


THE PHARMACEUTICAL INDUSTRY AND GLOBAL HEALTH

FACTS AND FIGURES 2014





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 two 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.

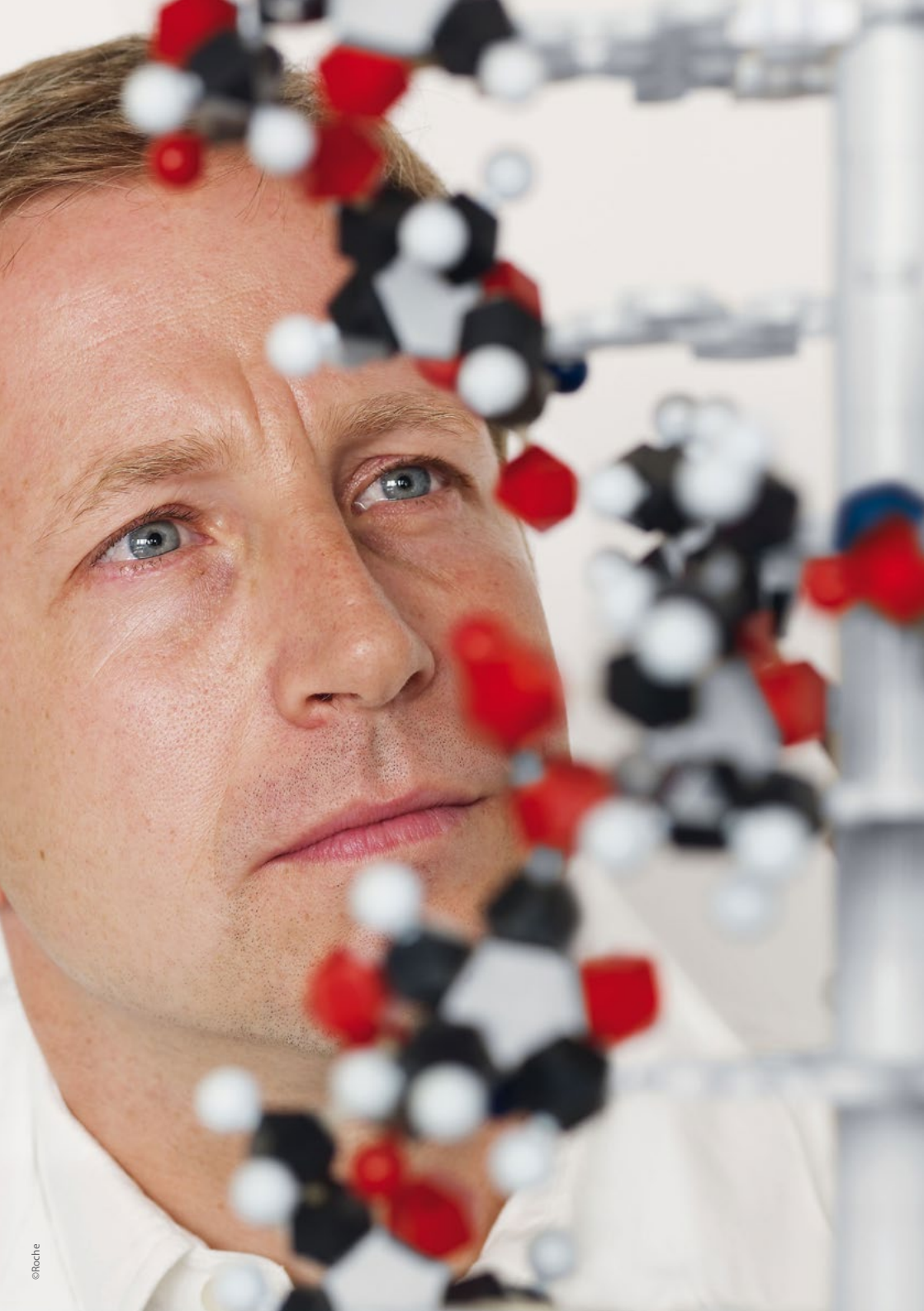


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Key facts

RESEARCH & DEVELOPMENT

- It takes 10–15 years to develop a medicine or vaccine.
- The research-based pharmaceutical industry currently spends over usd 137 billion on r&d per year.
- In 2011, 35 new pharmaceuticals were launched, out of more than 3,200 compounds in development.
- In 2008–2012, the number of new chemical or biological entities launched on the world market fell to 163 from 178 a decade earlier.
- It costs an average of usd 1.5 Billion to develop a single drug.
- In 2012, 5 of the 10 leading global r&d firms were pharmaceutical companies.

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

- Drugs and vaccines against malaria are estimated that will save, between 2011 and 2015, 1.14 Million african children's lives.
- Between 2000 and 2006, immunization campaigns helped reduce the number of deaths from measles in africa by 91%.
- In 2012, there were 412 drugs in the pipeline for diabetes and 204 drugs in development for hiv/aids.

- In 2013, ifpma members had 164 ongoing r&d projects related to diseases of the developing world.
- In 2012, 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 2012, the number of drugs in development for particular disease areas were:
 - Cancer 3,436
 - Cardiovascular disorders 650
 - Diabetes mellitus 412
 - Hiv/aids 204
- For every usd 1 spent on new medicines for hypertension in the united states saves usd 10.11 In medical spending.

THE PHARMACEUTICAL MARKET:

- The pharmaceutical market will reach nearly usd 1,200 billion by 2017.
- Leading emerging countries will account for 33% of global spending on pharmaceuticals by 2017, compared to 31% in 2012.
- The us share will decline from 34% in 2012 to 31% in 2017, while europe's share will fall from 15% in 2012 to 13% in 2017



Chapter 1

PHARMACEUTICAL INNOVATION AND PUBLIC HEALTH

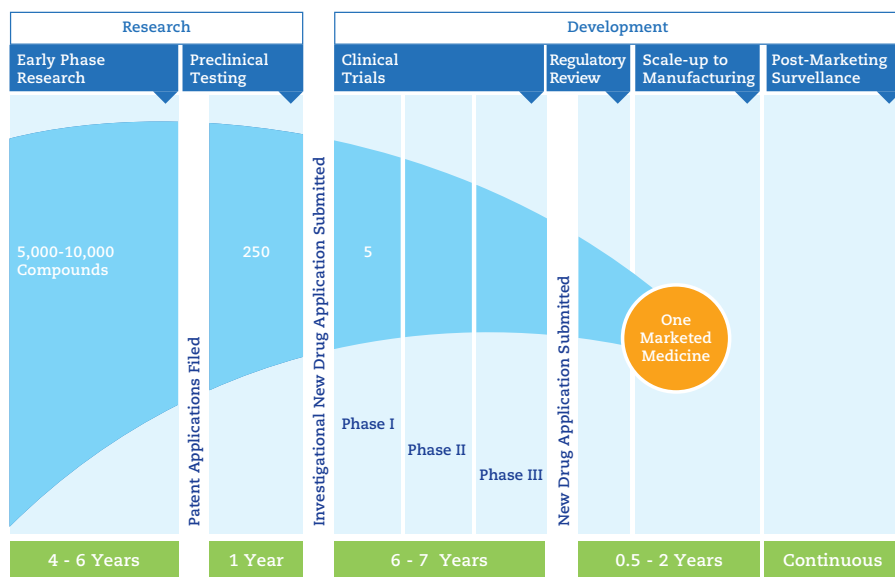
The research-based pharmaceutical industry plays a unique role in developing new medicines and vaccines to prevent and treat diseases, and improve the lives of patients. Its key contribution to medical progress is turning fundamental research into innovative treatments. Industry's success rests on continuous innovation – for the prevention and treatment of common, complex, and neglected diseases, and for improvements in existing treatments. Despite often 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. 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 years¹. To illustrate in 2012 43 new medicines were launched², while in 2013 more than 3,400 compounds were at different stages of development in the United States³. 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 Evaluate Pharma (2013) World Preview 2013, Outlook to 2018 Returning to Growth; p 15. <https://www.evaluategroup.com/Default.aspx/>

3 PhRMA (2013) PhRMA Industry Profile 2013. <http://www.phrma.org/industryprofile2013/>

Figure 1: The research and development process⁴

A look into the pharmaceutical industry R&D pipeline

Today, the cost of developing a single drug amounts to over USD 1.5 billion⁵ 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.

4 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/

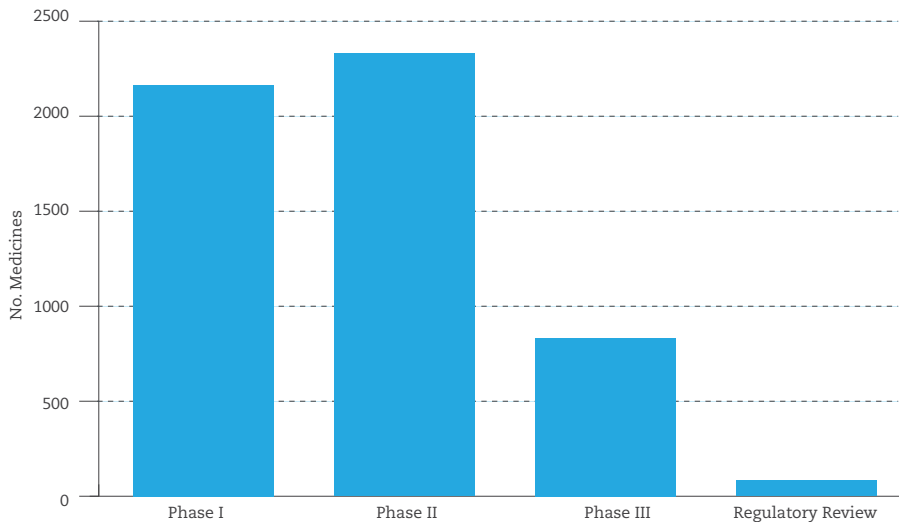
5 EFPIA (2014) The Pharmaceutical Industry in Figures. http://www.efpia.eu/uploads/Figures_2014_Final.pdf/

Table 1: R&D costs (2012)⁶

| FUNCTION | MILLION DOLLARS | SHARE (%) |
|----------------------|-----------------|-----------|
| Prehuman/Preclinical | 11,816.3 | 23.8 |
| Phase I | 3,823.2 | 7.7 |
| Phase II | 5,756.2 | 11.6 |
| Phase III | 15,926.8 | 32.1 |
| Approval | 3,834.6 | 7.7 |
| Phase IV | 6,776.5 | 13.7 |
| Uncategorized | 1,653.8 | 3.3 |
| Total R&D | 49,587.6 | 100% |

Note: All figures include company-financed R&D only. Total values may be affected by rounding.

Source: Pharmaceutical Research and Manufacturers of America, PhRMA Annual Membership Survey, 2014

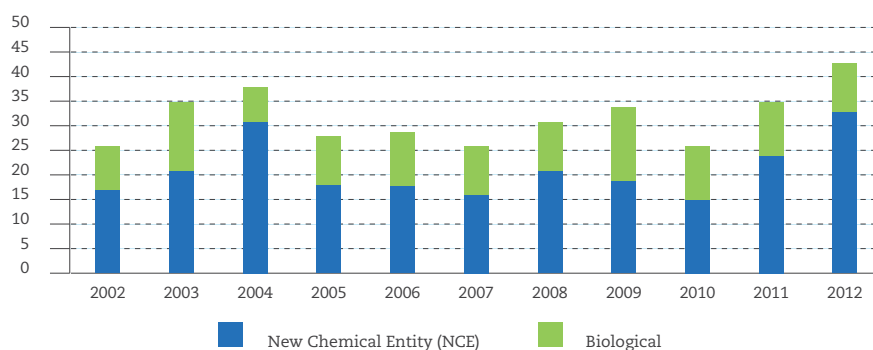
Chart 1: Medicines in development by regulatory phase globally (2011)⁷

⁶ PhRMA (2014) PhRMA industry profile 2014; Washington DC: Pharmaceutical Research and Manufacturers of America, p 71. http://www.phrma.org/sites/default/files/pdf/2014_PhRMA_PROFILE.pdf

⁷ PhRMA (2013) PhRMA Chart Pack. http://www.phrma.org/sites/default/files/pdf/CHART%20PACK_online%20version_13APR04_forweb.pdf/

Table 2: Medicines in development for NCDs⁸

| | PHASE I | PHASE II | PHASE III | REGULATORY REVIEW | TOTAL |
|----------------|---------|----------|-----------|-------------------|-------|
| Cancer | 1,265 | 1,507 | 288 | 13 | 3,073 |
| Cardiovascular | 128 | 230 | 85 | 7 | 450 |
| Diabetes | 103 | 132 | 43 | 3 | 281 |
| Respiratory | 123 | 198 | 47 | 2 | 370 |

Chart 2: Number of new chemical and biological entities approved by the US Food and Drug Administration, 2002–2012⁹

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 163 in the 2008–2012 period compared with 178 a decade earlier¹⁰. In addition, once a medicine receives regulatory approval, national 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, many research-based companies are expected to face a substantial drop in revenue in the near future, when many of their patents on "blockbuster" medicines are due to expire. These challenges have not diminished the industry's innovative drive but

⁸ Analysis Group (2013) Innovation in the Biopharmaceutical Pipeline: A Multidimensional View. http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/2012_Innovation_in_the_Biopharmaceutical_Pipeline.pdf/

⁹ Evaluate Pharma (2013) World Preview 2013, Outlook to 2018 Returning to Growth; p 17. <https://www.evaluategroup.com/Default.aspx/>

¹⁰ EFPIA (2013) The Pharmaceutical Industry in Figures. http://www.efpia.eu/uploads/Figures_Key_Data_2013.pdf/

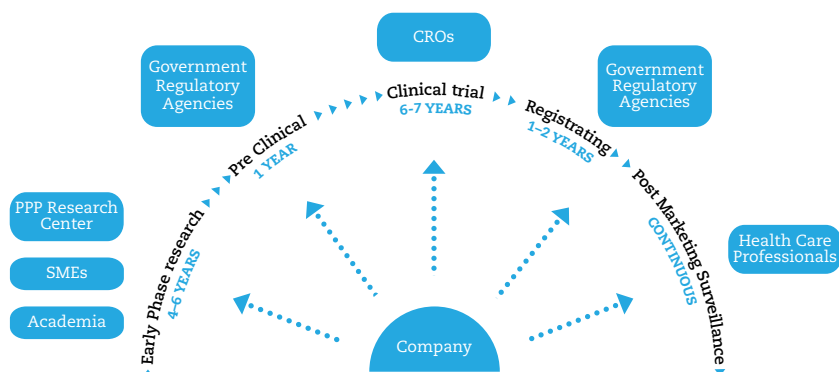
have rather encouraged it to adopt new models of innovation¹¹. Open collaboration and new business models such as joint ventures between pharmaceutical companies and other external entities are ways to increase the productivity of pharmaceutical research by facilitating partnerships involving academia and the public and private sectors. These collaborations facilitate the sharing of expertise, know how, and technologies such as compound databases.

Table 3: Trends in clinical trial protocol complexity¹²

| | 2000 – 2003 | 2008 – 2011 | PERCENTAGE CHANGE |
|---------------------------------------------------------------------------------------------|-------------|-------------|-------------------|
| Total Procedures per Trial Protocol (median) (e.g., bloodwork, routine exams, x-rays, etc.) | 105.9 | 166.6 | 57% |
| Total Investigative Site Work Burden (median units) | 28.9 | 47.5 | 64% |
| Total Eligibility Criteria | 31 | 46 | 58% |
| Clinical Trial Treatment Period (median days)* | 140 | 175 | 25% |
| Number of Case Report Form Pages per Protocol (median) | 55 | 171 | 227% |

*These numbers reflect only the “treatment duration” of the protocol.

Figure 2: Pharmaceutical R&D networks¹³



11 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

12 PhRMA (2013) PhRMA Industry Profile 2013. <http://www.phrma.org/industryprofile2013/>

13 IFPMA (2012) The New Frontiers of Biopharmaceutical Innovation. http://www.ifpma.org/fileadmin/content/Publication/2012/IFPMA_New_Frontiers_Biopharma_Innovation_2012_Web.pdf

Pharmaceutical industry R&D investments

The research-based pharmaceutical industry is estimated to have spent nearly USD 137 billion globally on pharmaceutical R&D in 2012¹⁴ (see chart 2).

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 5 times greater than that of the aerospace and defence industries, 4.5 times more than that of the chemicals industry, and 2.5 times more than that of the software and computer services industry¹⁵.

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.

Developing countries are well positioned to take action because innovation is stimulated by early institution of national models that link various stakeholders¹⁶.

Table 4: 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 |

14 Evaluate Pharma (2013) World Preview 2013, Outlook to 2018 Returning to Growth; p 17. <https://www.evaluategroup.com/Default.aspx/>

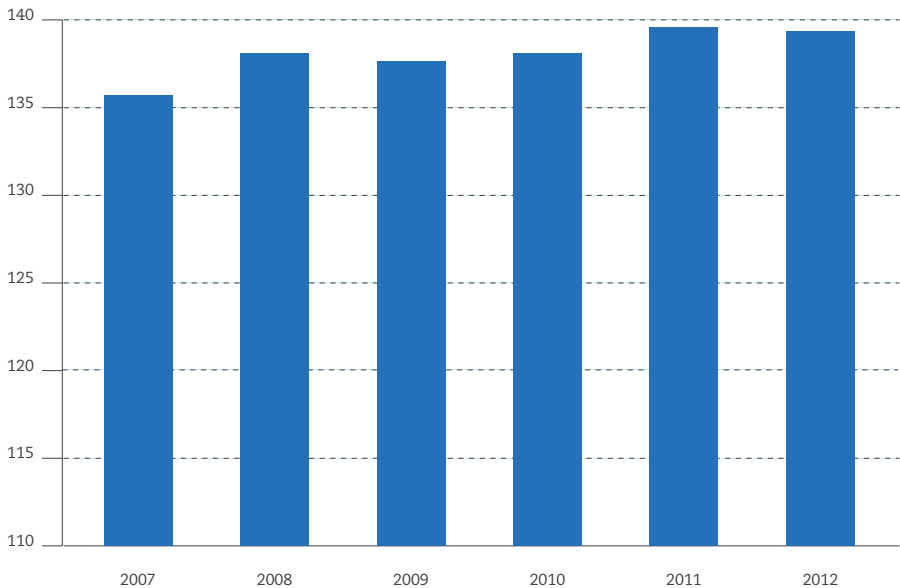
15 European Commission (2014) The 2014 EU Industrial R&D Investment Scoreboard; p 60. <http://iri.jrc.ec.europa.eu/scoreboard14.html>

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)

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 2014¹⁹. Spending on R&D by the research-based pharmaceutical industry in Japan amounts to 11% of its sales, in the US to 21%, and in the European Union to 17%²⁰. In 2012, the pharmaceutical industry registered 7,792 patents through the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization²¹. No other business sector has such high levels of R&D intensity.

