim	Collaboration for Health in Papua New Guinea (CHPNG)	2003	1
Johnson & Johnson	Assoc Sikiliza Leo Project, Uganda	2003	1
JPMA	Management of Community-based Prevention of HIV/AIDS and Care	2004	11
Boehringer Ingelheim	Healthcare Capacity & Research in Botswana	2005	1
AstraZeneca	AstraZeneca & AMREF: An Integrated Approach to Managing HIV/AIDS, Malaria & TB in Uganda	2006	1
Bristol-Myers Squibb, Gilead, MSD, Abbott, ViiV Healthcare	PEPFAR Partnership for Pediatric AIDS Treatment	2006	30
Boehringer Ingelheim	Healthcare Capacity	2008	3
Pfizer, Abbott, Bristol-Myers Squibb	Health at Home/Kenya	2009	1
Abbott	Partnership with AMPATH in Kenya	2009	1
ViiV Healthcare	Positive Action for Children Fund	2009	48
Takeda	Initiative with Global Fund	2010	3
Daiichi Sankyo	Mobile Healthcare Field Clinics	2011	3

⁷² IFPMA (2012) Developing world health partnerships directory. Geneva: International Federation of Pharmaceutical Manufacturers and Associations, <http://partnerships.ifpma.org/>.

For example, Bristol-Myers Squibb's Secure the Future® has funded more than 240 projects in 20 African countries, integrating clinic-based medical care with community-based health education and support. Abbott is actively involved in improving access to treatment and fostering capacity building through various initiatives supported by the Abbott Fund.

Chart 14: IFPMA member company access to medicines activities⁷³



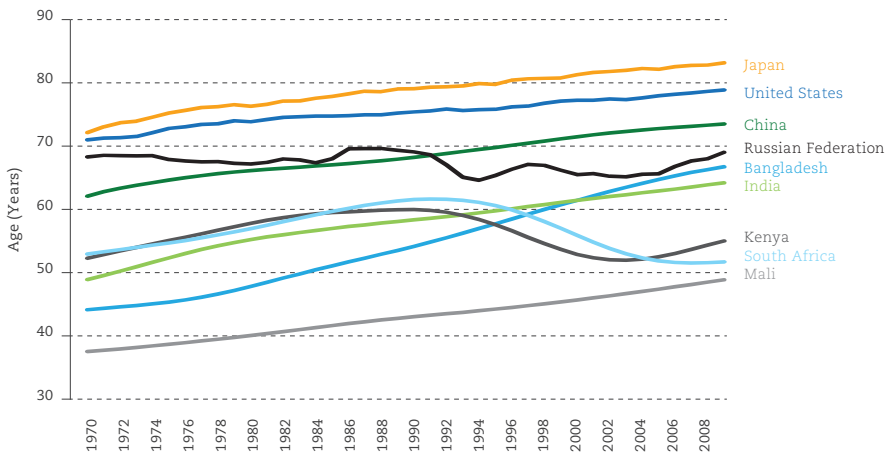
⁷³ IFPMA (2012) IFPMA Health partnership survey. Geneva: International Federation of Pharmaceutical Manufacturers and Associations.

Healthcare achievements and challenges

Since the 1970s, there have been significant improvements in healthcare systems and global health. As a result of concerted efforts of governments, the private sector, and civil society, more than 14 million people have been cured of leprosy; the number of people infected with guinea worm has dropped from 3 million to just 25,000 cases; schistosomiasis (bilharzia) has been effectively controlled in Brazil, China, and Egypt, and eliminated from Iran, Mauritius, and Morocco; and intestinal helminths (worms) have been eliminated in South Korea and are under control in many endemic countries.⁷⁴

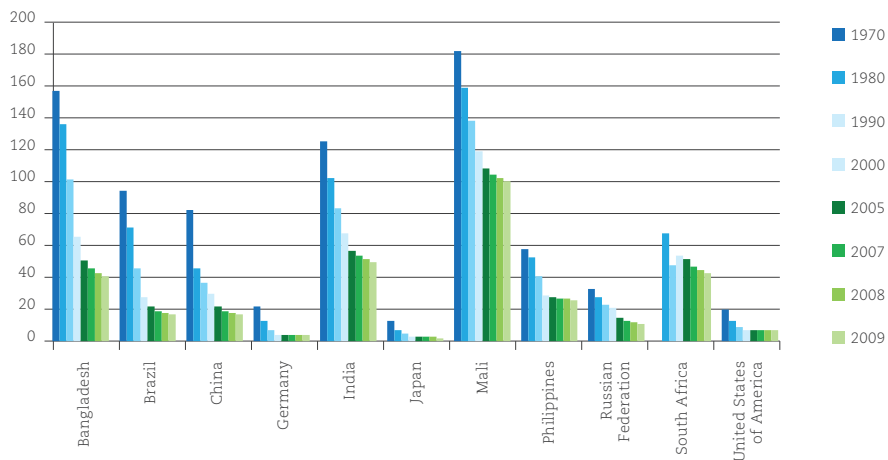
Life expectancy has increased all over the world, in developed and developing countries alike. However, not all countries have progressed at the same speed. For example, life expectancy in India has increased from 48 years in 1970 to 63 in 2009, but for Kenya the increase has been more modest – from 52 years (1970) to 54 years (2009). In comparison to these developing countries, life expectancy in the United States increased from 70 years (1970) to 78 years (2009). Meanwhile, infant mortality rates have steadily declined over the same period, 1970–2009, in both rich and poor countries.

Chart 15: Life expectancy evolution in selected countries⁷⁵



74 WHO (2006) Neglected tropical diseases: Hidden successes, emerging opportunities. Geneva: World Health Organization. http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_2006.2_eng.pdf.

75 United Nations Population Division (2009) World population prospects: The 2008 revision. New York: United Nations.

Chart 16: Infant mortality in selected countries, 1970-2009⁷⁶

Increased life expectancy, decreased infant mortality, and the adoption of unhealthy lifestyle choices have led to an increase in the burden of non-communicable diseases (NCDs), like heart disease, cancer, chronic respiratory diseases, and diabetes. They are currently the leading causes of death worldwide. Tackling the effects of these demographic changes on NCDs represents a great challenge to society. The research-based pharmaceutical industry recognizes this challenge and is committed to be at the forefront of the battle against NCDs.⁷⁷

⁷⁶ UNICEF (2012) Trends in infant mortality rates, 1960–2011. United Nations Children's Fund [online]. http://www.childinfo.org/mortality_imrcountrydata.php.

⁷⁷ IFPMA (2011) IFPMA statement: The value of prevention and partnerships in combating NCDs. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. [http://www.ifpma.org/fileadmin/content/Global%20Health/NCDs/IFPMA_Statement_on_Prevention_Finalx\[1\].pdf](http://www.ifpma.org/fileadmin/content/Global%20Health/NCDs/IFPMA_Statement_on_Prevention_Finalx[1].pdf).

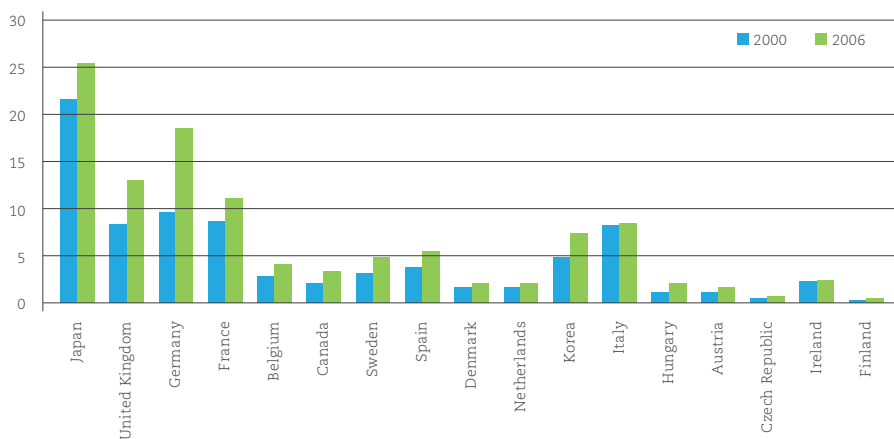


Chapter 3

ECONOMIC FOOTPRINT OF THE PHARMACEUTICAL INDUSTRY

The research-based pharmaceutical industry makes a major contribution to the prosperity of the world economy. It is a robust sector that has been one of the pillars of industrialized economies and is increasingly recognized as an important sector in the developing world as well. It contributes to employment (direct, indirect, or induced), trade (through imports and exports), expenditure on research and development (R&D), and technological capacity building. It is also a necessary foundation for the existence of the generic industry.

Chart 17: Value added in R&D and production by the pharmaceutical industry in selected countries (USD billion at purchasing power parity)⁷⁸



⁷⁸ Adapted from Kiriyama N (2010) Trade and innovation: Pharmaceuticals. OECD trade policy working paper no. 113, Paris: Organisation for Economic Co-operation and Development, p. 15.

The research-based pharmaceutical sector in China has around USD 74 billion in total investment and fixed assets,⁷⁹ while in Brazil, the industry contributed USD 134 million in R&D in 2008 alone.⁸⁰ The industry also has a positive impact in countries that still lack innovative capacity, through the technology diffusion that allows significant improvements in the healthcare sector and, in many cases, production of generics.

