

G-FINDER: Global Funding of Innovation for Neglected Diseases

Each year since 2007, the G-FINDER project has provided policy-makers, donors, researchers and industry with a comprehensive analysis of global investment into research and development (R&D) of new products to prevent, diagnose, control or cure neglected diseases in developing countries. It provides an up-to-date analysis of how R&D investments are being allocated across diseases and product types, funding trends over time, and where the potential gaps lie.

This is the eleventh annual G-FINDER report, providing new data on investments made in financial year 2017. In all, 197 organisations completed the survey for FY2017, which covered 33 neglected diseases and all relevant product types: drugs, vaccines (preventive and therapeutic), diagnostics, microbicides and vector control products (chemical and biological control agents, and reservoir targeted vaccines) – as well as basic research.

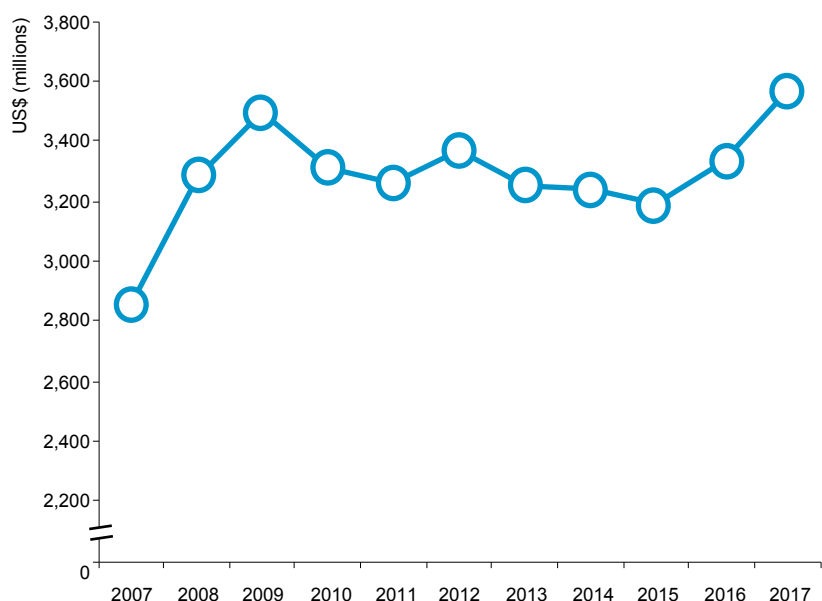
Executive summary

Global funding for basic research and product development for neglected diseases in 2017 was \$3,566m, the highest level ever recorded by the G-FINDER survey. This milestone stands even after accounting for differences in survey participation, expansion of existing categories, and the addition of new diseases and products to the scope. Investment grew by \$232m (up 7.0%) compared to the previous year. This was the largest increase in both relative and absolute terms since 2008, and the first time since 2009 that there has been two consecutive years of growth in global funding for neglected disease R&D.

NEGLECTED DISEASE FUNDING BY DISEASE

As in previous years, HIV/AIDS, malaria and tuberculosis (TB) collectively received more than two-thirds (\$2,496m, 70%) of all global funding for neglected disease R&D in 2017. This share was unchanged from the preceding year, despite increased funding for all three diseases: funding for HIV/AIDS increased by \$88m (up 7.5%, albeit partly due to investment by new survey participants); malaria by \$38m (up 6.4%); and TB by \$23m (up 3.8%).

Total funding for neglected disease R&D 2007-2017



There was a mixed picture among the less-well funded diseases: funding was sharply lower for dengue (down \$32m, -28%), bacterial pneumonia & meningitis (down \$21m, -21%), hepatitis C (down \$13m, -47%) and *Salmonella* infections (down \$12m, -12%); while there were smaller funding increases for helminth infections (up \$14m, 18%) and diarrhoeal diseases (up \$9.7m, 6.3%). The drop in funding for hepatitis C meant that it joined – for the first time – the group of diseases which receive less than 0.5% of global funding each year, while rheumatic fever once again received the least R&D funding (\$1.2m, <0.1%).

There was a substantial increase in non-disease-specific R&D investment. This category, which includes core funding of multi-disease R&D organisations, investments in platform technologies and multi-disease vector control products, and other R&D investment that cannot be allocated to a specific disease, accounted for 11% (\$382m) of global funding in 2017. This was \$129m higher than in 2016, (up 51%), largely due to a significant increase in core funding (up \$118m, 75%).