Chart 3: Pharmaceutical R&D Spending (USD Billion)²²



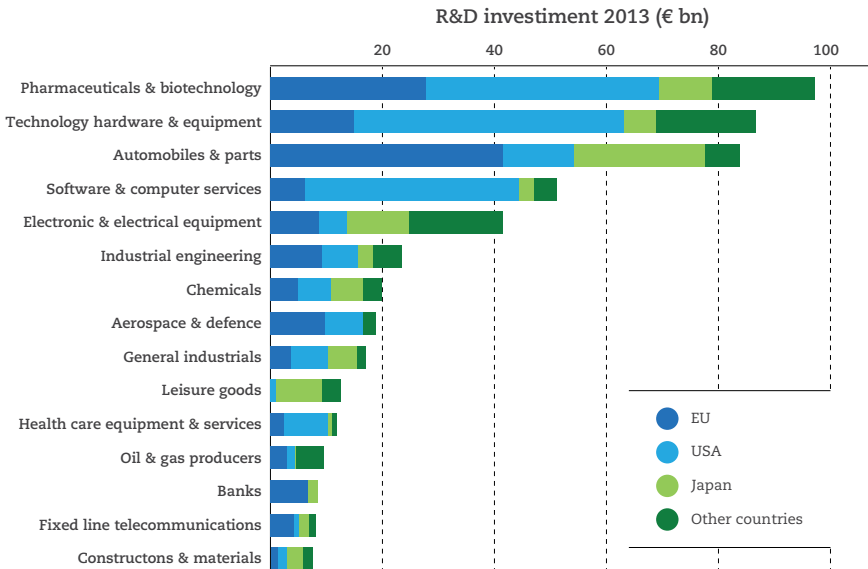
18 Part of the US Department of Health and Human Services, the National Institutes of Health (NIH) is the US medical research agency, funding universities and research institutions in the US and around the globe.

19 NIH (National Institutes of Health) (2014) NIH Budget. <http://www.nih.gov/about/budget.htm/>

20 European Commission (2014) The 2014 EU Industrial R&D Investment Scoreboard; p 60. <http://iri.jrc.ec.europa.eu/scoreboard14.html>

21 WIPO (2013) 2013 PCT Yearly Review – The International Patent System. http://www.wipo.int/export/sites/www/freepublications/en/patents/901/wipo_pub_901_2013.pdf/

22 Evaluate Pharma (2013) World Preview 2013, Outlook to 2018 Returning to Growth; p 15. <https://www.evaluategroup.com/Default.aspx/>

Chart 4: R&D investments by sector (EUR billion)²³

According to European Commission statistics, 5 of the 10 leading global R&D firms in 2013 were pharmaceutical companies²⁴. In 2013, R&D spending by the pharmaceuticals and biotechnology sector grew by 2.4%, strengthening its position as the top R&D investing sector²⁵. 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 2.5 million children each year. Between 2000 and 2012, immunization campaigns cut the number

²³ European Commission (2014) The 2014 EU Industrial R&D Investment Scoreboard; p 60. <http://iri.jrc.ec.europa.eu/scoreboard14.html>

²⁴ Idem.

²⁵ Idem.

of deaths caused by measles by 78%²⁶, with a reduction of 92% in Africa between 2000 and 2008²⁷. Since 1928, scientists 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 lives²⁸. 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 epidemic²⁹. In 2013, there were 204 drugs in development for HIV/AIDS, 3,436 for all types of cancer, 412 for diabetes, and 650 for cardiovascular diseases³⁰. It is estimated that the use of medicines against malaria can save, between 2011 and 2015, 1.14 million African children's lives prevent³¹.

Figure 3: Medicines in development in 2011 (selected categories)³²



26 WHO (2014) Fact Sheet Measles. <http://www.who.int/mediacentre/factsheets/fs286/en/>

27 GAVI Alliance (2014) Measles Vaccine Support. <http://www.gavialliance.org/support/nvs/measles/>

28 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/>

29 Rughani, G. (2011) Development of 50 Malaria Drugs Is under Threat Unless Funding Expands, British Medical Journal 342:d4158

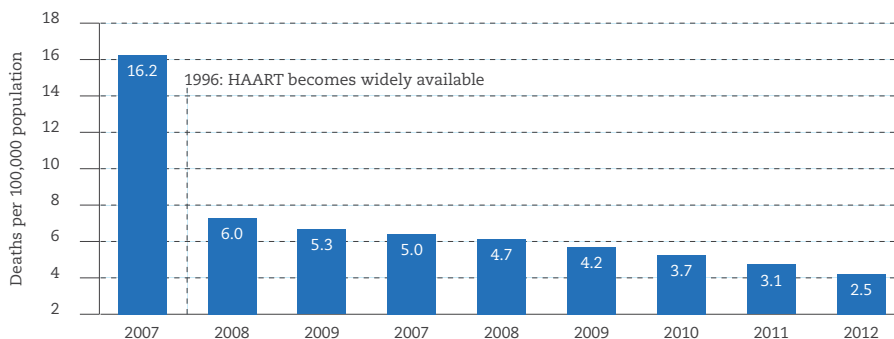
30 Analysis Group (2013) Innovation in the Biopharmaceutical Pipeline: A Multidimensional View. http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/2012_Innovation_in_the_Biopharmaceutical_Pipeline.pdf/

31 Roll Back Malaria (2010) Progress & Impact Series, Saving Lives with Malaria Control: Counting Down to the Millennium Development Goals. <http://www.rbm.who.int/ProgressImpactSeries/report3.html/>

32 Analysis Group (2013) Innovation in the Biopharmaceutical Pipeline: A Multidimensional View. http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/2012_Innovation_in_the_Biopharmaceutical_Pipeline.pdf/

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 2.5 deaths per 100,000 people in 2011, a reduction of 85%³³. The number of AIDS-related deaths worldwide peaked at 2.1 million in 2004 and has since fallen to an estimated 1.6 million deaths in 2012³⁴. This can be largely attributed to the introduction of new antiretroviral therapies (ARTs) combined with more patients being provided with treatment.

Chart 5: Decline in HIV/AIDS death rates³⁵



In the past 10 years alone, over 340 medicines have been approved that offer new hope to patients with hard-to-treat diseases³⁶. 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 costs³⁷.

Today, if diagnosed early, leukaemia can be driven into remission with a once-daily treatment. High cholesterol and other cardiovascular diseases, which required extensive

33 PhRMA (2013) PhRMA Chart Pack. http://www.phrma.org/sites/default/files/pdf/CHART%20PACK_online%20version_13APR04_forweb.pdf/

34 WHO (2014) Global Health Observatory (GHO), Number of deaths due to HIV/AIDS. http://www.who.int/gho/hiv/epidemic_status/deaths/en/

35 PhRMA (2013) PhRMA Chart Pack. http://www.phrma.org/sites/default/files/pdf/CHART%20PACK_online%20version_13APR04_forweb.pdf/

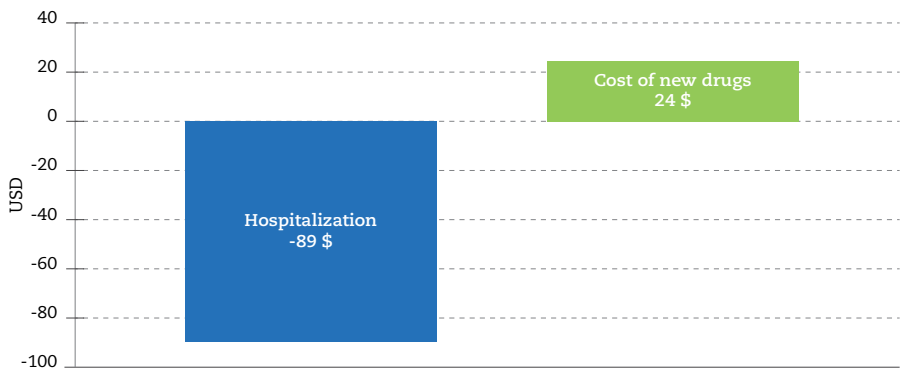
36 PhRMA (2013) PhRMA Industry Profile 2013. <http://www.phrma.org/industryprofile2013/>

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

treatment in the 1970s, can now be easily managed with oral therapy. Meanwhile, improvements in existing cancer treatments have cut annual death rates by half³⁸.

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 costs³⁹. Another study demonstrated that every USD 1 spent on new medicines for hypertension in the United States saves USD 10.11 in medical spending⁴⁰. In this manner, pharmaceutical innovation directly impacts patients' health and indirectly alleviates the unseen economic burden of disease.

Chart 6: Cost of newer cardiovascular drugs compared to savings in hospitalization in 20 OECD countries, 1995-2003⁴¹



Incremental innovation

Incremental innovation is the process of improving existing medicines or expanding therapeutic classes to increase therapeutic efficacy, safety, and quality. These improvements are often dependant on the experiences of healthcare providers and patients' needs. Incremental

38 Analysis Group (2013) Innovation in the Biopharmaceutical Pipeline: A Multidimensional View. http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/2012_Innovation_in_the_Biopharmaceutical_Pipeline.pdf/

39 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

40 Roebuck, M. C.; Liberman, J. N.; Gemmill-Toyama, M.; et al. (2011) Medication Adherence Leads to Lower Healthcare Use and Costs despite Increased Drug Spending. <http://content.healthaffairs.org/content/30/1/91.full.pdf+html/>

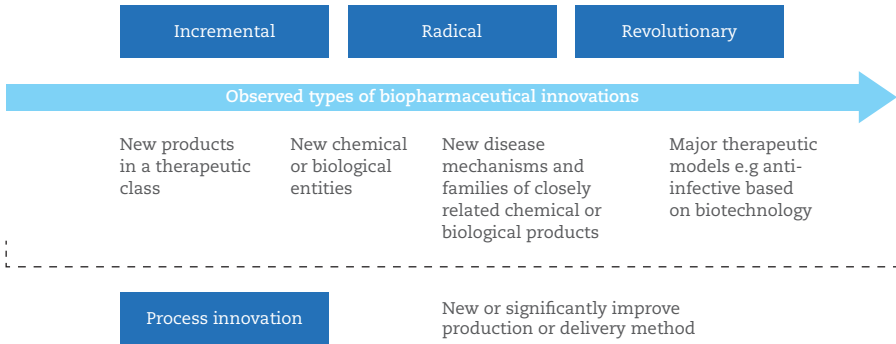
41 Litchenberg FR (2009) Have newer cardiovascular drugs reduced hospitalization? Evidence from longitudinal country-level data on 20 OECD countries, 1995–2003. *Health Economics* 18(5): 519–534

innovation can include expanding existing therapeutic classes by improving complex molecular structures, reformulating medicines to improve patient administration, or exploring new uses for existing medicines. For example, one way to improve a medicine's therapeutic efficacy profile is to ensure that patients comply with dosing requirements. Thus a once-a-day formulation of a medicine often eases patients' compliance to dosing regimens⁴².

Regardless whether an improvement is a new formulation, an expansion to an existing therapeutic class, or a newly identified medicinal use, incremental innovation involves the same R&D and clinical trial inputs as first-in-class medicines⁴³.

Because pharmaceutical innovation is the sum of various, and often discrete, activities, incremental innovation can be misconstrued as "trivial." According to this view, patenting activity relating to incremental improvements pre-empts generic versions of first-in-class medicines. However, existing intellectual property systems and regulatory procedures prevent exactly this situation. In fact, the patent term of an improved medicine is wholly independent of the term of the first-in-class medicine⁴⁴.

Figure 4: Categories of pharmaceutical innovation⁴⁵



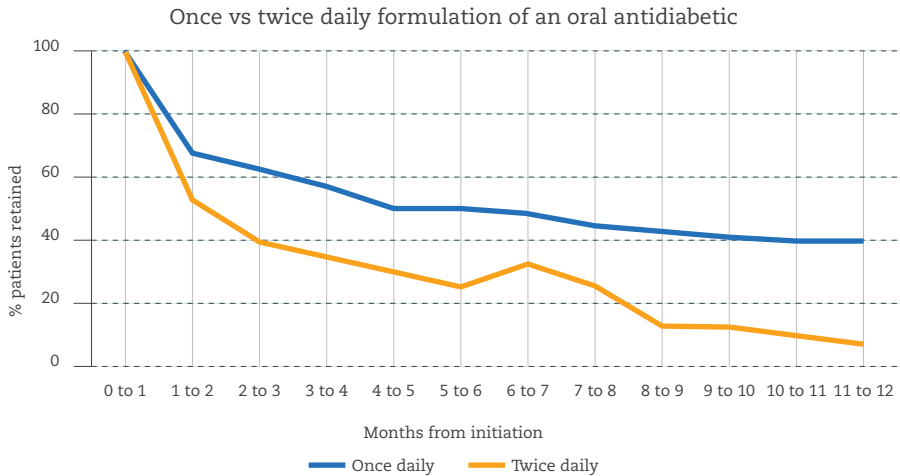
42 IFPMA (2012) Incremental Innovation: Adapting to Patient Needs, November 2012, p 8.

43 Idem.

44 IFPMA (2012) Incremental Innovation: Adapting to Patient Needs, November 2012, p 15.

45 Idem, p 6.

Chart 7: Reducing time per day increases percentage of patients retained on treatment⁴⁶



R&D for diseases that disproportionately affect the developing world

The World Health Organization has identified 17 neglected tropical diseases (NTDs), which form a significant part of the global disease burden and touch the lives of more than 1 billion people⁴⁷. 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.

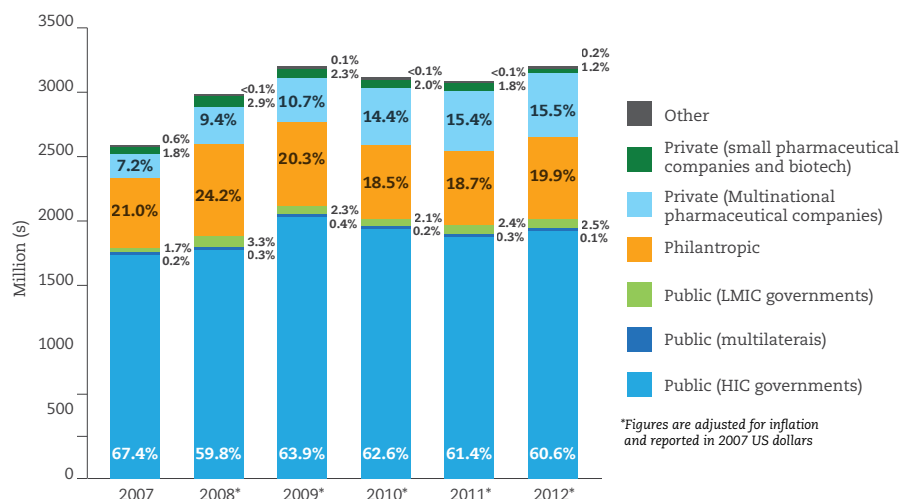
NTDs demand a distinct business/innovation model because the potential market does not adequately support R&D investments on a commercial basis. In this context, various pharmaceutical companies have collaborated with different stakeholders to form product development partnerships (PDPs), which bring 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 2012, the industry

46 IMS (2012) Advancing the Responsible Use of Medicines, Applying Levers for Change. http://www.imshealth.com/ims/Global/Content/Insights/IMS%20Institute%20for%20Healthcare%20Informatics/Responsible%20Use%20of%20Medicines/IHII_Advancing_Responsible_Use_of_Meds_Report.pdf

47 WHO (2014) Neglected Tropical Diseases. http://www.who.int/neglected_diseases/about/en/

contributed about 21% of the total research funding for malaria, 67.9% for dengue, and 26.1% tuberculosis⁴⁸. Overall, Industry was the second largest funder for neglected diseases research, investing over USD 572.2 million⁴⁹.

Chart 8: Total funding by funder type, 2007-2012⁵⁰



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 trials⁵¹. *The Drugs for Neglected Diseases initiative* (DNDi) aims to deliver 11 to 13 new treatments by 2018 for Chagas disease, malaria, leishmaniasis, helminths, paediatric HIV, and sleeping sickness, of which six are already available – unprecedented progress in the fight against these diseases⁵². WIPO Re:Search has facilitated 60 collaborations since its first year to (October 2011) to March 2014⁵³.

48 G-Finder (2013) Neglected Disease Research and Development: The Public Divide. http://www.policycures.org/downloads/GF_report13_all_web.pdf/

49 Idem.

50 Idem.

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

52 G-Finder (2013) Neglected Disease Research and Development: The Public Divide. http://www.policycures.org/downloads/GF_report13_all_web.pdf/

53 WIPO (2014) Collaboration Agreements. <http://www.wipo.int/research/en/collaboration.html/>

In 2013, IFPMA members had 164 ongoing R&D projects related to diseases of the developing world⁵⁴. 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 5: Industry R&D activity relating to diseases of the developing world, 2005-2013⁵⁵

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--------------------|------------------|------|------|------|------|------|------|------|------|
| Medicines | 32 | 43 | 50 | 58 | 75 | 91 | 82 | 117 | 150 |
| Vaccines | (not counted) | 6 | 8 | 9 | 9 | 11 | 11 | 15 | 14 |
| Totals projects | 32 | 49 | 58 | 67 | 84 | 102 | 93 | 132 | 164 |

54 IFPMA (2013) Pharmaceutical R&D Projects to Develop New Cures for Patients with Neglected Conditions. http://www.ifpma.org/fileadmin/content/Publication/2014/IFPMA_Status_Report_Neglected_Conditions_2013.pdf/

55 Idem.



Chapter 2

ACCESS TO MEDICINES AND HEALTHCARE SYSTEMS

A robust healthcare system is an important pillar of the development process, and sound policies for the pharmaceuticals sector is a fundamental condition for health systems to perform well⁵⁶. Health systems are complex mechanisms through which health products, services, and care are delivered to patients⁵⁷. 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

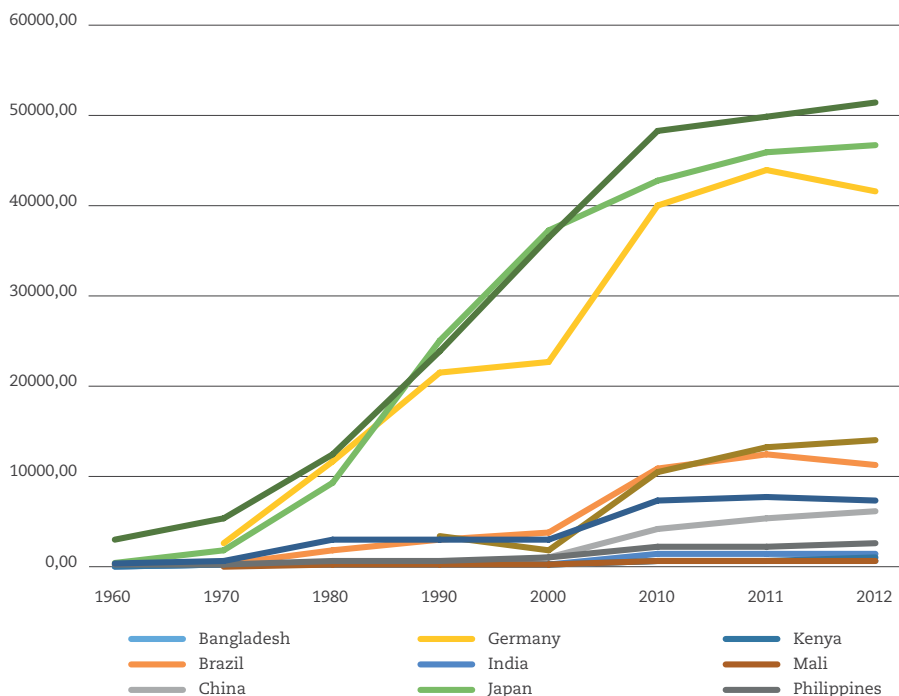
The world is still marked by a sharp disparity in the wealth of countries, which has a major impact on the performance of healthcare systems.

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 average⁵⁸. 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.

