

THE PHARMACEUTICAL INDUSTRY AND GLOBAL HEALTH

FACTS AND
FIGURES 2017



IFPMA

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 further illustrates that the research-based pharmaceutical industry is 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 lives and helps those suffering from disease to recover and lead more productive lives. IFPMA presents this publication to underline the ongoing commitment of the research-based pharmaceutical industry to improving the quality of life for all people worldwide.

We hope that sharing some of the most recent and relevant facts and figures relating to our work can add value to 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 149.8 billion on R&D per year.
- In 2015, 56 new pharmaceuticals were launched, out of more than 7,000 compounds in development.
- In 2011–2015, the number of new chemical or biological entities launched on the world market increased to 226 from 146 a decade earlier.
- In 2014, 5 of the 11 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 to have saved, between 2011 and 2015, 1.14 million African children's lives.
- Between 2000 and 2014, immunization campaigns helped reduce the number of deaths from measles in Africa by 79%.
- In 2014, there were 401 drugs in the pipeline for diabetes and 208 drugs in development for HIV/AIDS.
- Currently, IFPMA members have 119 ongoing R&D projects related to neglected tropical diseases.
- In 2014, industry was the third largest funder for neglected diseases research, investing over USD 534 million.

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

- In 2014, the number of drugs in development for particular disease areas were:
 - Cancer: 1,919
 - Cardiovascular diseases: 563
 - Neurology: 1,308
 - Infectious diseases: 1,261
- For every USD 1 spent on new medicines for hypertension in the United States USD 10.11 in medical spending is saved.

THE PHARMACEUTICAL MARKET

- The global pharmaceutical market will reach nearly USD 1,430 billion by 2020.
- Pharmedging countries will account for 25% of global spending on pharmaceuticals by 2020, compared to 23% in 2015.
- The United States share of the global market will increase from 40.3% in 2015 to 41% in 2020, while Europe's share will fall from 13.5% in 2015 to 13.1% in 2020.



Chapter 1

PHARMACEUTICAL INNOVATION AND PUBLIC HEALTH

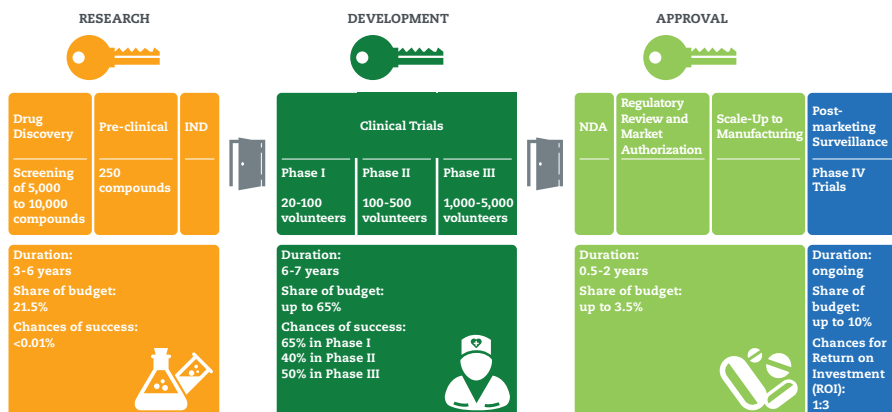
The research-based pharmaceutical industry plays a unique role in developing new medicines and vaccines to prevent and treat diseases, and improve the lives of patients worldwide. Its key contribution to global health is turning fundamental research into innovative treatments. Industry's success rests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

The private sector produces 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, on average, 5,000–10,000 screened. Researchers then extensively test the compound to ensure its efficacy and safety, a process that can take 10 to 15 years¹. To illustrate, in 2015 56 new medicines were launched², while currently more than 7,000 compounds are at different stages of development globally³. The difference in these numbers highlights the many research hurdles to be overcome before compounds can be developed into safe and effective medicines.

1 PhRMA (2016) 2016 Biopharmaceutical Research Industry Profile. Washington DC: Pharmaceutical Research and Manufacturers of America. <http://phrma.org/sites/default/files/pdf/biopharmaceutical-industry-profile.pdf/>

2 Evaluate Pharma (2016) World Preview 2016, Outlook to 2022. London: Evaluate Ltd., p 29. <http://info.evaluategroup.com/rs/607-YGS-364/images/wp16.pdf>

3 PhRMA (2016) Chart Pack Biopharmaceuticals in Perspective. Washington DC: Pharmaceutical Research and Manufacturers of America, p 22. <http://phrma.org/sites/default/files/pdf/chart-pack-biopharmaceuticals-in-perspective.pdf>

Figure 1: The Research and Development Process⁴

A Look into the Pharmaceutical Industry R&D Pipeline

Today, the cost of developing a successful medicine can exceed, according to some studies, USD 2.6 billion⁵ compared to USD 179 million in 1970s⁶. This increase reflects the various technical, regulatory and economic challenges facing R&D pipelines. Companies often experience lost R&D investments (that is, R&D expenditures that do not materialize in a market-approved medicine) because pharmaceutical R&D is marked by high failure rates. An early-phase compound may have a promising outlook, but only preclinical and clinical trials will demonstrate its efficacy, quality, and safety. In addition, lost investments may increase when a failure occurs in later R&D phases. A phase III failure is significantly more costly than a preclinical failure because each phase is associated with a certain amount of required investment.

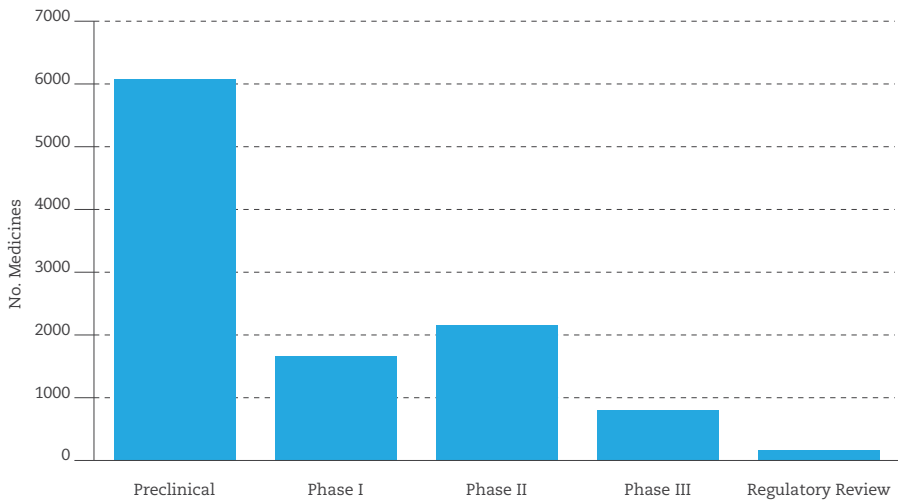
4 Pugatch Consilium (2015) Measuring the Global Biomedical Pulse. <http://www.pugatch-consilium.com/reports/BCI%202015%20-%20Measuring%20the%20Biomedical%20Pulse.pdf>

5 DiMasi, J. A.; Grabowski, H. G.; Hansenc, R. W. (2016) Innovation in the Pharmaceutical Industry: New Estimates of R&D Costs. *Journal of Health Economics*. doi: 10.1016/j.jhealeco.2016.01.012

6 PhRMA (2016) 2016 Biopharmaceutical Research Industry Profile. Washington DC: Pharmaceutical Research and Manufacturers of America, p 47. <http://phrma.org/sites/default/files/pdf/biopharmaceutical-industry-profile.pdf/>

Table 1: R&D Costs in the US, 2014⁷

FUNCTION	USD MILLION	SHARE (%)
Prehuman/Preclinical	11,272.7	21.2
Phase I	4,722.0	8.9
Phase II	5,697.8	10.7
Phase III	15,264.4	28.7
Approval	2,717.7	5.1
Phase IV	8,827.0	16.6
Uncategorized	4,751.5	8.9
TOTAL R&D	53,253.1	100

Chart 1: Medicines in Development by Regulatory Phase Globally, 2015⁸

7 PhRMA (2016) PhRMA Annual Membership Survey. Washington DC: Pharmaceutical Research and Manufacturers of America, p 6. <http://www.phrma.org/sites/default/files/pdf/annual-membership-survey-results.pdf>

8 Pharma Intelligence (2016) Pharma R&D Annual Review 2016. London: Pharmaprojects, p 6. <https://citeline.com/wp-content/uploads/Citeline-Annual-Report-2016.pdf>

Chart 2: Phase Transition Success Rates and Likelihood of Approval for All Medicines and Modalities⁹

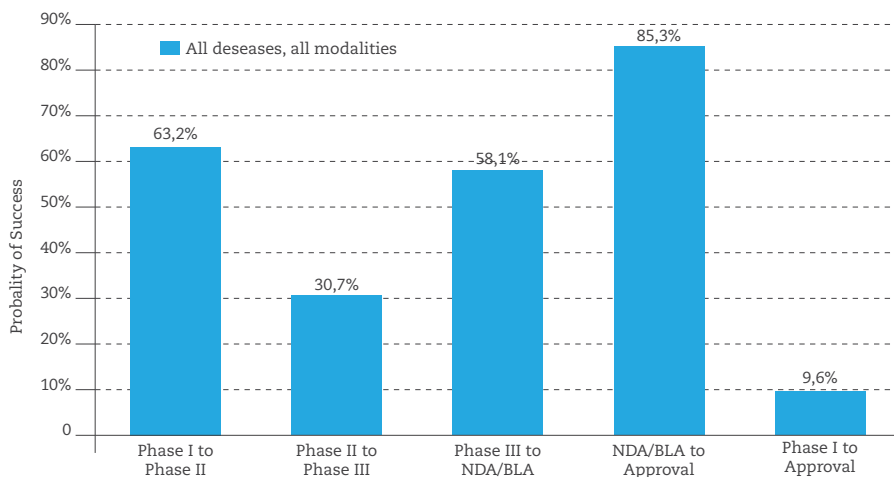
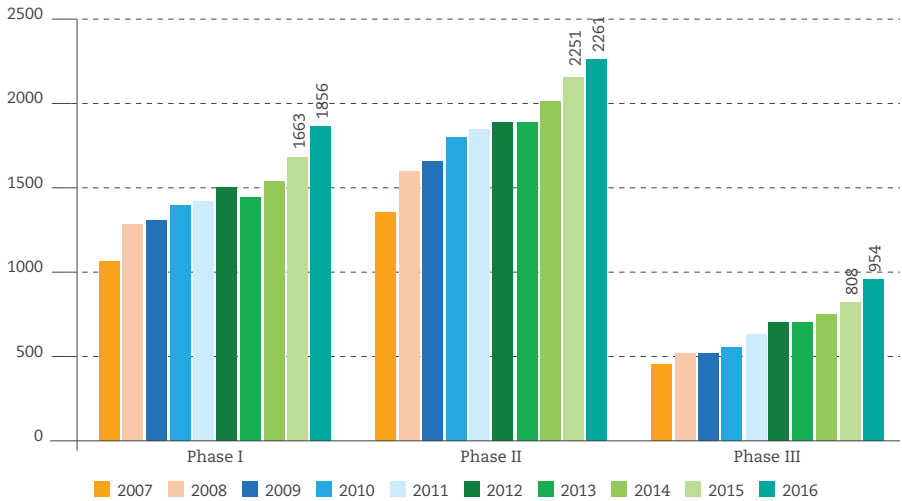


Table 2: Medicines in Development for Non-Communicable Diseases (NCDs)¹⁰

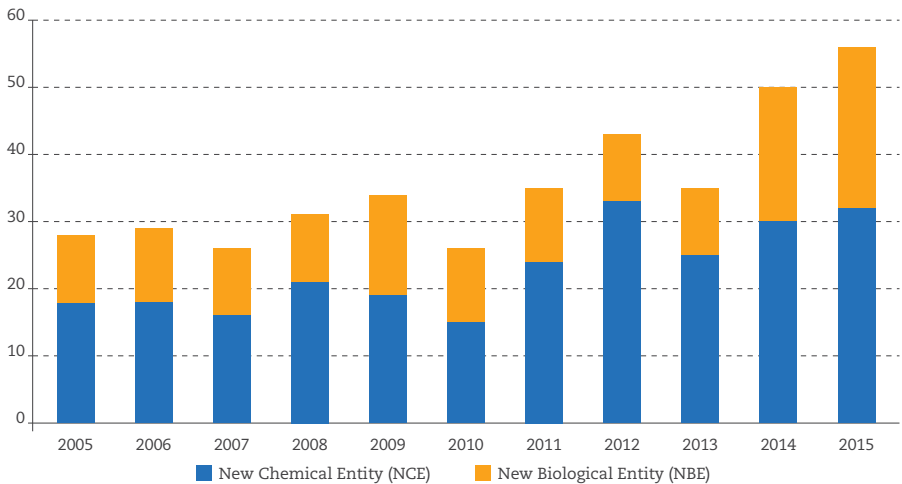
	PHASE I	PHASE II	PHASE III	REGULATORY REVIEW	TOTAL
Cancer	1,265	1,507	288	13	3,073
Cardiovascular	128	230	85	7	450
Diabetes	103	132	43	3	281
Respiratory	123	198	47	2	370

9 BIO, Biomedtracker and Amplion (2016) Clinical Development Success Rates 2006-2015, p 7. <https://www.bio.org/sites/default/files/Clinical%20Development%20Success%20Rates%202006-2015%20-%20BIO,%20Biomedtracker,%20Amplion%202016.pdf>

10 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

Chart 3: Clinical Phase Trends Globally, 2007-2016*¹¹

* 2016 figures forecasted

Chart 4: Number of New Chemical and Biological Entities Approved by the US Food and Drug Administration, 2004-2014¹²

11 Pharma Intelligence (2016) Pharma R&D Annual Review 2016. London: Pharmaprojects, p 7. <https://citeline.com/wp-content/uploads/Citeline-Annual-Report-2016.pdf>

12 Evaluate Pharma (2016) World Preview 2016, Outlook to 2022. London: Evaluate Ltd., p 29. <http://info.evaluategroup.com/rs/607-YGS-364/images/wp16.pdf>

Rising R&D costs have been accompanied by more stringent testing requirements. The number of new chemical or biological entities (NCEs and NBEs) launched on the world market increased to 226 in the 2011-2015 period compared with 146 a decade earlier¹³. 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.

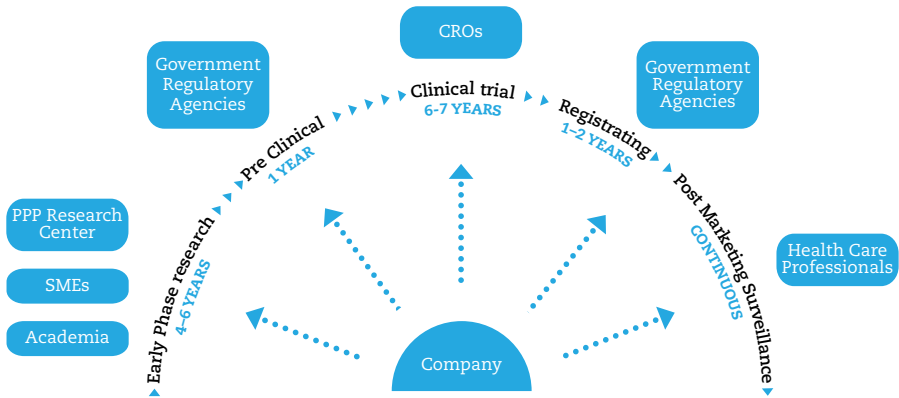
These challenges have not diminished the industry's innovative drive but have rather encouraged it to adopt new models of innovation. Open collaboration and new business models such as joint ventures between pharmaceutical companies and other external entities are ways to increase the productivity of pharmaceutical research by facilitating partnerships involving academia and the public and private sectors. These collaborations facilitate the sharing of expertise, know how, and technologies such as compound databases.

Table 3: Trends in Clinical Trial Protocol Complexity¹⁴

	2000-2003	2008-2011	% CHANGE
Total Procedures per Trial Protocol (median) (e.g., bloodwork, routine exams, x-rays, etc.)	105.9	166.6	57%
Total Investigative Site Work Burden (median units)	28.9	47.5	64%
Total Eligibility Criteria	31	46	48%
Clinical Trial Treatment Period (median days)	140	175	25%
Number of Case Report Form Pages per Protocol (median)	55	171	211%

13 EFPIA (2016) The Pharmaceutical Industry in Figures. Brussels: European Federation of Pharmaceutical Industries and Associations, p 8. <http://www.efpia.eu/uploads/Modules/Documents/the-pharmaceutical-industry-in-figures-2016.pdf>

14 PhRMA (2016) Chart Pack Biopharmaceuticals in Perspective. Washington DC: Pharmaceutical Research and Manufacturers of America, p 37. <http://phrma.org/sites/default/files/pdf/chart-pack-biopharmaceuticals-in-perspective.pdf>

Figure 2: Pharmaceutical R&D Networks¹⁵

Pharmaceutical Industry R&D Investments

The research-based pharmaceutical industry is estimated to have spent nearly USD 149.8 billion globally on pharmaceutical R&D in 2015¹⁶.

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 5.5 times greater than that of the aerospace and defense industries, 5 times more than that of the chemicals industry, and 1.8 times more than that of the software and computer services industry¹⁷.

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.