R&D funding by disease 2008-2017[^]

Disease or R&D area	US\$ (millions)										2017 % of total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
HIV/AIDS	1,370	1,343	1,267	1,227	1,255	1,143	1,156	1,099	1,169	1,257	35.2
Malaria	597	655	578	600	594	551	592	584	586	624	17.5
Tuberculosis	506	610	633	587	562	576	589	592	593	615	17.3
Diarrhoeal diseases	153	210	183	173	174	205	181	166	155	164	4.6
Kinetoplastid diseases	153	177	160	142	144	130	154	129	145	146	4.1
Helminth infections (worms & flukes)	76.8	89.2	82.8	89.2	94.2	94.7	95.8	79.9	75.4	89.2	2.5
<i>Salmonella</i> infections	45.4	45.1	49.8	49.2	59.1	67.1	67.9	71.0	94.5	82.9	2.3
Dengue	54.3	84.3	71.3	81.0	77.4	70.6	84.3	92.4	113	81.3	2.3
Bacterial pneumonia & meningitis	102	77.3	105	109	113	105	77.5	96.7	96.1	75.5	2.1
Hepatitis C (genotypes 4, 5 & 6)						48.4	46.6	34.9	28.8	15.3	0.4
Leprosy	11.6	12.4	10.7	9.3	15.4	13.5	11.1	11.5	11.5	12.8	0.4
Cryptococcal meningitis						3.1	5.7	5.6	5.7	10.7	0.3
Leptospirosis						0.4	1.3	1.3	2.4	3.2	<0.1
Buruli ulcer	2.0	1.9	5.6	5.9	6.2	6.6	3.8	1.9	2.8	2.9	<0.1
Trachoma	1.8	1.4	3.5	6.0	2.1	2.2	1.4	1.2	2.2	2.7	<0.1
Rheumatic fever	2.6	3.5	2.0	0.9	1.0	0.9	1.4	2.4	1.3	1.2	<0.1
Platform technologies	18.5	25.1	31.4	18.7	52.0	45.8	23.3	36.4	53.5	33.9	1.0
Adjuvants and immunomodulators	2.7	5.7	10.5	5.9	28.9	22.1	8.8	12.5	18.1	13.9	0.4
General diagnostic platforms	6.1	10.2	10.9	10.8	17.8	17.3	10.1	16.1	18.8	13.2	0.4
Delivery technologies and devices	9.7	9.2	10.0	1.9	5.3	6.4	4.5	7.8	16.7	6.9	0.2
Multi-disease vector control products										23.3	0.7
Core funding of a multi-disease R&D organisation	100	72.0	74.5	89.6	106	116	107	143	158	277	7.8
Unspecified disease	87.4	86.6	56.2	77.6	113	76.1	40.8	44.0	40.7	47.9	1.3
Total	3,282	3,493	3,313	3,265	3,370	3,255	3,240	3,191	3,334	3,566	100

■ Hepatitis C, cryptococcal meningitis and leptospirosis were added to G-FINDER in 2013. Multi-disease vector control products were added in 2017.

[^] Please note that some of the diseases listed are actually groups of diseases, such as the diarrhoeal diseases and helminth infections. This reflects common practice and also the shared nature of research in some areas. For example, *Streptococcus pneumoniae* R&D is often targeted at both pneumonia and meningitis.

NEGLECTED DISEASE FUNDERS

The public sector continued to be the most significant source of funding in 2017, providing almost two-thirds (\$2,318m, 65%) of the global total. It was also the key driver of the overall increase in funding, with public sector funding increasing by \$181m (up 8.5%). Industry investment increased by \$49m (up 9.7%), although this was due to investment by new survey participants. If irregular survey participants are excluded, industry funding was in fact marginally lower than last year (down \$9.8m, -2.0%). Philanthropic funding was essentially unchanged (up \$1.2m, 0.2%).

Large increases in funding from the UK government (up \$87m, 89%) and the European Commission (EC¹, up \$40m, 50%) narrowed the gap between the second and third-largest public funders and the US government, although US government funding also increased (up \$23m, 1.5%) and it remained the largest public funder of neglected disease R&D. The growth in UK government funding was driven by the Department for International Development (DFID, up \$46m, 83%), and the Department of Health and Social Care (new funding of \$40m), while the increase from the EC was the result of a nearly seven-fold increase in its funding to the European & Developing Countries Clinical Trials Partnership (EDCTP, up \$47m, 571%). Other large increases came from India (up \$21m, 38%), driven by increased investment from the Indian Council of Medical Research (up \$23m, 52%); and Germany (up \$18m, 39%), primarily due to additional funding from the German Federal Ministry of Education and Research (up \$12m, 40%). The increase in Indian government investment helped drive an overall increase in public funding from low- and middle-income countries (LMICs, up \$17m, 19%), marking the third consecutive year of growth and the second-largest LMIC public investment on record (behind only 2013).