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

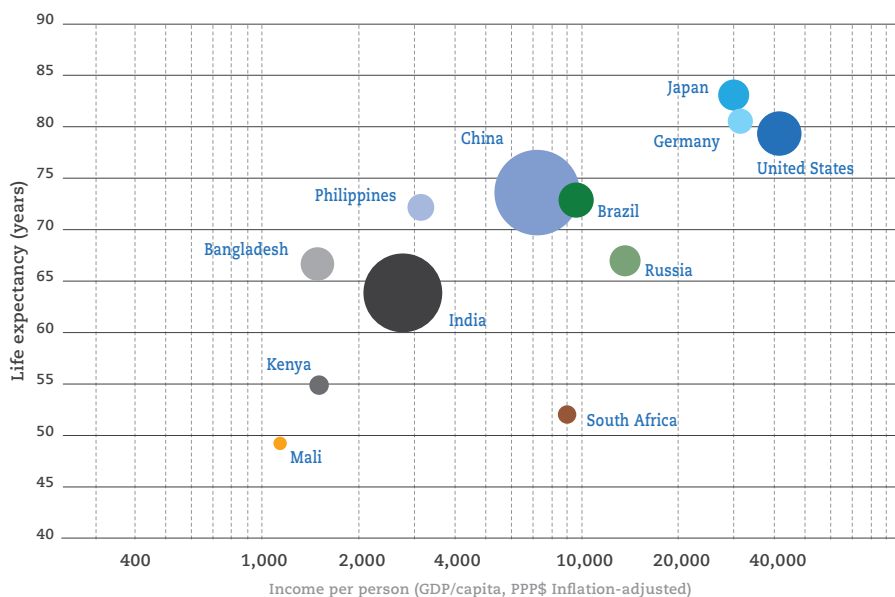
58 World Bank (2012) GDP per capita (current US\$). http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?order=wbapi_data_value_2008+wbapi_data_value&sort=asc/

Chart 9: Evolution of GDP per capita in selected countries⁵⁹

Total health expenditures range from 3.95% of GDP in Equatorial Guinea to 17.85% of GDP in the United States. On average, low-income countries spend 5.6% of GDP on financing healthcare systems whereas high-income countries spend more than 11.98 % on health. The disparities are also significant in terms of healthcare workers. There are 2.1 physicians per 10,000 inhabitants in low-income countries compared with 29.2 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 43.3⁶⁰.

59 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

60 Idem.

Chart 10: Correlation between income per person and life expectancy, 2011⁶¹

These divergences in wealth and resources have a decisive impact on people's health. In low-income countries, 81.8 out of 1,000 children die before their fifth birthday compared with 6.2 out of 1,000 in high-income countries (see also Annex 2)⁶². The strong link between wealth and health is also reflected in average life expectancy – 61 years in low-income countries compared with 79 years in high-income countries, a stark difference of 18 years⁶³.

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)⁶⁴. A well-functioning healthcare system also promotes productive relationships between governments, patients, and the healthcare industry.

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

62 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

63 Idem.

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

Figure 5: The WHO health system framework⁶⁵



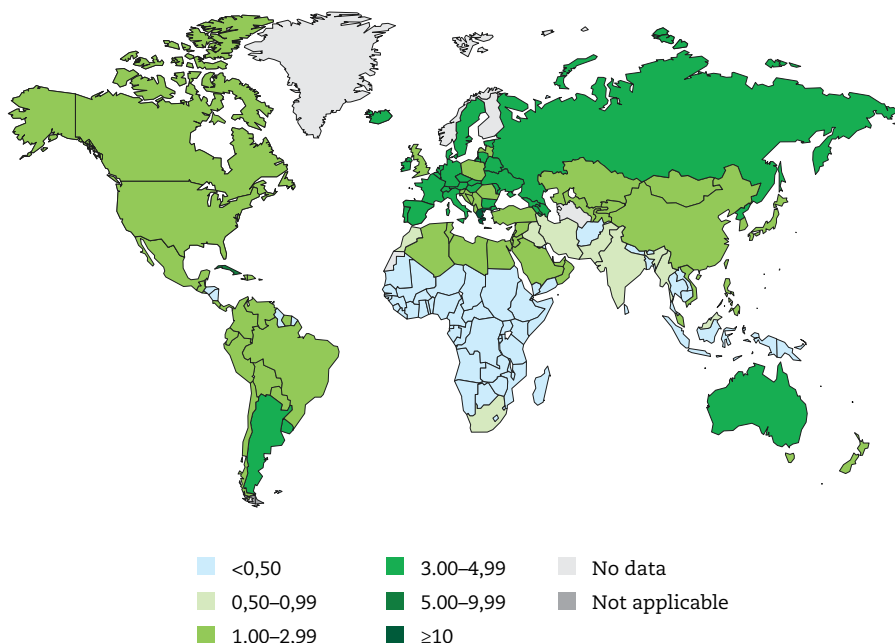
The pharmaceutical industry plays a pivotal role in any healthcare system, by providing medicines and vaccines for most health interventions. A well-performing healthcare system must ensure that pharmaceutical products meet quality requirements and are properly procured, distributed to the different 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 4 doctors for every 1,000 inhabitants, while in Ghana there are only 0.1⁶⁶.

65 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/

66 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

Figure 6: Relative density of doctors per 1,000 population, latest available year⁶⁷

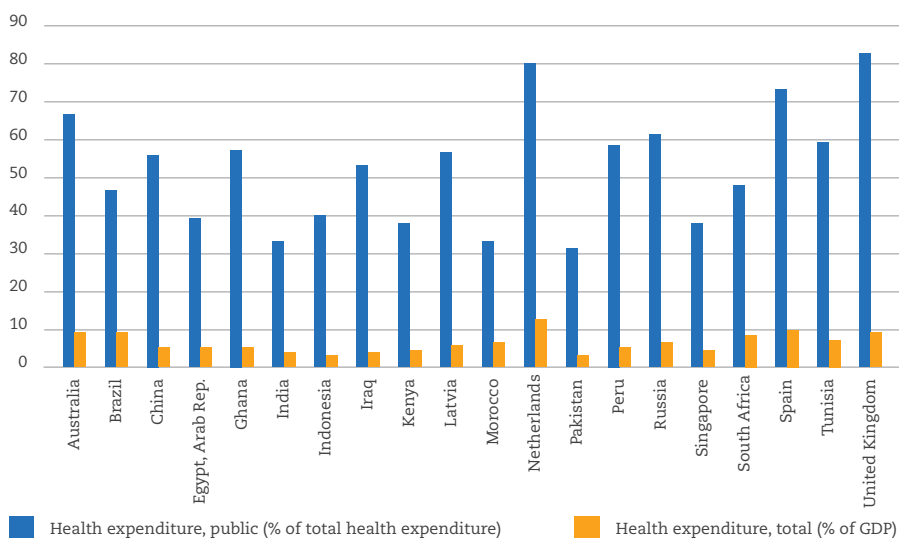


In terms of funding, performing healthcare systems require sufficient allocation of resources by government and/or the private sector. Unfortunately, public health and the strengthening of healthcare systems are not seen as important priorities in many countries, and the resources made available to health vary significantly from country to country (see Figure 13). For example, in 2011 Jordan invested about 8.42% of its GDP on health, which amounts to 67.74% of total government expenditure. In the same year, Pakistan invested only 2.51% and 27.02% respectively⁶⁸.

67 WHO (2014) Global Health Observatory Data Repository. <http://apps.who.int/gho/data/node.main.A1444?lang=en/>

68 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

Chart 11: Total health expenditure as a percentage of GDP and government spending, 2012⁶⁹



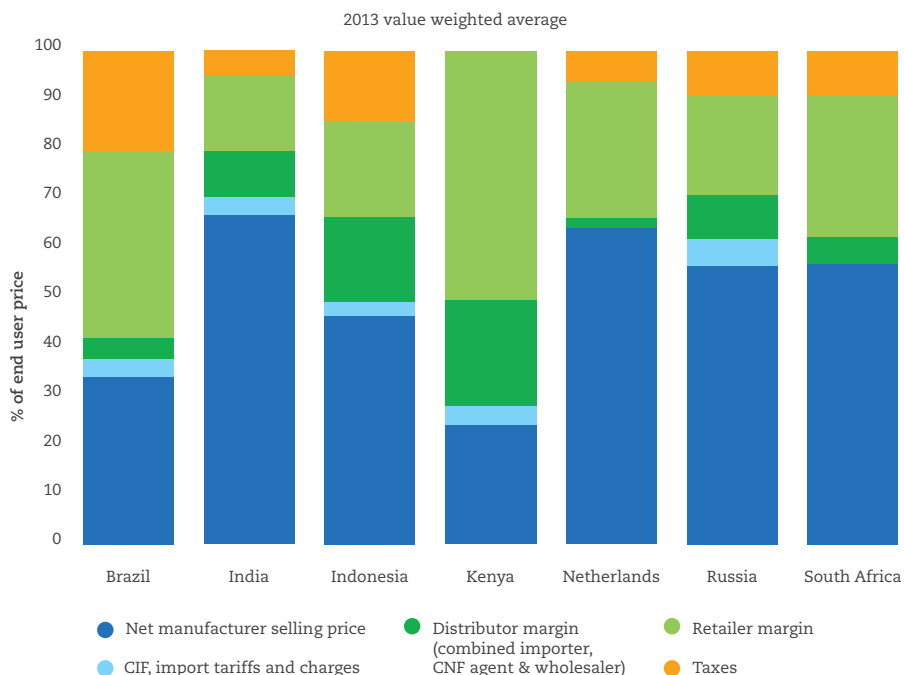
Strong healthcare systems also require strategic long-term planning and political commitment. Health authorities should not only facilitate necessary resources, but also procure medicines effectively and minimize inefficiencies and unnecessary mark-ups in the supply chain, such as taxes and tariffs. 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 certain developing countries is accompanied by serious shortages of doctors, nurses, and pharmacists. In addition, particularly in rural areas, healthcare facilities are located at a considerable distance from patients and the transport network is often precarious. Lack of health literacy can further hinder access to medicines.

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.

69 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

Chart 12: Examples of “hidden” costs of pharmaceutical procurement⁷⁰

Moreover, poor people with limited or no access to adequate nutrition, safe water, and sanitation are also often unable to afford 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 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.

70 IMS Institute for Healthcare Informatics (2014) Understanding the pharmaceutical value chain. http://www.imshealth.com/imshealth/Global/Content/Corporate/IMS%20Health%20Institute/Insights/Understanding_Pharmaceutical_Value_Chain.pdf

Table 6: Selected infrastructure indicators, 2010⁷¹

| | ROADS, PAVED (% OF TOTAL ROADS) | IMPROVED SANITATION FACILITIES (% OF POPULATION WITH ACCESS) | IMPROVED WATER SOURCE (% OF POPULATION WITH ACCESS) |
|-----------------------------------------------------|------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------|
| Arab World | 79.60 | 78.74 | 82.23 |
| East Asia & Pacific (all income levels) | 66.20 | 69.37 | 91.03 |
| Europe & Central Asia (all income levels) | 86.40 | 92.51 | 96.83 |
| Latin America & Caribbean (all income levels) | 23.30 | 80.79 | 89.08 |
| North America | 100.00 | 99.62 | 97.18 |
| South Asia | 44.95 | 38.09 | 90.88 |
| Sub-Saharan Africa (developing only) | 16.30 | 30.41 | 66.74 |
| Heavily indebted poor countries (HIPC) | 16.30 | 26.40 | 67.32 |
| Least developed countries | 20.80 | 35.72 | 70.05 |
| Low income | 16.30 | 36.84 | 72.68 |
| Lower middle income | 47.25 | 46.53 | 87.99 |
| Upper middle income | 60.45 | 73.70 | 91.31 |
| Middle income | 55.00 | 59.73 | 89.74 |
| High income | 84.60 | 96.10 | 98.16 |
| World | 57.60 | 63.26 | 88.29 |

The role of pharmaceutical products in healthcare

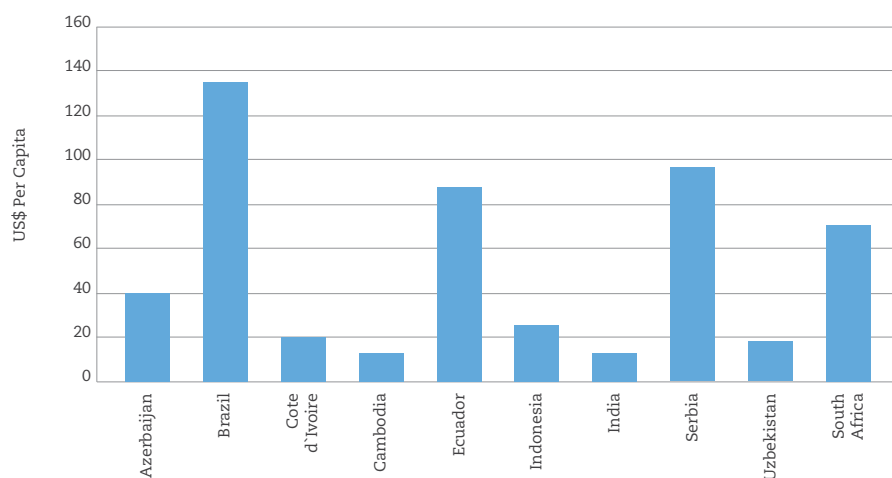
The MDGs highlight the imperative to adopt collaborative approaches. In particular, Goal 8 promotes global partnership for development, and Target 8e specifically aims to, “in co-operation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries.” The post-2015 Sustainable Development Goals are still

71 World Bank (2014) Infrastructure. <http://data.worldbank.org/indicator/>

being discussed, but health will likely maintain its critical important role. 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 13: Pharmaceutical sales per capita in selected low and middle income countries, 2012⁷²



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 costs⁷³. 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 treatment⁷⁴. Antibiotics cut the cost of treating ulcers to less than USD 1,000⁷⁵. In addition, patients enjoy a better quality of life and a non-invasive, safer course of treatment.

⁷² Business Monitor International (2012) BMI pharmaceutical and healthcare database. <http://www.businessmonitor.com/industry/pharma.html/>

⁷³ Lichtenberg FR (2009) Have newer cardiovascular drugs reduced hospitalization?

⁷⁴ Centers for Disease Control and Prevention (1998) *Helicobacter pylori* and Peptic Ulcer Disease. <http://www.cdc.gov/ulcer/economic.html/>

⁷⁵ Idem.

Chart 14: Cost of newer cardiovascular drugs compared to savings in hospitalization in 20 OECD countries, 1995-2003⁷⁶

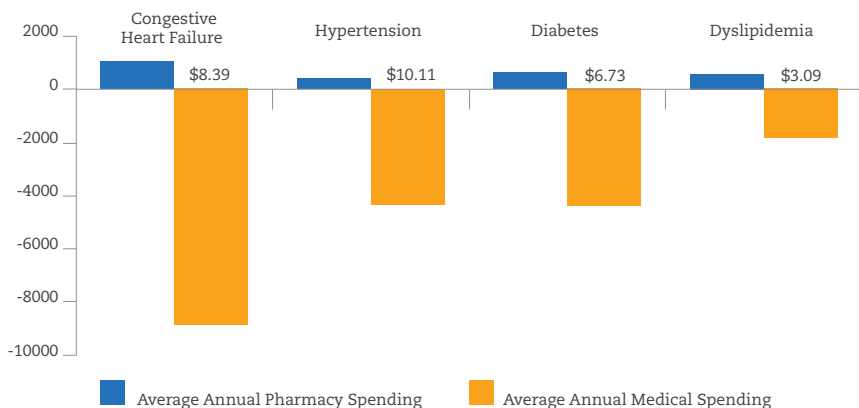
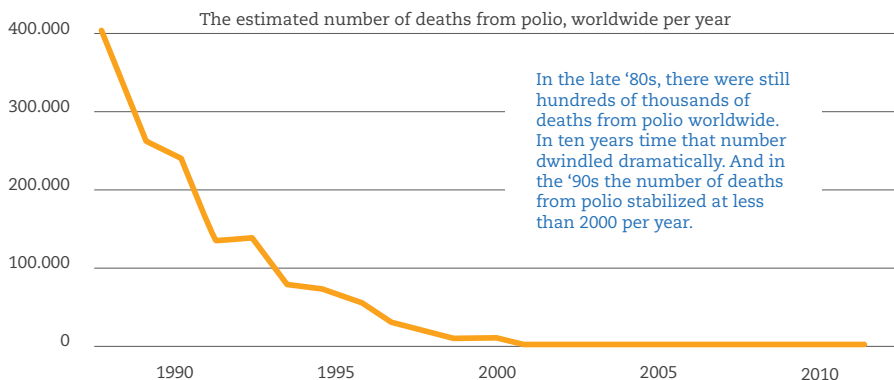


Chart 15: polio almost eradicated through vaccination campaigns⁷⁷



Source: Bill & Melinda Gates Foundation, 2011

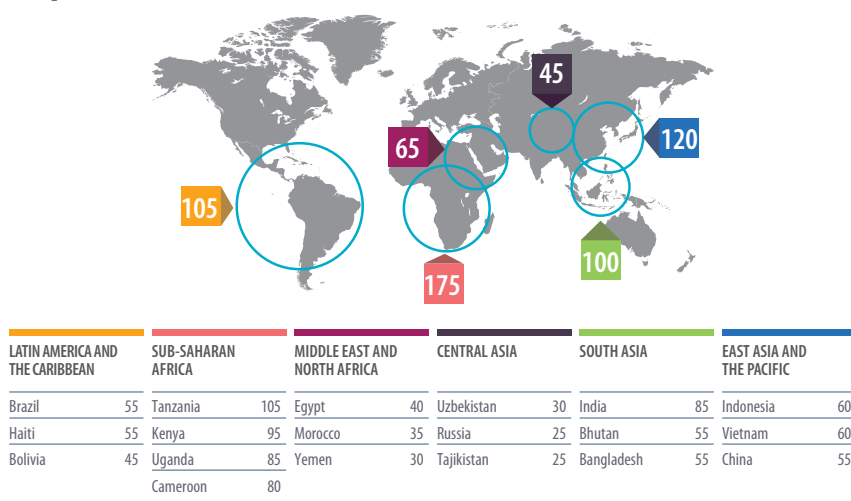
76 Roebuck, M. C.; Liberman, J. N.; Gemmill-Toyama, M.; et al. (2011) Medication Adherence Leads to Lower Healthcare Use and Costs despite Increased Drug Spending. <http://content.healthaffairs.org/content/30/1/91.full.pdf+html/>

77 Nefarma (2013) Pharma Facts 2013-2014. <http://www.nefarma.nl/english/pharma-facts-figures/>

Pharmaceutical industry's contribution to improving global health

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.

Figure 7: Health partnerships undertaken by research-based pharmaceutical companies⁷⁸



185 PARTNERSHIPS

to address health system infrastructure (a trained workforce, operating information systems, adequate physical infrastructure).

165 PARTNERSHIPS

to increase availability of treatments (differential pricing, product donations, technology transfers).

150 PARTNERSHIPS

to prevent the spread of communicable diseases and non-communicable diseases (NCDs) (vaccines, awareness raising and behavioural change).

95 PARTNERSHIPS

to develop new treatments for diseases of the developing world (including improved research capacities, paediatric R&D).