15 IFPMA (2012) *The New Frontiers of Biopharmaceutical Innovation*. Geneva: International Federation of Pharmaceutical Manufacturers & Associations, p 9. http://www.ifpma.org/fileadmin/content/Publication/2013/IFPMA_Incremental_Innovation_Feb_2013_Low-Res.pdf

16 Evaluate Pharma (2016) *World Preview 2016, Outlook to 2022*. London: Evaluate Ltd., p 27. <http://info.evaluategroup.com/rs/607-YGS-364/images/wp16.pdf>

17 European Commission (2015) *The 2015 EU Industrial R&D Investment Scoreboard*; p 50. <http://iri.jrc.ec.europa.eu/scoreboard15.html>

Table 4: Enabling Factors of Pharmaceutical Innovation¹⁸

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

In the United States, R&D investments of pharmaceutical companies have grown consistently over the past 15 years, and more than doubled the publicly-funded National Institutes of Health's (NIH)¹⁹ expenditures in 2014²⁰. R&D intensity by the research-based pharmaceutical industry in Japan amounts to 13.3%, in the US to 17.1%, and in the European Union to 13.3%²¹. In 2014, the pharmaceutical industry registered 7,691 patents through the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization²². No other business sector has such high levels of R&D intensity.

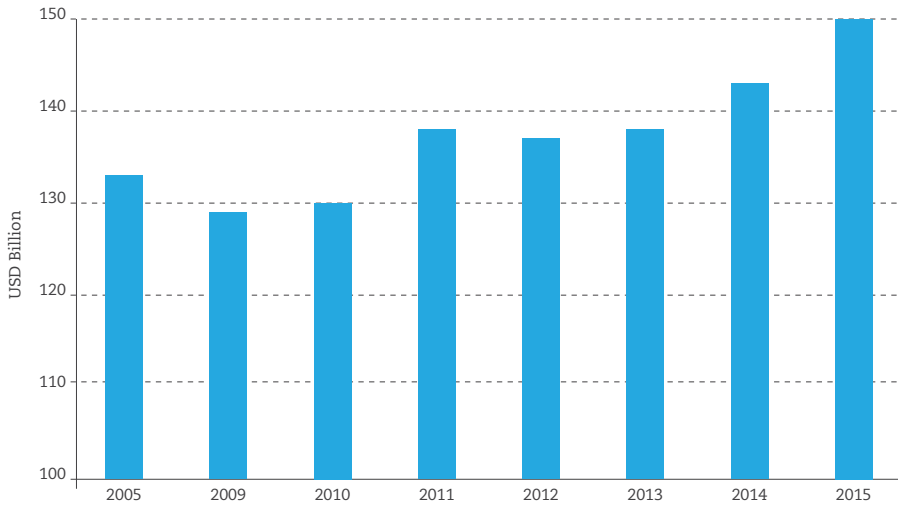
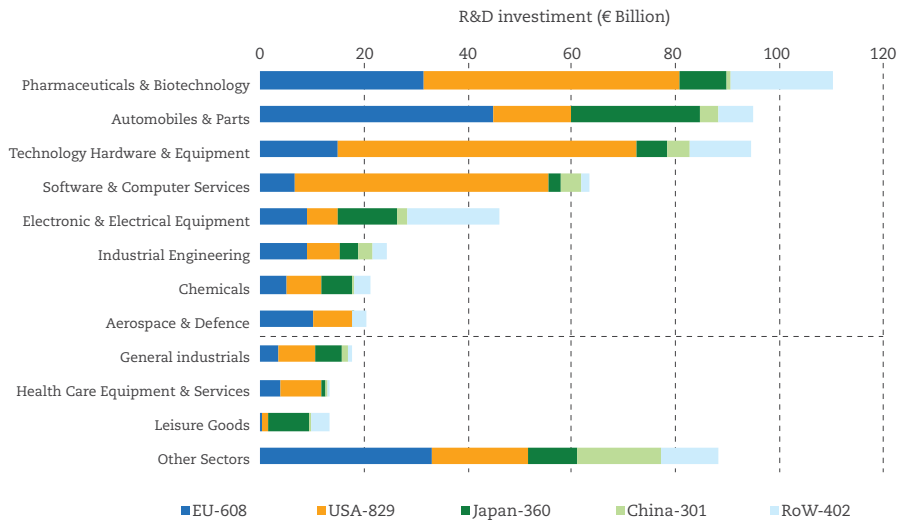
18 Charles River Associates (2012), Policies that encourage innovation in middle-income countries. (Boston, MA: Charles River Associates, 2012).

19 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.

20 NIH (National Institutes of Health) (2016) NIH Budget. <http://www.nih.gov/about/budget.htm>

21 European Commission (2015) The 2015 EU Industrial R&D Investment Scoreboard; p 53. <http://iri.jrc.ec.europa.eu/scoreboard15.html>

22 WIPO (2016) Patent Cooperation Treaty Yearly Review – The International Patent System. Geneva: World Intellectual Property Organization, p 37. http://www.wipo.int/edocs/pubdocs/en/wipo_pub_901_2016.pdf

Chart 5: Pharmaceutical R&D Spending²³Chart 6: R&D Investments by Sector²⁴

23 Evaluate Pharma (2016) World Preview 2016, Outlook to 2022. London: Evaluate Ltd., p 27. <http://info.evaluategroup.com/rs/607-YGS-364/images/wp16.pdf>

24 European Commission (2015) The 2015 EU Industrial R&D Investment Scoreboard; p 50. <http://iri.jrc.ec.europa.eu/scoreboard15.html>

According to European Commission statistics, 5 of the 11 leading global R&D firms in 2014 were pharmaceutical companies²⁵. In 2014, R&D spending by the pharmaceuticals and biotechnology sector grew by 8.7% from the previous year, strengthening its position as the top R&D investing sector²⁶. 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 proven to be one of the most effective preventative technologies in the fight against infectious diseases with an almost unparalleled impact on public health, including, but by no means limited to, ridding the world of smallpox, driving polio to the brink of eradication, and virtually eliminated measles, diphtheria and rubella in many parts of the world. Currently, vaccines save the lives of over 2.5 million children each year. Between 2000 and 2014, immunization campaigns cut the number of deaths caused by measles by 79%²⁷, with a reduction of 92% in Africa between 2000 and 2008²⁸. The new generation of vaccines is making the same kind of public health impact as their pioneering predecessors, dramatically reducing the burden of pneumococcal disease and rotavirus disease – two of the biggest killers of children – and cancers caused by HPV (human papilloma virus). Since 1928, scientists have discovered and developed 19 classes of antibiotics²⁹. Currently, 34 new antibacterial compounds are in development of which 15 are vaccines and 19 small and large molecules³⁰. With the help of major medical discoveries, the research-based pharmaceutical industry has developed more than 35 antiretroviral treatments for HIV/AIDS, essential to control of the epidemic³¹. More than 7,000 medicines are in

25 European Commission (2015) The 2015 EU Industrial R&D Investment Scoreboard; p 50. <http://iri.jrc.ec.europa.eu/scoreboard15.html>

26 Idem

27 WHO (2016) Fact Sheet Measles. Geneva: World Health Organization. <http://www.who.int/mediacentre/factsheets/fs286/en>

28 GAVI Alliance (2016) Measles Vaccine Support. Geneva: Gavi, the Vaccine Alliance. <http://www.gavialliance.org/support/nvs/measles>

29 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>

30 IFPMA (2015) Rethinking the Way We Fight Bacteria. Geneva: International Federation of Pharmaceutical Manufacturers & Associations, p 25. http://www.ifpma.org/fileadmin/content/Publication/2015/IFPMA_Rethinking_the_way_we_fight_bacteria_April2015_FINAL.pdf

31 U.S. Food and Drug Administration (2014) Antiretroviral Drugs Used in the Treatment of HIV Infection. <http://www.fda.gov/ForPatients/llness/HIVAIDS/Treatment/ucm118915.htm>

development worldwide, 208 drugs HIV/AIDS; 1,919 for cancer; 401 for diabetes; and 563 for cardiovascular diseases³².

Figure 3: Medicines in Development (Selected Categories)³³



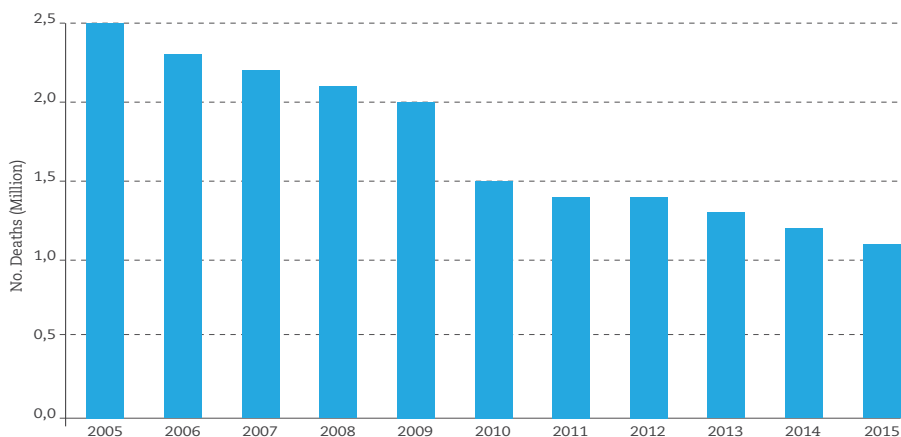
Pharmaceutical progress has led to a dramatic decline in death rates for diseases such as HIV/AIDS, cancer, polio, and measles. For example, death rates for HIV/AIDS in the United States have fallen from 10.2 deaths per 100,000 people in 1990 to 2.0 deaths per 100,000 people in 2014, a reduction of 80%³⁴. The number of AIDS-related deaths worldwide peaked at 2.5 million in 2005 and has since fallen to an estimated 1.1 million deaths in 2015³⁵. This can be largely attributed to the introduction of new antiretroviral therapies (ARTs) combined with more patients being provided with treatment.

32 PhRMA (2016) Chart Pack Biopharmaceuticals in Perspective. Washington DC: Pharmaceutical Research and Manufacturers of America, p 22. <http://phrma.org/sites/default/files/pdf/chart-pack-biopharmaceuticals-in-perspective.pdf>

33 Idem

34 Centers for Disease Control and Prevention (2016) Health, United States, 2015. Hyattsville: U.S. Department of Health and Human Services. <http://www.cdc.gov/nchs/data/abus/abus15.pdf>

35 UNAIDS (2016) Fact Sheet 2016 Statistics. Geneva: United Nations AIDS. http://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf

Chart 7: Decline in HIV/AIDS Death Rates³⁶

In the past 10 years alone, 293 medicines have been approved that offer new hope to patients with hard-to-treat diseases³⁷. 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 costs³⁸.

Today, if diagnosed early, leukemia can be driven into remission with a once-daily treatment. High cholesterol and other cardiovascular diseases, which required extensive treatment in the 1970s, can now be easily managed with oral therapy. Meanwhile, improvements in existing cancer treatments have cut annual death rates by half³⁹.

Pharmaceutical innovation can also reduce the costs incurred by governments and healthcare systems. For example, every USD 1 spent on childhood vaccination in the United States saves USD 10.20 in disease treatment costs⁴⁰. Another study demonstrated

36 UNAIDS (2016) Fact Sheet 2016 Statistics. Geneva: United Nations AIDS. http://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf

37 US Food and Drug Administration (2016) Novel Drugs 2015. <http://www.fda.gov/downloads/Drugs/DevelopmentApprovalProcess/DrugInnovation/UCM485053.pdf>

38 PhRMA Innovation Hub (2016) Innovation by the Numbers. http://www.innovation.org/index.cfm/ToolsandResources/FactSheets/Innovation_by_the_Numbers#11-Shang

39 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

40 Pfizer (2015) The Value of Medicines in Offsetting Healthcare Costs. http://www.pfizer.com/sites/default/files/health/VOM_MedicalCosts4.pdf

that lack of adherence to type 2 diabetes therapy in the United States generates USD 4 billion per year on avoidable costs to the national healthcare system⁴¹. In this manner, pharmaceutical innovation directly impacts patients' health and indirectly alleviates the unseen economic burden of disease.

Chart 8: Improving Adherence to Medicines Increases Productivity⁴²

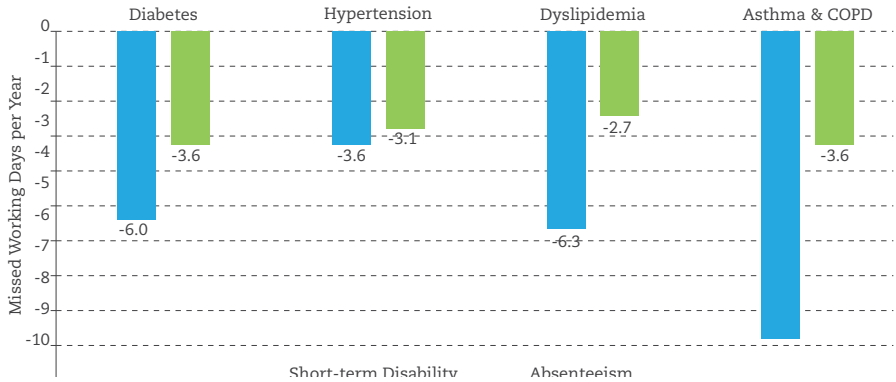
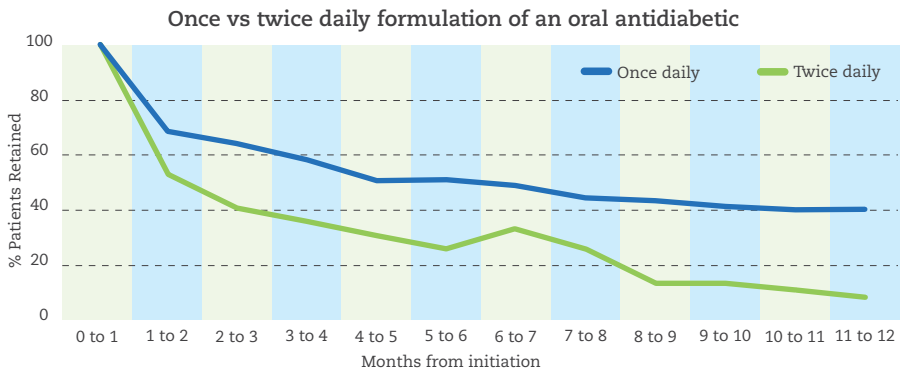


Chart 9: Reducing Number of Formulations per Day Increases Percentage of Diabetes Patients Retained on Treatment⁴³



41 QuintilesIMS Institute (2016) Improving Type 2 Diabetes Therapy Adherence and Persistence in the United States, p. 5. <https://www.imshealth.com/files/web/IMSH%20Institute/Healthcare%20Briefs/Diabetes/IIH%20Diabetes%20USA%20Report%202016%20SCREEN.pdf>

42 Carls GS, Roebuck C, Brennan TA, et al. (2012) Impact of Medication Adherence on Absenteeism and Short-Term Disability for Five Chronic Diseases. <http://www.ncbi.nlm.nih.gov/pubmed/22796923>

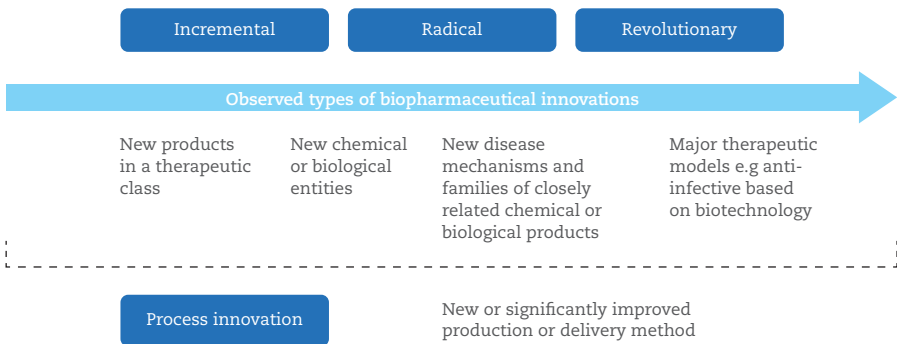
43 QuintilesIMS Institute (2012) Advancing the Responsible Use of Medicines: Applying Levers for Change, p. 54. https://www.imshealth.com/ims/Global/Content/Insights/IMS%20Institute%20for%20Healthcare%20Informatics/Responsible%20Use%20of%20Medicines/IIH_Advancing_Responsible_Use_of_Meds_Report.pdf

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 dependent on the experiences of healthcare providers and patients' needs. Incremental innovation can expand 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 improves patients' compliance to dosing regimens.

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 medicines⁴⁴. 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 medicine⁴⁵.