Table 10: Key indicators of the pharmaceutical industry's economic footprint in Europe⁸¹

	1990	2000	2010	2011
Production (EUR million)	63,010	123,793	200,050	205,000 (est)
Exports* (EUR million)	23,180	90,935	276,357	290,000 (est)
Imports* (EUR million)	16,113	68,841	204,824	210,000 (est)
Trade balance (EUR million)	7,067	22,094	71,533	80,000 (est)
R&D expenditure (EUR million)	7,776	17,849	27,796	27,500 (est)
Employment (units)	500,879	536,733	663,503	660,000 (est)
R&D employment (units)	76,126	88,397	117,191	116,000 (est)
* includes intra-EU trade				

79 Zhou EY (2007). China today: Biopharmaceutical industry trends in China—A five-year prospective. BioPharm International 20(3) [online]. <http://www.biopharminternational.com/biopharm/Article/China-Today-Biopharmaceutical-Industry-Trends-in-C/ArticleStandard/Article/detail/407871>.

80 Interfarma member survey, correspondence with Interfarma, May 2010.

81 Adapted from EFPIA (2012) The pharmaceutical industry In figures 2012.

Pharmaceutical R&D and production

The pharmaceutical industry's activities have a strong and positive influence on the economy. This economic footprint is most visible in the form of investments in manufacturing and R&D, but it often has other positive socioeconomic impacts, such as constant improvements in academic research. It also stimulates the creation of companies that support parts of the research and production process.

The research-based pharmaceutical industry is particularly economically active in production and R&D in certain countries. In 2007, pharmaceutical manufacturing accounted for USD 179 billion in the United States, USD 66 billion in Japan, and USD 52 billion in France.⁸² In the same year, R&D investments amounted to USD 47 billion in the United States, USD 10.4 billion in Japan, and USD 3.9 billion in France.⁸³ However, manufacturing and research are not directly linked. Some countries have little research compared to manufacturing capacity, while others have little manufacturing and considerable research.

82 OECD (2010) STAN industry 2008. OECD structural analysis statistics [online database]. doi: 10.1787/data-00029-en.

83 OECD (2011) STAN R&D: Research and development expenditure in industry – Revision 3 2011. OECD structural analysis statistics [online database]. doi: 10.1787/data-00556-en.

Table 11: Pharmaceutical production, R&D, and value added in selected countries, 2007 (USD billion at purchasing power parity)⁸⁴

	PRODUCTION (GROSS OUTPUT), USD	INTERMEDIATE CONSUMPTION, USD	VALUE ADDED, USD	R&D, MAIN FIELD OF COMPANY ACTIVITY, USD
Austria	4,150,143,010	1,773,600,170	2,376,542,840	323,080,561
Belgium	13,589,233,518	8,220,801,550	5,368,431,968	1,230,875,300
Czech Republic	1,437,012,484	913,146,563	523,865,922	81,604,311
Denmark	7,668,446,100	4,678,416,000	2,990,030,100	
Finland	1,010,231,521	401,659,966	608,571,555	192,185,474
France*	52,931,320,000	40,520,490,000	12,410,830,000	3,971,133,769
Germany	54,858,549,667	31,994,685,243	22,863,864,424	3,988,995,917
Greece	1,456,513,720	986,824,397	469,689,323	19,833,526
Hungary	2,838,806,425	1,513,924,314	1,324,882,111	318,511,215
Iceland	110,385,600	53,289,600	57,096,000	49,904,307
Ireland	14,249,139,141	9,834,621,049	4,414,518,093	153,763,300
Italy	32,330,423,356	22,385,002,501	9,945,420,855	518,519,173
Japan	66,806,601,005	43,681,204,826	23,125,396,180	10,420,679,962
Korea	21,507,894,100	14,727,399,500	6,780,494,600	776,398,546
Mexico	13,480,916,491	6,689,312,137	6,791,604,355	158,853,569
Netherlands	8,018,688,250	5,572,087,968	2,446,600,282	549,583,103
Norway	1,568,349,300	779,987,600	788,361,700	57,374,280
Poland	3,520,557,168	2,196,203,822	1,324,353,346	90,173,366
Slovak Republic	11,989,806	8,025,621	3,964,185	14,197,929
Spain	16,780,220,328	11,084,151,629	5,696,068,701	1,052,014,636
Sweden	11,234,656,439	5,551,753,015	5,682,903,423	
United Kingdom*	31,503,744,000	14,501,247,000	17,002,497,000	6,114,919,894
United States	179,726,547,239	94,422,140,174	85,304,407,066	47,749,857,012
*R&D Estimated by product field				

84 OECD (2012) StatExtracts, http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT.

Pharmaceutical industry employment

The pharmaceutical industry contributes to employment in both developing and developed countries. In the United States, every job in the biopharmaceutical industry supported five jobs outside the pharmaceutical sector, in areas from manufacturing and construction to childcare, retail, accounting, and more. A survey of 17 biopharmaceutical companies in the United States found that spending on services and supplies totalled USD 53 billion across 17 states, translating into more than 4 million jobs.⁸⁵ The industry currently directly employs 650,000 people in the United States⁸⁶ and 663,500 people in Europe.⁸⁷

High employment in the pharmaceutical sector is not exclusive to high-income countries. The pharmaceutical industry provides high-skilled jobs through direct employment and induces the creation of many more indirect jobs in low- and middle-income countries as well. For example, it employs 70,900 people in Russia, 37,500 in Egypt, 13,100 in Turkey,⁸⁸ and 16,350 in Colombia (for a complete list, see Annex 5).⁸⁹ Wages paid by the industry were worth over USD 123 million in Colombia, USD 186 million in Indonesia, and USD 1.4 billion in India.

85 PhRMA (2012) PhRMA releases new data on biopharmaceutical industry's contributions to local, state economies. Pharmaceutical Research and Manufacturers of America, press release, November 13 [online]. <http://phrma.org/media/releases/phrma-releases-new-data-biopharmaceutical-industry-contributions-local-state-economies>.

86 Ibid.

87 EFPIA (2012) The pharmaceutical industry in figures 2012.

88 Figure provided by AiFD [Association of Research-Based Pharmaceutical Companies, Turkey].

89 UNIDO (2011) INDSTAT (Query using variable ISIC Rev 3 – 2423 pharmaceuticals, medicinal chemicals, etc).

Table 12: Employment in the pharmaceutical industry in selected countries⁹⁰

COUNTRY OR AREA	YEAR	NUMBER OF EMPLOYEES	WAGES AND SALARIES PAID TO EMPLOYEES, USD
Colombia	2005	16,344	123,609,820
Ecuador	2008	2,856	29,488,000
Egypt	2006	37,494	137,411,531
Ethiopia	2009	1,437	1,167,480
Georgia	2009	2,373	8,900,552
India	2008	378,413	1,407,793,200
Indonesia	2009	58,875	186,879,218
Iran	2008	20,207	150,959,215
Jordan	2009	5,215	68,553,433
Kyrgyzstan	2009	343	351,038
Lebanon	2007	699	7,299,000
Lesotho	2007	89	184,280
Macedonia	2009	1,511	25,228,546
Malaysia	2008	9,894	65,601,860
Oman	2007	481	5,798,610
Pakistan	2006	36,336	142,991,304
Panama	2005	450	3,654,833
Philippines	2006	15,436	135,973,500
Russia	2009	70,923	501,586,800
Sri Lanka	2006	11,654	15,027,048
Tanzania	2009	1,145	2,245,353
Thailand	2006	27,080	76,914,290
Ukraine	2009	19,295	78,169,316
Uruguay	2007	3,102	52,283,171

90 United Nations Industrial Development Organization INDSTAT.

In addition to directly or indirectly creating jobs, the pharmaceutical industry's presence also leads to dissemination of knowledge in the workforce. Employees working for a pharmaceutical company often receive qualified training and are exposed to new technologies and processes. This knowledge becomes an asset for the entire workforce, as the employees may later change jobs or start their own companies, hence fostering economic development.

Transfer of technology

Transfer of advanced technology is essential for economic development. It is one means by which low- and middle-income countries can accelerate the acquisition of knowledge, experience, and equipment related to advanced, innovative industrial products and processes. Technology transfer has the potential to help improve health. It also benefits the overall economy by increasing the reliability of supply, decreasing reliance on imports, and raising the competence of the local workforce.⁹¹

91 IFPMA (2011) Technology transfer: A collaborative approach to improve global health. Geneva: International Federation of Pharmaceutical Manufacturers and Associations, p. 17. http://www.ifpma.org/fileadmin/content/Publication/IFPMA_Technology_Transfer_Booklet_2011.pdf.