⁷⁸ IFPMA (2014) Developing world health partnerships directory. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. http://www.ifpma.org/fileadmin/content/Publication/2014/2014_Partnership_Directory_Publication-FINAL-web.pdf

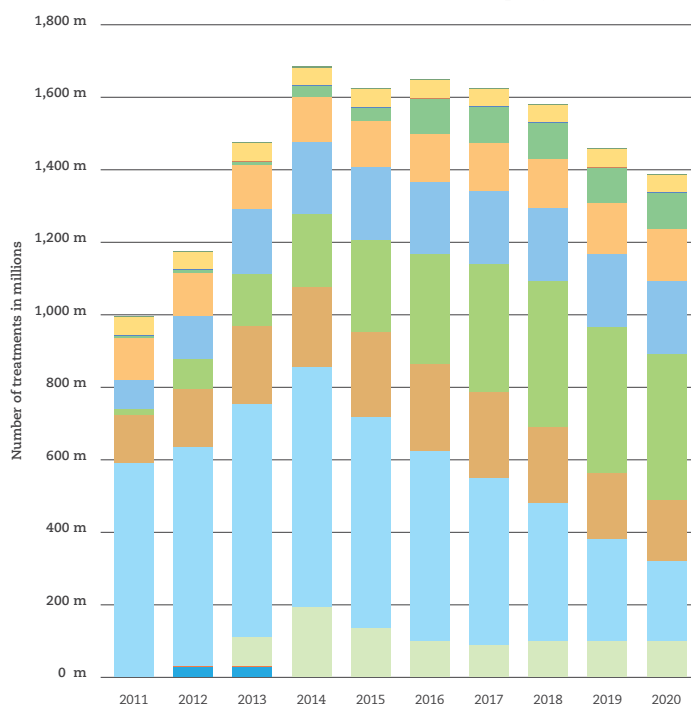
The contribution of the research-based pharmaceutical industry is vital in the fight against neglected tropical diseases (NTDs). At least 1 billion people – one person in seven – suffer from tropical diseases such as Buruli ulcer, cholera, dengue, lymphatic filariasis, onchocerciasis, schistosomiasis, trachoma, and African trypanosomiasis (sleeping sickness)⁷⁹. 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 selling many medicines at cost and/or 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 affected⁸⁰.

79 WHO (2014) Neglected tropical diseases. http://www.who.int/neglected_diseases/about/en/

80 IFPMA (2012) Ending neglected tropical diseases. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. <http://www.ifpma.org/fileadmin/content/Publication/2012/IFPMA-NTD-NewLogo/UNE2.pdf/>

Chart 16: Treatments donated and sold at cost in developing countries⁸¹

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 | 1,614,129,890 |
| 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 |

81 Idem.

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.

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 countries⁸².

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 66 in 2012, but for Kenya the increase has been more modest – from 52 years (1970) to 61 years (2012). In comparison to these developing countries, life expectancy in the United States increased from 70 years (1970) to 79 years (2012)⁸³. Meanwhile, infant mortality rates have steadily declined over the same period, 1970–2012, in both rich and poor countries⁸⁴.

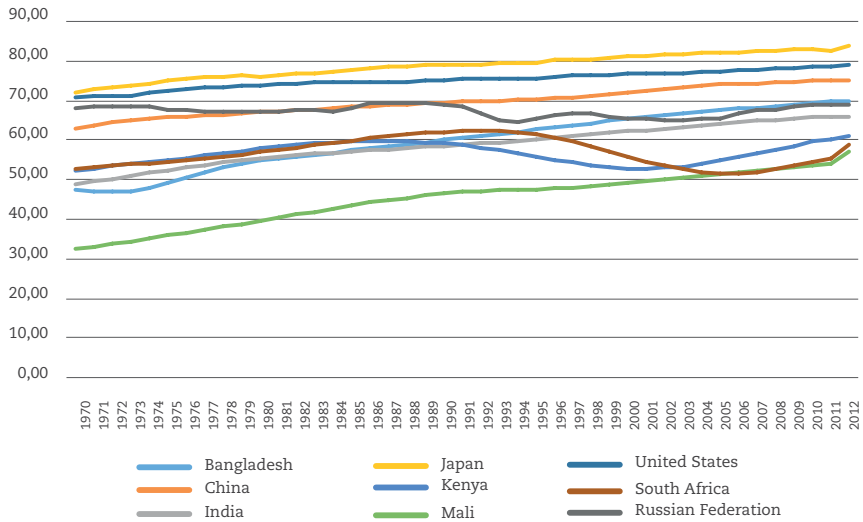
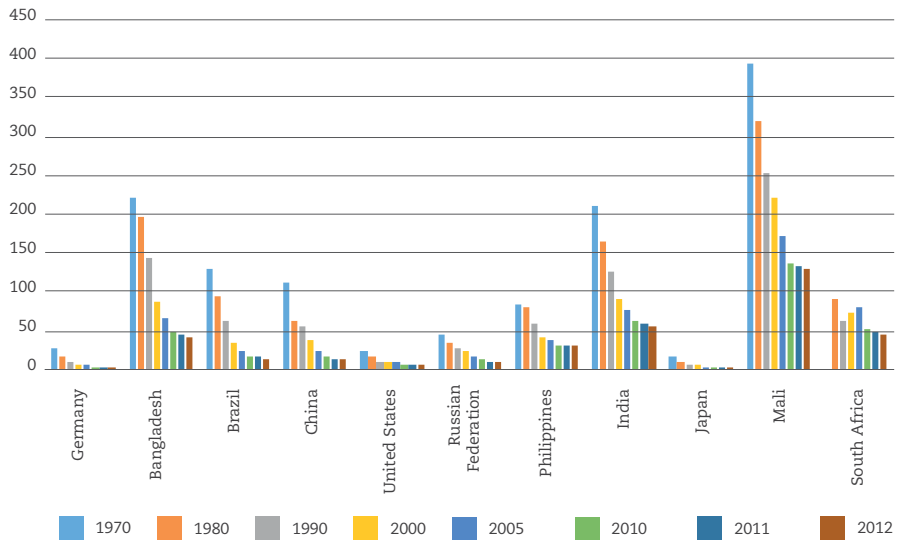
Increased life expectancy, decreased infant mortality, and the adoption of unhealthy lifestyle choices have led to an increase in the burden of non-communicable diseases (NCDs), like heart disease, cancer, chronic respiratory diseases, and diabetes. They are currently the leading causes of death worldwide. 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 NCDs⁸⁵.

82 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/

83 World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

84 Idem.

85 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)

Chart 17: Life expectancy evolution in selected countries⁸⁶Chart 18: Infant mortality in selected countries, 1970-2012⁸⁷

⁸⁶ World Bank (2014) Health Indicators. <http://data.worldbank.org/indicator#topic-8/>

⁸⁷ World Bank (2014) Mortality Rate, Infant (per 1,000 live births). <http://data.worldbank.org/indicator/SP.DYN.IMRT.IN/>

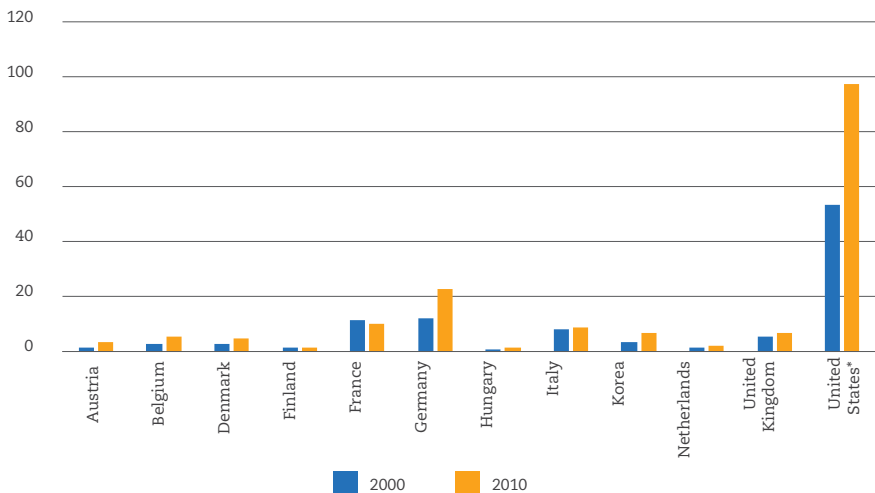


Chapter 3

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 19: Value added in R&D and production by the pharmaceutical industry in selected countries (USD billion at purchasing power parity)⁸⁸



88 OECD (2014) STAN Industry. <https://stats.oecd.org/Index.aspx?DataSetCode=STAN08BIS/>

Table 7: Key indicators of the pharmaceutical industry's economic footprint in Europe⁸⁹

| INDUSTRY (EFPIA TOTAL) | 1990 | 2000 | 2011 | 2012 |
|-----------------------------------------------------------------------|---------|---------|---------|------------|
| Production | 63,010 | 125,301 | 205,622 | 210,000(e) |
| Exports (1) (2) | 23,180 | 90,935 | 288,573 | 305,000(e) |
| Imports | 16,113 | 68,841 | 212,135 | 225,000(e) |
| Trade balance | 7,067 | 22,094 | 76,438 | 80,000(e) |
| R&D expenditure | 7,766 | 17,849 | 29,192 | 30,000(e) |
| Employment (units) | 500,879 | 534,882 | 700,010 | 700,000(e) |
| R&D employment (units) | 76,126 | 88,397 | 115,695 | 116,000(e) |
| Pharmaceutical market value at ex-factory prices | 41,147 | 86,704 | 160,603 | 163,000(e) |
| Pharmaceutical market value at retail prices | 64,509 | 140,345 | 235,017 | 238,500(e) |
| Payment for pharmaceuticals by statutory health insurance systems (3) | 40,807 | 76,909 | 125,603 | 126,800(e) |

Values in e million unless otherwise stated

(1) Data relate to EU-27, Norway and Switzerland since 2005 (EU-15 before 2005); Croatia and Serbia included since 2010; Turkey included since 2011

(2) Data relating to total exports and total imports include EU-27 intra-trade (double counting in some cases)

(3) Since 1998 data relate to ambulatory care only

Source: EFPIA member associations (official figures) - (e): EFPIA estimate; Eurostat (EU-27 trade data 1995-2012)

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

89 EFPIA (2013) The Pharmaceutical Industry in Figures. http://www.efpia.eu/uploads/Figures_Key_Data_2013.pdf/

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. Pharmaceutical manufacturing accounts for USD 181 billion in the United States (2009), USD 66.5 billion in Japan (2010), and USD 37 billion in France (2010)⁹⁰. Globally, the production value of the pharmaceutical industry amounted to USD 940 billion (2011), a more than 300 billion higher than in 2006⁹¹. R&D investments amounts to USD 49 billion in the United States (2009), USD 12.5 billion in Japan (2010), and USD 1.3 billion in France (2010)⁹². Manufacturing and research are not directly linked; some countries have little research compared to manufacturing capacity, while others have little manufacturing and considerable research.

In 2011, the pharmaceutical industry accounted for 3.9% of the gross value added in manufacturing worldwide. Gross valued added is the value of the products manufactured by a company less the value of its purchased materials and services. It thus reflects the additional value generated by the production process. The economic strength of the sector roughly corresponds to the GDP of Argentina (USD 448.2 billion)⁹³.

Table 8: Gross value added in the pharmaceutical industry in USD billion⁹⁴

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---------------------------------|-------|-------|-------|-------|-------|-------|
| Gross value added (USD billion) | 306.5 | 342.1 | 378.3 | 398.5 | 421.1 | 441.0 |
| Global share | 0.62% | 0.61% | 0.62% | 0.68% | 0.66% | 0.63% |

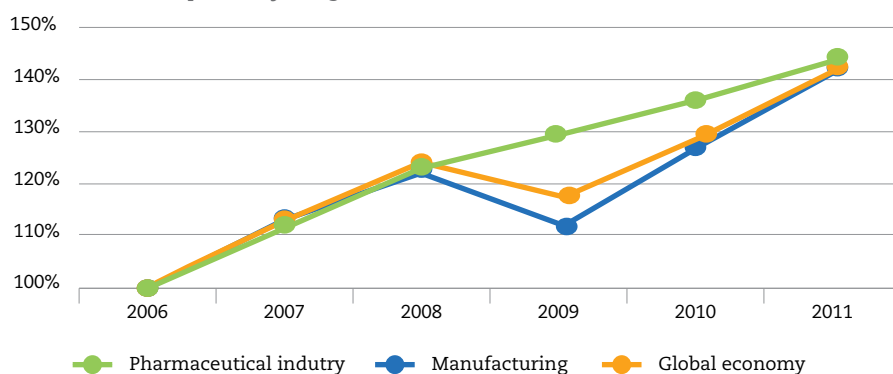
90 OECD (2014) STAN R&D and Industry. <https://stats.oecd.org/Index.aspx?DataSetCode=STAN08BIS/>

91 WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf/

92 OECD (2014) STAN R&D and Industry. <https://stats.oecd.org/Index.aspx?DataSetCode=STAN08BIS/>

93 WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf/

94 Idem.

Chart 20: Development of the gross value added⁹⁵Table 9: Pharmaceutical production, R&D, and value added in selected countries, 2010 (USD billion at purchasing power parity)⁹⁶

| | PRODUCTION (GROSS OUTPUT), USD | INTERMEDIATE CONSUMPTION, USD | VALUE ADDED, USD | R&D, MAIN FIELD OF COMPANY ACTIVITY, USD |
|----------------|--------------------------------------|-------------------------------------|---------------------|------------------------------------------------|
| Austria | 6,060,091,227 | 2,624,159,838 | 3,435,931,389 | 287,333,981 |
| Belgium | 12,928,441,660 | 7,275,415,274 | 5,653,026,386 | 1,847,856,194 |
| Czech Republic | 1,873,837,827 | 1,128,132,512 | 729,277,425 | 3,806,119 |
| Denmark | 10,147,163,124 | 5,550,927,711 | 4,596,235,413 | 168,341,440 |
| Finland | 1,757,553,447 | 633,713,301 | 1,176,304,428 | 159,588,048 |
| France | 37,956,693,065 | 27,861,957,727 | 10,094,735,338 | 1,342,662,248 |
| Germany | 50,282,872,380 | 27,433,296,930 | 22,849,575,450 | 6,478,251,698 |
| Hungary | 3,357,363,581 | 1,958,729,916 | 1,398,633,665 | 1,973,162 |
| Italy | 34,252,970,337 | 25,650,987,304 | 8,601,983,032 | 986,045,563 |
| Japan | 66,435,180,000 | | | 12,504,800,000 |
| Korea | 23,495,379,878 | 16,454,875,067 | 7,040,504,811 | 815,279,128 |
| Netherlands | 8,601,380,970 | 7,509,295,521 | 1,833,488,592 | 620,934,703 |
| United States* | 180,943,225,677 | 83,893,280,242 | 97,049,945,435 | 49,415,000,000 |
| * 2009 data | | | | |

⁹⁵ WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf

⁹⁶ OECD (2014) STAN R&D and Industry. <https://stats.oecd.org/Index.aspx?DataSetCode=STAN08BIS/>

Table 10: Production value of the pharmaceutical industry in USD billion⁹⁷

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------|-------|-------|-------|-------|-------|-------|
| Output (USD billion) | 634.2 | 718.7 | 793.5 | 831.9 | 884.4 | 940.8 |
| Growth rate | | 13.3% | 10.4% | 4.8% | 6.3% | 6.4% |
| Value added rate | 48.3% | 47.6% | 47.7% | 47.9% | 47.6% | 46.9% |

Pharmaceutical industry employment

The pharmaceutical industry contributes to employment in both developing and developed countries. In 2011, it employed approximately 4.2 million people worldwide; a 630,000 increase from 2006. 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 jobs⁹⁸. The industry currently directly employs more than 810,000 people in the United States and 700,010 people in Europe⁹⁹.

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.

Table 11: Employment in the pharmaceutical industry in million¹⁰⁰

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------|------|------|------|------|------|------|
| Employment | 3.60 | 3.62 | 3.81 | 3.89 | 4.06 | 4.23 |

97 WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf/

98 PhRMA (2013) PhRMA Industry Profile 2013. <http://www.phrma.org/industryprofile2013/>

99 EFPIA (2013) The Pharmaceutical Industry in Figures. http://www.efpia.eu/uploads/Figures_Key_Data_2013.pdf/

100 WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf/

Table 12: Employee compensation in the pharmaceutical industry in USD billion¹⁰¹

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|--------------------------------|--------|--------|--------|--------|--------|--------|
| Wages & salaries (USD billion) | 67.4 | 75.9 | 82.9 | 80.4 | 85.7 | 93.3 |
| Growth rate | | 12.7% | 9.3% | -3.1% | 6.6% | 8.9% |
| Wages & salaries per employee | 18,700 | 21,000 | 21,800 | 20,700 | 21,100 | 22,100 |
| Growth rate | | 12.3% | 3.8% | -5.0% | 1.9% | 4.7% |

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 workforce¹⁰².

¹⁰¹ WifOR (2013) First Steps towards Measuring the Economic Footprint of the Pharmaceutical Industry. http://ifpma.org/fileadmin/content/Publication/2014/wifor_key_findings_2013.pdf/

¹⁰² 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-how¹⁰³

| COMPANY | THERAPEUTIC FOCUS | START DATE | COUNTRY |
|----------------------|-------------------------|------------|---------------------------------------------------------------|
| Biken | Influenza vaccines | 2007 | Indonesia |
| Bristol-Myers Squibb | Antiretrovirals | 2001 | India, South Africa |
| Bristol-Myers Squibb | Antiretrovirals | 2011 | Brazil |
| Daiichi Sankyo | Cardiovascular diseases | 2004 | China, Thailand |
| Eisai | Lymphatic filariasis | 2009 | India |
| Eli-Lilly | Tuberculosis | 2016 | China, Russia, India, South Africa |
| Kaketsuken | Influenza vaccines | 2010 | Thailand |
| Roche | Antiretrovirals | 2006 | Bangladesh, Ethiopia, Kenya, South Africa, Tanzania, Zimbabwe |
| Roche | Chagas disease | 2003 | Brazil |
| Novartis | Meningitis Vaccine | 2009 | Brazil |
| Janssen | Antiretrovirals | 2007 | India, South Africa |
| Merck Sharp & Dohme | Antiretrovirals | 2008 | India, South Africa |
| ViiV Healthcare | Antiretrovirals | 2007 | Canada (for Rwanda) |
| GlaxoSmithKline | Preventable Diseases | 2010 | China |
| GlaxoSmithKline | Preventable Diseases | 1985 | Brazil |

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.

¹⁰³ IFPMA (2013) Pharmaceutical R&D Projects to Develop New Cures for Patients with Neglected Conditions. http://www.ifpma.org/fileadmin/content/Publication/2014/IFPMA_Status_Report_Neglected_Conditions_2013.pdf/

Table 14: Critical factors for creating favourable conditions for pharmaceutical technical transfers¹⁰⁴

| | |
|----|---------------------------------------------------------------------|
| 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 |

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 themselves¹⁰⁵. Medical innovation is transmitted across the world, thus contributing to significant gains in average life expectancy¹⁰⁶.

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 exports¹⁰⁷. In recent years, other countries like India, Singapore, Ireland and Israel have also managed to position themselves as important pharmaceutical exporters.