Figure 4: Categories of Pharmaceutical Innovation⁴⁶



44 IFPMA (2012) Incremental Innovation: Adapting to Patient's Needs. Geneva: International Federation of Pharmaceutical Manufacturers & Associations, p 6. http://www.ifpma.org/fileadmin/content/Publication/2013/IFPMA_Incremental_Innovation_Feb_2013_Low-Res.pdf

45 Idem, p 15

46 Idem, p 6

R&D for Diseases that Disproportionately Affect the Developing World

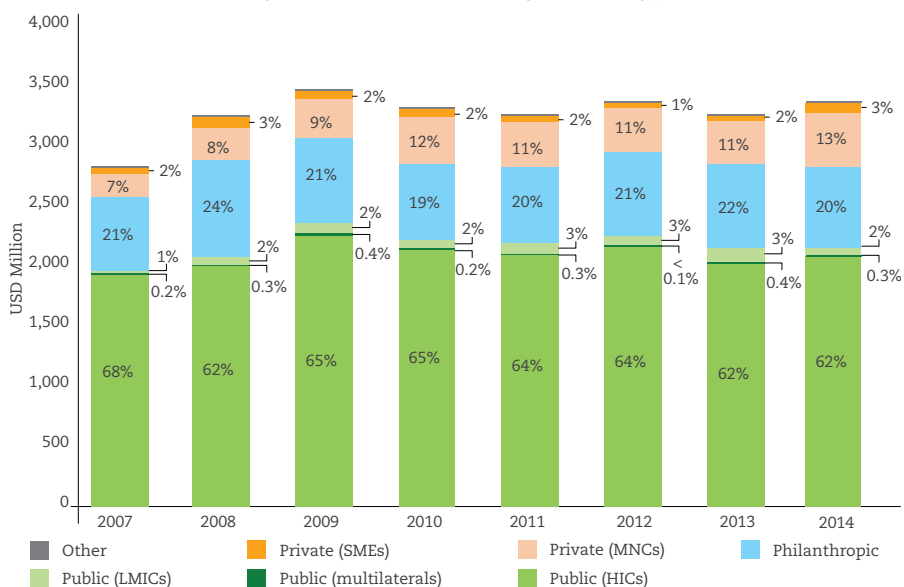
The World Health Organization (WHO) has identified 17 neglected tropical diseases (NTDs), which form a significant part of the global disease burden and affect the lives of more than 1 billion people⁴⁷. Some NTDs can have lifelong consequences for individuals. Others lead to acute infections that can 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 2014, the industry contributed about 22% of the total research funding for malaria, 8.8% for dengue, and 19% for tuberculosis⁴⁸. Overall, industry was the third largest funder for NTDs research, investing over USD 534 million⁴⁹.

47 WHO (2016) Neglected Tropical Diseases. http://www.who.int/neglected_diseases/diseases/en

48 G-Finder (2015) Neglected Disease Research and Development Emerging Trends: The Ebola Effect. <http://policycures.org/downloads/Y8%20GFINDER%20full%20report%20web.pdf>

49 Idem

Chart 10: Total Funding for Neglected Diseases by Funder Type, 2007-2014⁵⁰

SMEs = Small Pharmaceutical Companies & Biotech

MNCs = Multinational Pharmaceutical Companies

LMICs = Low and Middle-income Countries

HICs = High-income Countries

These partnerships have proven fruitful and most PDPs currently have a healthy pipeline. For example, the portfolio of the TB Alliance consists of six drugs between phase 1 and 4 of clinical trials⁵¹. The Drugs for Neglected Diseases initiative (DNDi) aims to deliver 16 to 18 new treatments by 2023 for Chagas disease, malaria, leishmaniasis, helminths, pediatric HIV, and sleeping sickness, of which six are already available – unprecedented progress in the fight against these diseases⁵². WIPO Re:Search has facilitated 105 collaborations since its first year to (October 2011) to August 2016⁵³.

50 G-Finder (2015) Neglected Disease Research and Development Emerging Trends: The Ebola Effect. <http://policycures.org/downloads/Y8%20GFINDER%20full%20report%20web.pdf>

51 TB Alliance (2016) TB Alliance Pipeline. <http://www.tballiance.org/portfolio/trials>

52 DNDi (2016) From Neglected Diseases to Neglected Patients and Populations. http://www.dndi.org/wp-content/uploads/2016/08/DNDi_AR_2015.pdf

53 WIPO (2016) Collaborations. Geneva: World Intellectual Property Organization. <http://www.wipo.int/research/en/collaborations>

Currently, IFPMA members have 119 ongoing R&D projects related to NTDs⁵⁴. The number of projects, undertaken in-house or in PDPs, has steadily increased over the years. Through its many partnerships, the research-based pharmaceutical industry is helping to construct innovative models to develop and deliver essential healthcare for patients living in the poorest areas of the world.

Table 5: Industry R&D Activity Relating to NTDs⁵⁵

	AMERICAN TRYPANOSOMIASIS (CHAGAS DISEASE)	CHIKUNGUNYA	DENGUE/DENGUE HEMORRHAGIC FEVER)	HUMAN AFRICAN TRYPANOSOMIASIS (SLEEPING SICKNESS)	LEISHMANIASIS	LYMPHATIC FILARIASIS	MYEOTOMA	ONCHOCERCIASIS (RIVER BLINDNESS)	RABIES	SCHISTOSOMIASIS	TRACHOMA
MEDICINES	25	2	6	8	22	16	1	20	0	7	1
VACCINES	2	0	6	0	2	0	0	0	1	0	0
TOTAL PROJECTS	27	2	12	8	24	16	1	20	1	7	1

54 Source: IFPMA 2016

55 Source: IFPMA 2016



Chapter 2

ACCESS TO MEDICINES AND HEALTHCARE SYSTEMS

A robust healthcare system is an important pillar of every country's socio-economic development process, and sound policies for the pharmaceuticals sector are 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 between 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

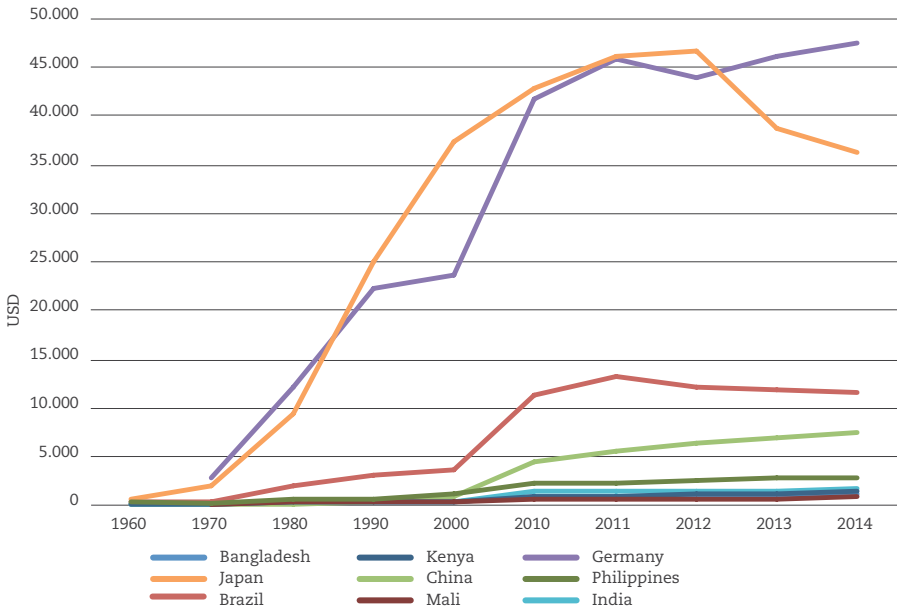
The world is still marked by a sharp disparity in the wealth of countries, which has a major impact on the performance of healthcare systems.

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. <http://www.ifpma.org/fileadmin/content/Publication/2012/ChangingLandscapes-Web.pdf>

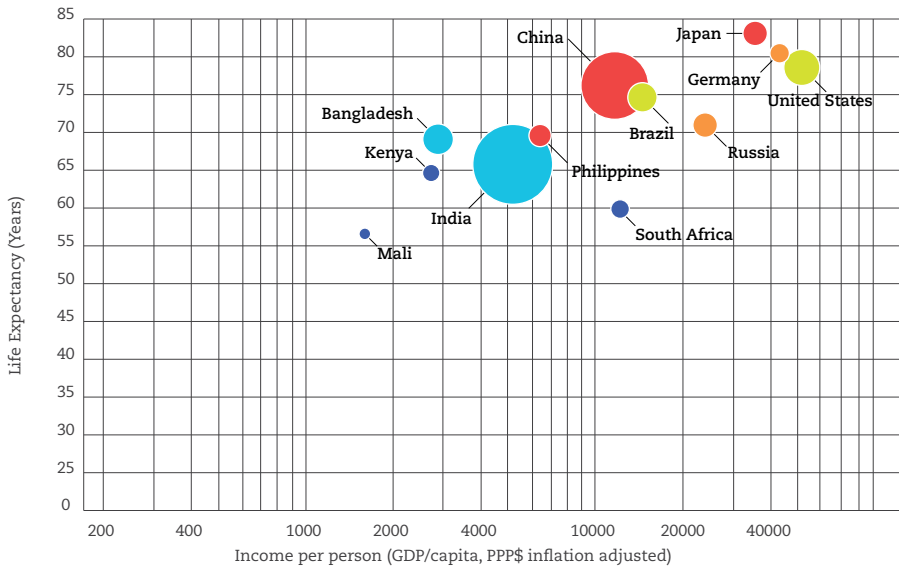
58 World Bank (2016) *GDP per capita (current US\$)*. Washington DC: The World Bank Group. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD/countries?order=wbapi_data_value_2008%20wbapi_data_value&sort=asc&display=map

Chart 11: Evolution GDP per Capita in Selected Countries⁵⁹

Total health expenditures range from 3.8% of GDP in Equatorial Guinea to 17.1% of GDP in the United States. On average, low-income countries spend 5.7% of GDP on financing healthcare systems whereas high-income countries spend more than 12.3% on health. The disparities are also significant in terms of healthcare workers. There are 0.7 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 42.3⁶⁰.

59 World Bank (2016) GDP per Capita (Current US\$). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

60 World Bank (2016) Health Indicators. Washington DC: The World Bank Group. <http://data.worldbank.org/indicator#topic-8>

Chart 12: Correlation between Income per Person and Life Expectancy, 2013⁶¹

These divergences in wealth and resources have a decisive impact on people's health. In low-income countries, 76.1 out of 1,000 children die before their fifth birthday compared with 6.8 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 – 61.3 years in low-income countries compared with 80.6 years in high-income countries, a stark difference of almost 20 years⁶³.

Healthcare Spending and Workforce

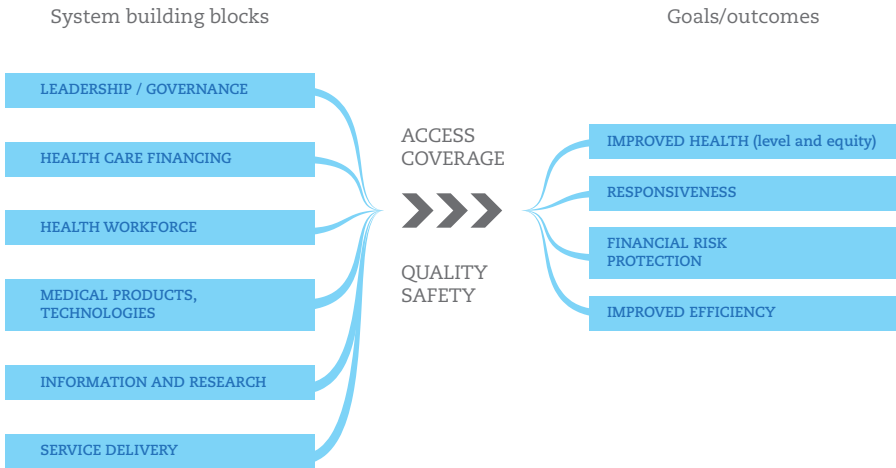
According to the WHO, a health system is built on six building blocks: service delivery; health workforce; information; medical products, vaccines, and technologies; financing; and leadership/governance⁶⁴. A well-functioning healthcare system also promotes productive relationships between governments, patients, and the healthcare industry.

61 Size of the circles reflects the country population. Gapminder (2016) Global Trends: Wealth & Health of Nations. <http://www.gapminder.org>

62 World Bank (2016) Mortality Rate, under-5 (per 1,000 Live Births). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/SH.DYN.MORT>

63 World Bank (2016) Life Expectancy at Birth, Total (Years). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/SP.DYN.LE00.IN>

64 WHO (2016) The WHO Health Systems Framework. Geneva: World Health Organization. http://www.wpro.who.int/health_services/health_systems_framework/en

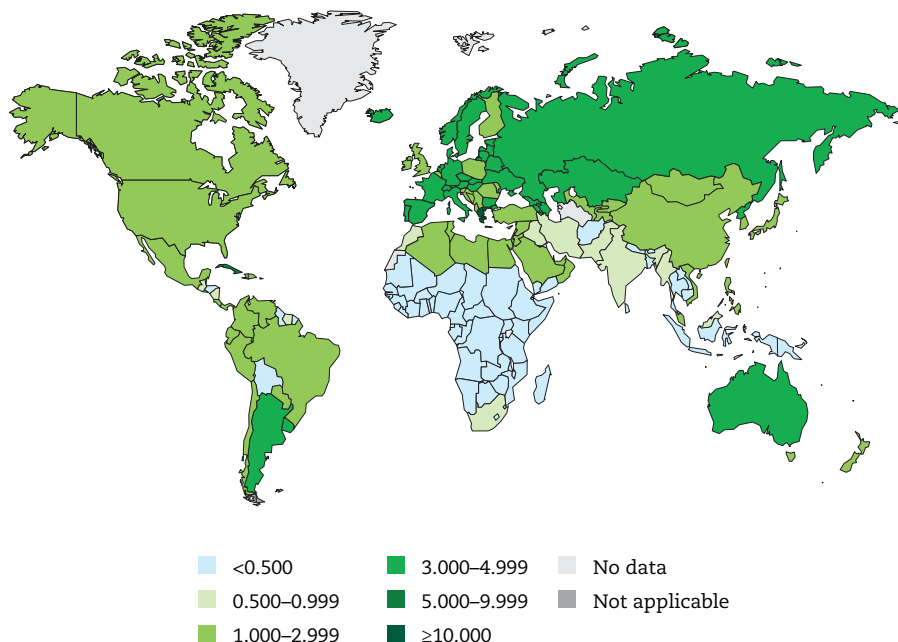
Figure 5: The WHO Health System Framework⁶⁵

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 4.9 doctors for every 1,000 inhabitants, while in Ghana there are only 0.1⁶⁶.

65 WHO (2016) The WHO Health Systems Framework. Geneva: World Health Organization. http://www.wpro.who.int/health_services/health_systems_framework/en

66 World Bank (2016) Physicians (per 1,000 People). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/SH.MED.PHYS.ZS>

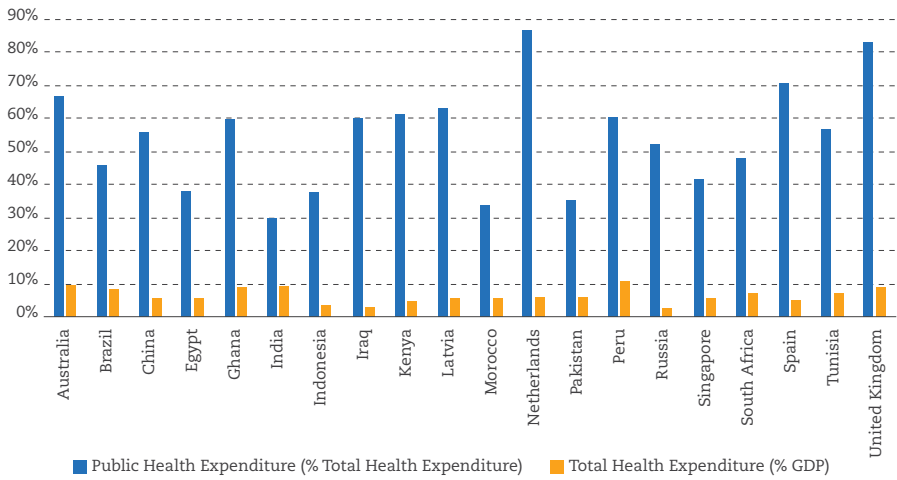
Figure 6: Relative Density of Physicians per 1,000 Population (Latest Available Year)⁶⁷

In terms of funding, performing healthcare systems require sufficient allocation of resources by government and the private sector. Unfortunately, public health and the strengthening of healthcare systems have different priority levels in many countries, and the resources made available to health vary significantly from country to country (see Figure 6). For example, in 2014 Australia invested about 9.4% of its GDP on health, which amounts to 67.0% of total government expenditure. In the same year, Pakistan invested 5.9% and 35.2% respectively⁶⁸.

67 WHO (2016) Global Health Observatory Data Repository: Density of Physicians (Total Number per 1,000 Population). Geneva: World Health Organization. http://gamapserver.who.int/gho/interactive_charts/health_workforce/PhysiciansDensity_Total/atlas.html

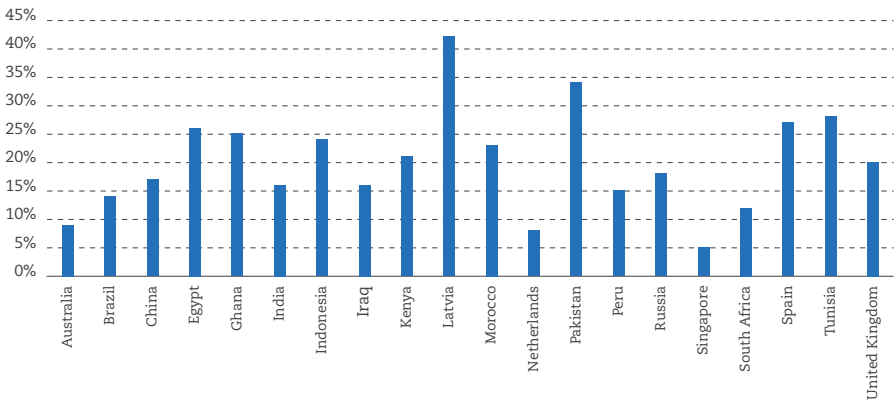
68 World Bank (2016) Health Indicators. Washington DC: The World Bank Group. <http://data.worldbank.org/topic/health>

Chart 13: Total Health Expenditure as a Percentage of GDP, and Public Health Expenditure as a Percentage of the Total Health Expenditure, 2014⁶⁹



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.