Table 13: Selected examples of technology transfer – manufacturing protocols and entrepreneurial know-how⁹²

COMPANY	PARTNER	DISEASE AREA	RECEIVING COUNTRY	YEAR
Biken	Bio Farma	Influenza	Indonesia	2007
Bristol-Myers Squibb	Emcure Pharmaceuticals, Aspen Pharmacare	HIV/AIDS	India, South Africa	2001
Bristol-Myers Squibb	Fundação Oswaldo Cruz (Fiocruz)	HIV/AIDS	Brazil	2011
Daiichi Sankyo	Inter Thai, Daiichi Sankyo Thailand	Cardiovascular diseases	China, Thailand	2004
Eisai	EPM (Eisai Pharmatechnology and Manufacturing)	Neglected Tropical Diseases, Non-Communicable Diseases	India	2009
Eli Lilly and Company	7 companies across the globe	Tuberchulosis	China, Russia, India, South Africa	2003
Kaketsuken	Government Pharmaceutical Organization (Thailand)	Influenza	Thailand	2010
Roche	13 companies and organizations in 6 countries	HIV/AIDS	Bangladesh, Ethiopia, Kenya, South Africa, Tanzania, Zimbabwe	2009
Roche	State Pharmaceutical Laboratory of Pernambuco, Nortec Quimica	Chagas	Brazil	2003
Novartis	Ezequiel Dias Foundation, Brazilian Ministry of Health	Meningitis	Brazil	2009
Janssen	5 companies	HIV/AIDS	India, South Africa	2008
Janssen	Aspen Pharmacare	HIV/AIDS	South Africa	2007
MSD	Emcure Pharmaceuticals, Matrix Laboratories	HIV/AIDS	India, South Africa	2011
MSD	6 South African companies	HIV/AIDS	South Africa	2007
ViiV	Apotex	HIV/AIDS	Canada	2007
GSK	Walvax	pediatric vaccines	China	2010
GSK	Oswaldo Cruz Foundation (FioCruz)	Vaccines	Brazil	1985

92 IFPMA (2012) Developing World Health Partnerships Directory. International Federation of Pharmaceutical Manufacturers and Associations [online database]. <http://partnerships.ifpma.org/>.

Pharmaceutical companies engage in technology transfer for a variety of reasons. While decisions with regard to transfer of technology are sometimes taken on a philanthropic basis, to ensure sustainability these collaborations are usually also driven by commercial rationales and market conditions, which are heavily influenced by policy and regulatory decisions made by national governments.

Table 14: Critical factors for creating favorable conditions for pharmaceutical technical transfers⁹³

1.	A viable and accessible local market
2.	Political stability, good economic governance
3.	Clear development priorities
4.	Effective regulation
5.	Availability of skilled workers
6.	Adequate capital markets
7.	Strong intellectual property rights (IPR) and effective enforcement
8.	Quality of the relationship between industry and government

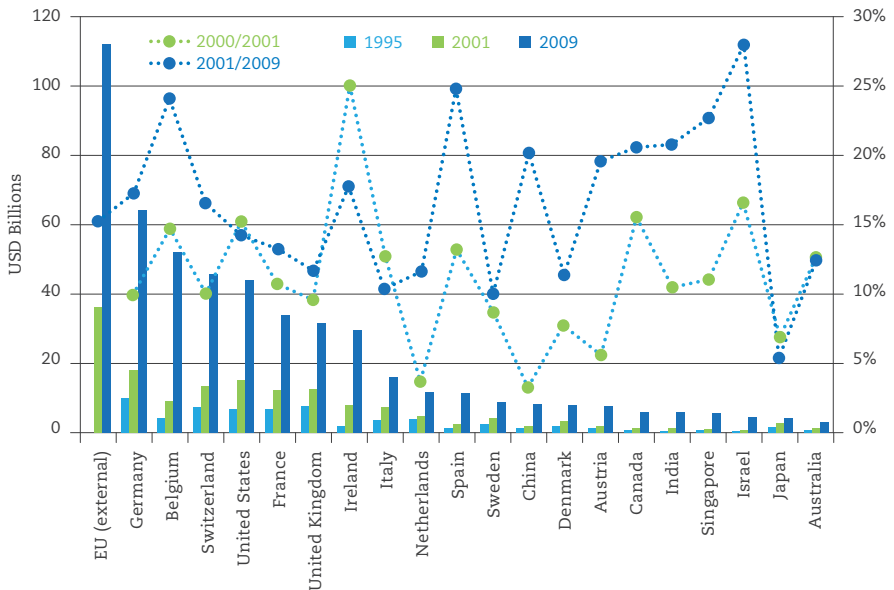
93 IFPMA (2011) Technology transfer: A collaborative approach to improve global health. Geneva: International Federation of Pharmaceutical Manufacturers and Associations, p. 17. http://www.ifpma.org/fileadmin/content/Publication/IFPMA_Technology_Transfer_Booklet_2011.pdf.

Trade in pharmaceuticals

Global sales of pharmaceutical products represent the international spread of medical technology that comes as the result of highly intensive R&D efforts in the exporting countries. At the same time, importing countries receive these benefits through health improvements – even if they do not participate in R&D activities themselves.⁹⁴ Medical innovation is transmitted across the world, thus contributing to significant gains in average life expectancy.⁹⁵

Europe has traditionally been the biggest exporter of pharmaceuticals in the world. Pharmaceutical exports represent more than a quarter of Europe's total high-tech exports. However, as shown in Figure X below, other countries have experienced strong export growth in the last decade, including China, India, Singapore, and Israel.

Chart 18: Major pharmaceutical exporters (export values and growth rates) in 1995, 2001, and 2009⁹⁶



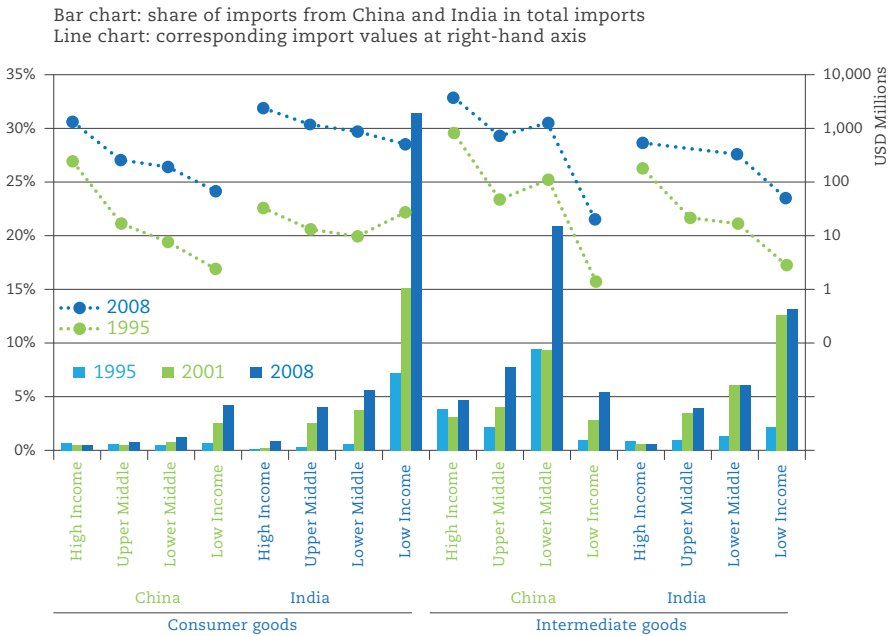
94 Kiriyaama N (2010) Trade and innovation: Pharmaceuticals, p. 26.

95 Ibid, p. 27.

96 Kiriyaama N (2010) Trade and innovation: Pharmaceuticals. OECD trade policy working paper no. 113, Paris: Organisation for Economic Co-operation and Development, p 32.

Although the global shares of exports from India and China in value terms are relatively modest, they play an important role in pharmaceutical trade for low-income countries, especially for generic medicines. In 2009, low-income countries imported more than 30% of their pharmaceuticals from India. Lower-middle-income countries with some manufacturing capacity also buy many of their “active pharmaceutical ingredients” (APIs) from China, accounting for more than 20% of their total imports of intermediate goods.

Chart 19: Imports from China and India by country income group⁹⁷

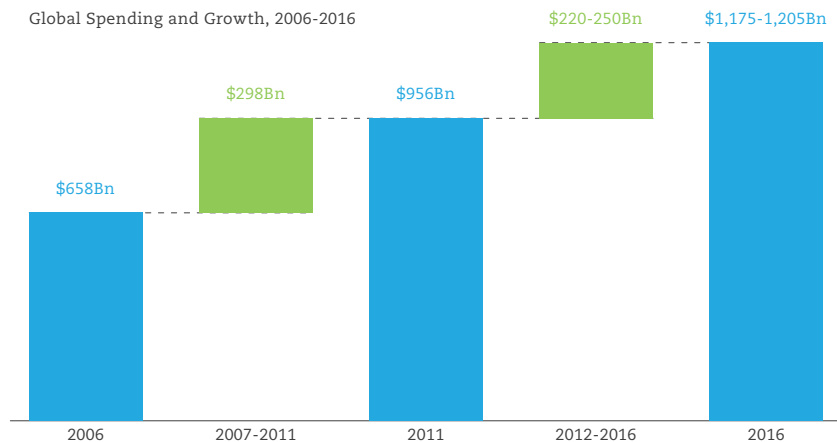


97 Kiriya N (2010) Trade and innovation: Pharmaceuticals. OECD trade policy working paper no. 113, p. 33.

The pharmaceutical market

The IMS Institute for Healthcare Informatics predicts that the pharmaceutical market will reach nearly USD 1,200 billion by 2016, an increase of nearly USD 250 billion from the USD 956 billion recorded in 2011.⁹⁸ This growth is coming mainly from market expansion in the leading emerging countries and from generics. Global brand spending is forecast to increase from USD 596 billion in 2011 to USD 615–645 billion in 2016. Global generic spending is expected to increase from USD 242 billion to USD 400–430 billion by 2016, of which USD 224–244 billion of the increase is from low-cost generics in emerging markets.⁹⁹

Chart 20: Global spending on medicines¹⁰⁰



Notes

Spending in USD with variable exchange rates. Compound annual growth rate (CAGR) in USD using constant exchange rates.