104 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/

105 Kiriya N (2010) Trade and innovation: Pharmaceuticals, p. 26

106 Idem.

107 Idem.

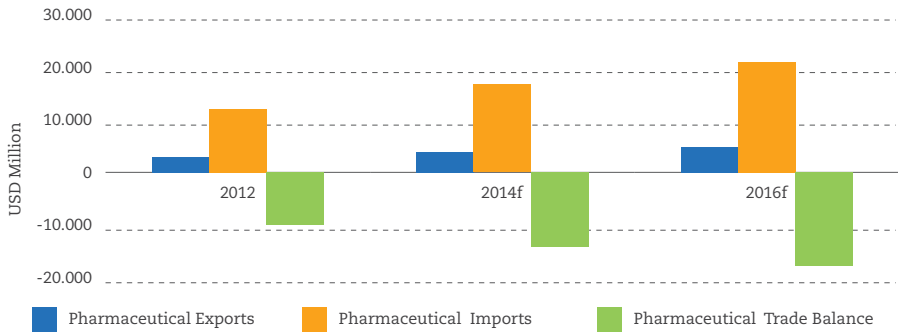
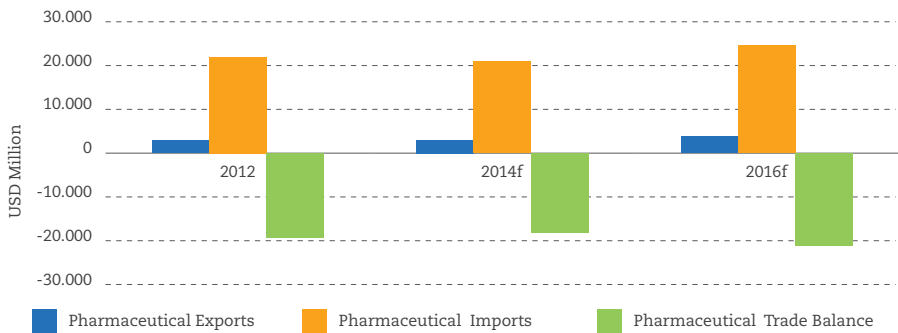
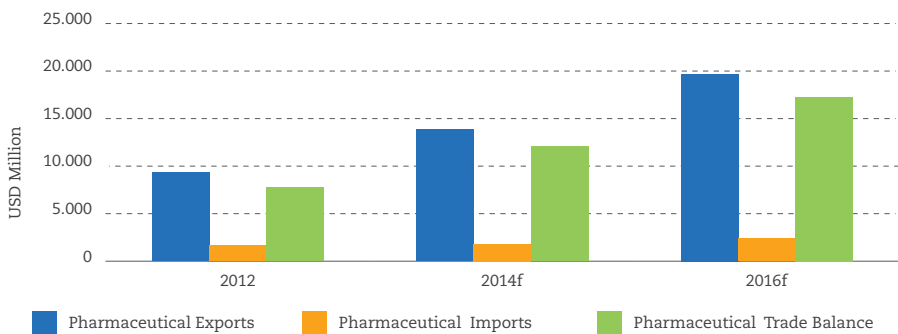
Chart 21: Pharmaceutical trade and forecast (China, 2012-2016)¹⁰⁸Chart 22: Pharmaceutical trade and forecast (Japan, 2012-2016)¹⁰⁹Chart 23: Pharmaceutical trade and forecast (India, 2012-2016)¹¹⁰¹⁰⁸ Business Monitor International (2014) Industry View¹⁰⁹ Idem.¹¹⁰ Idem.

Chart 24: Pharmaceutical trade and forecast (Singapore, 2012-2016)¹¹¹

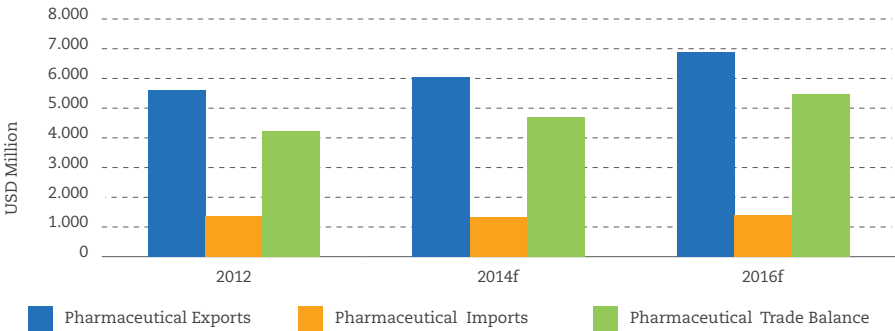


Chart 25: Pharmaceutical trade and forecast (UK, 2012-2016)¹¹²

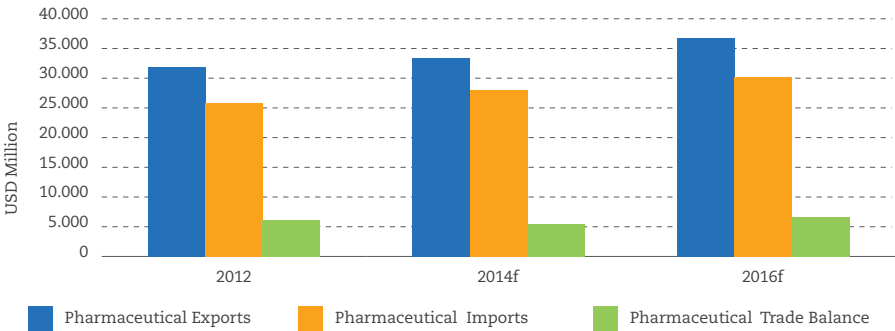
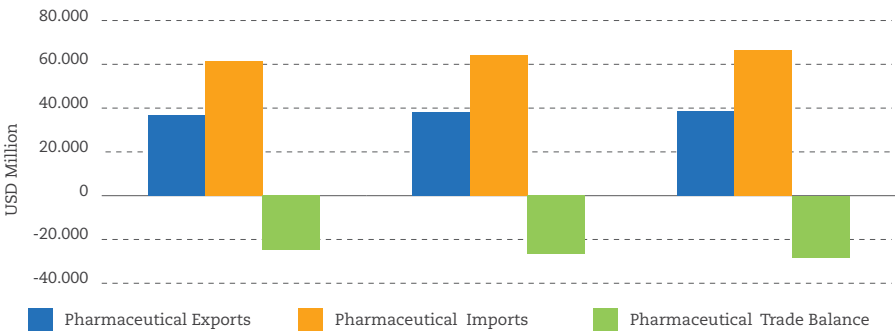


Chart 26: Pharmaceutical trade and forecast (US, 2012-2016)¹¹³



¹¹¹ Business Monitor International (2014) Industry View

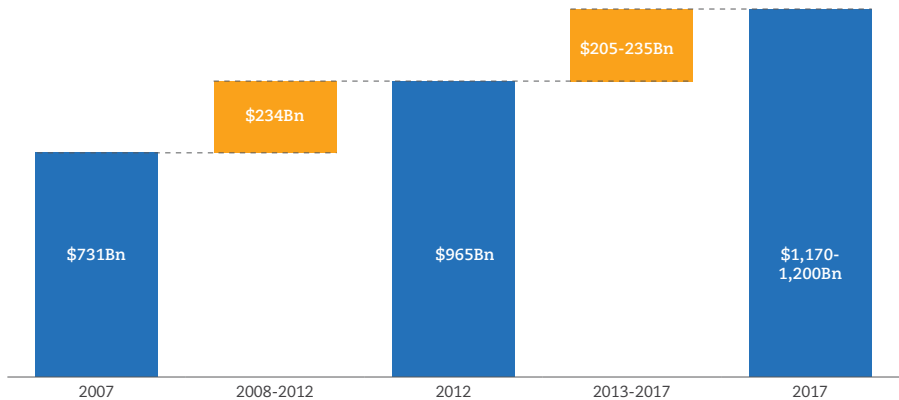
¹¹² Idem.

¹¹³ Idem.

The pharmaceutical market

The IMS Institute for Healthcare Informatics predicts that the pharmaceutical market will reach nearly USD 1,200 billion by 2017, an increase of nearly USD 235 billion from the USD 965 billion recorded in 2012¹¹⁴. 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 589 billion in 2012 to USD 610–624 billion in 2017. Global generic spending is expected to increase from USD 261 billion to USD 420–430 billion by 2017, of which USD 224–244 billion of the increase is from low-cost generics in emerging markets¹¹⁵.

Chart 27: Global spending on medicines¹¹⁶



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 34% in 2012 to 31% in 2017, while the European share of spending will decline from 15% to 13%. Meanwhile, the leading emerging countries will account for 33% of global spending in 2017 from 31% in 2012¹¹⁷.

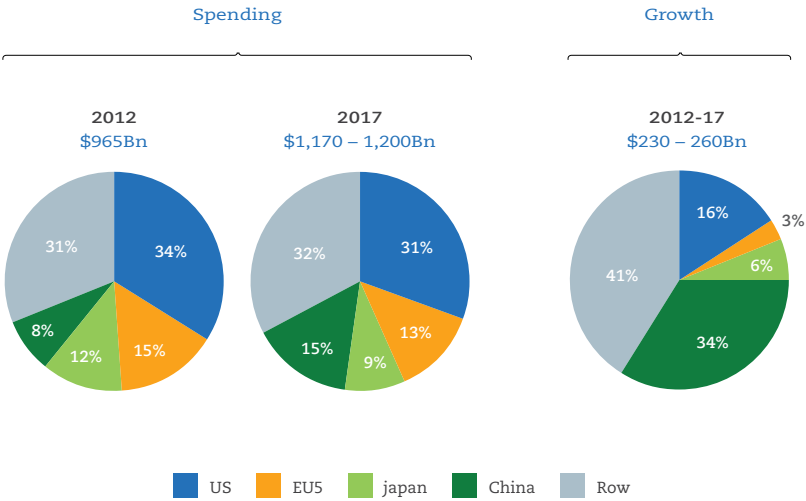
¹¹⁴ IMS Institute for Healthcare Informatics (2014) The Global Use of Medicines. http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Health%20Institute/Reports/Global_Use_of_Meds_Outlook_2017/Global_Spending_Growth_2008-2017.pdf

¹¹⁵ Idem.

¹¹⁶ Idem.

¹¹⁷ Idem.

Figure 8: Spending by geography¹¹⁸

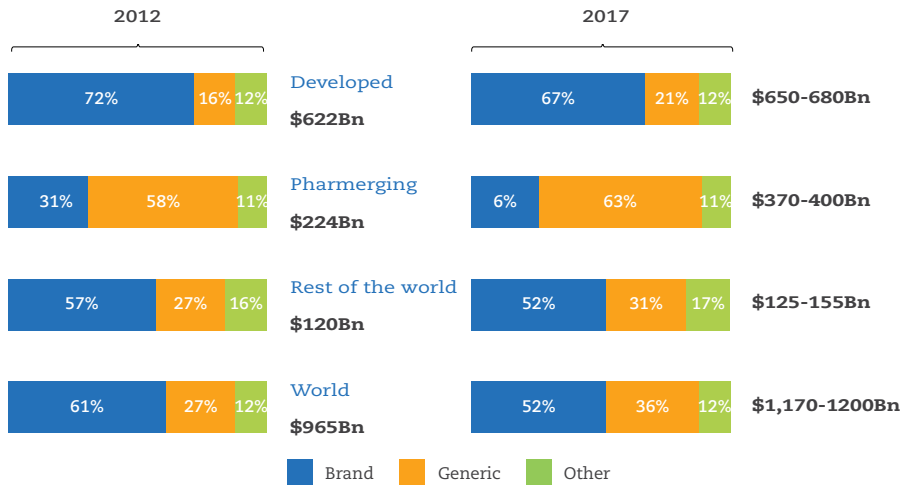


Generic versus branded pharmaceutical products

Branded products accounted for nearly two-thirds of global pharmaceutical spending in 2012. 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 2017 are expected to reach USD 420–430 billion, approximately 70% of which will be outside developed markets¹¹⁹.

118 IMS Institute for Healthcare Informatics (2014) The Global Use of Medicines. http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Health%20Institute/Reports/Global_Use_of_Meds_Outlook_2017/Global_Spending_Growth_2008-2017.pdf

119 Idem.

Figure 9: Spending by segment¹²⁰

Conclusion

Pharmaceutical innovation is 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.

¹²⁰ Idem.

ANNEXES

Annex 1

Life expectancy and cause of death

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|---------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Afghanistan | 16 | 14 | 60 | 49 | 74 | 9 | 18 |
| Albania | 19 | 16 | 74 | | 9 | 14 | 76 |
| Algeria | 18 | 17 | 72 | | 43 | 12 | 45 |
| Andorra | 25 | 22 | 83 | | 4 | 12 | 84 |
| Angola | 16 | 14 | 51 | | 79 | 7 | 14 |
| Antigua and Barbuda | 22 | 17 | 75 | 71 | 17 | 14 | 69 |
| Argentina | 21 | 20 | 76 | 73 | 18 | 16 | 67 |
| Armenia | 17 | 16 | 71 | | 14 | 9 | 77 |
| Australia | 25 | 21 | 83 | | 6 | 15 | 79 |
| Austria | 24 | 21 | 81 | | 4 | 12 | 84 |
| Azerbaijan | 19 | 16 | 72 | | 26 | 8 | 66 |
| Bahamas | 21 | 19 | 75 | 72 | 24 | 18 | 57 |
| Bahrain | 20 | 18 | 77 | 73 | 13 | 20 | 67 |
| Bangladesh | 18 | 17 | 70 | 60 | 52 | 14 | 34 |
| Barbados | 23 | 20 | 78 | | 16 | 11 | 73 |
| Belarus | 19 | 19 | 72 | | 5 | 23 | 72 |
| Belgium | 23 | 21 | 80 | | 7 | 15 | 78 |
| Belize | 21 | 19 | 75 | 71 | 28 | 30 | 43 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|-----------------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Benin | 16 | 15 | 59 | | 75 | 7 | 18 |
| Bhutan | 19 | 16 | 68 | 53 | 53 | 14 | 33 |
| Bolivia | 19 | 17 | 68 | 58 | 55 | 11 | 34 |
| Bosnia and Herzegovina | 21 | 18 | 77 | | 5 | 9 | 86 |
| Botswana | 18 | 17 | 62 | | 71 | 10 | 19 |
| Brazil | 21 | 18 | 74 | | 20 | 24 | 56 |
| Brunei Darussalam | 21 | 18 | 77 | | 13 | 16 | 71 |
| Bulgaria | 19 | 18 | 74 | | 5 | 9 | 86 |
| Burkina Faso | 15 | 15 | 58 | | 82 | 7 | 12 |
| Burundi | 16 | 15 | 56 | | 78 | 8 | 14 |
| Cabo Verde | 16 | 16 | 74 | | 43 | 17 | 40 |
| Cambodia | 20 | 17 | 72 | 54 | 60 | 10 | 31 |
| Cameroon | 24 | 17 | 56 | 54 | 75 | 7 | 17 |
| Canada | 16 | 16 | 82 | | 6 | 14 | 79 |
| Central African Republic | 25 | 22 | 51 | | 78 | 7 | 14 |
| Chad | 16 | 15 | 51 | 45 | 84 | 5 | 11 |
| Chile | 15 | 14 | 80 | 73 | 10 | 20 | 71 |
| China | 24 | 19 | 75 | | 15 | 19 | 65 |
| Colombia | 19 | 18 | 79 | | 21 | 36 | 43 |
| Comoros | 25 | 21 | 62 | | 68 | 8 | 24 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|---------------------------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Congo | 16 | 15 | 59 | 56 | 73 | 10 | 17 |
| Cook Islands | 17 | 16 | 76 | 69 | 23 | 15 | 62 |
| Costa Rica | 21 | 17 | 79 | | 13 | 25 | 62 |
| Côte d'Ivoire | 23 | 22 | 53 | | 71 | 11 | 19 |
| Croatia | 21 | 18 | 78 | | 3 | 11 | 85 |
| Cuba | 22 | 20 | 79 | 74 | 8 | 13 | 78 |
| Cyprus | 24 | 20 | 82 | | 4 | 15 | 81 |
| Czech Republic | 21 | 17 | 78 | | 5 | 13 | 83 |
| Democratic People's Republic of Korea | 17 | 17 | 70 | 70 | 39 | 10 | 52 |
| Democratic Republic of the Congo | 15 | 15 | 52 | 49 | 82 | 7 | 11 |
| Denmark | 23 | 20 | 80 | | 5 | 10 | 85 |
| Djibouti | 16 | 15 | 61 | 57 | 65 | 10 | 24 |
| Dominica | 21 | 20 | 75 | | 16 | 11 | 74 |
| Dominican Republic | 23 | 19 | 77 | | 42 | 17 | 42 |
| Ecuador | 22 | 20 | 75 | | 30 | 25 | 45 |
| Egypt | 17 | 17 | 71 | | 24 | 11 | 65 |
| El Salvador | 22 | 19 | 72 | | 22 | 32 | 46 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|-------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Equatorial Guinea | 16 | 15 | 55 | | 74 | 8 | 18 |
| Eritrea | 15 | 12 | 63 | | 64 | 14 | 23 |
| Estonia | 21 | 18 | 77 | | 4 | 19 | 77 |
| Ethiopia | 18 | 15 | 64 | 45 | 70 | 9 | 20 |
| Fiji | 17 | 15 | 69 | | 23 | 10 | 67 |
| Finland | 24 | 20 | 81 | 75 | 3 | 20 | 77 |
| France | 25 | 22 | 82 | | 6 | 14 | 80 |
| Gabon | 18 | 17 | 63 | 61 | 69 | 9 | 21 |
| Gambia | 17 | 16 | 61 | | 73 | 7 | 20 |
| Georgia | 20 | 19 | 74 | 71 | 15 | 10 | 75 |
| Germany | 24 | 20 | 81 | | 5 | 8 | 87 |
| Ghana | 17 | 16 | 62 | 57 | 66 | 9 | 25 |
| Greece | 24 | 21 | 81 | | 5 | 12 | 83 |
| Grenada | 19 | 18 | 73 | | 17 | 13 | 70 |
| Guatemala | 21 | 18 | 72 | 62 | 45 | 24 | 31 |
| Guinea | 16 | 15 | 58 | | 73 | 8 | 19 |
| Guinea-Bissau | 15 | 14 | 54 | 49 | 79 | 6 | 15 |
| Guyana | 15 | 16 | 63 | | 32 | 21 | 47 |
| Haiti | 17 | 15 | 62 | 54 | 72 | 6 | 22 |
| Honduras | 22 | 19 | 74 | | 42 | 14 | 43 |
| Hungary | 20 | 17 | 75 | 69 | 3 | 10 | 87 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Iceland | 25 | 22 | 82 | | 5 | 18 | 77 |
| India | 17 | 15 | 66 | 58 | 52 | 13 | 35 |
| Indonesia | 18 | 16 | 71 | | 41 | 13 | 45 |
| Iran | 20 | 16 | 74 | | 28 | 23 | 49 |
| Iraq | 18 | 18 | 70 | | 35 | 40 | 25 |
| Ireland | 24 | 19 | 81 | | 6 | 16 | 78 |
| Israel | 24 | 21 | 82 | | 10 | 12 | 78 |
| Italy | 25 | 21 | 83 | 77 | 5 | 9 | 86 |
| Jamaica | 21 | 20 | 74 | | 37 | 21 | 42 |
| Japan | 26 | 23 | 84 | | 9 | 15 | 77 |
| Jordan | 19 | 17 | 74 | | 26 | 19 | 55 |
| Kazakhstan | 16 | 17 | 68 | 66 | 16 | 24 | 59 |
| Kenya | 18 | 17 | 61 | | 76 | 10 | 14 |
| Kiribati | 17 | 16 | 66 | 60 | 36 | 4 | 60 |
| Kuwait | 21 | 18 | 78 | | 14 | 22 | 64 |
| Kyrgyzstan | 17 | 18 | 69 | | 30 | 15 | 55 |
| Laos | 17 | 15 | 66 | | 58 | 13 | 28 |
| Latvia | 20 | 18 | 74 | | 5 | 17 | 77 |
| Lebanon | 22 | 17 | 80 | 67 | 13 | 17 | 70 |
| Lesotho | 16 | 17 | 50 | | 77 | 9 | 15 |
| Liberia | 16 | 14 | 62 | | 82 | 4 | 14 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|-------------------------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Libya | 20 | 17 | 75 | 68 | 21 | 18 | 62 |
| Lithuania | 21 | 19 | 74 | | 6 | 23 | 71 |
| Luxembourg | 25 | 20 | 82 | | 5 | 15 | 79 |
| Madagascar | 17 | 15 | 64 | | 69 | 7 | 24 |
| Malawi | 16 | 15 | 59 | | 73 | 10 | 17 |
| Malaysia | 19 | 17 | 74 | | 26 | 16 | 58 |
| Maldives | 20 | 13 | 77 | | 23 | 21 | 56 |
| Mali | 15 | 14 | 57 | 46 | 85 | 4 | 11 |
| Malta | 24 | 19 | 81 | | 5 | 9 | 86 |
| Marshall Islands | 18 | 16 | 70 | 63 | 27 | 9 | 64 |
| Mauritania | 16 | 16 | 63 | | 72 | 9 | 19 |
| Mauritius | 20 | 17 | 74 | | 12 | 12 | 76 |
| Mexico | 22 | 21 | 76 | | 19 | 20 | 61 |
| Micronesia (Federated States of) | 17 | 17 | 69 | 66 | 41 | 10 | 49 |
| Monaco | 25 | 22 | 82 | | 5 | 16 | 78 |
| Mongolia | 16 | 15 | 67 | | 26 | 21 | 53 |
| Montenegro | 20 | 22 | 76 | | 5 | 9 | 86 |
| Morocco | 18 | 17 | 71 | | 39 | 10 | 51 |
| Mozambique | 16 | 14 | 53 | 43 | 76 | 8 | 15 |
| Myanmar | 17 | 16 | 66 | | 41 | 39 | 21 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Namibia | 18 | 16 | 67 | 63 | 63 | 15 | 22 |
| Nauru | 23 | 20 | 79 | 73 | 29 | 15 | 56 |
| Nepal | 17 | 15 | 68 | 54 | 60 | 10 | 31 |
| Netherlands | 24 | 21 | 81 | 77 | 6 | 8 | 86 |
| New Zealand | 25 | 20 | 82 | 76 | 5 | 18 | 77 |
| Nicaragua | 21 | 22 | 73 | | 33 | 17 | 49 |
| Niger | 15 | 15 | 59 | | 90 | 3 | 8 |
| Nigeria | 16 | 15 | 54 | | 81 | 5 | 14 |
| Niue | 19 | 17 | 74 | | 27 | 15 | 58 |
| Norway | 24 | 21 | 82 | | 6 | 14 | 80 |
| Oman | 20 | 17 | 76 | | 13 | 20 | 67 |
| Pakistan | 17 | 17 | 65 | | 64 | 9 | 26 |
| Palau | 18 | 16 | 73 | | 24 | 11 | 65 |
| Panama | 23 | 21 | 77 | | 30 | 22 | 48 |
| Papua New Guinea | 15 | 13 | 62 | | 62 | 11 | 28 |
| Paraguay | 21 | 21 | 75 | 73 | 35 | 21 | 45 |
| Peru | 23 | 21 | 77 | | 37 | 17 | 46 |
| Philippines | 17 | 18 | 69 | | 42 | 13 | 45 |
| Poland | 21 | 18 | 77 | | 5 | 15 | 80 |
| Portugal | 24 | 20 | 81 | | 10 | 9 | 81 |
| Qatar | 22 | 19 | 79 | 75 | 11 | 34 | 55 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|-----------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Republic of Korea | 24 | 18 | 81 | | 7 | 21 | 72 |
| Republic of Moldova | 17 | 17 | 71 | | 10 | 16 | 74 |
| Romania | 20 | 18 | 74 | | 8 | 12 | 80 |
| Russian Federation | 17 | 18 | 69 | | 11 | 25 | 64 |
| Rwanda | 18 | 15 | 65 | 48 | 77 | 8 | 15 |
| Saint Kitts and Nevis | 19 | 17 | 74 | 68 | 14 | 23 | 63 |
| Saint Lucia | 21 | 20 | 75 | | 20 | 20 | 60 |
| Samoa | 19 | 15 | 73 | | 34 | 10 | 55 |
| San Marino | 25 | 23 | 83 | | 7 | 7 | 86 |
| Sao Tome and Principe | 18 | 17 | 67 | | 67 | 8 | 25 |
| Saudi Arabia | 19 | 17 | 76 | 69 | 20 | 25 | 55 |
| Senegal | 16 | 16 | 64 | | 77 | 6 | 17 |
| Serbia | 19 | 19 | 75 | | 4 | 8 | 88 |
| Seychelles | 20 | 17 | 74 | 69 | 21 | 14 | 66 |
| Sierra Leone | 13 | 11 | 46 | 38 | 85 | 5 | 10 |
| Singapore | 25 | 20 | 83 | | 11 | 11 | 78 |
| Slovakia | 21 | 18 | 76 | | 6 | 13 | 81 |
| Slovenia | 23 | 19 | 80 | | 4 | 16 | 80 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|----------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Solomon Islands | 17 | 15 | 69 | | 51 | 8 | 41 |
| Somalia | 16 | 15 | 53 | | 74 | 11 | 14 |
| South Africa | 16 | 15 | 59 | | 79 | 6 | 15 |
| Spain | 25 | 22 | 82 | 77 | 7 | 10 | 83 |
| Sri Lanka | 20 | 19 | 75 | 69 | 11 | 50 | 39 |
| Sudan | 17 | 16 | 63 | | 59 | 17 | 24 |
| Suriname | 23 | 21 | 77 | | 30 | 18 | 52 |
| Swaziland | 17 | 16 | 54 | 61 | 72 | 12 | 16 |
| Sweden | 24 | 21 | 82 | | 5 | 12 | 83 |
| Switzerland | 25 | 22 | 83 | | 5 | 13 | 82 |
| Syrian Arab Republic | 19 | 18 | 68 | | 23 | 16 | 61 |
| Tajikistan | 17 | 18 | 68 | | 62 | 6 | 32 |
| Thailand | 21 | 18 | 75 | 69 | 24 | 22 | 55 |
| Macedonia | 19 | 19 | 76 | | 6 | 6 | 88 |
| Timor-Leste | 17 | 14 | 66 | 50 | 76 | 6 | 18 |
| Togo | 17 | 16 | 58 | 55 | 76 | 6 | 18 |
| Tonga | 18 | 17 | 71 | 68 | 30 | 8 | 61 |
| Trinidad and Tobago | 18 | 17 | 70 | 68 | 22 | 19 | 59 |
| Tunisia | 21 | 19 | 76 | 70 | 34 | 13 | 53 |
| Turkey | 21 | 18 | 75 | | 21 | 11 | 68 |

