International Federation of Pharmaceutical Manufacturers & Associations

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.

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

7

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/



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.

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

8

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/

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%

Table 1: R&D costs (2012)6

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/ 10

	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

Table 2: Medicines in development for NCDs⁸

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

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

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/

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.

	2000 - 2003	2008 - 2011	PERCENTAGE CHANGE
	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 Treatmen Period (median days)*	140	175	25%
Number of Case Report Form Pages per Protocol (median)	55	171	227%

Table 3: Trends in clinical trial protocol complexity¹²

*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	 World class research institutions Highly trained workforce (retained or attracted back to the country) Clusters of innovative companies providing support on core
RESEARCH	technologies (high throughput screening, gene sequencing etc.) Partnership encouraging environment
CLINICAL TRIALS	 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/

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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 companies^{24.} In 2013, R&D spending by the pharmaceuticals and biotechnology sector grew by 2.4%, strengthening its position as the top R&D investing sector^{25.} 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

24 Idem.

25 Idem.

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

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 prevent ³¹.



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, $1995\text{-}2003^{41}$



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

Incremental		Radical		Revolutionary		
Observ	ved types	s of bioph	armaceutical ini	novations		
New products New chemical in a therapeutic or biological class entities		New disease mechanisms a families of clos related chemic biological prod	New disease mechanisms and families of closely related chemical or biological products		c	
Process innovat		New or significantly improve production or delivery method				

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 treatment $^{\rm 46}$

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%20 Use%20of%20Medicines/IHII_Advancing_Responsible_Use_of_Meds_Report.pdf/

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, 2007-2012 ⁵⁰

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.

49 Idem.

50 Idem.

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/

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

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

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.

	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

Table 5: Industry R&D activity relating to diseases of the developing world, 2005-201355

55 Idem.

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/



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/

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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/



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 lowincome 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.

63 Idem.

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

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/

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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/



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/



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.



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

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	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	

Table 6: Selected infrastructure indicators, 2010⁷¹

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

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 wellfunctioning 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, 2012^{72}

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) Heliobacter pylori and Peptic Ulcer Disease. http://www. cdc.gov/ulcer/economic.htm/



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 reasearch-based pharmaceutical companies $^{\rm 78}$



LATIN AMERICA AND SUB-SAHARAN THE CARIBBEAN AFRICA		SUB-SAHARAN Africa		MIDDLE EAST AND North Africa		CENTRAL ASIA		SOUTH ASIA		EAST ASIA AND The Pacific	
Brazil	55	Tanzania	105	Egypt	40	Uzbekistan	30	India	85	Indonesia	60
Haiti	55	Kenya	95	Morocco	35	Russia	25	Bhutan	55	Vietnam	60
Bolivia	45	Uganda	85	Yemen	30	Tajikistan	25	Bangladesh	55	China	55
		Cameroon	80								



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



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



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



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-NewLogoJUNE2.pdf/




¹ Nifurtimox, generally used as 2nd-line drug. ² The Bill and Melinda Gates foundation is also contributing.

Human African trypanosomiasis: Pentamidine/Melarsopro/Eflornathine(Sanofi)

1,800 m

Trachoma: Zithromax® (Pfizer)



Leprosy: Rimactane/Lamprene (Novartis)

Schistosomiasis: Prazinquantel (Merck KGaA)

Onchocerciasis: Mectizan (Ivermectin) (Merck & Co., Inc.)

Soil transmitted helminthiases: Mebendazole (Johnson & Johnson)





- Mectizan® (Ivermectin) (Merck & Co., Inc.)
- Lymphatic filariasis: Albendazole (GlaxoSmithKline)
- Lymphatic filariasis: Diethylcarbamazine citrate (Eisai)
- Chagas: Nifurtimox¹ (Bayer)

Lymphatic filariasis: Diethylcarbamazine citrate (Eisai/Sanofi²)

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

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/

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/









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

Table 7: Key indicators of the pharmaceutical industry's economic footprint in ${\it Europe}^{\rm 89}$

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	- 2005 (EU 1	E boforo 200	E): Croatia a	ad Carbia

(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.