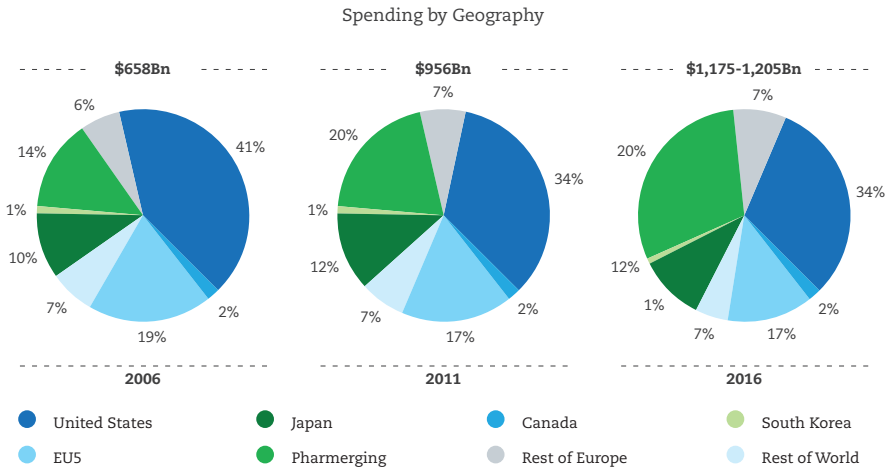
The US share of global spending will decline from 41% in 2006 to 31% in 2016, while the European share of spending will decline from 26% to 18%. Meanwhile, the leading emerging countries will account for 30% of global spending in 2016 from 14% in 2006.¹⁰¹

⁹⁸ IMS Institute for Healthcare Informatics (2012) *The global use of medicines: Outlook through 2016*. Parsippany, NJ: IMS Institute for Healthcare Informatics, p. 10.

⁹⁹ *Ibid*, p. 8.

¹⁰⁰ IMS Institute for Healthcare Informatics (2012) *The global use of medicines: Outlook through 2016*. Parsippany, NJ: IMS Institute for Healthcare Informatics, p. 18.

¹⁰¹ IMS Institute for Healthcare Informatics (2012) *The global use of medicines*, p. 5.

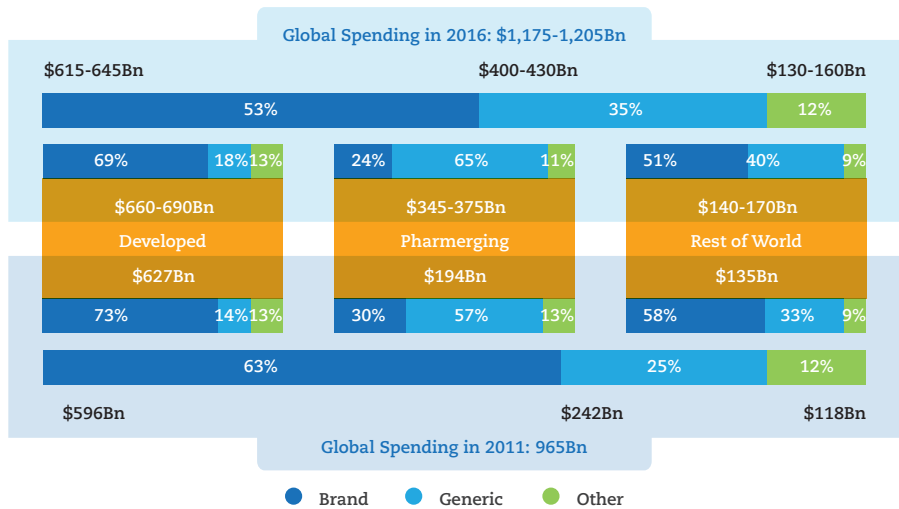
Chart 21: Spending by geography¹⁰²

Generic versus branded pharmaceutical products

Branded products accounted for nearly two-thirds of global pharmaceutical spending in 2011. However, as patents expire in developed markets, that share is expected to decline. Spending on generic drugs is driving most of the growth in the leading emerging markets, which will contribute to the increase in the share of generic spending. The revenues from generics in 2016 are expected to reach USD 400–430 billion, approximately 70% of which will be outside developed markets.¹⁰³

¹⁰² IMS Institute for Healthcare Informatics (2012) The global use of medicines: Outlook through 2016. Parsippany, NJ: IMS Institute for Healthcare Informatics.

¹⁰³ IMS Institute for Healthcare Informatics (2012) The global use of medicines, p. 6.

Figure 6: Spending by segment¹⁰⁴

Conclusion

Pharmaceutical innovations are behind some of the greatest achievements in modern medicine. Today people live longer and healthier lives than previous generations. Medical advances allow people to enjoy a better quality of life and increase their productivity, contributing to the overall prosperity of society. Pharmaceutical innovation also creates jobs, spurs technology, and represents an important source of income. Unfortunately, not everyone has yet fully benefited from these medical advances. Poverty and great wealth inequality between and within countries mean that many do not have access to even the simplest healthcare interventions. Addressing these issues is a complex challenge that requires long-term commitment from government, civil society, and the private sector. Through differential pricing schemes, donation programs, and technology transfer initiatives, the pharmaceutical industry has been doing its part to help those in greatest need to also enjoy the benefits of medical progress. Much still needs to be done; the path forward will require a constant rethinking on how to maximize the research-based industry's positive impact on the health and prosperity of societies.

¹⁰⁴ IMS Institute for Healthcare Informatics (2012) The global use of medicines: Outlook through 2016. Parsippany, NJ: IMS Institute for Healthcare Informatics.

ANNEXES

Annex 1

Life expectancy and cause of death

	CAUSE OF DEATH (%)						
	LIFE EXPECTANCY AT AGE 60 (YEARS)		LIFE EXPECTANCY AT BIRTH (YEARS)		COMMUNICABLE	INJURIES	NONCOMMUNICABLE
BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Afghanistan	14	14	48	44	74	9	18
Albania	18	16	73	68	9	14	76
Algeria	19	17	72	67	43	12	45
Andorra	25	22	82	77	4	12	84
Angola	15	14	52	42	79	7	14
Antigua and Barbuda	21	18	74	70	17	14	69
Argentina	21	20	75	73	18	16	67
Armenia	16	16	70	66	14	9	77
Australia	25	21	82	77	6	15	79
Austria	23	20	80	76	4	12	84
Azerbaijan	16	16	68	63	26	8	66
Bahamas	23	20	76	71	24	18	57
Bahrain	19	18	74	74	13	20	67
Bangladesh	16	15	65	54	52	14	34
Barbados	21	20	76	74	16	11	73
Belarus	18	19	70	71	5	23	72
Belgium	23	21	80	76	7	15	78
Belize	21	21	73	73	28	30	43

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Benin	15	16	57	55	75	7	18
Bhutan	16	15	63	55	53	14	33
Bolivia	18	16	68	60	55	11	34
Bosnia and Herzegovina	20	18	76	72	5	9	86
Botswana	17	17	61	66	71	10	19
Brazil	21	18	73	67	20	24	56
Brunei Darussalam	20	19	77	73	13	16	71
Bulgaria	19	18	74	71	5	9	86
Burkina Faso	15	15	52	51	82	7	12
Burundi	15	15	50	50	78	8	14
Cambodia	16	16	61	59	60	10	31
Cameroon	15	15	51	55	75	7	17
Canada	24	21	81	77	6	14	79
Cape Verde	19	19	71	67	43	17	40
Central African Republic	15	15	48	51	78	7	14
Chad	15	15	48	52	84	5	11
Chile	23	19	79	72	10	20	71
China	19	17	74	68	15	19	65
Colombia	23	20	76	70	21	36	43
Comoros	16	15	60	57	68	8	24
Congo (Republic of)	15	15	55	55	73	10	17
Congo (D.R)	15	14	49	48	82	7	11
Cook Islands	22	17	76	69	23	15	62
Costa Rica	23	22	79	76	13	25	62
Côte d'Ivoire	14	15	50	52	71	11	19
Croatia	20	18	76	72	3	11	85
Cuba	22	20	78	74	8	13	78
Cyprus	23	20	81	76	4	15	81