Chart 14: Total Pharmaceutical Sales as a Percentage of Healthcare Expenditure, 2014⁷⁰



69 World Bank (2016) Health Expenditure. Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/all>

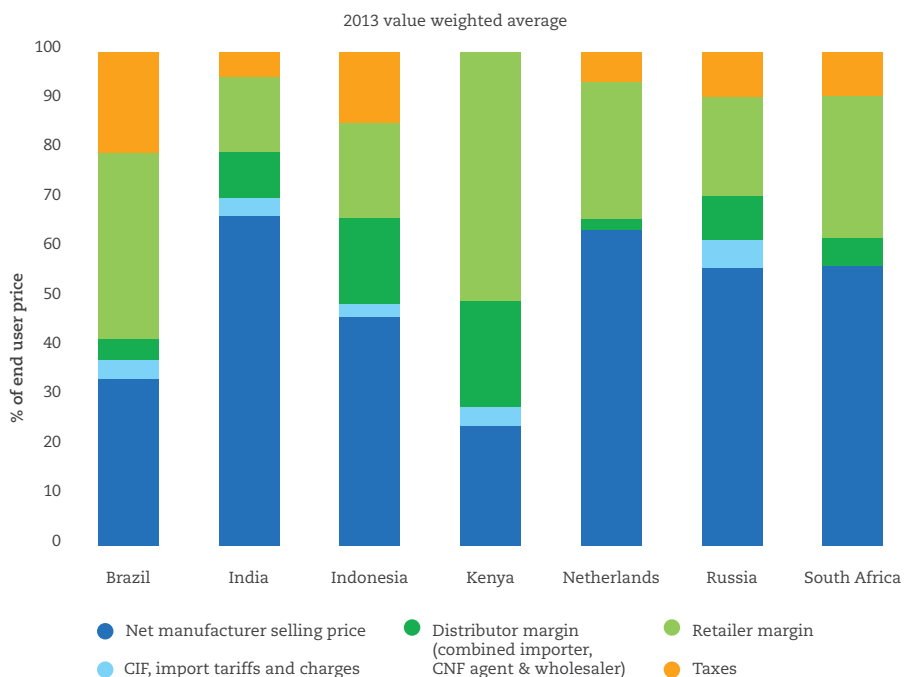
70 Business Monitor International (2016) BMI Pharmaceutical and Healthcare Database. <https://bmo.bmiresearch.com/data/dataset>

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 unnecessarily inflate 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 15: Examples of “Hidden” Costs of Pharmaceutical Procurement⁷¹



71 Aitken, M. (2016) Understanding the Pharmaceutical Value Chain. Pharmaceuticals Policy and Law [online]. Doi: 10.3233/PPL-160432. <http://www.ifpma.org/wp-content/uploads/2016/11/6.-Understanding-the-Pharmaceutical-Value-Chain-1.pdf>

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.

Table 6: Selected Infrastructure Indicators, 2015⁷²

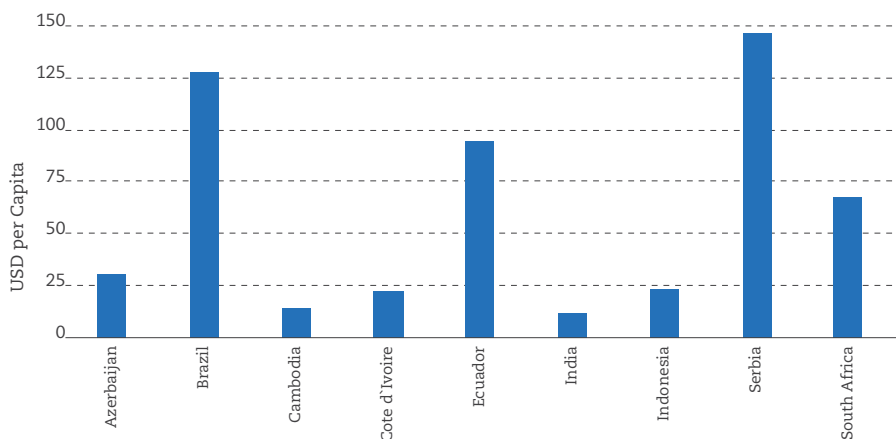
	ROADS PAVED (% TOTAL ROADS)*	IMPROVED SANITATION FACILITIES (% POPULATION WITH ACCESS)	IMPROVED WATER SOURCE (% POPULATION WITH ACCESS)
Arab World	79.60	90.33	92.08
East Asia & Pacific	66.20	77.21	94.13
Europe & Central Asia	86.40	93.08	98.49
Heavily indebted poor countries	16.30	27.37	65.92
High income	84.60	99.41	99.53
Latin America & Caribbean	23.30	83.16	94.65
Least developed countries	20.80	37.39	69.13
Low income	16.30	28.28	65.63
Lower middle income	47.25	52.00	89.54
Middle income	55.00	65.07	92.11
North America	100.00	99.98	99.26
South Asia	44.95	44.77	92.40
Sub-Saharan Africa	16.30	29.75	67.59
Upper middle income	60.45	79.75	94.98
World	57.60	67.53	90.97

*2010 Figures

The Role of Pharmaceutical Products in Healthcare

The MDGs highlighted 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 have been adopted, and health has been shown to play a critically important role. Collaboration remains integral to the research-based pharmaceutical industry in their approach to improving the effectiveness of healthcare systems.

Chart 16: Pharmaceutical Sales per Capita in Selected Low and Middle Income Countries, 2015⁷³



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

Innovative drugs can help to control increasing costs within a healthcare system. For every USD 1 spent on childhood vaccination in the United States, USD 10.20 were saved in disease treatment costs⁷⁴. Prior to the creation of antibiotics used to treat peptic ulcers,

73 Business Monitor International (2016) BMI Pharmaceutical and Healthcare Database. <https://bmo.bmiresearch.com/data/datatool>

74 Pfizer (2015) The Value of Medicines in Offsetting Healthcare Costs. http://www.pfizer.com/sites/default/files/health/VOMPaper_MedicalCostOffset_12_23_14.pdf

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 treatment⁷⁵. Antibiotics cut the cost of treating ulcers to less than USD 1,000⁷⁶. In addition, patients enjoy a better quality of life and a non-invasive, safer course of treatment.

Chart 17: Impact of Medication Adherence in Chronic Vascular Disease, 2005–2008⁷⁷

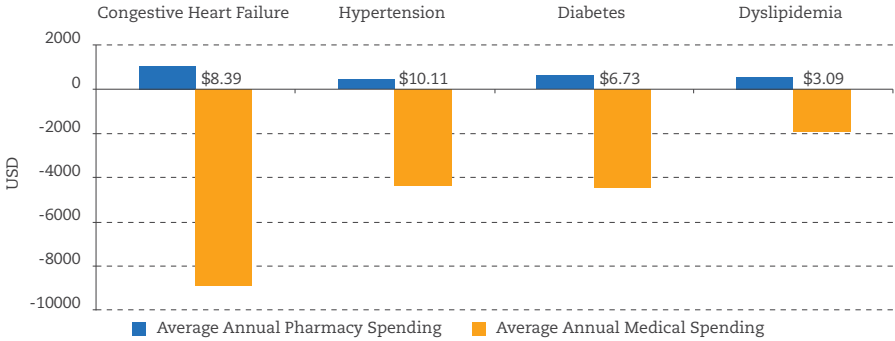
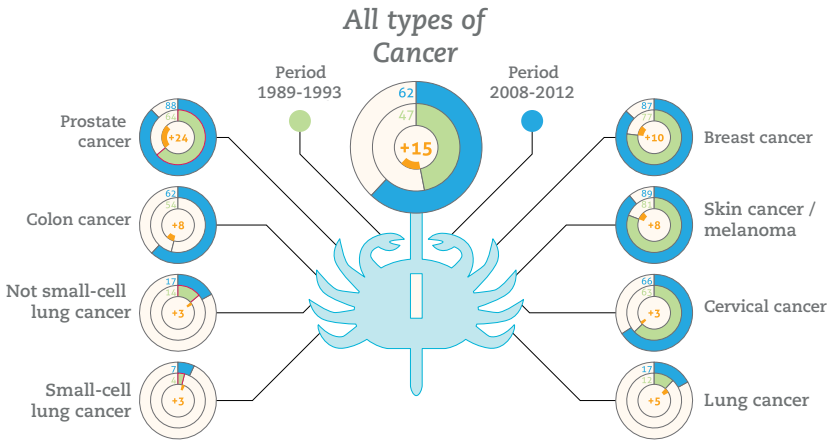


Figure 7: Five-year Survival Rates for Various Cancers, 1989-1993 vs 2008-2012⁷⁸



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

76 Idem

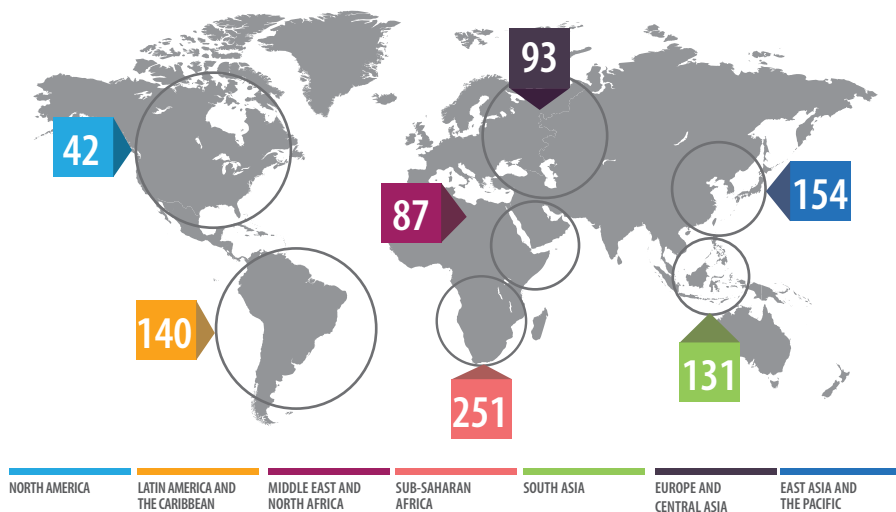
77 Roebuck, M. C.; Liberman, J. N.; Gemmill-Toyama, M.; et al. (2011) Medication Adherence Leads to Lower Healthcare Use and Costs despite Increased Drug Spending. <http://content.healthaffairs.org/content/30/1/91.full.pdf+html>

78 NEFARMA (2015) *Pharma Facts 2015*. <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 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 8: Health Partnerships Undertaken by Research-based Pharmaceutical Companies⁷⁹



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

79 IFPMA (2016) Health Partnerships Directory. Geneva: International Federation of Pharmaceutical Manufacturers and Associations [online]. <http://partnerships.ifpma.org/pages/>

filariasis, onchocerciasis, schistosomiasis, trachoma, and African trypanosomiasis (sleeping sickness)⁸⁰. 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 programs⁸¹.

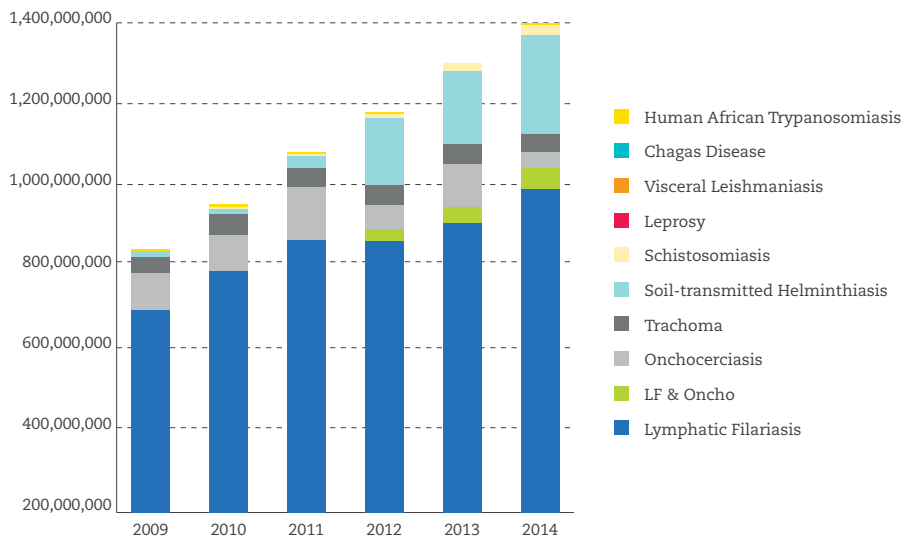
Research-based pharmaceutical companies have pledged to donate 14 billion treatments over the 10 years from 2011 to 2020⁸². This commitment builds on already existing initiatives on NTDs that have been drastically changing the lives of those affected⁸⁰.

80 WHO (2016) Neglected Tropical Diseases. Geneva: World Health Organization. http://www.who.int/neglected_diseases/about/en

81 Uniting to Combat NTDs (2016) Country Leadership and Collaboration on Neglected Tropical Diseases. <http://unitingtocombatntds.org/sites/default/files/document/UTCNTD%20FULL%20REPORT.pdf>

82 Idem

Chart 18: Treatments Donated and Sold at Cost in Developing Countries for NTDs, 2009-2014⁸³



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 antiretroviral (ARV), 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 countries⁸⁴.

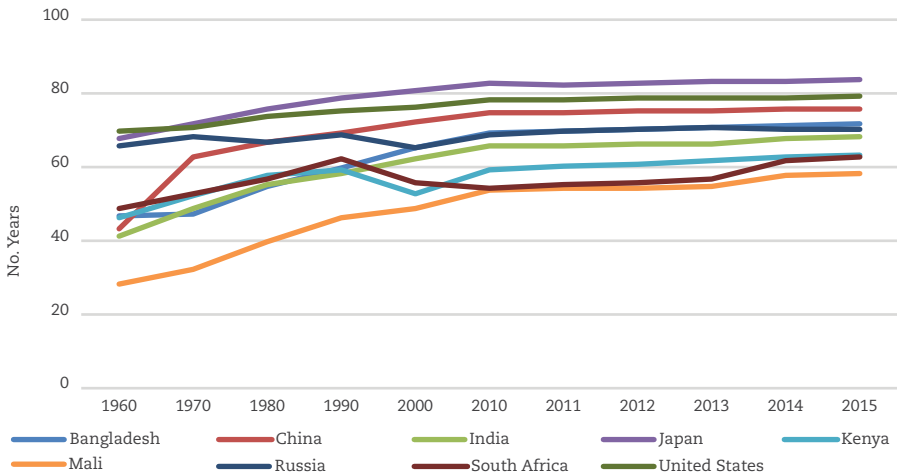
83 Idem

84 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

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 68 in 2015, but for Kenya the increase has been more modest – from 52 years (1970) to 63 years (2015). In comparison to these developing countries, life expectancy in the United States increased from 70 years (1970) to 79 years (2015)⁸⁵. Meanwhile, infant mortality rates have steadily declined over the same period, 1970–2013, in both rich and poor countries⁸⁶.

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 NCDs⁸⁷.