The philanthropic sector provided a total of \$692m in funding for basic research and product development for neglected diseases in 2017, almost unchanged from 2016. Funding growth from other sectors meant that the philanthropic sector's share of total funding fell slightly (to 19%, from 21% in 2016), marking the sector's smallest share of overall funding for neglected disease R&D since 2010. Once again, the Bill & Melinda Gates Foundation and the Wellcome Trust together provided the vast majority (95%) of philanthropic funding. A slight drop in Gates Foundation spending (down \$11m, -1.9%) was fully offset by additional funding from the Wellcome Trust along with several smaller donors.

The private sector invested a total of \$554m in neglected disease R&D in 2017, accounting for 16% of total global funding. As usual, multinational pharmaceutical companies (MNCs) provided the majority of this investment (\$445m, 80%), with small pharmaceutical and biotechnology firms (SMEs) contributing the remainder (\$109m, 20%). Growth in reported funding was driven by new survey participants; contributions from regular survey participants actually fell slightly in 2017, with MNC investment down \$5.9m (-1.5%) and SMEs down \$3.9m (-3.9%).

¹ The term 'EC' used here and throughout the report refers to funding from the European Union budget that is managed by the European Commission or related European Union partnerships and initiatives, such as the European & Developing Countries Clinical Trials Partnership (EDCTP) and Innovative Medicines Initiative (IMI).

Top neglected disease R&D funders 2017

Funder	US\$ (millions)										2017 % of total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
US NIH	1,313	1,519	1,463	1,431	1,534	1,340	1,337	1,317	1,404	1,393	39
Aggregate industry	345	379	419	396	382	390	469	477	505	554	16
Gates Foundation	722	655	539	536	531	550	543	550	564	553	16
EC	126	116	91	108	93	110	109	132	80	119	3.4
Wellcome Trust	52	56	66	78	121	112	104	82	99	102	2.9
UK DFID	37	73	80	62	37	60	65	52	55	100	2.8
US DOD	81	110	78	87	85	99	100	75	81	93	2.6
USAID	100	101	103	97	98	85	80	84	74	85	2.4
Indian ICMR	26	20	24	24	25	38	36	36	43	66	1.9
Unitaid	-	-	-	-	0.4	8.8	16	20	48	49	1.4
German BMBF	<0.1	6.7	9.2	8.4	16	15	17	24	31	43	1.2
UK MRC	45	45	51	44	39	41	41	35	41	41	1.2
Subtotal of top 12 [^]	2,896	3,131	2,978	2,937	3,019	2,903	2,954	2,911	3,024	3,200	90
Total R&D funding	3,281	3,493	3,313	3,265	3,368	3,254	3,240	3,191	3,333	3,566	100

[^] Subtotals for 2008-2016 top 12 reflect the top funders for those respective years, not the top 12 for 2017.

Funding organisation did not participate in the survey for this year. Any contributions listed are based on data reported by funding recipients so may be incomplete.

- No reported funding

NEGLECTED DISEASE FUNDING FLOWS

Organisations can invest in neglected disease R&D in two ways: by funding their own in-house research (internal investment/self-funding) or by giving grants to others (external investment). Once again, just under three-quarters (\$2,604m, 73%) of all funding for neglected disease basic research and product development in 2017 was given externally. Of this external funding, almost three-quarters (\$1,913m, 73%) was given directly to researchers and developers, \$508m (19%) was channelled through PDPs, and the remainder (\$184m, 7.1%) was given to other intermediaries. The most significant change was a doubling of funding to other intermediaries (up \$91m, 99%), primarily as a result of increased funding for EDCTP. Funding for PDPs also rebounded (up \$52m, 11%) after an historic low in 2016, driven by increased funding from UK and US government agencies. After a big increase the previous year, funding given directly to researchers and developers remained stable in 2017 (up \$5.6m, 0.3%).

Internal investments (self-funding) accounted for just over a quarter (\$962m, 27%) of all funding for neglected disease R&D in 2017, an increase of \$84m (up 9.5%). This was driven by industry investment (up \$45m, 9.1%), as well as internal investment by government agencies (up \$37m, 9.8%), although the scale of this headline increase was heavily influenced by new industry survey participants.

DISCUSSION

Global funding for neglected disease R&D reached a record high in 2017, on the back of a second consecutive year of increasing investment

- Global funding for basic research and product development for neglected diseases in 2017 totalled \$3,566m. This was an increase of \$232m (up 7.0%) from the previous year, and the highest level ever recorded by the G-FINDER survey – an achievement that continues to hold even taking into account the changes in survey participation and to the scope of the survey over the 11 years since G-FINDER's inception.
- This was both the largest annual increase in global funding for neglected disease R&D and the first time that funding had increased in two consecutive years since the previous, fiscal stimulus-driven peak of 2008-2009, allowing total funding to finally eclipse its previous high of 2009 after spending nearly a decade below this peak.