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Czech Republic	21	17	77	71	5	13	83
Denmark	22	20	79	75	5	10	85
Djibouti	16	16	60	58	65	10	24
Dominica	20	20	74	73	16	11	74
Dominican Republic	20	19	71	68	42	17	42
Ecuador	23	20	75	69	30	25	45
Egypt	18	15	71	62	24	11	65
El Salvador	21	19	72	64	22	32	46
Equatorial Guinea	15	15	53	49	74	8	18
Eritrea	17	12	66	36	64	14	23
Estonia	21	18	75	70	4	19	77
Ethiopia	15	14	54	44	70	9	20
Fiji	17	17	69	68	23	10	67
Finland	24	20	80	75	3	20	77
France	25	22	81	77	6	14	80
Gabon	17	16	62	62	69	9	21
Gambia	16	15	60	54	73	7	20
Georgia	19	18	71	69	15	10	75
Germany	23	20	80	75	5	8	87
Ghana	16	16	60	60	66	9	25
Greece	23	21	80	77	5	12	83
Grenada	20	19	73	70	17	13	70
Guatemala	20	18	69	63	45	24	31
Guinea	15	15	52	50	73	8	19
Guinea-Bissau	15	14	49	45	79	6	15
Guyana	18	16	67	63	32	21	47
Haiti	16	14	62	50	72	6	22
Honduras	18	17	69	66	42	14	43

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Hungary	20	17	74	69	3	10	87
Iceland	24	22	82	78	5	18	77
India	16	14	65	57	52	13	35
Indonesia	17	17	68	65	41	13	45
Iran	19	16	73	63	28	23	49
Iraq	17	17	66	67	35	40	25
Ireland	23	19	80	75	6	16	78
Israel	24	21	82	77	10	12	78
Italy	25	21	82	77	5	9	86
Jamaica	20	20	71	73	37	21	42
Japan	26	23	83	79	9	15	77
Jordan	18	17	71	69	26	19	55
Kazakhstan	16	17	64	65	16	24	59
Kenya	17	16	60	61	76	10	14
Kiribati	21	19	68	63	36	4	60
Korea (D.P.R)	18	18	70	68	39	10	52
Korea (Republic of)	24	18	80	72	7	21	72
Kuwait	22	18	78	73	14	22	64
Kyrgyzstan	16	17	66	65	30	15	55
Laos	16	14	63	50	58	13	28
Latvia	19	18	72	70	5	17	77
Lebanon	19	17	74	68	13	17	70
Lesotho	16	16	48	60	77	9	15
Liberia	15	13	56	37	82	4	14
Libya	18	17	72	69	21	18	62
Lithuania	20	19	73	71	6	23	71
Luxembourg	23	20	81	75	5	15	79
Macedonia	18	19	74	72	6	6	88

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Madagascar	16	15	65	52	69	7	24
Malawi	14	15	47	48	73	10	17
Malaysia	18	17	73	71	26	16	58
Maldives	19	13	75	57	23	21	56
Mali	15	15	53	49	85	4	11
Malta	23	19	80	76	5	9	86
Marshall Islands	12	15	59	62	27	9	64
Mauritania	16	15	58	57	72	9	19
Mauritius	19	17	73	69	12	12	76
Mexico	21	21	76	71	19	20	61
Micronesia	18	17	69	66	41	10	49
Monaco	25	22	82	77	5	16	78
Mongolia	19	17	69	62	26	21	53
Montenegro	19	21	75	76	5	9	86
Morocco	19	17	73	65	39	10	51
Mozambique	15	15	49	48	76	8	15
Myanmar	17	16	64	58	41	39	21
Namibia	16	15	57	60	63	15	22
Nauru	15	14	60	60	29	15	56
Nepal	17	15	67	55	60	10	31
Netherlands	23	21	81	77	6	8	86
New Zealand	24	20	81	75	5	18	77
Nicaragua	22	21	74	68	33	17	49
Niger	16	14	57	44	90	3	8
Nigeria	15	14	54	48	81	5	14
Niue	20	20	72	75	27	15	58
Norway	24	21	81	77	6	14	80
Oman	19	17	74	67	13	20	67

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Pakistan	16	16	63	59	64	9	26
Palau	19	17	72	69	24	11	65
Panama	23	20	77	73	30	22	48
Papua New Guinea	16	15	63	58	62	11	28
Paraguay	21	21	74	73	35	21	45
Peru	21	21	76	69	37	17	46
Philippines	18	17	70	65	42	13	45
Poland	21	18	76	71	5	15	80
Portugal	23	20	79	74	10	9	81
Qatar	22	20	78	75	11	34	55
Republic of Moldova	17	17	69	68	10	16	74
Romania	19	18	73	70	8	12	80
Russian Federation	17	18	68	69	11	25	64
Rwanda	16	15	59	51	77	8	15
Saint Kitts and Nevis	21	17	74	68	14	23	63
Saint Lucia	21	19	74	71	20	20	60
Samoa	18	16	70	63	34	10	55
San Marino	25	22	83	79	7	7	86
Sao Tome and Principe	18	17	68	65	67	8	25
Saudi Arabia	18	17	72	68	20	25	55
Senegal	16	15	62	57	77	6	17
Serbia	18	18	74	72	4	8	88
Seychelles	19	17	73	69	21	14	66
Sierra Leone	15	14	49	40	85	5	10
Singapore	24	20	82	75	11	11	78
Slovakia	20	18	75	71	6	13	81
Slovenia	23	19	79	74	4	16	80
Solomon Islands	18	16	71	67	51	8	41

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Somalia	15	14	51	48	74	11	14
South Africa	17	16	54	63	79	6	15
Spain	24	21	82	77	7	10	83
Sri Lanka	19	19	71	68	11	50	39
St. Vincent and the Grenadines	20	19	73	71	24	17	60
Sudan	16	15	59	57	59	17	24
Suriname	20	17	72	66	30	18	52
Swaziland	15	16	49	61	72	12	16
Sweden	24	21	81	78	5	12	83
Switzerland	25	22	82	77	5	13	82
Syrian Arab Republic	19	17	74	67	23	16	61
Tajikistan	17	17	68	63	62	6	32
Tanzania	16	15	55	53	78	8	13
Thailand	18	17	70	68	24	22	55
Timor-Leste	17	15	67	50	76	6	18
Togo	16	15	59	54	76	6	18
Tonga	18	16	71	68	30	8	61
Trinidad and Tobago	19	17	70	69	22	19	59
Tunisia	20	18	75	70	34	13	53
Turkey	20	17	75	65	21	11	68
Turkmenistan	16	16	63	62	35	13	52
Tuvalu	14	14	64	62	28	10	62
Uganda	15	15	52	48	76	11	13
Ukraine	18	18	68	70	14	17	70
United Arab Emirates	21	19	78	73	14	30	57
United Kingdom	23	20	80	76	8	9	83
United States of America	23	21	79	75	9	19	72

BASE YEAR	2009	1990	2009	1990	2008	2008	2008
Uruguay	21	19	76	72	12	14	74
Uzbekistan	16	18	69	66	34	10	55
Vanuatu	17	16	71	65	35	10	56
Venezuela	22	19	75	72	20	38	42
Viet Nam	19	16	72	65	29	15	56
Yemen	17	15	65	58	61	13	26
Zambia	15	14	48	46	75	10	15
Zimbabwe	16	16	49	61	87	4	9

Source: WHO

Annex 2

Health financing

BASE YEAR (2010)

	Per capita total expenditure on health (PPP int. \$)	Per capita government expenditure on health (PPP int. \$)	Total expenditure on health as a percentage of gross domestic product	General government expenditure on health as a percentage of total expenditure on health	Private expenditure on health as a percentage of total expenditure on health	General government expenditure on health as a percentage of total government expenditure	External resources for health as a percentage of total expenditure on health	Social security expenditure on health as a percentage of general government expenditure on health	Out-of-pocket expenditure as a percentage of private expenditure on health	Private prepaid plans as a percentage of private expenditure on health
Afghanistan	44	5	7.58	11.66	88.34	1.59	31.99		94.00	
Angola	168	139	2.85	82.46	17.54	7.19	2.88		100.00	
Antigua and Barbuda	991	703	6.03	70.97	29.03	16.74	0.13		88.91	11.09
Australia	3,441	2,340	8.73	67.99	32.01	16.84			64.13	25.23
Azerbaijan	579	117	5.88	20.29	79.71	4.22	0.78		87.25	0.71
Bahamas	1,988	907	7.89	45.60	54.40	14.21		3.21	53.98	45.07
Belgium	4,025	3,009	10.71	74.74	25.26	15.12		84.90	80.14	19.10
Belize	378	237	5.20	62.69	37.31	11.35	5.51	2.85	69.55	16.94
Benin	65	32	4.13	49.53	50.47	9.62	35.86	0.47	92.67	7.27
Bhutan	275	239	5.19	86.83	13.17	10.46	10.95		90.78	1.16
Burkina Faso	93	47	6.74	50.97	49.03	13.49	22.94	0.49	73.84	3.72
Burundi	47	18	11.59	38.17	61.83	8.14	45.82	23.03	61.36	0.17
Cambodia	121	45	5.61	37.23	62.77	10.48	23.86		64.35	
Cameroon	122	36	5.13	29.62	70.38	8.53	13.18	2.56	94.48	
China	379	203	5.07	53.60	46.40	12.07	0.09	64.69	78.86	6.89
Colombia	713	518	7.59	72.70	27.30	20.15	0.04	46.44	71.49	28.51