Chart 19: Life Expectancy Evolution in Selected Countries⁸⁸

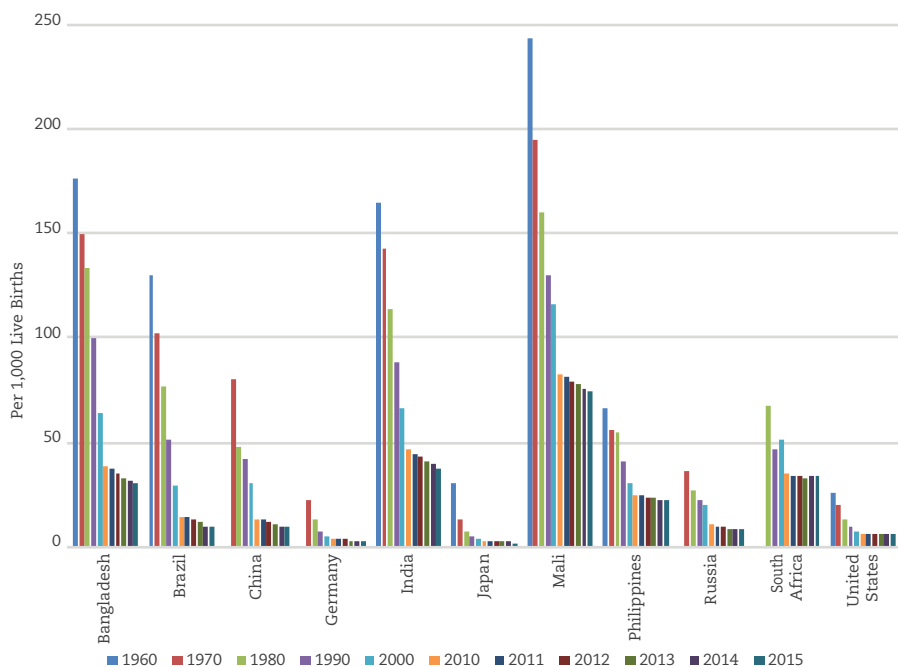


85 World Bank (2016) Life Expectancy at Birth, Total (Years). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/SP.DYN.LE00.IN>

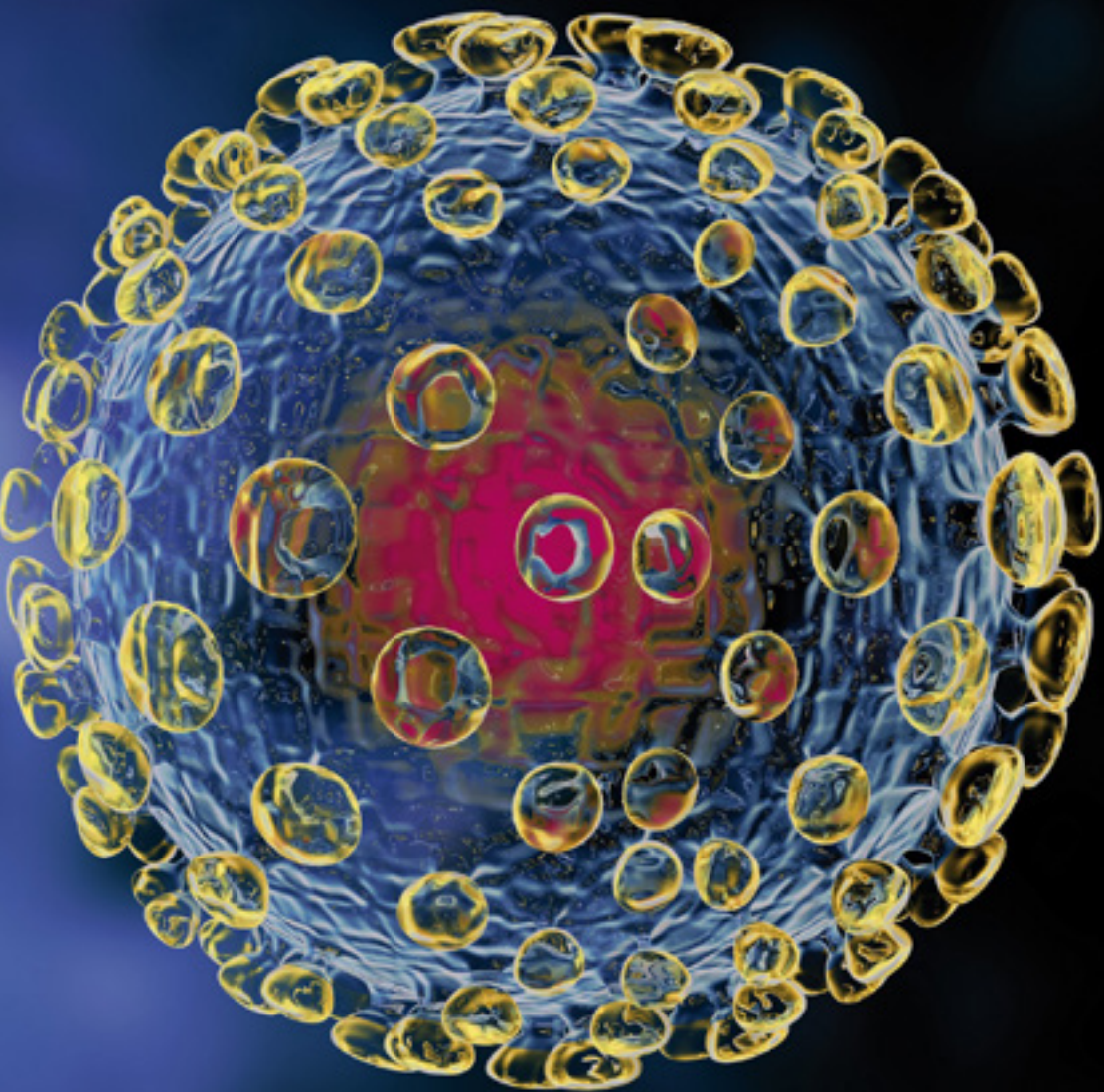
86 World Bank (2016) Mortality Rate, under-5 (per 1,000 Live Births). Washington DC: The World Bank Group. <http://data.worldbank.org/indicator/SH.DYN.MORT>

87 IFPMA (2011) IFPMA Statement: The Value of Prevention and Partnerships in Combating NCDs. Geneva: International Federation of Pharmaceutical Manufacturers and Associations. [http://www.ifpma.org/fileadmin/content/Global%20Health/NCDs/IFPMA_Statement_on_Prevention_Finalx\[1\].pdf](http://www.ifpma.org/fileadmin/content/Global%20Health/NCDs/IFPMA_Statement_on_Prevention_Finalx[1].pdf)

88 World Bank (2016) Life expectancy at Birth, Total (Years). Washington DC: World Bank. <http://data.worldbank.org/indicator/SP.DYN.LE00.IN>

Chart 20: Infant Mortality in Selected Countries⁸⁹

89 World Bank (2016) Mortality Rate, Infant (per 1,000 Live Births). Washington DC: World Bank. <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.

Table 7: Key Indicators of the Pharmaceutical Industry's Economic Footprint in Europe⁹⁰

	2000	2010	2014	2015
Production (EUR Million)	125,316	199,400	221,088	225,000
Exports* (EUR Million)	90,935	276,357	324,452	361,500
Imports* (EUR Million)	68,841	204,824	251,427	27,500
Trade Balance (EUR Million)	22,094	71,533	73,025	86,500
R&D Expenditure (EUR Million)	17,849	27,920	30,887	31,500
Employment (Units)	534,882	670,088	723,448	725,000
R&D Employment (Units)	88,397	117,035	118,052	118,000

**Includes Intra-EU Trade*

⁹⁰ EFPIA (2016) The Pharmaceutical Industry in Figures. Brussels: European Federation of Pharmaceutical Industries and Associations, p 3. <http://www.efpia.eu/uploads/Modules/Documents/the-pharmaceutical-industry-in-figures-2016.pdf>

Pharmaceutical R&D and Production

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

The research-based pharmaceutical industry is particularly economically active in production and R&D in certain countries. Globally, the production value of the pharmaceutical industry amounted to USD 997 billion (2014), more than USD 345 billion higher than in 2006⁹¹. In 2014, the pharmaceutical industry accounted for 3.8% of the gross value added in manufacturing worldwide. Gross value 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 globally roughly corresponds to the GDP of Argentina (USD 452.8 billion)⁹².

Table 8: Regional Breakdown of the Gross Value Added in the Pharmaceutical Industry (USD Billion)⁹³

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asia	85.1	94.9	119.9	131.1	148.7	157.2	163.3	148.3	153.9
Europe	104.3	120.9	135.1	130.5	135.1	146.0	134.8	140.9	142.8
Northern America	95.4	100.4	94.2	110.5	104.9	102.6	105.3	108.3	111.8
Latin America	18.5	20.8	22.7	18.4	20.4	25.2	24.9	21.7	24.6
Africa	3.1	3.4	3.3	4.4	5.0	5.0	5.1	6.2	6.8
Oceania	1.8	2.2	2.1	2.4	3.5	3.2	3.3	3.6	2.7
Worldwide	308.2	342.5	377.3	397.3	417.6	439.2	436.8	428.7	452.8

91 Source: WifOR 2016

92 Source: WifOR 2016

93 Source: WifOR 2016

Chart 21: Development of the Gross Value Added and the Annual Growth Rate (Red Line) in Comparison to the Worldwide GDP (Blue Line)⁹⁴

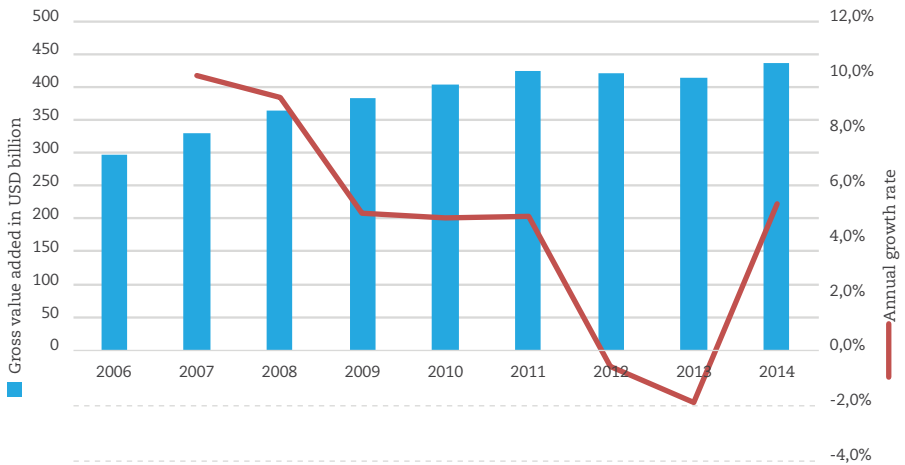


Table 9: Production Value of the Pharmaceutical Industry⁹⁵

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Production Value (USD Billion)	651.4	728.8	822.8	844.4	870.1	912.1	948.7	969.6	996.9
Growth Rate		11.9%	12.9%	2.6%	3.0%	4.8%	4.0%	2.2%	2.8%
Value Added Rate	47.3%	47.0%	45.9%	47.1%	45.8%	45.6%	45.1%	45.6%	45.5%

Pharmaceutical Industry Employment

The pharmaceutical industry contributes to employment in both developing and developed countries. In 2014, it employed approximately 5.1 million people worldwide; almost 1.5 million increase from 2006⁹⁶. In the United States, every job in the biopharmaceutical industry supported 5.21 jobs outside the pharmaceutical sector, in

⁹⁴ Source: WifOR 2016

⁹⁵ Source: WifOR 2016

⁹⁶ Source: WifOR 2016

areas from manufacturing and construction to childcare, retail, accounting, and more⁹⁷. Spending on services and supplies totaled USD 659 billion, translating into more than 4.4 million jobs⁹⁸. The industry currently directly employs more than 854,000 people in the United States⁹⁹ and 736,358 people in Europe¹⁰⁰.

High employment in the pharmaceutical sector is not exclusive to high-income countries. The pharmaceutical industry provides high-skilled jobs through direct employment and induces the creation of many more indirect jobs in low – and middle income countries as well.

Table 10: Regional Breakdown of Employment in the Pharmaceutical Industry (Headcount in Thousands)¹⁰¹

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asia	2,153	2,197	2,369	2,507	2,662	2,820	3,003	3,176	3,422
Europe	737	741	734	716	728	738	749	795	736
Northern America	310	307	302	283	281	276	271	267	270
Latin America	232	231	239	240	236	242	259	363	466
Africa	199	187	169	156	146	143	142	191	250
Oceania	17	17	17	18	17	18	18	18	22
Worldwide	3,649	3,680	3,829	3,919	4,070	4,237	4,443	4,793	5,067

97 Tecnomy Partnes LLC & PhRMA (2016) The Economic Impact of the US Biopharmaceutical Industry: National & States Estimates, p 1. <http://phrma.org/sites/default/files/pdf/biopharmaceutical-industry-economic-impact.pdf>

98 Idem

99 Idem

100 Source: WifOR 2016

101 Source: WifOR 2016

Chart 22: Employment (Headcount in Thousands) and Shares of Originators, Generics and Other Drugs, 2014¹⁰²

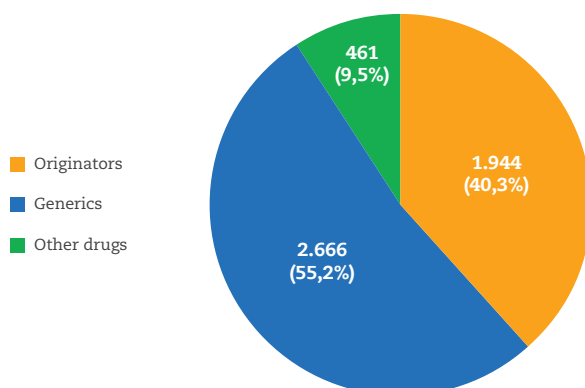


Table 11: Employee Compensation in the Pharmaceutical Industry¹⁰³

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Wages & Salaries (USD Billion)	64.3	71.4	81.3	79.3	84.1	91.9	91.3	93.8	97.2
Growth Rate		11.0%	13.9%	-2.5%	6.1%	9.3%	-0.7%	2.7%	3.5%
Wages & Salaries per Employee (USD)	17,600	19,400	21,200	20,200	20,700	21,700	20,600	19,577	19,188

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.

¹⁰² Source: WifOR 2016

¹⁰³ Source: WifOR 2016

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 workforce¹⁰⁴.

Table 12: Selected Examples of Technology Transfer – Manufacturing Protocols and Entrepreneurial Know-how¹⁰⁵

COMPANY	R&D CENTER	LOCATION	DISEASE	SINCE
AstraZeneca	Cambridge Biomedical Campus (CBC)	Cambridge, UK	Chagas Disease Leishmaniasis Onchocerciasis Human African Trypanosomiasis Lymphatic Filariasis Schistosomiasis	2015
Celgene	Celgene Global Health	Summit NJ, USA	Visceral Leishmaniasis Chagas Disease Human African Trypanosomiasis Malaria Lymphatic Filariasis Onchocerciasis Wolbachia Tuberculosis Hemorrhagic Fevers	2009
Merck	R&D Translational Innovation Platform “Global Health”	Geneva, Switzerland	Schistosomiasis & Helminthic Diseases Malaria Co-infections	2014
Novartis	Novartis Institutes for BioMedical Research (NIBR)	Emeryville CA, USA	Human African Trypanosomiasis	2016
Sanofi	Marcy l’Etoile Research & Development Campus	Lyon, France	Tuberculosis Malaria	2015

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 Source: IFPMA 2016

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.

Figure 9: Critical Factors for Creating Favorable Conditions for Pharmaceutical Technical Transfers¹⁰⁶



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 themselves¹⁰⁷. Medical innovation is transmitted across the world, thus contributing to significant gains in average life expectancy¹⁰⁸.

106 IFPMA (2015) Technology Transfer: A Collaborative Approach to Improve Global Health. Geneva: International Federation of Pharmaceutical Manufacturers & Associations, p 8. http://www.ifpma.org/fileadmin/content/Publication/2015/IFPMA_Technology_Transfer_2015_Web.pdf

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

108 Idem

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 exports¹⁰⁹. In recent years, other countries like India, Singapore and Israel have also managed to position themselves as important pharmaceutical exporters.

Chart 23: Pharmaceutical Trade and Forecast, China¹¹⁰

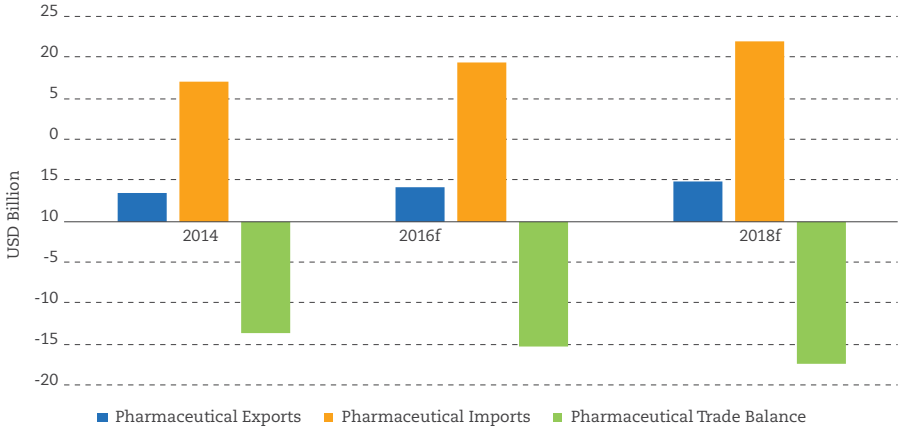
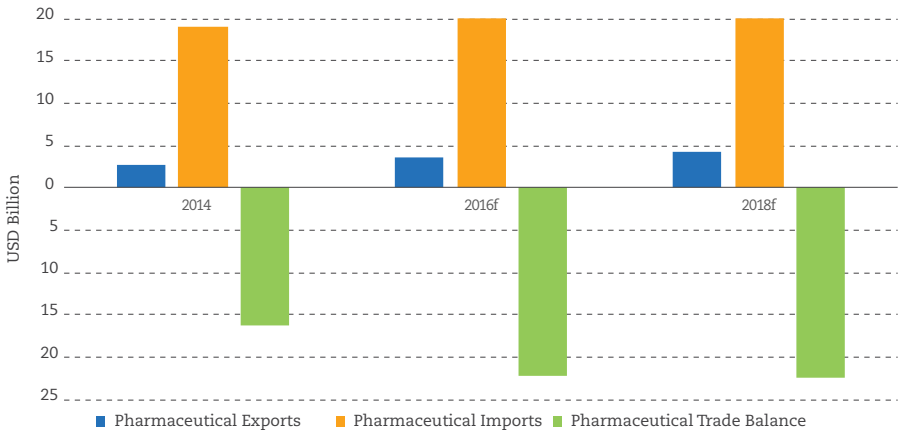