| | LIFE EXPECTANCY AT AGE 60 (YEARS) | | LIFE EXPECTANCY AT BIRTH (YEARS) | | CAUSE OF DEATH (%) | | |
|--------------------------|--------------------------------------|------|-------------------------------------|------|--------------------|----------|-----------------|
| | | | | | COMMUNICABLE | INJURIES | NONCOMMUNICABLE |
| | 2012 | 1990 | 2012 | 1990 | 2008 | 2008 | 2008 |
| Turkmenistan | 16 | 16 | 63 | | 35 | 13 | 52 |
| Tuvalu | 16 | 14 | 68 | 62 | 28 | 10 | 62 |
| Uganda | 16 | 15 | 57 | 47 | 76 | 11 | 13 |
| Ukraine | 18 | 18 | 71 | 70 | 14 | 17 | 70 |
| United Arab Emirates | 20 | 17 | 76 | | 14 | 30 | 57 |
| United Kingdom | 24 | 20 | 81 | | 8 | 9 | 83 |
| Tanzania | 18 | 16 | 61 | | 78 | 8 | 13 |
| United States of America | 23 | 21 | 79 | | 9 | 19 | 72 |
| Uruguay | 22 | 19 | 77 | | 12 | 14 | 74 |
| Uzbekistan | 17 | 18 | 69 | 67 | 34 | 10 | 55 |
| Vanuatu | 18 | 16 | 72 | 66 | 35 | 10 | 56 |
| Venezuela | 23 | 19 | 76 | 72 | 20 | 38 | 42 |
| Viet Nam | 22 | 20 | 76 | | 29 | 15 | 56 |
| Yemen | 16 | 16 | 64 | | 61 | 13 | 26 |
| Zambia | 17 | 15 | 57 | 43 | 75 | 10 | 15 |
| Zimbabwe | 18 | 18 | 58 | 62 | 87 | 4 | 9 |

Source: WHO

Annex 2

Health financing

| | PER CAPITA TOTAL EXPENDITURE ON HEALTH (PPT INT. \$) | PER CAPITA GOVERNMENT EXPENDITURE ON HEALTH (PPT INT. \$) | HEALTH EXPENDITURE, TOTAL (% OF GDP) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF GOVERNMENT EXPENDITURE) | EXTERNAL RESOURCES FOR HEALTH (% OF TOTAL EXPENDITURE ON HEALTH) | SOCIAL SECURITY EXPENDITURE ON HEALTH AS A PERCENTAGE OF GENERAL GOVERNMENT EXPENDITURE ON HEALTH | OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE EXPENDITURE ON HEALTH) | PRIVATE PREPAID PLANS AS A PERCENTAGE OF PRIVATE EXPENDITURE ON HEALTH |
|--------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2011 |
| Afghanistan | 47.34 | 9.85 | 8.65 | 20.80 | 79.20 | 7.07 | 21.75 | | 93.96 | |
| Angola | 212.10 | 131.85 | 3.47 | 62.16 | 37.84 | 5.57 | 1.68 | | 70.53 | |
| Australia | 3,984.69 | 2,638.60 | 8.94 | 66.22 | 33.78 | 17.21 | 0.00 | | 60.38 | 24.85 |
| Azerbaijan | 572.33 | 130.24 | 5.39 | 22.76 | 77.24 | 3.87 | 1.03 | | 89.33 | 0.72 |
| Bahamas | 2,377.16 | 1,095.23 | 7.52 | 46.07 | 53.93 | 15.72 | | 2.13 | 53.98 | 45.07 |
| Belgium | 4,320.11 | 3,279.49 | 10.79 | 75.91 | 24.09 | 14.95 | 0.00 | 86.21 | 81.69 | 19.73 |
| Belize | 458.04 | 297.25 | 5.81 | 64.90 | 35.10 | 12.09 | 1.19 | 13.86 | 69.76 | 16.82 |
| Benin | 69.61 | 35.82 | 4.49 | 51.46 | 48.54 | 10.30 | 31.98 | 0.44 | 91.18 | 7.15 |
| Bhutan | 252.79 | 212.10 | 3.77 | 83.91 | 16.09 | 7.01 | 11.63 | | 94.74 | 1.21 |
| Burkina Faso | 90.10 | 48.96 | 6.17 | 54.34 | 45.66 | 11.87 | 31.41 | 0.21 | 79.64 | 2.51 |
| Burundi | 44.64 | 26.54 | 8.13 | 59.46 | 40.54 | 13.68 | 46.33 | 13.05 | 69.73 | 0.18 |
| Cameroon | 120.17 | 40.27 | 5.13 | 33.51 | 66.49 | 8.53 | 9.28 | 2.56 | 94.22 | |
| China | 479.97 | 268.57 | 5.41 | 55.96 | 44.04 | 12.52 | 0.05 | 67.92 | 77.97 | 6.44 |
| Colombia | 723.31 | 548.13 | 6.83 | 75.78 | 24.22 | 18.53 | 0.56 | 83.99 | 60.94 | 32.34 |
| Comoros | 55.79 | 31.18 | 4.54 | 55.88 | 44.12 | 9.94 | 26.90 | | 100.00 | |

| | PER CAPITA TOTAL EXPENDITURE ON HEALTH (PPT INT. \$) | PER CAPITA GOVERNMENT EXPENDITURE ON HEALTH (PPT INT. \$) | HEALTH EXPENDITURE, TOTAL (% OF GDP) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF GOVERNMENT EXPENDITURE) | EXTERNAL RESOURCES FOR HEALTH (% OF TOTAL EXPENDITURE ON HEALTH) | SOCIAL SECURITY EXPENDITURE ON HEALTH AS A PERCENTAGE OF GENERAL GOVERNMENT EXPENDITURE ON HEALTH | OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE EXPENDITURE ON HEALTH) | PRIVATE PREPAID PLANS AS A PERCENTAGE OF PRIVATE EXPENDITURE ON HEALTH |
|--------------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2011 |
| Congo, Dem. Rep. | 23.58 | 12.11 | 5.59 | 51.35 | 48.65 | 12.84 | 50.40 | | 66.77 | 3.6 |
| Cote d'Ivoire | 144.05 | 39.59 | 7.06 | 27.49 | 72.51 | 8.01 | 8.74 | 6.68 | 76.99 | 1.07 |
| Croatia | 1,409.77 | 1,160.54 | 6.82 | 82.32 | 17.68 | 15.05 | | 94.28 | 78.56 | 4.08 |
| Ecuador | 652.22 | 292.48 | 6.40 | 44.84 | 55.16 | 7.07 | 0.36 | 33.1 | 93.16 | 13.36 |
| Equatorial Guinea | 1,431.72 | 777.13 | 4.74 | 54.28 | 45.72 | 6.96 | 1.05 | 4.51 | 95.20 | |
| Eritrea | 16.51 | 7.84 | 2.60 | 47.48 | 52.52 | 3.60 | 24.68 | | 100.00 | |
| Ethiopia | 43.65 | 21.13 | 3.83 | 48.40 | 51.60 | 11.10 | 50.31 | | 79.88 | 1.49 |
| Fiji | 197.09 | 127.88 | 3.99 | 64.88 | 35.12 | 8.91 | 7.25 | | 64.08 | 21.76 |
| Gabon | 558.24 | 285.85 | 3.47 | 51.21 | 48.79 | 7.17 | 1.26 | 27.08 | 84.87 | |
| Georgia | 560.73 | 100.96 | 9.18 | 18.01 | 81.99 | 5.21 | 3.00 | 68.84 | 78.86 | 4.09 |
| Grenada | 690.93 | 321.95 | 6.38 | 46.60 | 53.40 | 9.00 | 0.74 | 0.62 | 97.79 | |
| Guinea-Bissau | 65.78 | 14.94 | 5.86 | 22.72 | 77.28 | 7.79 | 34.47 | 1.55 | 55.87 | |
| Guyana | 222.94 | 147.29 | 6.56 | 66.06 | 33.94 | 13.12 | 10.90 | 2.55 | 92.34 | 0.35 |
| Honduras | 353.84 | 178.02 | 8.60 | 50.31 | 49.69 | 11.77 | 3.58 | 29.59 | 91.67 | 7.6 |
| Indonesia | 150.11 | 59.45 | 3.03 | 39.61 | 60.39 | 6.87 | 1.08 | 17.64 | 75.09 | 4.1 |
| Iran, Islamic Rep. | 973.99 | 431.17 | 4.18 | 44.27 | 55.73 | 10.53 | 0.05 | 47.2 | 95.83 | 2.81 |

| | PER CAPITA TOTAL EXPENDITURE ON HEALTH (PPT INT. \$) | PER CAPITA GOVERNMENT EXPENDITURE ON HEALTH (PPT INT. \$) | HEALTH EXPENDITURE, TOTAL (% OF GDP) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF GOVERNMENT EXPENDITURE) | EXTERNAL RESOURCES FOR HEALTH (% OF TOTAL EXPENDITURE ON HEALTH) | SOCIAL SECURITY EXPENDITURE ON HEALTH AS A PERCENTAGE OF GENERAL GOVERNMENT EXPENDITURE ON HEALTH | OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE EXPENDITURE ON HEALTH) | PRIVATE PREPAID PLANS AS A PERCENTAGE OF PRIVATE EXPENDITURE ON HEALTH |
|----------------------------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2011 |
| Iraq | 148.93 | 79.76 | 3.59 | 53.56 | 46.44 | 4.42 | 0.33 | | 100.00 | |
| Jordan | 483.39 | 305.18 | 9.83 | 63.13 | 36.87 | 17.76 | 4.22 | 28.28 | 77.30 | 18.06 |
| Kiribati | 263.73 | 217.94 | 10.71 | 82.64 | 17.36 | 10.30 | 6.27 | 0 | 0.54 | 0.19 |
| Korea, Rep. | 2,321.38 | 1,263.49 | 7.54 | 54.43 | 45.57 | 13.58 | | 79.48 | 79.11 | 13.99 |
| Kuwait | 1,376.66 | 1,136.20 | 2.53 | 82.53 | 17.47 | 5.61 | | | 90.38 | 9.44 |
| Lao People's Democratic Republic | 84.37 | 43.20 | 2.88 | 51.20 | 48.80 | 6.08 | 22.07 | 4.87 | 78.25 | |
| Lebanon | 1,015.63 | 385.32 | 7.58 | 37.94 | 62.06 | 8.89 | 0.73 | 53.2 | 72.19 | 20.12 |
| Libya | 439.07 | 339.45 | 3.91 | 77.31 | 22.69 | 6.87 | 0.10 | | 100.00 | |
| Madagascar | 39.86 | 24.21 | 4.11 | 60.75 | 39.25 | 12.80 | 20.89 | | 80.15 | 15.18 |
| Maldives | 770.86 | 349.54 | 8.50 | 45.34 | 54.66 | 9.30 | 1.32 | 22.19 | 88.34 | 6.5 |
| Mali | 73.75 | 28.77 | 5.82 | 39.01 | 60.99 | 12.54 | 31.46 | 0.74 | 99.58 | 0.43 |
| Mauritania | 121.66 | 77.79 | 6.39 | 63.94 | 36.06 | 9.93 | 8.15 | 11.25 | 94.58 | 0.64 |
| Micronesia, Fed. Sts. | 488.98 | 441.49 | 12.79 | 90.29 | 9.71 | 18.03 | 70.17 | 18.5 | 97.54 | |
| Monaco | 6,026.06 | 5,337.21 | 4.40 | 88.57 | 11.43 | 18.82 | 0.00 | 98.72 | 61.24 | 38.8 |
| Montenegro | 1,018.76 | 608.34 | 7.57 | 59.71 | 40.29 | 9.95 | 1.26 | 88.34 | 90.99 | |
| Myanmar | 24.72 | 5.91 | 1.79 | 23.90 | 76.10 | 1.50 | 8.07 | 3.01 | 93.72 | |

| | PER CAPITA TOTAL EXPENDITURE ON HEALTH (PPT INT. \$) | PER CAPITA GOVERNMENT EXPENDITURE ON HEALTH (PPT INT. \$) | HEALTH EXPENDITURE, TOTAL (% OF GDP) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF GOVERNMENT EXPENDITURE) | EXTERNAL RESOURCES FOR HEALTH (% OF TOTAL EXPENDITURE ON HEALTH) | SOCIAL SECURITY EXPENDITURE ON HEALTH AS A PERCENTAGE OF GENERAL GOVERNMENT EXPENDITURE ON HEALTH | OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE EXPENDITURE ON HEALTH) | PRIVATE PREPAID PLANS AS A PERCENTAGE OF PRIVATE EXPENDITURE ON HEALTH |
|--------------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2011 |
| Namibia | 618.71 | 381.68 | 8.35 | 61.69 | 38.31 | 13.86 | 8.03 | 2.48 | 17.91 | 61.06 |
| Nepal | 80.00 | 31.60 | 5.46 | 39.50 | 60.50 | 10.36 | 18.47 | | 81.38 | 0.25 |
| Nigeria | 161.40 | 50.27 | 6.07 | 31.15 | 68.85 | 6.66 | 5.27 | | 95.69 | 3.08 |
| Palau | 1,680.25 | 1,295.04 | 9.46 | 77.07 | 22.93 | 16.43 | 35.21 | 0 | 46.11 | 39.32 |
| Papua New Guinea | 150.79 | 125.24 | 5.20 | 83.05 | 16.95 | 14.03 | 21.64 | 0 | 55.89 | 5.49 |
| Paraguay | 633.44 | 266.21 | 10.32 | 42.03 | 57.97 | 11.17 | 2.63 | 34.81 | 91.99 | 8.62 |
| Philippines | 202.51 | 76.43 | 4.59 | 37.74 | 62.26 | 10.30 | 1.75 | 28.26 | 83.53 | 11.3 |
| Qatar | 1,804.57 | 1,509.03 | 2.16 | 83.62 | 16.38 | 5.30 | | | 52.17 | 24.32 |
| Romania | 872.86 | 678.46 | 5.11 | 77.73 | 22.27 | 11.28 | | 82.1 | 97.79 | 0.37 |
| Russian Federation | 1,473.83 | 898.86 | 6.26 | 60.99 | 39.01 | 10.31 | | 47.08 | 87.97 | 7.01 |
| Rwanda | 144.34 | 82.72 | 10.66 | 57.31 | 42.69 | 22.12 | 46.60 | 3.07 | 49.39 | |
| Samoa | 308.14 | 272.18 | 6.82 | 88.33 | 11.67 | 13.46 | 19.88 | 0.54 | 62.60 | |
| Senegal | 96.49 | 53.93 | 4.96 | 55.89 | 44.11 | 9.60 | 19.12 | 3.96 | 77.41 | 17.88 |
| Serbia | 1,249.78 | 764.41 | 10.47 | 61.16 | 38.84 | 13.36 | 0.37 | 93.45 | 95.60 | 0.78 |
| Seychelles | 1,196.68 | 1,116.17 | 4.66 | 93.27 | 6.73 | 10.80 | 7.58 | 4 | 35.43 | 23.24 |
| Sierra Leone | 204.94 | 33.97 | 15.08 | 16.58 | 83.42 | 12.27 | 13.16 | 0 | 91.38 | 0.18 |
| Singapore | 2,880.57 | 1,082.96 | 4.65 | 37.60 | 62.40 | 11.40 | | 12.7 | 93.86 | 10.27 |
| Solomon Islands | 251.55 | 241.97 | 8.05 | 96.19 | 3.81 | 19.93 | 52.30 | 0 | 56.70 | |