	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%

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

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/



Chart 20: Development of the gross value added⁹⁵

Table 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, UDS	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/

	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%

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

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.

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

Table 11: Employment in the pharmaceutical industry in million¹⁰⁰

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/

	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%

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

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-how $^{\rm 103}$

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.

106 Idem.

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



Chart 21: Pharmaceutical trade and forecast (China, 2012-2016)¹⁰⁸

108 Business Monitor International (2014) Industry View

109 Idem.









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.

116 Idem.

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.

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/



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.

ANNEXES

Annex 1 Life expectancy and cause of death

				CAUSE OF DEATH (%)			
	LIFE EXPECTANCY AT AGE 60 (YEARS)		LIFE EXPECTANCY AT BIRTH (YEARS)		COMMUNICABLE	INJURIES	NONCOMMUNICABLE
	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

					CAUSE OF DEATH (%)			
		AT AGE 60 (YEARS)		LIFE EXPECTANCY AT BIRTH (YEARS)		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)				CAUSE OF DEATH (%)			
				LIFE EXPECTANCY AT BIRTH (YEARS)		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	

					CAUSE OF DEATH (%)			
	LIFE EXPECTANCY AT AGE 60 (YEARS)			AT BIRTH (YEARS)	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	

					CAU	н (%)	
	LIFE EXPECTANCY AT AGE 60 (YEARS)		LIFE EXPECTANCY AT BIRTH (YEARS)		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

					CAUSE OF DEATH (%)			
	LIFE EXPECTANCY AT AGE 60 (YEARS)			LIFE EXFECTANCY AT BIRTH (YEARS)	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	

					CAUSE OF DEATH (%)		
	LIFE EXPECTANCY AT AGE 60 (YEARS)			AT BIRTH (YEARS)	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

					CAUSE OF DEATH (%)		
	LIFE EXPECTANCY AT AGE 60 (YEARS)			LIFE EXPECTANCY AT BIRTH (YEARS)	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

					CAUS	SE OF DEAT	'Н (%)
	LIFE EXPECTANCY AT AGE 60 (YEARS)			LIFE EXFECTANCY AT BIRTH (YEARS)	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
Тодо	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

					CAU	'Н (%)	
	LIFE EXPECTANCY AT AGE 60 (YEARS)			AT BIRTH (YEARS)	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
Тодо	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

	PHARMACEUTICAL SALES, US\$BN		PHARMACEUTICAL SALES, US\$ PER CAPITA		PHARMACEUTICAL SALES, % OF HEALTH EXPENDITURE		PHARMAGEUTICAL EXPORTS, US\$MN		PHARMACEUTICAL IMPORTS, US\$MN	
Geography	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`lvoire	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

	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
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\$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 foscated

	PHARMACEUTICAL	SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER	CAPITA	PHARMACEUTICAL SALES. % OF HEALTH	EXPENDITURE	PHARMACEUTICAL	EXPORTS, US\$MN	PHARMACEUTICAL	IMPORTS, US\$MIN
Geography	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	EXFORIS, USAMIN	PHARMAGEUTICAL	IMPORTS, US\$MIN
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 foscated

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	PHARMACEUTICAL	SALES, US\$BN	PHARMACEUTICAL SALES, US\$ PER	CAPITA	PHARMACEUTICAL SALES. % OF HEALTH	EXPENDITURE	PHARMACEUTICAL	EXPORTS, US\$MIN	PHARMACEUTICAL	IMPORTS, US\$MIN
Geography	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 King- dom	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 foscated

Source: Business Monitor International

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Annex 4 Pharmaceutical value added

	PRODUCTION (GROSS OUTPUT), USD	INTERMEDIATE CONSUMPTION, UDS	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

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.

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IFPMA represents the research-based pharmaceutical companies and associations across the globe. The researchbased 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.

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