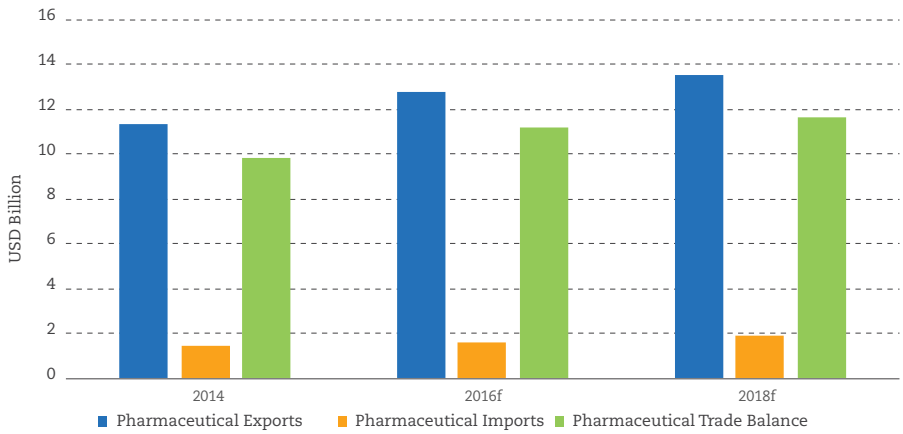
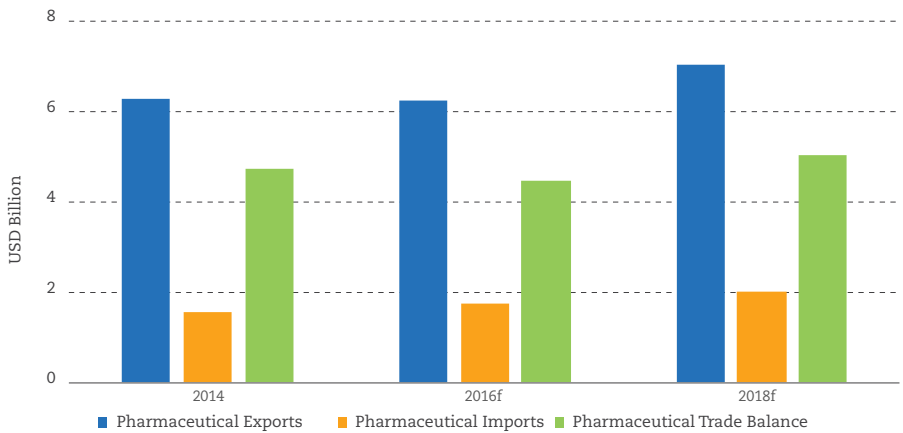
Chart 24: Pharmaceutical Trade and Forecast, Japan¹¹¹



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

110 Business Monitor International (2016) BMI Pharmaceutical and Healthcare Database. <https://bmo.bmiresearch.com/data/datatool>

111 Idem

Chart 25: Pharmaceutical Trade and Forecast, India¹¹²Chart 26: Pharmaceutical Trade and Forecast, Singapore¹¹³

112 Idem

113 Idem

Chart 27: Pharmaceutical Trade and Forecast, United Kingdom¹¹⁴

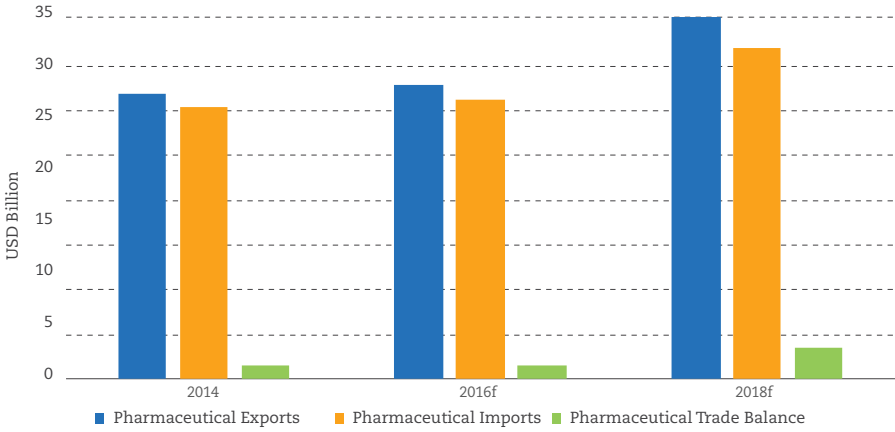
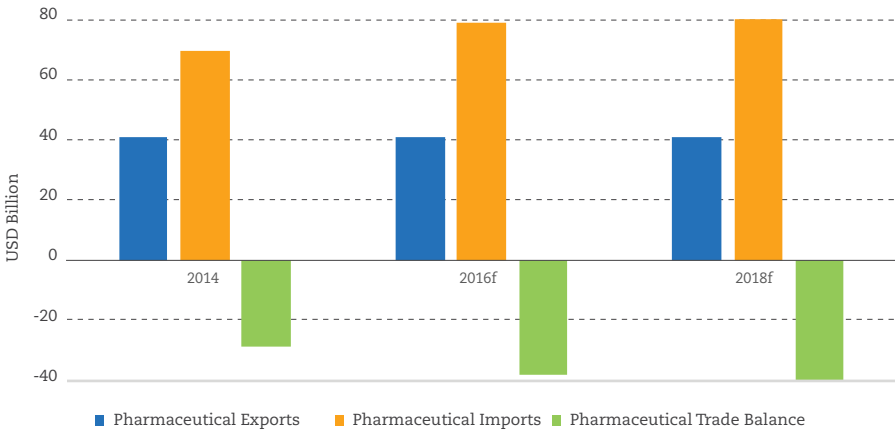


Chart 28: Pharmaceutical Trade and Forecast, United States¹¹⁵



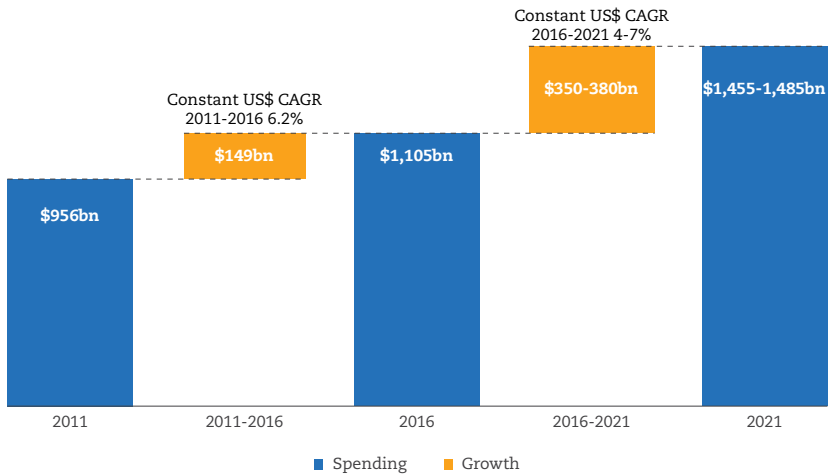
114 Business Monitor International (2016) BMI Pharmaceutical and Healthcare Database. <https://bmo.bmiresearch.com/data/datatool>

115 Idem

The Pharmaceutical Market

The QuintilesIMS Institute predicts that the pharmaceutical market will reach nearly USD 1,485 billion by 2021, an increase of USD 350-380 billion from the USD 1,105 billion recorded in 2016¹¹⁶. This growth is coming mainly from market expansion in pharmerging countries¹¹⁷ and demographic trends in developed countries due to an ageing population. Global brand spending is forecast to increase to USD 815-832 billion in 2021. Global generic spending is expected to increase to USD 495-505 billion by 2021¹¹⁸.

Chart 29: Global Spending on Medicines¹¹⁹



The United States share of global spending will increase from USD 461.7 billion in 2016 to USD 645-675 billion in 2021, while the European share of spending will grow from USD 151.8 billion to USD 170-200 billion. Meanwhile, pharmerging countries will spend USD 315-345 billion in 2021 from 242.9 in 2016¹²⁰.

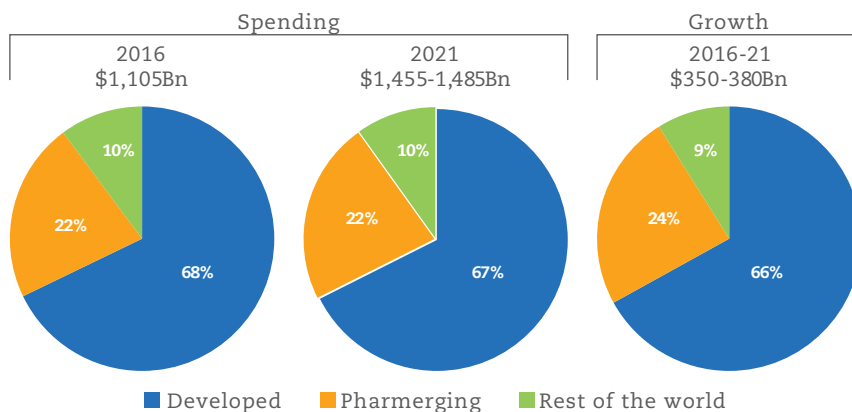
116 QuintilesIMS Institute (2016) Outlook for Global Use of Medicines through 2021. http://www.imshealth.com/en/thought-leadership/quintilesims-institute/reports/outlook_for_global_medicines_through_2021

117 Pharmerging countries: China, Brazil, Russia, India, Algeria, Argentina, Colombia, Bangladesh, Indonesia, Mexico, Nigeria, Pakistan, Poland, Saudi Arabia, South Africa, Philippines, Turkey, Romania, Chile, Kazakhstan and Vietnam. QuintilesIMS Institute (2016) Outlook for Global Use of Medicines through 2021. http://www.imshealth.com/en/thought-leadership/quintilesims-institute/reports/outlook_for_global_medicines_through_2021

118 QuintilesIMS Institute (2016) Outlook for Global Use of Medicines through 2021. http://www.imshealth.com/en/thought-leadership/quintilesims-institute/reports/outlook_for_global_medicines_through_2021

119 Idem

120 Idem

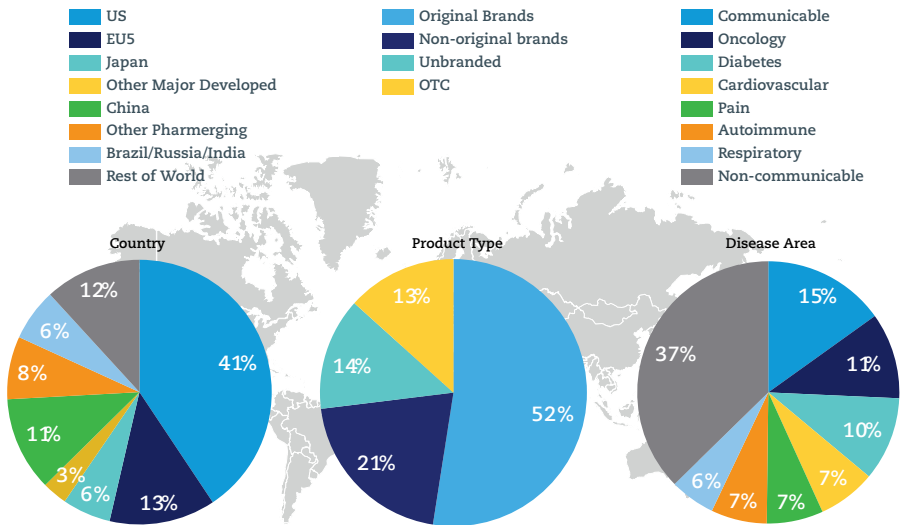
Chart 30: Spending by Geography¹²¹

Generic versus Branded Pharmaceutical Products

Branded products will account for over one-half of global pharmaceutical growth in 2021. 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 2021 are expected to reach USD 495-505 billion¹²².

121 QuintilesIMS Institute (2016) Outlook for Global Use of Medicines through 2021. http://www.imshealth.com/en/thought-leadership/quintilesims-institute/reports/outlook_for_global_medicines_through_2021

122 Idem

Figure 10: Spending by Geography, Segment and Disease Area in 2020¹²³

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.

123 QuintilesIMS Institute (2015) Global Medicines Use in 2020: Outlook and Implications. <http://www.imshealth.com/en/thought-leadership/ims-institute/reports/global-medicines-use-in-2020>

ANNEXES

Annex 1

Key Health Numbers, 2014

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Afghanistan	60,37	15,90	68,10	0,27	166,52	8,18	2,93	99,56
Albania	77,83	21,50	12,90	1,15	614,54	5,88	2,94	99,69
Algeria	74,81	21,70	22,00	1,21	932,10	7,21	5,24	97,28
Andorra			2,10	4,00	4.272,52	8,13	6,34	72,56
Angola	52,27	15,70	98,80		239,01	3,31	2,12	67,04
Antigua and Barbuda	75,94	21,60	6,10		1.208,08	5,54	3,78	74,73
Argentina	76,16	21,40	11,50	3,86	1.137,24	4,79	2,65	68,94
Armenia	74,68	19,50	13,20	2,70	362,13	4,48	1,93	93,85
Australia	82,25	25,30	3,20	3,27	4.357,26	9,42	6,32	57,08
Austria	81,34	24,10	3,00	4,83	5.038,88	11,21	8,73	72,95
Azerbaijan	70,76	18,70	28,90	3,40	1.047,30	6,04	1,23	90,55
Bahamas	75,23	22,40	10,20		1.818,77	7,74	3,55	53,98
Bahrain	76,68	19,60	5,60	0,92	2.272,90	4,98	3,15	63,51
Bangladesh	71,63	18,80	32,10	0,36	88,08	2,82	0,79	92,89
Barbados	75,50	19,70	12,30	1,81	1.013,97	7,47	4,74	81,88
Belarus	72,98	18,70	3,50	3,93	1.030,99	5,69	3,74	93,62
Belgium	80,59	23,90	3,40	4,89	4.391,60	10,59	8,25	80,45
Belize	70,08	17,00	14,60	0,83	488,74	5,79	3,88	69,76
Benin	59,51	15,60	65,70	0,06	85,61	4,59	2,25	76,67

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Bhutan	69,47	20,40	28,30	0,26	281,10	3,57	2,62	94,49
Bolivia	68,34	21,30	31,70	0,47	427,41	6,33	4,57	82,73
Bosnia and Herzegovina	76,43	20,50	5,40	1,93	957,40	9,57	6,81	96,90
Botswana	64,43	17,20	35,60	0,34	870,84	5,41	3,19	12,66
Brazil	74,40	21,50	14,40	1,89	1.318,17	8,32	3,83	47,20
Brunei Darussalam	78,81	21,20	8,50	1,44	1.777,76	2,65	2,49	97,83
Bulgaria	75,41	19,50	9,70	3,87	1.398,88	8,44	4,61	97,28
Burkina Faso	58,59	15,30	62,20	0,05	82,31	4,96	2,59	81,94
Burundi	56,69	16,50	55,80		58,02	7,54	3,97	44,48
Cabo Verde	73,15	18,70	21,30	0,31	310,12	4,76	3,56	88,04
Cambodia	68,21	17,20	26,30	0,17	183,23	5,68	1,25	95,17
Cameroon	55,49	16,40	58,60		121,92	4,10	0,94	85,98
Canada	81,96	24,90	4,40	2,07	4.640,95	10,45	7,41	46,79
Chad	51,56	15,80	86,70		79,02	3,62	1,98	86,33
Chile	81,50	24,30	7,20	1,03	1.749,36	7,79	3,85	62,37
China	75,78	19,60	9,80	1,94	730,52	5,55	3,10	72,35
Colombia	73,99	21,60	14,10	1,47	961,89	7,20	5,41	61,73
Comoros	63,26	16,30	56,60		100,82	6,75	2,22	67,12
Congo, Dem. Rep.	58,66	16,70	76,50		32,28	4,33	1,60	61,47
Congo, Rep.	62,31	17,80	34,40	0,10	322,63	5,15	4,21	96,02

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Costa Rica	79,40	24,00	8,60	1,11	1.389,34	9,31	6,77	90,98
Cote d'Ivoire	51,56	14,30	68,50	0,14	187,02	5,72	1,68	71,93
Croatia	77,33	21,30	3,80	3,00	1.652,12	7,80	6,39	61,80
Cuba	79,39	22,70	4,10	6,72	2.474,62	11,06	10,57	100,00
Cyprus	80,13	22,30	2,60	2,33	2.062,37	7,37	3,33	88,93
Czech Republic	78,28	21,80	2,90	3,62	2.146,32	7,41	6,26	92,65
Denmark	80,55	23,10	3,00	3,49	4.782,06	10,80	9,16	87,69
Djibouti	62,02	17,60	55,80	0,23	337,96	10,57	6,75	99,22
Dominica			19,50		586,90	5,49	3,77	90,51
Dominican Republic	73,50	21,90	26,20	1,49	580,33	4,38	2,93	63,87
Ecuador	75,87	22,60	19,00	1,72	1.039,76	9,16	4,51	95,35
Egypt, Arab Rep.	71,12	17,40	21,00	2,83	594,11	5,64	2,16	90,07
El Salvador	72,75	21,80	14,90	1,60	564,89	6,77	4,47	84,81
Equatorial Guinea	57,65	16,70	70,30		1.163,42	3,80	2,93	87,95
Eritrea	63,66	15,60	35,00		51,04	3,34	1,53	100,00
Estonia	77,24	21,80	2,50	3,24	1.668,31	6,38	5,03	97,84
Ethiopia	64,04	17,70	42,90	0,02	72,96	4,88	2,87	78,14
Fiji	70,09	17,10	19,40	0,43	364,05	4,49	2,95	67,26
Finland	81,13	23,90	2,00	2,91	3.701,14	9,68	7,29	73,84