	Per capita total expenditure on health (PPP int. \$)	Per capita government expenditure on health (PPP int. \$)	Total expenditure on health as a percentage of gross domestic product	General government expenditure on health as a percentage of total expenditure on health	Private expenditure on health as a percentage of total expenditure on health	General government expenditure on health as a percentage of total government expenditure	External resources for health as a percentage of total expenditure on health	Social security expenditure on health as a percentage of general government expenditure on health	Out-of-pocket expenditure as a percentage of private expenditure on health	Private prepaid plans as a percentage of private expenditure on health
Comoros	49	33	4.51	67.22	32.78	13.09	19.17		100.00	
Cook Islands	416	391	4.35	93.85	6.15	11.93	5.85		100.00	
Côte d'Ivoire	98	21	5.30	21.59	78.41	5.06	9.75		98.80	1.20
Croatia	1,514	1,285	7.76	84.87	15.13	17.66		90.97	95.92	4.08
Democratic Republic of the Congo	27	12	7.91	42.52	57.48	9.11	32.74		62.48	0.16
Ecuador	653	243	8.06	37.21	62.79	7.32	0.42	39.62	78.05	12.45
Equatorial Guinea	1,545	1,173	4.48	75.93	24.07	6.96	1.96		92.11	
Eritrea	16	8	2.66	48.24	51.76	3.60	37.96		100.00	
Ethiopia	51	27	4.90	53.54	46.46	13.46	39.44			1.49
Fiji	198	139	4.86	70.13	29.87	9.40	8.67		65.82	21.76
Gabon	522	276	3.50	52.93	47.07	6.63	2.39	24.85	100.00	
Georgia	522	123	10.13	23.64	76.36	6.87	2.80	79.72	89.50	4.10
Grenada	594	267	5.86	44.97	55.03	8.21	5.64	0.22	97.49	
Guinea-Bissau	100	10	8.50	10.03	89.97	4.14	23.33	2.91	73.84	
Guyana	167	142	5.38	85.40	14.60	14.93	27.20	4.41	99.79	
Honduras	263	171	6.75	65.21	34.79	17.41	6.34	25.46	89.35	10.65
Indonesia	112	55	2.61	49.08	50.92	7.75	1.32	13.93	75.13	3.01
Iran (Islamic Republic of)	836	336	5.60	40.13	59.87	10.53	0.01	55.33	96.57	3.23
Iraq	340	276	8.42	81.18	18.82	8.98	0.77		100.00	

	Per capita total expenditure on health (PPP int. \$)	Per capita government expenditure on health (PPP int. \$)	Total expenditure on health as a percentage of gross domestic product	General government expenditure on health as a percentage of total expenditure on health	Private expenditure on health as a percentage of total expenditure on health	General government expenditure on health as a percentage of total government expenditure	External resources for health as a percentage of total expenditure on health	Social security expenditure on health as a percentage of general government expenditure on health	Out-of-pocket expenditure as a percentage of private expenditure on health	Private prepaid plans as a percentage of private expenditure on health
Jordan	448	303	8.04	67.66	32.34	18.61	3.71	26.47	77.64	18.33
Kiribati	258	212	11.25	82.33	17.67	12.08	17.10		0.64	
Kuwait	1,133	910	2.63	80.37	19.63	6.86			90.56	9.44
Lao People's Democratic Republic	97	32	4.47	33.29	66.71	5.90	15.11	5.02	76.68	0.56
Lebanon	980	384	7.03	39.16	60.84	9.53	4.71	59.70	73.46	22.08
Libya	713	490	3.88	68.78	31.22	5.46	0.59		100.00	
Madagascar	36	22	3.77	60.28	39.72	14.70	9.04		68.27	15.18
Maldives	464	281	6.33	60.49	39.51	8.58	0.57	1.03	71.64	4.56
Mali	56	26	4.98	46.58	53.42	10.58	27.36		99.50	0.50
Mauritania	79	42	4.41	53.11	46.89	7.30	10.07	15.30	94.49	0.64
Micronesia (Federated States of)	451	411	14.15	91.16	8.84	20.02	69.29	15.82	97.54	
Monaco	5,949	5,238	4.30	88.05	11.95	18.82		98.72	58.58	41.42
Montenegro	1,155	776	9.11	67.17	32.83	13.59	0.36	97.92	90.99	
Myanmar	34	4	1.97	12.18	87.82	0.97	8.69	1.30	92.37	-
Namibia	436	254	6.78	58.38	41.62	12.13	19.04	2.64	17.90	61.16
Nepal	66	22	5.52	33.24	66.76	7.92	11.31		72.42	0.36
Nigeria	121	46	5.07	37.89	62.11	4.41	9.16		95.34	3.08
Palau	1,409	1,089	10.25	77.31	22.69	14.26	39.33		40.32	43.32
Papua New Guinea	88	63	3.58	71.55	28.45	8.15	23.98		55.89	5.49

	Per capita total expenditure on health (PPP int. \$)	Per capita government expenditure on health (PPP int. \$)	Total expenditure on health as a percentage of gross domestic product	General government expenditure on health as a percentage of total expenditure on health	Private expenditure on health as a percentage of total expenditure on health	General government expenditure on health as a percentage of total government expenditure	External resources for health as a percentage of total expenditure on health	Social security expenditure on health as a percentage of general government expenditure on health	Out-of-pocket expenditure as a percentage of private expenditure on health	Private prepaid plans as a percentage of private expenditure on health
Paraguay	302	110	5.87	36.41	63.59	11.49	2.35	43.55	89.72	10.28
Philippines	142	50	3.61	35.34	64.66	7.55	1.35	29.67	83.57	10.58
Qatar	1,622	1,257	1.81	77.45	22.55	5.55			71.01	27.87
Republic of Moldova	360	165	11.68	45.79	54.21	13.11	9.55	88.09	82.79	0.07
Saint Kitts and Nevis	868	525	6.66	60.57	39.43	8.20	0.30	17.63	94.64	5.36
Saint Lucia	804	486	8.70	60.50	39.50	12.82	3.03	2.54	98.47	1.53
Saint Vincent and the Grenadines	466	403	4.47	86.45	13.55	7.77	5.58		100.00	
Samoa	283	248	6.47	87.66	12.34	23.44	13.39	0.59	62.97	
Senegal	109	60	5.66	55.49	44.51	11.56	18.46	4.07	78.53	17.88
Serbia	1,169	723	10.36	61.87	38.13	14.08	0.78	94.21	95.55	0.87
Seychelles	785	721	3.40	91.87	8.13	9.11	4.16	1.18	67.70	22.96
Sierra Leone	107	12	13.07	11.33	88.67	6.35	20.60		89.54	0.98
Singapore	2,273	825	3.96	36.30	63.70	8.02		15.60	84.80	12.59
Solomon Islands	227	212	8.55	93.39	6.61	23.09	31.63		54.22	
South Africa	935	412	8.94	44.10	55.90	11.87	2.18	2.55	29.64	66.14
Sudan	141	42	6.32	29.82	70.18	9.76	3.25	11.73	95.70	0.98
Suriname	523	250	7.02	47.80	52.20	11.89	8.88	41.67	21.90	16.67
Syrian Arab Republic	174	80	3.41	46.00	54.00	5.58	0.70		100.00	

	Per capita total expenditure on health (PPP int. \$)	Per capita government expenditure on health (PPP int. \$)	Total expenditure on health as a percentage of gross domestic product	General government expenditure on health as a percentage of total expenditure on health	Private expenditure on health as a percentage of total expenditure on health	General government expenditure on health as a percentage of total government expenditure	External resources for health as a percentage of total expenditure on health	Social security expenditure on health as a percentage of general government expenditure on health	Out-of-pocket expenditure as a percentage of private expenditure on health	Private prepaid plans as a percentage of private expenditure on health
Thailand	330	247	3.88	75.04	24.96	12.70	0.27	10.08	55.77	31.42
Timor-Leste	84	47	9.12	55.83	44.17	4.71	33.66		25.57	
Tonga	229	187	5.07	81.50	18.50	12.93	17.40		67.82	17.91
Tunisia	483	262	6.21	54.30	45.70	10.69	0.34	48.36	87.03	11.21
Turkmenistan	199	118	2.50	59.38	40.62	9.86	0.26	6.50	100.00	
Tuvalu	473	472	17.49	99.89	0.11	14.37	12.60		100.00	
Uganda	124	27	9.01	21.74	78.26	12.11	25.88		63.60	0.16
United Republic of Tanzania	83	56	6.01	67.32	32.68	13.79	48.83	3.03	41.66	10.14
Vanuatu	240	217	5.25	90.61	9.39	18.19	23.39		56.70	20.64
Yemen	122	30	5.18	24.16	75.84	4.32	4.31		98.61	1.29

Source: WHO

Annex 3

Pharmaceutical sales

PHARMACEUTICAL SALES (2011)