| | PER CAPITA TOTAL EXPENDITURE ON HEALTH (PPT INT. \$) | PER CAPITA GOVERNMENT EXPENDITURE ON HEALTH (PPT INT. \$) | HEALTH EXPENDITURE, TOTAL (% OF GDP) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF TOTAL HEALTH EXPENDITURE) | HEALTH EXPENDITURE, PUBLIC (% OF GOVERNMENT EXPENDITURE) | EXTERNAL RESOURCES FOR HEALTH (% OF TOTAL EXPENDITURE ON HEALTH) | SOCIAL SECURITY EXPENDITURE ON HEALTH AS A PERCENTAGE OF GENERAL GOVERNMENT EXPENDITURE ON HEALTH | OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE EXPENDITURE ON HEALTH) | PRIVATE PREPAID PLANS AS A PERCENTAGE OF PRIVATE EXPENDITURE ON HEALTH |
|----------------------|------------------------------------------------------|-----------------------------------------------------------|--------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------|
| | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2012 | 2011 |
| South Africa | 982.29 | 470.47 | 8.79 | 47.90 | 52.10 | 12.87 | 1.75 | 2.81 | | 81.08 |
| Sudan | 159.10 | 37.26 | 7.25 | 23.42 | 76.58 | 10.65 | 2.09 | | 96.21 | 0.99 |
| Suriname | 520.61 | 296.84 | 5.88 | 57.02 | 42.98 | 11.88 | 4.46 | 41.79 | 23.54 | 16.32 |
| Syrian Arab Republic | 196.21 | 90.38 | 3.40 | 46.06 | 53.94 | 5.58 | 0.89 | | 100.00 | |
| Tanzania | 108.68 | 42.75 | 6.99 | 39.34 | 60.66 | 10.25 | 37.74 | | 52.34 | |
| Thailand | 385.46 | 294.62 | 3.93 | 76.43 | 23.57 | 14.21 | 0.64 | 10.06 | 55.76 | 31.42 |
| Timor-Leste | 79.61 | 58.73 | 4.29 | 73.78 | 26.22 | 2.64 | 45.39 | | 15.40 | 0 |
| Togo | 74.69 | 38.41 | 8.64 | 51.42 | 48.58 | 15.38 | 18.06 | 6.47 | 84.58 | 4.22 |
| Tonga | 269.88 | 226.69 | 5.37 | 84.00 | 16.00 | 12.80 | 19.43 | | 67.82 | 17.91 |
| Tunisia | 686.40 | 405.24 | 7.04 | 59.04 | 40.96 | 13.33 | 0.44 | 56.28 | 86.68 | 10.31 |
| Turkmeni- stan | 209.37 | 132.41 | 1.98 | 63.24 | 36.76 | 8.68 | 1.05 | 6.5 | 100.00 | |
| Tuvalu | 432.91 | 432.48 | 15.43 | 99.90 | 0.10 | 17.87 | 11.65 | | 100.00 | |
| Uganda | 107.78 | 25.72 | 7.97 | 23.87 | 76.13 | 10.22 | 28.56 | | 64.79 | 0.15 |
| Vanuatu | 167.33 | 144.88 | 3.63 | 86.58 | 13.42 | 13.55 | 28.64 | | 56.70 | 20.64 |
| Yemen, Rep. | 117.94 | 32.25 | 5.53 | 27.35 | 72.65 | 3.97 | 3.69 | | 98.66 | 1.29 |

Source: World Bank

Annex 3

Pharmaceutical sales

| Geography | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|-------------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Afghanistan | 0.39 | 0.46 | 11.80 | 13.20 | 1.95 | 2.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| Albania | 0.22 | 0.24 | 68.60 | 74.90 | 1.77 | 1.82 | 1.35 | 1.65 | 152.37 | 155.61 |
| Algeria | 3.16 | 3.43 | 82.00 | 87.60 | 1.53 | 1.63 | 1.75 | 3.40 | 2,165.62 | 2,442.92 |
| Antigua and Barbuda | 0.01 | 0.01 | 136.90 | 142.00 | 1.04 | 1.05 | - | - | 8.13 | 8.52 |
| Argentina | 7.75 | 7.18 | 188.50 | 173.20 | 1.63 | 1.59 | 871.52 | 957.29 | 1,979.03 | 1,833.86 |
| Armenia | 0.13 | 0.16 | 41.90 | 52.60 | 1.26 | 1.23 | 6.42 | 7.01 | 122.05 | 146.55 |
| Australia | 13.44 | 12.30 | 583.00 | 527.00 | 0.87 | 0.82 | 4,308.91 | 4,682.30 | 9,796.66 | 8,967.93 |
| Austria | 5.69 | 6.09 | 672.20 | 717.20 | 1.45 | 1.43 | 8,892.20 | 9,413.45 | 4,977.17 | 5,330.00 |
| Azerbaijan | 0.37 | 0.44 | 39.70 | 47.00 | 0.54 | 0.58 | 78.00 | 92.38 | 236.90 | 263.48 |
| Bahamas | 0.07 | 0.07 | 193.50 | 189.60 | 0.88 | 0.85 | 0.10 | 0.10 | 50.64 | 50.36 |
| Bahrain | 0.26 | 0.28 | 198.60 | 210.60 | 0.86 | 0.86 | - | - | 218.94 | 236.99 |
| Bangladesh | 1.52 | 1.78 | 9.80 | 11.40 | 1.31 | 1.37 | 85.00 | 98.90 | 167.46 | 196.00 |
| Barbados | 0.09 | 0.10 | 318.00 | 351.50 | 2.13 | 2.37 | 68.94 | 72.79 | 60.04 | 66.69 |
| Belarus | 0.86 | 1.00 | 91.80 | 107.10 | 1.33 | 1.42 | 138.88 | 158.51 | 697.78 | 810.05 |
| Belgium | 7.48 | 7.64 | 676.40 | 688.30 | 1.57 | 1.52 | 42,767.31 | 45,592.99 | 33,110.20 | 34,485.94 |
| Bolivia | 0.26 | 0.28 | 24.50 | 26.30 | 0.95 | 1.03 | - | - | 137.87 | 144.65 |
| Bosnia-Her- zegovina | 0.54 | 0.58 | 141.10 | 150.50 | 3.07 | 3.12 | 58.98 | 63.46 | 332.16 | 353.70 |
| Botswana | 0.20 | 0.19 | 97.80 | 95.70 | 1.36 | 1.32 | 16.27 | 20.12 | 143.49 | 146.57 |

*Numbers in blue are foscated

| | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|----------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|----------|-----------------------------------|-----------|
| Geography | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Brazil | 26.82 | 26.40 | 135.00 | 131.80 | 1.19 | 1.18 | 1,188.39 | 1,291.56 | 6,476.99 | 6,698.27 |
| Brunei Darussalam | 0.09 | 0.10 | 225.00 | 237.20 | 0.54 | 0.56 | 0.73 | - | 61.83 | - |
| Bulgaria | 1.46 | 1.58 | 200.90 | 218.40 | 2.85 | 2.98 | 729.49 | 773.10 | 1,017.51 | 1,098.29 |
| Burkina Faso | 0.21 | 0.24 | 12.40 | 14.20 | 1.93 | 1.99 | - | - | 159.38 | 187.59 |
| Burundi | 0.06 | 0.06 | 6.80 | 7.10 | 3.82 | 3.83 | - | - | - | - |
| Cambodia | 0.18 | 0.21 | 12.30 | 13.60 | 1.31 | 1.37 | 2.49 | - | 122.01 | 141.10 |
| Cameroon | 0.26 | 0.30 | 12.20 | 13.60 | 1.03 | 1.02 | - | - | 169.25 | 193.69 |
| Canada | 25.81 | 24.90 | 740.90 | 707.60 | 1.44 | 1.38 | 5,242.60 | 5,305.55 | 12,223.50 | 12,644.97 |
| Cape Verde | 0.01 | 0.01 | 22.70 | 25.50 | 0.61 | 0.62 | - | - | 8.23 | 9.15 |
| Central African Rep. | 0.03 | 0.04 | 6.00 | 9.10 | 1.20 | 1.95 | - | - | 18.67 | 28.30 |
| Chile | 3.30 | 3.48 | 189.00 | 197.40 | 1.23 | 1.25 | 148.94 | 161.17 | 923.50 | 973.37 |
| China | 71.84 | 86.59 | 52.20 | 62.50 | 0.88 | 0.94 | 3,041.58 | 3,549.55 | 12,525.19 | 15,097.38 |
| Colombia | 4.22 | 4.35 | 88.50 | 90.00 | 1.14 | 1.15 | 432.50 | 456.69 | 1,952.73 | 2,010.35 |
| Congo (DRC) | 0.19 | 0.20 | 2.80 | 2.70 | 1.19 | 1.18 | 1.06 | 1.21 | 127.85 | 129.93 |
| Costa Rica | 0.75 | 0.80 | 156.70 | 164.30 | 1.66 | 1.61 | 223.50 | 261.00 | 520.19 | 552.89 |
| Cote d'Ivoire | 0.41 | 0.44 | 20.50 | 21.80 | 1.69 | 1.56 | 6.28 | 7.04 | 285.97 | 311.57 |
| Croatia | 1.28 | 1.19 | 297.60 | 277.50 | 2.27 | 2.08 | 499.68 | 505.43 | 712.49 | 704.29 |
| Cuba | 1.28 | 1.35 | 113.70 | 119.60 | 1.73 | 1.73 | 447.93 | 476.67 | 73.75 | 77.18 |
| Cyprus | 0.29 | 0.26 | 255.30 | 227.20 | 1.17 | 1.10 | 0.00 | 0.00 | 277.46 | 249.59 |

*Numbers in blue are foscated

| Geography | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|--------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Czech Republic | 4.07 | 3.66 | 381.90 | 341.80 | 2.08 | 2.02 | 1,256.24 | 1,284.93 | 3,553.09 | 3,228.09 |
| Denmark | 3.54 | 3.61 | 631.90 | 641.60 | 1.12 | 1.10 | 4,917.91 | 5,466.30 | 3,228.20 | 3,290.61 |
| Dominican Republic | 0.70 | 0.69 | 68.30 | 66.50 | 1.19 | 1.14 | 33.58 | 30.38 | 467.74 | 489.48 |
| Ecuador | 1.36 | 1.38 | 87.90 | 87.60 | 1.61 | 1.50 | 29.34 | 38.10 | 936.68 | 948.78 |
| Egypt | 2.11 | 2.09 | 26.20 | 25.40 | 0.82 | 0.82 | 266.95 | 295.89 | 1,628.16 | 1,802.81 |
| El Salvador | 0.52 | 0.45 | 82.90 | 71.40 | 2.19 | 1.87 | 107.58 | 109.84 | 328.85 | 285.18 |
| Estonia | 0.33 | 0.36 | 257.80 | 282.90 | 1.50 | 1.50 | 58.40 | 59.44 | 326.63 | 357.53 |
| Ethiopia | 0.37 | 0.42 | 4.00 | 4.40 | 0.88 | 1.04 | 1.60 | 1.65 | 136.98 | 159.02 |
| Fiji | 0.03 | 0.04 | 38.50 | 46.90 | 0.81 | 0.94 | - | - | 24.71 | 30.28 |
| Finland | 3.70 | 3.91 | 684.70 | 721.10 | 1.52 | 1.53 | 1,245.86 | 1,272.62 | 2,194.22 | 2,318.44 |
| France | 44.09 | 44.56 | 689.70 | 693.00 | 1.69 | 1.59 | 32,929.73 | 33,476.32 | 23,541.74 | 24,258.42 |
| Gabon | 0.14 | 0.15 | 83.10 | 87.80 | 0.55 | 0.55 | - | - | - | - |
| Georgia | 0.38 | 0.41 | 87.30 | 96.00 | 2.31 | 2.30 | 0.00 | 0.00 | 0.00 | 0.00 |
| Germany | 50.60 | 52.82 | 605.80 | 630.60 | 1.49 | 1.46 | 62,847.26 | 69,483.30 | 40,322.34 | 41,366.20 |
| Ghana | 0.32 | 0.34 | 12.50 | 13.20 | 0.82 | 0.90 | 3.27 | 3.99 | 147.59 | 160.03 |
| Greece | 7.61 | 7.45 | 683.90 | 669.40 | 3.09 | 3.06 | 1,110.88 | 1,118.42 | 3,334.42 | 3,298.02 |
| Guatemala | 0.69 | 0.74 | 45.80 | 47.60 | 1.37 | 1.37 | 219.30 | 234.04 | 460.55 | 490.34 |
| Guyana | 0.06 | 0.06 | 69.50 | 72.90 | 2.19 | 2.22 | 2.89 | 2.88 | 39.75 | 41.87 |
| Honduras | 0.48 | 0.50 | 60.80 | 61.10 | 2.57 | 2.53 | 3.93 | 3.93 | 373.83 | 394.43 |
| Hong Kong | 1.33 | 1.45 | 185.90 | 201.10 | 0.50 | 0.51 | 1,448.06 | 1,497.86 | 2,137.75 | 2,330.26 |
| Hungary | 2.75 | 2.54 | 275.90 | 254.60 | 2.18 | 1.97 | 4,330.23 | 4,803.75 | 2,819.05 | 2,624.46 |

*Numbers in blue are foscated

| | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|-----------------|---------------------------------|--------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| Geography | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Iceland | 0.20 | 0.22 | 622.20 | 648.00 | 1.36 | 1.27 | 82.68 | 90.54 | 68.47 | 72.05 |
| India | 15.72 | 15.44 | 12.70 | 12.30 | 0.76 | 0.85 | 9,402.47 | 11,106.32 | 1,640.73 | 1,841.09 |
| Indonesia | 6.24 | 6.11 | 25.30 | 24.40 | 0.71 | 0.69 | 425.44 | 451.24 | 541.30 | 562.38 |
| Iran | 3.52 | 2.46 | 46.00 | 31.80 | 0.64 | 0.49 | - | - | 1,562.20 | 1,092.62 |
| Iraq | 1.19 | 1.35 | 36.20 | 40.00 | 0.62 | 0.60 | 0.17 | 0.20 | 734.18 | 837.03 |
| Ireland | 2.76 | 2.66 | 602.10 | 574.60 | 1.34 | 1.23 | 27,895.83 | 28,575.63 | 4,107.51 | 3,964.31 |
| Israel | 1.85 | 2.02 | 241.90 | 261.70 | 0.77 | 0.76 | 6,867.63 | 7,790.63 | 1,535.01 | 1,757.02 |
| Italy | 27.93 | 27.60 | 458.70 | 452.60 | 1.40 | 1.34 | 19,376.57 | 20,556.69 | 19,677.11 | 21,021.06 |
| Jamaica | 0.23 | 0.22 | 83.70 | 79.30 | 1.57 | 1.54 | 2.86 | 3.47 | 135.97 | 129.54 |
| Japan | 129.48 | 112.62 | 1017.50 | 885.80 | 2.17 | 2.24 | 2,928.77 | 2,825.65 | 22,144.35 | 19,899.45 |
| Jordan | 0.85 | 0.91 | 121.20 | 124.40 | 2.74 | 2.77 | 537.17 | 576.21 | 442.20 | 457.93 |
| Kazakhstan | 1.65 | 1.80 | 101.70 | 109.50 | 0.82 | 0.85 | 23.70 | 25.71 | 1,259.68 | 1,395.51 |
| Kenya | 0.56 | 0.64 | 13.00 | 14.50 | 1.38 | 1.48 | 74.00 | 77.73 | 330.00 | 377.45 |
| Kuwait | 0.98 | 1.02 | 300.00 | 303.30 | 0.53 | 0.56 | - | - | 417.86 | - |
| Kyrgyzstan | 0.25 | 0.27 | 45.90 | 49.40 | 3.93 | 3.27 | - | - | 184.70 | 201.62 |
| Latvia | 0.41 | 0.43 | 197.70 | 209.30 | 1.48 | 1.45 | 518.68 | 575.13 | 623.36 | 656.64 |
| Lebanon | 1.30 | 1.36 | 279.90 | 282.70 | 3.05 | 3.05 | 31.37 | 35.70 | 950.55 | 967.57 |
| Lithuania | 0.64 | 0.67 | 211.20 | 221.10 | 1.51 | 1.46 | 432.69 | 516.02 | 806.81 | 841.65 |
| Luxem- bourg | 0.36 | 0.38 | 693.50 | 714.30 | 0.65 | 0.62 | 81.26 | 81.40 | 398.57 | 415.70 |
| Macedonia | 0.27 | 0.29 | 125.70 | 135.70 | 2.75 | 2.72 | 89.58 | 93.86 | 150.04 | 162.16 |
| Madagascar | 0.10 | 0.11 | 4.40 | 4.60 | 1.09 | 1.11 | - | - | 69.61 | 75.11 |