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
France	82,37	25,50	3,60	3,19	4.508,13	11,54	9,02	29,08
Gabon	64,38	18,20	37,00		599,26	3,44	2,35	69,17
Gambia	60,23	15,30	48,60	0,04	118,43	7,34	5,05	54,53
Georgia	74,67	19,50	11,30	4,27	627,74	7,42	1,55	74,09
Germany	80,84	23,60	3,20	3,89	5.182,11	11,30	8,70	57,35
Ghana	61,31	15,90	44,20	0,10	145,37	3,56	2,13	66,85
Greece	81,29	23,80	3,70	6,17	2.098,05	8,08	4,99	90,94
Grenada	73,37	19,00	11,10		728,31	6,10	2,83	94,96
Guatemala	71,72	21,10	25,10		472,85	6,20	2,33	83,74
Guinea	58,73	16,60	62,80	0,10	68,46	5,64	2,74	87,97
Guinea-Bissau	55,16	15,10	62,40	0,05	90,96	5,59	1,15	62,23
Guyana	66,41	16,10	32,60	0,21	378,79	5,25	3,12	92,32
Haiti	62,75	17,60	53,50		130,85	7,56	1,56	43,87
Honduras	73,14	22,20	18,00		399,75	8,72	4,42	88,07
Hungary	75,87	20,10	5,30	3,08	1.826,68	7,40	4,88	78,16
Iceland	82,06	24,60	1,60	3,48	3.881,70	8,86	7,18	92,18
India	68,01	17,80	39,30	0,70	267,41	4,69	1,41	89,21
Indonesia	68,89	16,60	23,60	0,20	299,41	2,85	1,08	75,32
Iran, Islamic Rep.	75,39	19,50	13,90	0,89	1.081,67	6,89	2,84	81,30
Iraq	69,40	18,20	27,20	0,61	667,01	5,54	3,34	100,00
Ireland	81,15	24,00	3,10	2,67	3.801,06	7,78	5,14	52,04

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Israel	82,15	24,80	3,30	3,34	2.599,13	7,81	4,75	68,93
Italy	82,69	24,90	3,00	3,76	3.238,89	9,25	6,99	86,88
Jamaica	75,65	22,30	13,90		476,18	5,36	2,81	58,41
Japan	83,59	26,00	2,10	2,30	3.726,68	10,23	8,55	84,77
Jordan	74,05	19,10	15,80	2,56	797,59	7,45	5,19	68,83
Kazakhstan	71,62	17,40	13,50	3,62	1.068,06	4,36	2,37	98,90
Kenya	61,58	16,90	36,60	0,20	168,98	5,72	3,50	67,37
Kiribati	65,95	16,80	44,60	0,38	183,56	10,21	8,29	0,55
Korea, Dem. Rep.	70,07	16,90	20,70			
Korea, Rep.	82,16	24,80	3,00	2,14	2.530,57	7,37	3,99	78,54
Kuwait	74,59	17,80	7,70	2,70	2.319,60	3,04	2,61	90,54
Kyrgyz Republic	70,40	17,80	20,10	1,97	215,06	6,48	3,64	89,82
Lao PDR	66,12	16,70	52,30	0,18	98,47	1,87	0,94	78,80
Latvia	74,19	20,00	7,20	3,58	940,30	5,88	3,72	95,41
Lebanon	79,37	18,90	7,30	3,20	987,39	6,39	3,04	69,51
Lesotho	49,70	15,60	70,50		276,04	10,62	8,08	69,01
Liberia	60,83	15,30	54,70	0,01	98,29	10,04	3,16	44,85
Libya	71,72	18,40	11,90	1,90	806,23	4,97	3,65	100,00
Lithuania	73,97	19,30	3,60	4,12	1.718,02	6,55	4,45	97,31
Luxembourg	82,21	24,10	1,60	2,90	6.812,08	6,94	5,82	65,97

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Macedonia, FYR	75,34	19,00	5,20	2,63	851,15	6,48	4,10	100,00
Madagascar	65,09	16,90	37,00	0,16	43,70	3,04	1,47	80,23
Malawi	62,72	15,40	45,10	0,02	93,48	11,38	6,00	22,49
Malaysia	74,72	19,40	6,20	1,20	1.040,23	4,17	2,30	78,75
Maldives	76,77	21,10	7,80	1,42	1.995,84	13,73	10,76	84,26
Mali	57,99	15,90	75,90	0,08	108,10	6,86	1,57	61,77
Malta	81,75	23,90	5,20	3,49	3.071,63	9,75	6,74	93,59
Marshall Islands			30,20	0,44	679,57	17,14	14,45	75,20
Mauritania	63,02	16,50	66,10	0,07	148,11	3,77	1,87	86,99
Mauritius	74,19	20,20	12,20		896,16	4,81	2,36	91,32
Mexico	76,72	22,30	11,90	2,10	1.121,99	6,30	3,26	91,22
Micronesia, Fed. Sts.	69,10	17,30	29,40	0,18	472,65	13,71	12,43	97,54
Moldova	71,46	17,80	13,90	2,98	514,21	10,32	5,30	78,95
Monaco			2,90	7,17	7.301,91	4,34	3,84	61,15
Mongolia	69,46	16,80	19,90	2,84	565,07	4,73	2,62	93,35
Montenegro	76,18	19,70	4,60	2,11	888,17	6,42	3,67	100,00
Morocco	74,02	19,30	24,60	0,62	446,64	5,91	2,00	88,34
Mozambique	55,03	16,50	58,50	0,04	79,32	6,98	3,94	21,75
Myanmar	65,86	16,70	40,70	0,61	103,47	2,28	1,04	93,72
Namibia	64,68	17,40	33,40	0,37	869,30	8,93	5,36	17,92

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Nepal	69,60	17,40	30,50		137,40	5,80	2,34	79,86
Netherlands	81,30	24,10	3,30	2,86	5.201,70	10,90	9,48	40,18
New Zealand	81,40	24,60	4,80	2,74	4.018,31	11,03	9,08	62,57
Nicaragua	74,81	21,70	19,40	0,90	444,62	9,04	5,10	86,04
Niger	61,46	16,10	58,40	0,02	53,53	5,82	3,21	76,67
Nigeria	52,75	14,10	71,50	0,40	216,87	3,67	0,92	95,74
Norway	81,75	24,10	2,20	4,28	6.346,62	9,72	8,31	93,80
Oman	77,09	20,80	10,00	2,43	1.441,97	3,55	3,19	56,49
Pakistan	66,18	17,80	67,40	0,83	128,99	2,61	0,92	86,79
Palau			14,70	1,38	1.428,88	9,02	6,53	55,64
Panama	77,60	24,00	15,10	1,65	1.676,95	8,03	5,88	83,22
Papua New Guinea	62,61	15,00	45,70	0,06	109,49	4,26	3,47	55,89
Paraguay	72,92	21,10	18,10	1,23	872,93	9,81	4,50	91,31
Peru	74,53	21,50	13,60	1,13	656,18	5,47	3,32	72,71
Philippines	68,27	17,20	22,80		328,87	4,71	1,61	81,69
Poland	77,25	21,70	4,50	2,22	1.570,45	6,35	4,51	80,85
Portugal	80,72	24,00	3,00	4,10	2.689,94	9,50	6,16	76,29
Qatar	78,60	21,20	7,00	7,74	3.071,19	2,19	1,88	48,15
Romania	75,06	20,00	10,10	2,45	1.079,26	5,57	4,47	96,30
Russian Federation	70,37	18,50	8,50	4,31	1.835,71	7,07	3,69	95,92
Rwanda	63,97	18,00	32,70	0,06	125,07	7,53	2,87	45,44

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Samoa	73,51	19,10	15,40	0,48	417,81	7,22	6,54	62,60
San Marino			2,70	5,10	3.390,15	6,13	5,74	90,80
Sao Tome and Principe	66,38	18,30	35,50		299,73	8,35	3,61	19,72
Saudi Arabia	74,34	18,60	12,90	2,49	2.465,98	4,68	3,49	56,17
Senegal	66,37	16,70	42,30	0,06	106,94	4,66	2,42	77,41
Serbia	75,53	19,60	6,00	2,11	1.312,22	10,37	6,42	95,99
Seychelles	73,23	19,50	11,90	1,07	844,34	3,37	3,11	30,01
Sierra Leone	50,88	12,60	90,20	0,02	223,74	11,09	1,88	73,43
Singapore	82,65	25,30	2,20	1,95	4.046,98	4,92	2,05	94,11
Slovak Republic	76,71	20,60	6,10	3,32	2.179,05	8,05	5,84	81,96
Slovenia	80,52	23,50	2,20	2,52	2.697,67	9,23	6,62	42,69
Solomon Islands	67,93	16,90	24,20	0,22	107,61	5,05	4,64	56,70
Somalia	55,35	16,30	87,40	0,04		
South Africa	57,18	16,40	34,40	0,78	1.148,37	8,80	4,24	12,54
South Sudan	55,68	16,50	62,00		72,82	2,74	1,14	92,59
Spain	83,08	25,10	3,60	4,95	2.965,82	9,03	6,40	82,39
Sri Lanka	74,79	20,50	8,60	0,68	369,17	3,50	1,96	95,79
St. Kitts and Nevis			8,70		1.151,67	5,08	2,14	87,85
St. Lucia	75,05	21,20	13,00		698,30	6,72	3,60	98,14

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
St. Vincent and the Grenadines	72,94	20,00	17,00		916,55	8,63	4,39	100,00
Sudan	63,46	17,80	48,80	0,28	281,64	8,43	1,80	96,06
Suriname	71,15	19,30	19,50		978,63	5,69	2,94	23,60
Swaziland	48,93	15,90	45,80		586,82	9,25	7,00	42,35
Sweden	81,96	24,60	2,40	3,93	5.218,86	11,93	10,02	88,07
Switzerland	82,85	25,40	3,50	4,05	6.468,50	11,66	7,70	78,82
Syrian Arab Republic	70,07	18,10	11,70	1,46	375,88	3,25	1,51	100,00
Tajikistan	69,60	18,30	39,70	1,92	185,15	6,88	1,98	86,69
Tanzania	64,94	16,30	36,20	0,03	137,49	5,58	2,59	43,32
Thailand	74,42	21,00	10,90	0,39	950,14	6,53	5,62	56,70
Timor-Leste	68,26	17,00	46,10	0,07	101,54	1,48	1,33	99,62
Togo	59,66	15,50	53,60	0,05	76,25	5,25	2,02	75,13
Tonga	72,79	18,70	14,70	0,56	269,77	5,18	4,27	67,82
Trinidad and Tobago	70,44	18,30	18,70	1,18	1.815,65	5,93	3,17	81,70
Tunisia	74,14	19,50	12,60	1,22	785,32	7,00	3,97	87,06
Turkey	75,16	21,00	12,30	1,71	1.036,47	5,41	4,19	78,71
Turkmenistan	65,60	16,60	45,00	2,39	319,90	2,07	1,35	100,00
Tuvalu			23,40	1,09	585,04	16,54	16,40	100,00
Uganda	58,47	17,20	39,10	0,12	132,59	7,22	1,80	54,57

	LIFE EXPECTANCY AT BIRTH (YEARS)	LIFE EXPECTANCY AT AGE 60 (YEARS)	CHILD MORTALITY (PER 1,000 BIRTHS)	PHYSICIANS (PER 1,000 PEOPLE)	TOTAL HEALTH EXPENDITURE PER CAPITA (USD PER CAPITA)	TOTAL HEALTHCARE EXPENDITURE (%GDP)	PUBLIC HEALTHCARE EXPENDITURE (%GDP)	OUT-OF-POCKET HEALTH EXPENDITURE (% OF PRIVATE HEALTH EXPENDITURE)
Ukraine	71,19	18,20	8,10	3,54	584,24	7,10	3,60	93,93
United Arab Emirates	77,37	20,00	6,10	2,53	2.405,37	3,64	2,64	64,38
United Kingdom	81,06	23,90	3,70	2,81	3.376,87	9,12	7,58	57,74
United States	78,94	23,50	5,70	2,45	9.402,54	17,14	8,28	21,37
Uruguay	76,99	21,90	9,10	3,74	1.792,18	8,58	6,11	54,12
Uzbekistan	68,34	18,30	35,00	2,53	339,61	5,84	3,11	94,05
Vanuatu	71,92	18,10	23,50	0,12	150,36	5,02	4,51	56,70
Venezuela, RB	74,24	21,30	13,20		922,99	5,26	1,54	91,06
Vietnam	75,63	22,50	17,80	1,19	390,50	7,07	3,82	80,01
Yemen, Rep.	63,82	16,30	35,10	0,20	202,16	5,64	1,27	98,68
Zambia	60,05	17,60	44,70	0,17	194,68	4,99	2,76	67,18
Zimbabwe	57,50	17,60	47,60	0,08	114,61	6,44	2,47	58,25

Source: World Bank

Annex 2 Pharmaceutical Market, 2014

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Albania	0,17	58,10	21,40				
Algeria	4,64	119,30	33,00	3,86	0,79	2,46	1,39
Angola	0,33	13,50	7,50				
Antigua and Barbuda	0,01	142,80	18,50				
Argentina	6,76	157,30	26,20	5,83	0,93	3,72	2,11
Armenia	0,15	48,70	30,00				
Australia	12,15	514,30	8,70	9,75	2,40	8,15	1,60
Austria	8,10	950,60	17,10	7,07	1,03	5,94	1,13
Azerbaijan	0,30	31,00	6,60				
Bahamas	0,07	191,30	11,10				
Bahrain	0,32	237,60	19,20	0,29	0,04	0,19	0,10
Bangladesh	1,98	12,50	40,50	1,55	0,42	0,14	1,42
Barbados	0,10	362,20	31,60				
Belarus	1,01	106,90	23,50	0,59	0,42	0,11	0,49
Belgium	7,73	688,50	14,10	6,90	0,83	6,01	0,89
Belize	0,01	40,10	14,40				
Benin	0,12	11,00	29,10				
Bhutan	0,02	24,50	23,40				
Bolivia	0,26	24,40	11,90				

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERIC (USD MILLION)
Bosnia and Herzegovina	0,50	130,60	28,20				
Botswana	0,20	90,10	23,40				
Brazil	26,35	127,90	13,50	19,23	7,11	12,49	6,74
Brunei Darussalam	0,09	235,10	22,10				
Bulgaria	1,72	238,50	35,90	1,39	0,33	0,86	0,53
Burkina Faso	0,26	14,90	42,30				
Burundi	0,11	10,10	47,00				
Cabo Verde	0,01	26,40	14,30				
Cambodia	0,23	14,90	24,00				
Cameroon	0,37	16,10	27,40				
Canada	21,83	613,40	11,70	17,19	4,64	12,40	4,79
Chile	3,47	195,30	17,30	2,87	0,60	1,69	1,17
China	98,75	72,10	17,20	83,67	15,08	21,12	62,55
Colombia	4,32	90,30	15,90	3,58	0,73	1,67	1,91
Congo, Dem. Rep.	0,36	4,70	30,00				
Congo, Rep.	0,11	25,20	18,90				
Costa Rica	0,78	164,70	17,00				
Cote d'Ivoire	0,49	22,30	25,20				
Croatia	1,23	289,20	27,30	1,14	0,09	0,61	0,54
Cuba	1,43	125,50	15,40				

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Cyprus	0,35	304,80	22,60	0,32	0,03	0,16	0,16
Czech Republic	3,30	330,80	25,50	2,88	0,42	1,75	1,13
Denmark	3,81	674,70	10,50	3,43	0,38	2,72	0,71
Dominica	0,00	60,20	14,80				
Dominican Republic	0,65	62,70	23,20				
Ecuador	1,50	94,30	16,30				
Egypt, Arab Rep.	4,17	46,50	26,20	3,41	0,76	2,15	1,26
El Salvador	0,47	76,10	27,20				
Equatorial Guinea	0,02	21,00	2,40				
Eritrea	0,03	3,90	18,20				
Estonia	0,39	269,20	23,60	0,33	0,06	0,15	0,18
Ethiopia	0,46	4,70	17,60				
Fiji	0,05	53,10	26,00				
Finland	3,78	689,60	15,00	3,51	0,27	2,78	0,73
France	44,70	697,10	13,70	36,86	7,84	29,10	7,75
Gabon	0,09	55,90	15,90				
Gambia	0,01	6,20	19,20				
Georgia	0,53	132,30	43,50				
Germany	68,86	667,10	13,50	60,61	8,25	47,87	12,74

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Ghana	0,33	12,30	25,00	0,24	0,09	0,11	0,13
Greece	6,57	597,60	34,50	5,82	0,76	4,23	1,58
Guatemala	0,85	52,70	34,70				
Guinea	0,12	10,00	33,00				
Guyana	0,06	73,80	27,80				
Haiti	0,04	4,10	3,80				
Honduras	0,44	55,00	25,10				
Hungary	2,79	281,60	27,20	2,27	0,52	1,33	0,93
Iceland	0,23	699,00	15,80				
India	15,63	12,10	16,10	13,36	2,27	1,38	11,88
Indonesia	5,93	23,30	23,50	3,65	2,29	1,18	2,47
Iran, Islamic Rep.	1,91	24,40	8,50				
Iraq	1,62	46,00	15,80				
Ireland	3,16	618,10	16,20	2,81	0,34		
Israel	2,10	264,40	8,80	1,64	0,46	1,17	0,47
Italy	35,33	591,00	17,80	32,32	3,01	29,11	3,22
Jamaica	0,21	74,10	27,80				
Japan	106,14	837,20	22,50	99,82	6,32	87,63	12,19
Jordan	0,91	122,00	34,00	0,74	0,17	0,28	0,45
Kazakhstan	1,73	99,40	18,40	1,14	0,59	0,48	0,66
Kenya	0,73	16,20	20,80	0,52	0,20	0,07	0,46