GEOGRAPHY	PHARMACEUTICAL SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Afghanistan	0.336	10			
Albania	0.211	66	25.10	1.9	155.5
Algeria	2.998	83	41.20	0.9	1,895.0
Angola	0.286	15	5.60	0.0	209.2
Argentina	7.582	186	20.10	784.5	1,743.8
Armenia	0.128	41	27.80	5.8	104.9
Australia	13.268	587	10.50	3,446.0	9,959.6
Austria	6.251	743	14.60	0.0	0.0
Azerbaijan	0.277	30	7.90	54.9	240.0
Bahamas	0.051	148	8.40	2.2	36.0
Bahrain	0.241	182	21.00	0.4	192.8
Bangladesh	1.499	10	40.30	77.5	179.0
Barbados	0.140	510	51.30	39.5	78.0
Belarus	0.692	72	28.20	121.4	559.4
Belgium	8.507	791	15.70	45,278.5	32,171.0
Belize	0.012	38	15.10		8.8
Benin	0.171	19	41.50	0.3	123.9
Bolivia	0.214	21	17.60	2.4	142.6
Bosnia-Herzegovina	0.403	108	20.70		

GEOGRAPHY	PHARMACEUTICAL SALES, US\$B	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Botswana	0.205	101	15.10	13.0	139.3
Brazil	28.718	146	12.70	1,134.6	6,189.1
Brunei Darussalam	0.063	155	16.50		
Bulgaria	1.492	200	41.00	649.0	1,035.9
Burkina Faso	0.232	14	42.00	0.2	160.3
Burundi	0.059f	6.9f	26.9f		
Cambodia	0.177	12	24.10	3.0	116.4
Cameroon	0.226	11	16.60	0.3	144.8
Canada	26.057	759	13.60	5,212.1	11,860.1
Cape Verde	0.018	36	17.20		13.1
Central African Rep.	0.048	11	45.00	0.5	32.7
Chad	0.052	5	10.50		37.3
Chile	3.068	178	16.70	137.5	849.5
China	66.863	50	18.70	2,580.3	9,970.1
Colombia	3.829	82	23.60	379.1	1,530.4
Congo	-			0.2	165.2
Congo, Dem. Rep.	0.184	3	29.80	0.9	122.5
Costa Rica	0.714	151	16.00	323.8	542.3
Cote d'Ivoire	0.416	21	32.10	4.1	292.2
Croatia	1.380	314	28.90	448.7	696.7
Cuba	0.159	14	1.90		
Cyprus	0.305	273	19.20	279.6	293.7
Czech Republic	4.563	433	27.00	1,384.9	3,905.1
Denmark	2.437	437		7,735.8	3,275.2

GEOGRAPHY	PHARMACEUTICAL SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Djibouti	0.047	52	44.40		34.4
Dominica	0.003				
Dominican Republic	0.788	78	23.70	21.6	524.2
Ecuador	1.254	86	29.30	28.3	861.1
Egypt	3.066	37	29.30	241.4	1,284.8
El Salvador	0.535	86	34.40	111.0	336.8
Equatorial Guinea	0.007	9	0.90		4.1
Estonia	0.336	251	25.70	65.6	315.7
Ethiopia	0.383	5	46.60	1.4	280.7
Fiji	0.038				27.8
Finland	4.281	796	17.80	1,105.1	2,347.6
France	48.664	771	14.90	35,482.0	23,660.7
Gabon	0.135	88	24.90	1.8	94.3
Gambia	0.014	8	34.40		13.6
Georgia	0.330	76	25.00	25.2	225.3
Germany	55.148	671	14.60	61,926.0	44,793.5
Ghana	0.303	12	17.50	10.0	127.0
Greece	9.347	821	30.80	1,196.0	4,046.9
Grenada	0.016				
Guatemala	0.652	44	20.30	205.0	434.3
Guinea	0.067	6	20.10	0.0	49.3
Guinea-Bissau	0.008	5	29.50		5.4
Guyana	0.061	81	48.30		
Honduras	0.463	60	43.00	3.9	351.6

GEOGRAPHY	PHARMACEUTICAL SALES, US\$B	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Hong Kong	1.230	173	9.50	1,635.2	2,126.8
Hungary	3.439	345	34.40	3,930.3	3,478.5
Iceland	0.208	640	16.40	80.1	69.7
India	15.643	13	21.00	8,079.1	1,359.4
Indonesia	6.044	25	27.40	380.3	483.5
Iran	3.260	44	11.60		
Iraq	0.870	27	10.00	0.2	504.2
Ireland	3.239	716	17.00	34,662.8	4,764.3
Israel	1.978	262	10.80	7,003.2	1,519.5
Italy	34.630	570	16.40	16,960.3	17,987.9
Jamaica	0.242	88	28.00		
Japan	127.377	1,007	21.20	3,353.5	19,049.4
Jordan	0.653	103	26.70	498.2	381.2
Kazakhstan	1.335	82	18.80	18.2	1,010.1
Kenya	0.440	11	28.70	74.5	336.5
Kiribati	0.004				0.0
Kosovo	0.109f	59.5f			
Kuwait	0.737	262	19.60	27.8	490.4
Kyrgyzstan	0.215	40	52.50	2.9	158.2
Laos	0.037	6	10.90		
Latvia	0.405	181	23.00	461.9	620.0
Lebanon	1.301	306	43.60	36.2	951.1
Libya	0.352	55	15.70	0.1	263.9
Lithuania	0.659	199	23.50	359.6	831.5

GEOGRAPHY	PHARMACEUTICAL SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Luxembourg	0.359	695	7.90	103.4	434.7
Macedonia	0.252	122	39.50	72.7	140.6
Madagascar	0.093	4	19.00	0.0	65.0
Malawi	0.214	14	62.90	0.3	142.5
Malaysia	1.814	63	15.30	161.1	1,120.3
Mali	0.230	15	31.20		160.3
Malta	0.223	534	34.30		
Mauritania	0.020	6	19.20		13.7
Mauritius	0.134	102	29.30		88.9
Mexico	12.978	113	18.30	1,579.4	4,212.5
Moldova	0.211	59	27.40	76.5	208.3
Mongolia	0.063	23	19.00		
Morocco	1.247	39	24.00	66.5	514.2
Mozambique	0.080	3	11.40	0.0	54.0
Namibia	0.273	117	35.80	1.6	197.7
Netherlands	9.380	563	10.70	15,047.6	11,880.3
New Zealand	1.065	241	7.00	199.2	853.0
Nicaragua	0.401	68	61.90	2.7	317.4
Niger	0.277	17	58.60		193.3
Nigeria	0.921	6	9.00	4.5	446.8
Norway	3.486	708	7.70	698.5	1,865.7
Oman	0.391	138	20.30	24.0	255.1
Pakistan	1.982	11	37.50	148.6	528.5
Panama	0.468	131	19.10	1,346.6	1,167.0

GEOGRAPHY	PHARMACEUTICAL SALES, US\$B	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$M	PHARMACEUTICAL IMPORTS, US\$M
Paraguay	0.212	32	14.70	27.3	118.7
Peru	1.418	48	16.00	31.0	535.5
Philippines	2.911	31	34.50	43.4	777.1
Poland	11.257	294	29.70	2,076.2	5,662.1
Portugal	6.211	581	22.80	734.4	2,741.2
Puerto Rico	2.808	750	24.90	42,889.6	13,759.9
Qatar	0.390	209	13.50	0.7	331.8
Romania	4.185	195	42.30	993.0	3,099.2
Russia	20.653	145	24.20	297.6	12,730.8
Rwanda	0.106	10	16.20	1.5	76.6
Saint Lucia	0.012	59	14.20	0.2	8.1
Saint Vincent	0.009	93	30.00	0.0	6.2
Saudi Arabia	4.458	159	21.20	193.3	3,485.5
Senegal	0.251	20	28.70	13.1	157.6
Serbia	1.032	142	21.80	209.3	656.3
Seychelles	0.005	61	11.80		2.9
Sierra Leone	0.055	9	50.80	1.8	39.7
Singapore	0.716	138	6.90	4,864.7	1,452.1
Slovakia	2.386	436	29.00	467.4	2,013.7
Slovenia	1.059	521	22.30	2,334.3	966.0
South Africa	3.744	74	10.40	148.3	2,073.9
South Korea	14.796	306	19.60	895.1	3,548.9
Spain	28.009	603	19.20	13,391.0	13,282.3
Sri Lanka	0.444	21	19.60	2.0	242.4

GEOGRAPHY	PHARMACEUTICAL SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Sudan	0.556	16	13.50		286.6
Suriname	0.016	31	5.10		10.7
Swaziland	0.010	9	5.90		8.1
Sweden	6.597	699	13.10	9,916.7	4,485.3
Switzerland	7.629	991	10.40	52,662.2	19,652.3
Syria	0.407	20	20.70	298.9	101.5
Taiwan	4.594	198	14.20	238.3	2,176.3
Tajikistan	0.085	12	25.10		59.8
Tanzania	0.223f	4.8f	19.1f	11.85f	104.64f
Thailand	4.407	64	33.10	241.1	1,573.3
Togo	0.129	21	62.50		94.7
Trinidad & Tobago	0.181	134	11.30	0.8	126.8
Tunisia	0.693	65	25.60	31.9	420.9
Turkey	10.242	139	20.60	531.8	4,510.9
Turkmenistan	0.063	12	12.80		
Uganda	0.265f	7.7f	23.7f		
Ukraine	3.350	74	27.60	186.1	2,791.1
United Arab Emirates	1.515	192	12.30	67.7	1,187.0
United Kingdom	38.334	614	16.50	31,902.4	24,478.4
United States	337.100	1,077	12.40	35,342.2	62,447.2
Uruguay	0.368	109	10.70	149.9	163.4
Uzbekistan	0.498	18	23.50	1.8	331.6
Venezuela	8.449	287	56.60	39.2	2,645.7
Vietnam	2.425	27	31.80	63.1	1,581.4