*Numbers in blue are foscasted

| Geography | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Malawi | 0.28 | 0.36 | 17.70 | 21.80 | 3.78 | 3.83 | 0.08 | 0.08 | 196.13 | 252.61 |
| Malaysia | 1.96 | 2.10 | 67.10 | 70.50 | 0.64 | 0.67 | 184.82 | 187.28 | 1,263.37 | 1,305.67 |
| Mali | 0.23 | 0.26 | 15.30 | 16.70 | 2.27 | 2.26 | - | - | 159.52 | 179.58 |
| Mauritius | 0.16 | 0.17 | 128.10 | 136.60 | 1.39 | 1.45 | 32.06 | 33.97 | 105.87 | 114.40 |
| Mexico | 12.32 | 13.43 | 101.90 | 109.80 | 1.03 | 1.05 | 1,665.90 | 1,827.96 | 4,612.54 | 5,006.00 |
| Moldova | 0.21 | 0.21 | 60.90 | 61.40 | 3.27 | 3.09 | 97.27 | 121.51 | 211.51 | 211.51 |
| Mongolia | 0.08 | 0.09 | 27.60 | 31.40 | 0.75 | 0.80 | - | - | - | - |
| Montenegro | 0.10 | 0.11 | 161.30 | 174.60 | 2.47 | 2.38 | 12.12 | 9.07 | 65.16 | 65.84 |
| Morocco | 1.10 | 1.11 | 33.90 | 33.60 | 1.15 | 1.06 | 80.40 | 96.29 | 457.65 | 442.50 |
| Mozam- bique | 0.19 | 0.19 | 7.60 | 7.40 | 1.33 | 1.25 | 6.11 | 6.20 | 129.17 | 129.10 |
| Namibia | 0.26 | 0.26 | 115.80 | 111.20 | 2.04 | 2.13 | 3.41 | 3.13 | 185.00 | 188.56 |
| Nepal | 0.24 | 0.25 | 8.90 | 9.00 | 1.29 | 1.28 | 10.65 | - | 162.52 | - |
| Netherlands | 8.13 | 8.04 | 486.10 | 479.60 | 1.05 | 0.99 | 15,953.11 | 17,902.56 | 13,171.98 | 14,478.27 |
| New Zea- land | 1.12 | 1.17 | 251.20 | 258.80 | 0.66 | 0.64 | 218.78 | 236.38 | 843.64 | 824.23 |
| Nicaragua | 0.44 | 0.46 | 73.60 | 75.50 | 4.14 | 4.08 | 2.67 | 2.71 | 349.12 | 363.41 |
| Niger | 0.18 | 0.23 | 10.60 | 13.10 | 2.75 | 3.08 | - | - | 127.42 | 157.69 |
| Nigeria | 1.10 | 1.28 | 6.50 | 7.40 | 0.42 | 0.47 | 6.30 | 7.11 | 422.90 | 481.70 |
| North Korea | - | - | - | - | - | - | - | - | - | - |
| Norway | 3.32 | 3.32 | 664.40 | 658.70 | 0.66 | 0.68 | 657.82 | 667.94 | 1,789.11 | 1,841.19 |
| Oman | 0.42 | 0.46 | 125.10 | 125.20 | 0.53 | 0.52 | 30.00 | 33.67 | 276.42 | 302.54 |
| Pakistan | 2.03 | 2.06 | 11.30 | 11.30 | 0.94 | 0.93 | 142.92 | 148.23 | 577.62 | 590.70 |

*Numbers in blue are foscated

| | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|--------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| Geography | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| Panama | 0.55 | 0.59 | 143.40 | 151.90 | 1.52 | 1.53 | 1,250.00 | 1,338.37 | 363.44 | 391.35 |
| Paraguay | 0.24 | 0.27 | 35.10 | 39.10 | 0.92 | 0.89 | - | - | 156.35 | 169.63 |
| Peru | 1.56 | 1.62 | 52.00 | 53.40 | 0.78 | 0.78 | 33.60 | 36.27 | 564.68 | 615.42 |
| Philippines | 3.17 | 3.21 | 32.80 | 32.60 | 1.27 | 1.20 | 56.14 | 62.35 | 923.49 | 951.37 |
| Poland | 9.64 | 10.25 | 252.30 | 268.20 | 1.93 | 1.95 | 2,237.54 | 2,379.65 | 4,906.10 | 5,264.97 |
| Portugal | 4.75 | 4.59 | 447.90 | 432.70 | 2.26 | 2.20 | 795.17 | 850.02 | 2,566.33 | 2,480.16 |
| Puerto Rico | 3.12 | 3.02 | 844.20 | 817.90 | 4.54 | 4.42 | 40,848.00 | 40,419.70 | 15,503.00 | 15,926.54 |
| Qatar | 0.40 | 0.45 | 195.20 | 206.90 | 0.21 | 0.25 | 0.82 | 0.86 | 340.59 | 374.33 |
| Romania | 3.91 | 4.17 | 179.60 | 192.10 | 2.31 | 2.20 | 1,128.50 | 1,273.06 | 3,060.44 | 3,414.59 |
| Russia | 22.22 | 24.30 | 155.20 | 170.10 | 1.10 | 1.17 | 585.95 | 647.96 | 12,883.00 | 13,960.13 |
| Rwanda | 0.11 | 0.13 | 9.90 | 10.70 | 1.60 | 1.54 | - | - | 83.06 | 92.67 |
| Saint Lucia | 0.01 | 0.01 | 60.60 | 62.10 | 1.21 | 1.13 | 0.16 | 0.17 | 8.29 | 8.48 |
| Saint Vin- cent | 0.01 | 0.01 | 98.30 | 104.00 | 1.64 | 1.49 | 0.00 | 0.00 | 6.54 | 6.91 |
| Saudi Arabia | 5.49 | 6.06 | 194.00 | 210.30 | 0.75 | 0.81 | 278.03 | 289.63 | 4,119.84 | 4,674.47 |
| Senegal | 0.27 | 0.31 | 19.80 | 22.20 | 1.95 | 2.03 | 13.04 | 14.67 | 171.07 | 197.71 |
| Serbia | 0.93 | 1.05 | 96.80 | 110.60 | 2.42 | 2.45 | 207.00 | 205.58 | 588.27 | 669.09 |
| Seychelles | 0.01 | 0.01 | 67.90 | 75.60 | 0.63 | 0.62 | 0.00 | 0.00 | 3.19 | 3.55 |
| Singapore | 0.77 | 0.79 | 144.40 | 145.90 | 0.26 | 0.27 | 5,586.62 | 5,708.66 | 1,371.94 | 1,319.34 |
| Slovakia | 2.12 | 2.20 | 389.50 | 404.00 | 2.34 | 2.28 | 350.04 | 377.91 | 1,757.50 | 1,842.15 |
| Slovenia | 0.95 | 0.96 | 458.90 | 461.30 | 2.08 | 2.03 | 2,618.22 | 2,778.39 | 948.79 | 955.79 |
| South Africa | 3.71 | 3.52 | 70.80 | 66.80 | 0.97 | 1.00 | 163.70 | 164.64 | 2,219.62 | 2,085.68 |

*Numbers in blue are foscasted

| Geography | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|----------------------|---------------------------------|-------|---------------------------------------------|--------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| South Korea | 13.95 | 14.71 | 284.70 | 298.70 | 1.24 | 1.22 | 1,050.91 | 1,101.90 | 3,792.03 | 3,885.50 |
| Spain | 31.74 | 31.79 | 678.90 | 677.50 | 2.38 | 2.21 | 11,528.99 | 12,175.22 | 13,641.75 | 14,346.23 |
| Sri Lanka | 0.47 | 0.52 | 22.20 | 24.60 | 0.79 | 0.79 | 3.10 | 3.22 | 307.10 | 342.88 |
| Sudan | 0.58 | 0.56 | 15.50 | 14.60 | 1.11 | 0.92 | - | - | 297.73 | 271.17 |
| Suriname | 0.02 | 0.02 | 30.90 | 32.70 | 0.37 | 0.36 | 0.00 | 0.00 | 10.47 | 11.08 |
| Swaziland | 0.01 | 0.01 | 7.20 | 7.00 | 0.20 | 0.18 | 0.00 | 0.00 | 6.94 | 6.87 |
| Sweden | 5.34 | 5.54 | 561.20 | 579.10 | 1.02 | 0.97 | 6,948.35 | 7,053.54 | 4,004.28 | 4,117.27 |
| Switzerland | 7.55 | 7.76 | 944.30 | 961.10 | 1.25 | 1.25 | 53,420.38 | 55,295.04 | 20,037.14 | 20,598.68 |
| Syria | 0.22 | 0.10 | 10.10 | 4.40 | 0.36 | 0.17 | - | - | - | - |
| Taiwan | 5.20 | 5.43 | 223.00 | 232.30 | 1.09 | 1.11 | 320.12 | 363.66 | 2,287.93 | 2,524.27 |
| Tajikistan | 0.09 | 0.10 | 11.50 | 12.60 | 1.21 | 1.26 | 31.67 | 45.43 | 64.84 | 72.69 |
| Tanzania | 0.28 | 0.43 | 5.90 | 8.70 | 0.95 | 1.28 | 2.40 | 1.68 | 189.39 | 286.04 |
| Thailand | 4.36 | 4.64 | 65.20 | 69.20 | 1.19 | 1.20 | 291.84 | 335.27 | 1,743.29 | 1,925.50 |
| Trinidad & Tobago | 0.27 | 0.28 | 199.30 | 208.80 | 1.11 | 1.10 | - | - | - | - |
| Tunisia | 0.82 | 1.00 | 75.40 | 91.10 | 1.90 | 2.06 | 29.44 | 36.39 | 469.83 | 571.60 |
| Turkey | 9.11 | 9.00 | 123.10 | 120.20 | 1.16 | 1.09 | 624.09 | 709.75 | 3,820.44 | 3,973.97 |
| Uganda | 0.29 | 0.32 | 8.10 | 8.50 | 1.38 | 1.39 | 8.72 | 8.23 | 239.47 | 261.55 |
| Ukraine | 3.94 | 4.44 | 86.50 | 98.10 | 2.25 | 2.51 | 234.52 | 290.92 | 3,213.55 | 3,572.99 |
| United Arab Emirates | 1.82 | 1.91 | 197.60 | 204.50 | 0.45 | 0.45 | 131.23 | 137.88 | 1,652.65 | 1,744.79 |
| United Kingdom | 37.65 | 36.15 | 599.60 | 572.50 | 1.51 | 1.43 | 31,893.71 | 31,632.83 | 25,800.54 | 25,803.05 |

*Numbers in blue are foscated

| | PHARMACEUTICAL SALES, US\$BN | | PHARMACEUTICAL SALES, US\$ PER CAPITA | | PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE | | PHARMACEUTICAL EXPORTS, US\$MN | | PHARMACEUTICAL IMPORTS, US\$MN | |
|---------------|---------------------------------|--------|---------------------------------------------|---------|-----------------------------------------------------|------|-----------------------------------|-----------|-----------------------------------|-----------|
| Geography | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 | 2013 |
| United States | 343.00 | 341.17 | 1080.30 | 1066.00 | 2.11 | 2.03 | 36,450.94 | 37,170.09 | 60,823.21 | 60,498.86 |
| Uruguay | 0.31 | 0.34 | 92.30 | 99.20 | 0.62 | 0.61 | 115.42 | 121.03 | 139.23 | 147.50 |
| Uzbekistan | 0.53 | 0.50 | 18.40 | 17.40 | 1.18 | 0.93 | 2.39 | 3.06 | 375.82 | 360.79 |
| Venezuela | 10.12 | 9.85 | 337.80 | 324.00 | 2.66 | 2.73 | 38.90 | 38.88 | 2,771.75 | 3,640.79 |
| Vietnam | 2.84 | 3.30 | 31.20 | 35.90 | 1.82 | 1.93 | 77.14 | 93.77 | 1,840.89 | 2,138.42 |
| Yemen | 0.30 | 0.33 | 12.40 | 13.30 | 1.02 | 1.00 | 1.94 | 2.11 | 256.22 | 274.16 |
| Zambia | 0.20 | 0.21 | 13.80 | 14.30 | 0.91 | 0.93 | 8.85 | 9.93 | 137.07 | 146.44 |
| Zimbabwe | 0.20 | 0.23 | 14.80 | 16.50 | 2.13 | 2.32 | 3.75 | 4.06 | 112.50 | 129.56 |

*Numbers in blue are forecasted

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 | 6,060,091,227 | 2,624,159,838 | 3,435,931,389 | 287,333,981 |
| Belgium | 12,928,441,660 | 7,275,415,274 | 5,653,026,386 | 1,847,856,194 |
| Czech Republic | 1,873,837,827 | 1,128,132,512 | 729,277,425 | 3,806,119 |
| Denmark | 10,147,163,124 | 5,550,927,711 | 4,596,235,413 | 168,341,440 |
| Finland | 1,757,553,447 | 633,713,301 | 1,176,304,428 | 159,588,048 |
| France | 37,956,693,065 | 27,861,957,727 | 10,094,735,338 | 1,342,662,248 |
| Germany | 50,282,872,380 | 27,433,296,930 | 22,849,575,450 | 6,478,251,698 |
| Hungary | 3,357,363,581 | 1,958,729,916 | 1,398,633,665 | 1,973,162 |
| Italy | 34,252,970,337 | 25,650,987,304 | 8,601,983,032 | 986,045,563 |
| Korea | 23,495,379,878 | 16,454,875,067 | 7,040,504,811 | 815,279,128 |
| Netherlands | 8,601,380,970 | 7,509,295,521 | 1,833,488,592 | 620,934,703 |
| United States* | 180,943,225,677 | 83,893,280,242 | 97,049,945,435 | 49,415,000,000 |

* 2009 data

Source: OECD (2014) STAN R&D and Industry

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 |
|-----------------|------|---------------------|------|-------------------------------------------|------------------------------------------------------|
| Australia | 2010 | 15,074 | 2010 | 1,230,460,000 | 1,309,000,000 |
| Austria | 2009 | 10,683 | 2009 | 675,132,471 | 489,000,000 |
| Azerbaijan | 2010 | 140 | 2010 | 248,820 | 319,000 |
| Belgium | 2009 | 18,614 | 2009 | 1,554,599,514 | 1,126,000,000 |
| Brazil | 2010 | 97,677 | 2010 | 2,132,398,937 | 4,734,950,000 |
| Bulgaria | 2010 | 7,200 | 2010 | 50,339,843 | 71,008,000 |
| Canada | 2010 | 18,452 | 2010 | 754,772,537 | 816,651,000 |
| China | 2010 | 1,731,600 | 2010 | 11,631,495,084 | 72,446,000,000 |
| Croatia | 2010 | 3,919 | 2010 | 104,670,734 | 575,905,000 |
| Cyprus | 2010 | 1,122 | 2010 | 34,977,108 | 25,334,000 |
| Czech Republic | 2007 | 10,110 | 2007 | 167,219,000 | 3,385,000,000 |
| Denmark | 2009 | 17,368 | 2009 | 1,859,118,180 | 10,060,000,000 |
| Ecuador | 2008 | 2,856 | 2008 | 29,488,000 | 29,488,000 |
| Egypt | 2010 | 42,314 | 2010 | 221,717,658 | 1,562,096,000 |
| Eritrea | 2010 | 277 | 2010 | 500,955 | 5,245,000 |
| Estonia | 2010 | 300 | 2010 | 6,486,179 | 4,697,954 |
| Ethiopia | 2009 | 1,437 | 2009 | 708,673 | 13,800,000 |
| Finland | 2009 | 1,371 | 2009 | 82,838,340 | 60,000,000 |
| France | 2009 | 78,745 | 2009 | 4,869,513,753 | 3,527,000,000 |
| Georgia | 2010 | 2,401 | 2010 | 9,114,458 | 16,041,300 |
| Germany | 2009 | 115,141 | 2009 | 8,537,871,576 | 6,184,000,000 |
| Greece | 2007 | 6,294 | 2007 | 242,590,800 | 174,000,000 |

| COUNTRY OR AREA | YEAR | NUMBER OF EMPLOYEES | YEAR | WAGES AND SALARIES PAID TO EMPLOYEES, USD | WAGES AND SALARIES PAID TO EMPLOYEES, LOCAL CURRENCY |
|----------------------------|------|---------------------|------|-------------------------------------------|------------------------------------------------------|
| Hungary | 2009 | 15,756 | 2009 | 394,683,289 | 89,033,000,000 |
| India | 2009 | 414,025 | 2009 | 1,278,597,424 | 76,638,900,000 |
| Indonesia | 2009 | 58,875 | 2009 | 152,042,772 | 1,746,530,000,000 |
| Iran (Islamic Republic of) | 2009 | 22,225 | 2009 | 94,389,541 | 2,410,750,000,000 |
| Ireland | 2009 | 16,570 | 2009 | 1,355,787,498 | 982,000,000 |
| Italy | 2009 | 65,117 | 2009 | 4,048,033,548 | 2,932,000,000 |
| Japan | 2010 | 90,469 | 2010 | 4,512,376,043 | 458,961,000,000 |
| Jordan | 2010 | 5,430 | 2010 | 51,115,441 | 72,146,000 |
| Kyrgyzstan | 2010 | 290 | 2010 | 286,249 | 15,001,300 |
| Latvia | 2010 | 1,713 | 2007 | 8,248,888 | 16,406,000 |
| Lebanon | 2007 | 699 | 2007 | 7,299,000 | 7,299,000 |
| Lesotho | 2007 | 89 | 2007 | 184,280 | 1,321,000 |
| Lithuania | 2010 | 674 | 2010 | 7,620,481 | 26,312,000 |
| Malawi | 2009 | 300 | 2009 | 865,591 | 125,448,000 |
| Malaysia | 2010 | 10,275 | 2010 | 76,785,072 | 247,904,100 |
| Malta | 2008 | 622 | 2008 | 28,461,173 | 20,614,493 |
| Mexico | 2010 | 49,435 | 2010 | 891,279,059 | 11,544,587,000 |
| Morocco | 2010 | 8,224 | 2010 | 224,983,289 | 1,831,664,000 |
| 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 |
| Oman | 2010 | 666 | 2010 | 775,101 | 2,013,119 |
| Pakistan | 2006 | 36,336 | 2006 | 142,991,304 | 8,613,934,000 |
| Philippines | 2008 | 14,013 | 2008 | 125,346,746 | 5,469,000,000 |

| COUNTRY OR AREA | YEAR | NUMBER OF EMPLOYEES | YEAR | WAGES AND SALARIES PAID TO EMPLOYEES, USD | WAGES AND SALARIES PAID TO EMPLOYEES, LOCAL CURRENCY |
|-----------------------------|------|---------------------|------|-------------------------------------------|------------------------------------------------------|
| 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 | 771,901,660 | 830,000,000,000 |
| Romania | 2010 | 8,836 | 2010 | 98,023,884 | 314,300,000 |
| Russian Federation | 2010 | 71,024 | 2010 | 524,192,018 | 18,378,000,000 |
| Singapore | 2010 | 5,363 | 2010 | 389,675,579 | 486,456,000 |
| Slovakia | 2008 | 2,603 | 2008 | 40,038,531 | 29,000,000 |
| Slovenia | 2010 | 6,233 | 2010 | 335,495,277 | 243,000,000 |
| Spain | 2009 | 38,983 | 2009 | 2,387,124,831 | 1,729,000,000 |
| Sri Lanka | 2006 | 11,654 | 2006 | 15,027,048 | 1,565,317,467 |
| State of Palestine | 2009 | 871 | 2009 | 9,889,000 | 9,889,000 |
| Sweden | 2009 | 16,883 | 2009 | 1,059,890,000 | 8,060,000,000 |
| Thailand | 2006 | 27,080 | 2006 | 76,914,290 | 2,924,497,700 |
| Turkey | 2009 | 29,230 | 2009 | 702,130,411 | 1,461,356,000 |
| Ukraine | 2010 | 20,488 | 2010 | 98,519,573 | 809,358,000 |
| United Kingdom | 2009 | 39,910 | 2009 | 3,447,010,800 | 2,202,000,000 |
| United Republic of Tanzania | 2010 | 1,119 | 2010 | 2,465,275 | 4,051,397,589 |
| United States of America | 2008 | 245,900 | 2008 | 18,425,100,000 | 18,425,100,000 |
| Uruguay | 2007 | 3,102 | 2007 | 52,283,171 | 1,256,807,000 |
| Vietnam | 2010 | 35,525 | 2010 | 102,887,053 | 2,169,240,000,000 |

Source: United Nations Industrial Development Organization.



About the IFPMA

IFPMA represents the research-based pharmaceutical companies and associations across the globe. The research-based pharmaceutical industry's 2 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 initiative studies and identifies trends for the research-based pharmaceutical industry's long-term partnership programs to improve health in developing countries and the IFPMA Code of Practice sets standards for ethical promotion of medicines.

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