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Korea, Rep.	15,75	314,60	15,20	12,67	3,08	5,25	7,42
Kuwait	1,01	268,10	19,40	0,85	0,16	0,65	0,20
Kyrgyz Republic	0,24	41,50	50,50				
Lao PDR	0,10	14,40	44,30				
Latvia	0,54	247,30	41,60	0,45	0,09	0,29	0,16
Lebanon	1,53	272,40	48,00	1,21	0,32	0,75	0,46
Liberia	0,04	9,60	27,40				
Libya	0,43	68,00	18,20				
Lithuania	0,80	250,30	25,50	0,67	0,13	0,32	0,35
Luxembourg	0,36	711,80	9,10				
Macedonia, FYR	0,25	121,90	34,50				
Madagascar	0,11	4,50	22,70				
Malawi	0,19	11,50	46,60				
Malaysia	2,21	73,80	16,20	1,62	0,58	0,79	0,83
Mali	0,26	15,40	28,90				
Malta	0,23	538,00	22,40				
Marshall Islands	0,03						
Mauritania	0,19	7,10	14,30				
Mauritius		148,10	30,70				
Mexico	12,96	103,40	16,10	10,92	2,04	7,57	3,35

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Moldova	0,39	96,70	48,00	0,27	0,12	0,04	0,23
Mongolia	0,10	33,40	14,00				
Montenegro	0,10	158,70	61,00				
Morocco	1,49	44,50	23,10	1,04	0,45	0,62	0,42
Mozambique	0,24	8,90	21,20				
Myanmar	0,38	7,20	27,30				
Namibia	0,20	82,20	16,50				
Nepal	0,26	9,00	21,20				
Netherlands	7,97	465,60	8,20	6,99	0,98	5,03	1,97
New Zealand	1,18	262,10	5,40	1,04	0,14	0,81	0,23
Nicaragua	0,42	69,60	39,20				
Niger	0,09	4,90	21,30				
Nigeria	1,03	5,80	5,20	0,57	0,46	0,18	0,39
Norway	3,53	685,20	7,20	3,15	0,38	2,62	0,53
Oman	0,59	138,90	20,60	0,52	0,07	0,29	0,23
Pakistan	2,29	12,40	34,20	1,70	0,59	0,22	1,48
Panama	0,63	162,10	16,90				
Paraguay	0,28	42,80	9,20				
Peru	1,65	53,10	14,90	1,21	0,44	0,57	0,64
Philippines	3,28	33,10	24,40	2,35	0,94	0,92	1,43
Poland	10,15	262,90	29,30	7,26	2,90	3,09	4,17
Portugal	4,55	437,30	20,80	4,27	0,28	3,29	0,98

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Qatar	0,49	226,30	10,80	0,44	0,05	0,33	0,10
Romania	4,24	215,60	38,20	3,46	0,78	2,45	1,01
Russian Federation	22,96	160,00	17,60	14,02	8,93	5,19	8,84
Rwanda	0,13	11,50	22,00				
Saudi Arabia	7,16	244,80	21,30	6,23	0,93	4,02	2,21
Senegal	0,31	20,90	42,30				
Serbia	1,05	146,40	23,00	0,94	0,11	0,29	0,65
Seychelles	0,01	78,30	17,20				
Sierra Leone	0,11	17,90	21,50				
Singapore	0,82	149,20	5,40	0,65	0,17	0,46	0,19
Slovak Republic	2,45	453,70	31,20	2,03	0,42	0,99	1,05
Slovenia	0,90	433,50	20,10	0,81	0,09	0,51	0,30
South Africa	3,67	68,00	11,90	3,22	0,44	2,04	1,19
Spain	32,78	708,70	26,50	31,46	1,32	27,95	3,51
Sri Lanka	0,58	27,90	27,70	5,00	0,50	4,17	0,83
St. Kitts and Nevis	0,01	116,70	15,20	6,21	1,51	5,30	0,91
Sudan	0,45	11,50	9,20				
Swaziland	0,02	19,30	8,30				
Sweden	5,49	566,20	10,30				
Switzerland	7,71	939,40	9,80				

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERIC (USD MILLION)
Syrian Arab Republic	0,14	7,40	44,70				
Tajikistan	0,11	13,10	17,10				
Tanzania	0,48	9,30	18,00				
Thailand	4,48	66,10	18,40	3,60	0,88	1,36	2,24
Togo	0,13	18,30	33,80				
Tonga	0,00	13,40	6,30				
Trinidad and Tobago	0,29	216,50	21,90				
Tunisia	0,94	84,60	27,70				
Turkey	8,56	110,40	19,80	7,68	0,88	4,59	3,09
Turkmenistan	0,13	24,00	12,80				
Uganda	0,43	11,50	22,30				
Ukraine	3,35	74,50	36,20	2,09	1,26	0,41	1,68
United Arab Emirates	2,20	490,10	30,40	1,86	0,34	1,46	0,40
United Kingdom	50,14	779,40	19,80	43,60	6,55	30,81	12,79
United States	316,34	970,00	10,40	297,70	18,64	230,81	66,89
Uruguay	0,33	95,00	6,60				
Uzbekistan	0,96	32,40	26,10	0,72	0,24	0,25	0,47
Venezuela, RB	8,11	264,10	30,30	6,40	1,70	3,15	3,26
Vietnam	3,81	41,20	29,00	2,81	1,00	0,84	1,98

	TOTAL PHARMACEUTICAL SALES (USD BILLION)	PHARMACEUTICAL SALES (USD PER CAPITA)	PHARMACEUTICAL SALES (% OF HEALTH EXPENDITURE)	PHARMACEUTICAL SALES PRESCRIPTION DRUGS (USD BILLION)	PHARMACEUTICAL SALES OTC (USD MILLION)	PHARMACEUTICAL SALES ORIGINATOR (USD MILLION)	PHARMACEUTICAL SALES GENERICS (USD MILLION)
Yemen, Rep.	0,42	16,00	20,00				
Zambia	0,24	15,30	17,90				
Zimbabwe	0,36	23,70					

Source: Business Monitor International

Annex 3

Pharma Economic Footprint, 2014

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Afghanistan			1.610,42	12,70	49,51
Albania	1,67	110,03	269,57	10,40	28,03
Algeria	1,79	2.600,00	9.928,17	57,72	190,80
Andorra			44,60	1,53	4,13
Angola		239,15	6.552,42	41,96	138,70
Antigua and Barbuda		8,65		0,00	
Argentina	819,53	2.002,94	102.000,00	456,14	1.804,69
Armenia	9,19	114,48	913,53	5,86	22,85
Australia	2.467,77	8.027,35	19.800,00	1.110,35	2.203,05
Austria	8.687,79	5.679,93	14.710,00	1.009,26	3.880,58
Azerbaijan	11,81	221,10	142,08	0,43	0,65
Bahamas, The		51,56		0,00	
Bahrain	0,70	261,58	3.173,77	26,65	103,87
Bangladesh	111,06	219,28	12.056,32	153,86	599,66
Barbados	76,19	68,43		0,00	
Belarus	152,79	766,65	1.723,65	155,89	419,92
Belgium	47.506,51	37.447,88	24.100,00	2.104,74	4.000,36
Belize		10,34	51,66	1,37	5,43
Benin		84,92	771,88	8,38	27,71
Bhutan		13,61	92,99	0,90	3,50
Bolivia	3,03	162,47	567,22	21,99	87,02

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Bosnia and Herzegovina	68,41	362,97	618,46	28,45	76,65
Botswana	8,04	134,87	739,14	5,92	19,57
Brazil	1.284,01	7.040,11	105.253,03	1.460,32	5.926,36
Brunei Darussalam		66,60	1.144,22	11,79	45,96
Bulgaria	1.002,64	1.319,63	8.370,00	79,31	206,69
Burkina Faso		190,28	1.037,22	5,80	19,17
Burundi		79,01	183,72	1,09	3,61
Cabo Verde		9,68	88,00	0,71	2,34
Cambodia		267,78	15.200,00	11,00	42,86
Cameroon	0,57	234,87	5.242,43	28,97	95,77
Canada	6.769,02	11.776,70	18.158,72	1.295,00	3.139,57
Chad			741,03	9,82	32,46
Chile	193,98	1.081,24	6.124,86	199,39	788,88
China	3.565,97	17.113,70	2.301.534,05	9.563,25	68.652,93
Colombia	492,60	2.239,78	23.299,30	197,27	1.619,45
Comoros			23,81	0,17	0,56
Congo, Dem. Rep.		237,02	977,52	37,91	125,33
Congo, Rep.		79,43	657,00	4,81	15,88
Costa Rica	231,10	604,41	7.350,00	49,61	196,27
Cote d'Ivoire	5,25	375,88	5.048,47	31,17	103,03
Croatia	519,75	810,24	7.160,00	98,24	264,63
Cuba	506,94	81,75	14,90	0,38	1,52

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Cyprus	310,09	245,40	1.400,00	47,56	87,85
Czech Republic	2.286,02	4.275,52	11.700,00	185,99	742,27
Denmark	5.667,06	3.958,13	21.000,00	2.438,59	4.854,27
Djibouti		24,76	22,03	0,13	0,42
Dominica		3,31		0,00	
Dominican Republic		459,14	26,26	0,48	1,91
Ecuador	43,53	1.031,55	7.500,00	52,75	203,60
Egypt, Arab Rep.	300,80	1.838,35	47.753,63	597,05	2.210,20
El Salvador	107,43	292,56	8.600,00	32,57	128,88
Equatorial Guinea		11,78	31,73	0,17	0,57
Eritrea		17,46	458,36	2,06	2,57
Estonia	67,42	398,01	400,00	8,37	13,75
Ethiopia	2,02	309,77	660,03	6,35	27,01
Fiji		34,95		0,00	11,13
Finland	901,01	2.320,86	4.700,00	286,96	1.458,27
France	33.687,33	25.364,41	47.000,00	3.847,34	8.125,94
Gabon	0,05	66,06	1.303,86	7,74	25,58
Gambia	102,35	11,14	90,69	0,30	1,01
Georgia		352,70	3.299,78	21,29	55,94
Germany	74.260,84	45.459,79	128.000,00	9.137,42	26.109,24
Ghana	1,36	206,22	3.490,58	13,88	45,90
Greece	1.345,66	3.325,08	11.860,00	374,24	907,87

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Guatemala	260,42	563,09	9.900,00	75,48	298,65
Guinea		90,31	593,46	3,42	11,31
Guinea-Bissau			160,31	1,00	3,30
Guyana	2,88	42,63	43,16	1,15	4,55
Honduras	8,86	332,92	752,83	22,72	89,90
Hungary	4.011,16	3.312,49	20.400,00	485,04	1.658,52
Iceland	81,70	135,18	500,00	17,19	46,31
India	11.333,18	1.487,41	587.468,59	3.441,70	17.766,44
Indonesia	508,89	667,09	64.059,39	850,85	11.419,11
Iran, Islamic Rep.	102,72	1.724,80	27.199,96	247,24	1.036,38
Iraq	0,71	1.037,14	12.407,03	13,89	54,12
Ireland	25.886,35	4.595,39	17.030,00	1.426,81	13.391,86
Israel	6.174,68	1.798,71	24.395,30	205,05	799,16
Italy	24.605,56	20.624,85	59.300,00	3.794,73	8.147,62
Jamaica	3,57	120,68	2,98	0,06	0,23
Japan	2.582,07	18.970,58	91.528,69	4.039,18	36.518,82
Jordan	596,31	490,19	5.500,91	115,16	436,83
Kazakhstan	20,47	1.369,23		0,00	
Kenya	86,95	475,54	3.505,32	22,64	74,84
Korea, Dem. Rep.			2.664,28	19,85	77,38
Korea, Rep.	1.327,57	4.477,75	15.299,38	0,00	9.998,98
Kuwait	20,96	949,17	5.780,20	51,68	201,40
Kyrgyz Republic		178,36	286,35	0,12	1,60

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Lao PDR		32,16	265,21	3,95	15,41
Latvia	385,07	598,72	2.340,00	43,57	75,42
Lebanon	38,06	1.117,31	699,00	22,02	67,43
Liberia	0,12	36,08	1.000,00	0,77	2,56
Libya			6.480,27	10,14	33,50
Lithuania	636,06	989,33	360,00	19,13	176,22
Luxembourg	85,24	412,30		0,00	107,09
Macedonia, FYR	81,62	161,63	800,00	18,24	57,38
Madagascar	213,78	75,60	1.325,11	5,24	17,34
Malawi		222,81	396,55	1,33	3,96
Malaysia		1.419,18	12.586,51	111,64	355,00
Maldives			99,53	0,70	2,74
Mali	1,70	184,31	750,61	6,16	20,35
Malta	329,18	152,55	1.200,00	45,81	97,77
Marshall Islands				0,00	
Mauritania		18,57	334,39	2,40	7,93
Mauritius	32,28	111,32	400,00	6,83	22,57
Mexico	1.651,04	4.525,47	51.125,14	2.172,82	10.718,40
Micronesia, Fed. Sts.			3,38	0,01	0,02
Moldova	124,74	262,45	73,97	8,25	22,23
Monaco			91,57	4,79	12,90
Mongolia			326,90	5,74	22,36
Montenegro			71,23	1,51	4,06

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Morocco	123,33	585,33	10.149,38	330,45	743,71
Mozambique	0,63	164,36	1.468,98	5,63	18,62
Myanmar		392,43	1.801,61	56,66	220,81
Namibia	1,20	152,62	1.846,23	12,27	40,58
Nepal				3,27	17,97
Netherlands	24.096,58	15.993,38	12.000,00	925,96	928,46
New Zealand	224,63	839,75	2.100,00	243,62	483,38
Nicaragua	4,27	331,45	317,45	11,23	44,43
Niger		65,38	425,78	3,33	11,00
Nigeria	8,00	318,54	7.780,03	376,33	1.244,03
Norway	824,38	1.957,44	2.700,00	259,09	787,79
Oman	53,23	380,23	734,36	12,31	48,37
Pakistan	184,54	712,71	36.336,00	316,39	1.223,50
Panama	1.170,00	97,84	1.100,00	21,30	84,26
Papua New Guinea				12,34	24,48
Paraguay	49,29	180,58	645,11	22,74	89,97
Peru	44,13	669,15	4.973,45	134,55	532,36
Philippines	50,68	963,84	31.000,00	516,24	1.106,08
Poland	3.441,58	5.616,65	38.000,00	548,67	1.303,21
Portugal	1.048,45	2.551,91	5.940,00	208,84	574,97
Qatar	16,53	409,53	10.916,37	113,69	443,12
Romania	1.100,51	3.348,08	10.000,00	119,30	178,31

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Russian Federation	572,02	12.276,45	66.523,33	1.793,57	5.717,46
Rwanda	0,12	94,57	308,14	1,42	4,69
San Marino			182,72	7,22	19,45
Sao Tome and Principe			22,94	0,09	0,29
Saudi Arabia	439,48	5.492,17	34.934,02	433,64	1.690,08
Senegal	13,76	193,49	3.855,18	13,32	44,05
Serbia	239,99	642,80	7.100,00	91,75	247,13
Seychelles		5,50	87,79	0,48	1,58
Sierra Leone		72,75	99,03	0,66	2,19
Singapore	6.285,00	1.568,74	7.978,56	464,02	8.948,65
Slovak Republic	555,18	1.936,63	2.180,00	22,69	106,89
Slovenia	3.077,20	1.170,57	7.500,00	406,39	1.014,60
Solomon Islands				1,04	2,07
Somalia			60,26	0,11	0,37
South Africa	380,04	1.901,71	97.000,00	286,33	946,52
South Sudan			1.068,47	1,14	3,78
Spain	11.993,94	14.461,66	43.723,10	2.594,50	5.589,39
Sri Lanka	5,10	316,70	11.654,00	18,75	102,21
St. Kitts and Nevis		2,76		0,00	
St. Vincent and the Grenadines		4,40		0,00	
Sudan	0,23	378,36	6.020,79	53,26	176,07

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Suriname		12,82	272,41	5,82	23,04
Swaziland	18,59	15,16	1.534,47	10,75	35,55
Sweden	7.249,18	4.009,30	9.700,00	1.389,23	7.202,53
Switzerland	61.670,12	23.142,44	43.258,08	7.371,57	19.856,41
Syrian Arab Republic	2,23	95,29	1.918,60	8,52	33,20
Tajikistan	64,29	75,24		0,00	
Tanzania	2,75	310,87	1.600,00	5,41	61,04
Thailand	316,26	1.788,64	48.000,00	186,59	544,33
Timor-Leste			9,90	0,04	0,15
Togo		95,49	434,94	1,75	5,78
Tonga				0,30	0,61
Trinidad and Tobago			16,88	0,77	1,12
Tunisia	42,65	570,21	13.105,44	50,41	166,65
Turkey	758,04	4.240,31	35.100,00	2.179,25	3.935,85
Uganda	9,70	354,36	1.260,06	9,37	30,96
Ukraine	245,19	2.395,41	22.237,86	136,34	367,26
United Arab Emirates	873,65	3.523,61	24.036,10	192,82	751,51
United Kingdom	31.922,73	30.340,00	41.690,00	6.835,93	20.037,47
United States	40.546,55	69.214,89	251.994,77	13.218,36	108.654,49
Uruguay	115,65	144,70	6.600,00	126,26	230,20
Venezuela, RB	38,29	3.662,94	13.429,39	2.185,86	1.736,06
Vietnam	98,92	2.099,98	39.749,42	156,22	467,51

	PHARMACEUTICAL EXPORTS (USD MILLION)	PHARMACEUTICAL IMPORTS (US\$MM)	NUMBER OF EMPLOYEES	WAGES AND SALARIES (USD MILLION)	GROSS VALUE ADDED (USD MILLION)
Yemen, Rep.	6,63	356,70	1.734,12	3,31	15,47
Zambia	0,14	208,20	1.460,18	7,56	24,98
Zimbabwe	2,20	246,73	676,57	5,75	18,99

Source: Business Monitor International and WifOR

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