GEOGRAPHY	PHARMACEUTICAL SALES, US\$B	PHARMACEUTICAL SALES, US\$ PER CAPITA	PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE	PHARMACEUTICAL EXPORTS, US\$MN	PHARMACEUTICAL IMPORTS, US\$MN
Yemen	0.211	9	17.90	1.9	179.3
Zambia	0.196	15	18.40	1.8	128.1
Zimbabwe	0.160	13	19.20	3.3	88.0

Source: Business Monitor International

Annex 4

Pharmaceutical value added

	PRODUCTION (GROSS OUTPUT), USD	INTERMEDIATE CONSUMPTION, USD	VALUE ADDED, USD	R&D, MAIN FIELD OF COMPANY ACTIVITY, USD
Austria	4,150,143,010	1,773,600,170	2,376,542,840	323,080,561
Belgium	13,589,233,518	8,220,801,550	5,368,431,968	1,230,875,300
Czech Republic	1,437,012,484	913,146,563	523,865,922	81,604,311
Denmark	7,668,446,100	4,678,416,000	2,990,030,100	
Finland	1,010,231,521	401,659,966	608,571,555	192,185,474
France*	52,931,320,000	40,520,490,000	12,410,830,000	3,971,133,769
Germany	54,858,549,667	31,994,685,243	22,863,864,424	3,988,995,917
Greece	1,456,513,720	986,824,397	469,689,323	19,833,526
Hungary	2,838,806,425	1,513,924,314	1,324,882,111	318,511,215
Iceland	110,385,600	53,289,600	57,096,000	49,904,307
Ireland	14,249,139,141	9,834,621,049	4,414,518,093	153,763,300
Italy	32,330,423,356	22,385,002,501	9,945,420,855	518,519,173
Japan	66,806,601,005	43,681,204,826	23,125,396,180	10,420,679,962
Korea	21,507,894,100	14,727,399,500	6,780,494,600	776,398,546
Mexico	13,480,916,491	6,689,312,137	6,791,604,355	158,853,569
Netherlands	8,018,688,250	5,572,087,968	2,446,600,282	549,583,103
Norway	1,568,349,300	779,987,600	788,361,700	57,374,280
Poland	3,520,557,168	2,196,203,822	1,324,353,346	90,173,366
Slovak Republic	11,989,806	8,025,621	3,964,185	14,197,929
Spain	16,780,220,328	11,084,151,629	5,696,068,701	1,052,014,636
Sweden	11,234,656,439	5,551,753,015	5,682,903,423	
United Kingdom*	31,503,744,000	14,501,247,000	17,002,497,000	6,114,919,894
United States	179,726,547,239	94,422,140,174	85,304,407,066	47,749,857,012

*R&D Estimated by product field

Source: OECD - Dataset: STAN Industry 2008

Annex 5

Pharmaceutical employment

COUNTRY OR AREA	YEAR	NUMBER OF EMPLOYEES	YEAR	WAGES AND SALARIES PAID TO EMPLOYEES, USD	WAGES AND SALARIES PAID TO EMPLOYEES, LOCAL CURRENCY
Colombia	2005	16,344	2005	123,609,820	309,024,549,000
Ecuador	2008	2,856	2008	29,488,000	29,488,000
Egypt	2006	37,494	2006	137,411,531	799,369,000
Estonia	2009	200	2009	5,497,817	3,943,349
Ethiopia	2009	1,437	2009	1,167,480	13,800,000
Georgia	2009	2,373	2009	8,900,552	14,861,500
India	2008	378,413	2008	1,407,793,200	61,208,400,000
Indonesia	2009	58,875	2009	186,879,218	1,746,533,930,000
Iran	2008	20,207	2008	150,959,215	1,854,383,000,000
Jordan	2009	5,215	2009	68,553,433	48,869,000
Kyrgyzstan	2009	343	2009	351,038	15,066,000
Lebanon	2007	699	2007	7,299,000	7,299,000
Lesotho	2007	89	2007	184,280	1,321,000
Macedonia	2009	1,511	2009	25,228,546	1,121,268,729
Malaysia	2008	9,894	2008	65,601,860	218,600,000
Oman	2007	481	2007	5,798,610	2,239,105
Pakistan	2006	36,336	2006	142,991,304	8,613,934,000
Panama	2005	450	2005	3,654,833	3,692,123
Philippines	2006	15,436	2006	135,973,500	6,973,000,000
Russian Federation	2009	70,923	2009	501,586,800	15,873,000,000
Sri Lanka	2006	11,654	2006	15,027,048	1,565,317,467

COUNTRY OR AREA	YEAR	NUMBER OF EMPLOYEES	YEAR	WAGES AND SALARIES PAID TO EMPLOYEES, USD	WAGES AND SALARIES PAID TO EMPLOYEES, LOCAL CURRENCY
Tanzania	2009	1,145	2009	2,245,353	3,207,646,824
Thailand	2006	27,080	2006	76,914,290	2,924,497,700
Ukraine	2009	19,295	2009	78,169,316	636,040,000
Uruguay	2007	3,102	2007	52,283,171	1,256,807,000
Austria	2009	10,683	2009	681,763,800	489,000,000
Azerbaijan	2009	130	2009	246,352	198,000
Belgium	2009	18,614	2009	1,569,869,200	1,126,000,000
Bulgaria	2008	7,948	2007	49,283,777	65,598,000
Canada	2008	28,338	2008	1,628,420,616	1,725,936,000
China	2009	1,604,800	2009	9,124,342,000	62,410,000,000
Cyprus	2009	1,109	2009	34,245,735	24,563,000
Czech Republic	2007	10,110	2007	167,219,000	3,385,000,000
Denmark	2008	16,949	2008	1,776,291,900	9,003,000,000
Eritrea	2009	175	2009	n/a	4,750,000
Finland	2009	1,371	2009	83,652,000	60,000,000
France	2009	78,745	2009	4,917,343,400	3,527,000,000
Germany	2009	115,141	2009	8,621,732,800	6,184,000,000
Greece	2007	6,294	2007	242,590,800	174,000,000
Ireland	2009	16,570	2009	1,369,104,400	982,000,000
Italy	2009	65,117	2009	4,087,794,400	2,932,000,000
Japan	2007	85,576	2007	3,927,000,000	462,000,000,000
Latvia	2007	1,748	2009	31,960,529	16,406,000
Lithuania	2008	777	2008	12,498,381	29,547,000
Malawi	2009	300	2009	865,591	125,448,000
Malta	2008	622	2008	28,740,726	20,614,493
Morocco	2009	7,648	2009	202,584,550	1,648,369,000

COUNTRY OR AREA	YEAR	NUMBER OF EMPLOYEES	YEAR	WAGES AND SALARIES PAID TO EMPLOYEES, USD	WAGES AND SALARIES PAID TO EMPLOYEES, LOCAL CURRENCY
Nepal	2008	107	2008	76,481	5,386,000
Netherlands	2008	16,382	2008	1,049,832,600	753,000,000
Norway	2008	3,028	2008	256,468,800	1,428,000,000
Palestinian Territories	2009	871	2009	9,889,000	9,889,000
Poland	2009	24,835	2009	503,734,700	1,561,000,000
Portugal	2008	6,459	2008	237,014,000	170,000,000
Republic of Korea	2008	26,035	2008	747,000,000	830,000,000,000
Romania	2009	9,008	2009	97,284,800	296,600,000
Singapore	2009	4,856	2009	292,457,293	424,898,000
Slovakia	2008	2,603	2008	40,431,800	29,000,000
Slovenia	2009	5,945	2009	349,944,200	251,000,000
Spain	2009	38,983	2009	2,410,571,800	1,729,000,000
Sweden	2009	16,883	2009	1,059,890,000	8,060,000,000
Taiwan	2006	21,363	2006	390,074,231	12,706,001,000
United Kingdom	2009	39,910	2009	3,447,010,800	2,202,000,000
United States of America	2008	245,900	2008	18,425,100,000	18,425,100,000

Source: United Nations Industrial Development Organization. ISIC Rev 3 - 2423 Pharmaceuticals, medicinal chemicals, etc.



About the IFPMA

IFPMA represents the research-based pharmaceutical companies and associations across the globe. The research-based pharmaceutical industry's 1.3 million employees research, develop and provide medicines and vaccines that improve the life of patients worldwide. Based in Geneva, IFPMA has official relations with the United Nations and contributes industry expertise to help the global health community find solutions that improve global health.

IFPMA manages global initiatives including: IFPMA Developing World Health Partnerships, which studies and identifies trends for the research-based pharmaceutical industry's long-term partnership programs to improve health in developing countries; IFPMA Code of Practice, which sets standards for ethical promotion of medicines; IFPMA Clinical Trials Portal, which helps patients and health professionals find out about on-going clinical trials and trial results.

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