Funding growth in 2017 was very different from that in 2009: this time it came mainly from Europe, not the US, and went to product development, not basic research

- The increase in global funding for neglected disease R&D in 2009 was driven by US government spending, as the global financial crisis prompted a rapid release of funding aimed at stimulating the domestic economy. The US National Institutes of Health (NIH) played the key role, providing almost 98% of the net overall increase in spending. Most of this new investment went to academic institutions – which typically focus on basic research – and US-based SMEs.
- The 2017 increase also came from the public sector, but this time it was primarily driven by the UK and the European Commission, along with India and Germany. And this time the increase was primarily directed towards PDPs and intermediaries – organisations that focus on clinical trials and product development – with 90% of the net increase in investment going to either core funding or clinical development.
- The combined effect of these changes was twofold. Firstly, the gap between the share of funding coming from the US government and that from the second-largest public funder shrank to its lowest level on record. And secondly, 2017 marked the first time ever that PDPs received more of their funding from governments than they did from philanthropic organisations.

Funders outside of the traditional top three or four continued to increase their commitment to neglected disease R&D

- Last year's G-FINDER report recognised important increases in funding from a range of emerging funders, including Unitaid, Médecins Sans Frontières, Gavi, and the governments of Japan, India and Brazil. All of these funders increased their contributions in 2017, aside from Brazil, where a cap on public spending was responsible for a drop in R&D funding.
- In addition to the emerging funders called out in last year's report, German government funding for neglected disease R&D also increased significantly in 2017. This eclipsed its previous high (set in 2012) by 24%, clearly establishing Germany's position as the most significant European public funder after the UK and EC.
- Two of the three largest LMIC public funders also increased their funding for neglected disease R&D: as noted above, the Indian government sharply increased its funding (up \$21m, 38%), remaining the fourth-largest public funder overall, and providing the highest reported level of public funding from an LMIC. South Africa's government also increased its contribution (up \$2.7m, 24%), resulting in the largest ever investment as a share of gross domestic product (GDP) provided by an LMIC.

A half decade of consecutive yearly increases in industry investment has come to an end, but this is not necessarily cause for alarm

- Industry funding provided by regular survey participants was down slightly in 2017, for both MNCs and SMEs, bringing to an end five consecutive years of growth. While any further decline would be worth monitoring closely, this slight fall should be viewed in the context of the strong recent growth, and the way industry investment is driven by the state of the product pipeline: for example, the recent notable rise and fall of industry investment in malaria drug development was largely due to the progression of tafenoquine through late-stage trials and to successful registration.



- Industry investment is also less concentrated than either public or philanthropic funding, each of which is dominated by two or three organisations. Since the inception of the G-FINDER survey, the top three industry funders in any given year have accounted for an average of only 55% of all industry funding, compared to 73% for the top three public funders and 97% for the top three philanthropic organisations – a pattern that continued to hold in 2017. This diversity should help guard against any precipitous decline in industry investment, but ongoing industry investment in neglected disease R&D can only be guaranteed if there is sustained public and philanthropic commitment.

We are seeing the impact of sustained investment in neglected disease R&D, but we are still falling short of where we need to be

- This year alone saw several significant new product approvals: fexinidazole, the first all-oral, short course treatment for both stages of sleeping sickness; moxidectin, the first new onchocerciasis treatment in 20 years; tafenoquine, the first single-dose radical cure for *P. vivax* malaria; Typbar TCV, the first conjugate typhoid vaccine; and ROTASILL, a heat-stable rotavirus vaccine designed for developing country use.
- But despite global funding for neglected diseases reaching a record high in 2017, not a single country government in 2017 met the recommendation of the WHO Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property (GSPOA) that member states dedicate at least 0.01% of their GDP to research into the health needs of developing countries. Only two countries – the US with 0.0082% and the UK with 0.0071% – were even close, with no other country even reaching half the target level. In fact, over the 11 year history of the G-FINDER report, only the US has ever met this target (which it did between 2007 and 2012).
- The gap is narrowing between the two largest funders of neglected disease R&D (the US government and the Gates Foundation) and the rest of the world. This follows record investments by many members of the next tier of funders, including the UK, India, Germany and Unitaïd; along with close-to-historic highs from the EC, the Wellcome Trust, and the pharmaceutical industry. This is unequivocally a positive development, but it also means that continuing to deliver the impact we've seen recently will require these funders to either sustain or further increase their current level of investment in neglected disease R&D.

Download the full report at: <http://www.policycuresresearch.org/g-finder-2018>

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