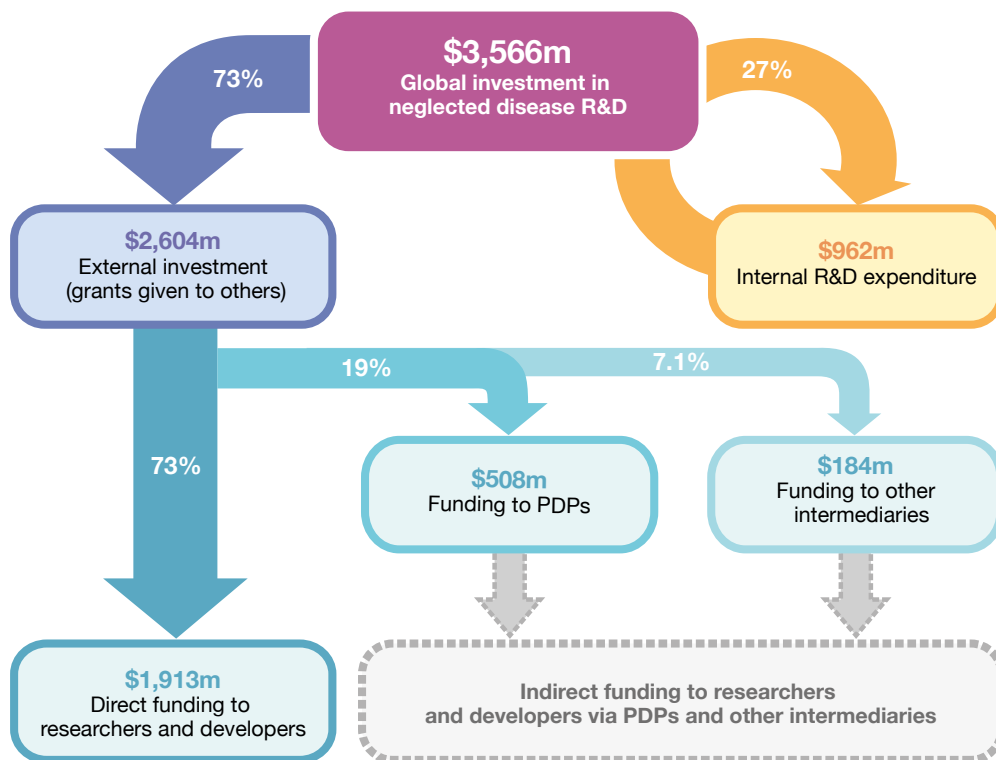


FUNDING FLOWS

Organisations can invest in neglected disease basic research and product development in two main ways: by funding their own in-house research (internal investment, also referred to as intramural or self-funding); or by giving grants to others (external investment). This external investment can either be given directly to researchers and developers, or it can be provided via PDPs* and other intermediaries. Some organisations invest only internally (for example, most pharmaceutical companies); others, such as the Wellcome Trust, only invest externally (i.e. they do not conduct R&D themselves). Other organisations, such as the US NIH and the Indian ICMR, use a mixed model, providing external grants to others in addition to funding their own research programmes.

Figure 21. R&D funding flows 2017



A key point to note when analysing external investment flows is that different types of funders generally invest in different types of recipients. Science and technology (S&T) agencies, for example, mainly provide funding directly to researchers and developers (usually providing around three-quarters of their funding). Philanthropic foundations and aid agencies are the source of the vast majority of PDP funding (typically 80-90%). In contrast, non-PDP intermediary organisations generally have a broad funding base, supported by both S&T and aid agencies as well as philanthropic foundations.

As a result, changes in S&T agency funding are more likely to affect researchers and developers; changes in philanthropic or aid agency funding are more likely to affect PDPs; and non-PDP intermediary organisations are the least vulnerable to changes from one donor funding stream.

* Although there is no single universally-accepted definition of PDPs, they are typically public health driven, not-for-profit intermediary organisations that use private sector management practices to drive product development in conjunction with external partners. Some PDPs focus on a single disease or product type, while others work across multiple diseases and products, but all share the common goal of developing products that are suitable for use in LMICs in areas of market failure. While their primary aim is the advancement of public health rather than commercial gain, PDPs generally use industry practices in their R&D activities, including portfolio management and industrial project management. Additionally, many PDPs conduct global advocacy to raise awareness of their targeted neglected diseases.

FUNDING FLOW TRENDS

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 in the form of grants or contracts, with internal investments (\$962m, 27%) making up the remainder. External funding increased for the second year in a row (up \$149m, 6.1%), this time driven by increased funding from the EC and the UK government to fund managers (PDPs and intermediaries). Self-funding also increased in 2017 (up \$84m, 9.5%), continuing its steady growth since the start of the G-FINDER survey. However, the scale of this headline increase was heavily influenced by new industry survey participants; when this effect is excluded, the increase in self-funding was more modest (up \$23m, 2.8%), and entirely driven by government agencies.

Almost three-quarters (\$1,913m, 73%) of all external funding disbursed in 2017 was given directly to researchers and developers, down from 78% in 2016. This reduced share was entirely due to an increase in investments made to fund managers, as funding to researchers and developers in fact remained stable (up \$5.6m, 0.3%), with an increase from philanthropic organisations (up \$34m, 7.9%) offsetting a decrease from HIC S&T agencies (down \$29m, -2.1%). The increase in funding from philanthropic organisations was driven by the Gates Foundation (up \$22m, 6.9%), whose funding to researchers and developers reached its highest level in the history of the G-FINDER survey (\$343m). The overall decrease in spending by HIC S&T agencies was mostly due to reduced funding from the US NIH (down \$30m, -2.5%), following a large increase in 2016.

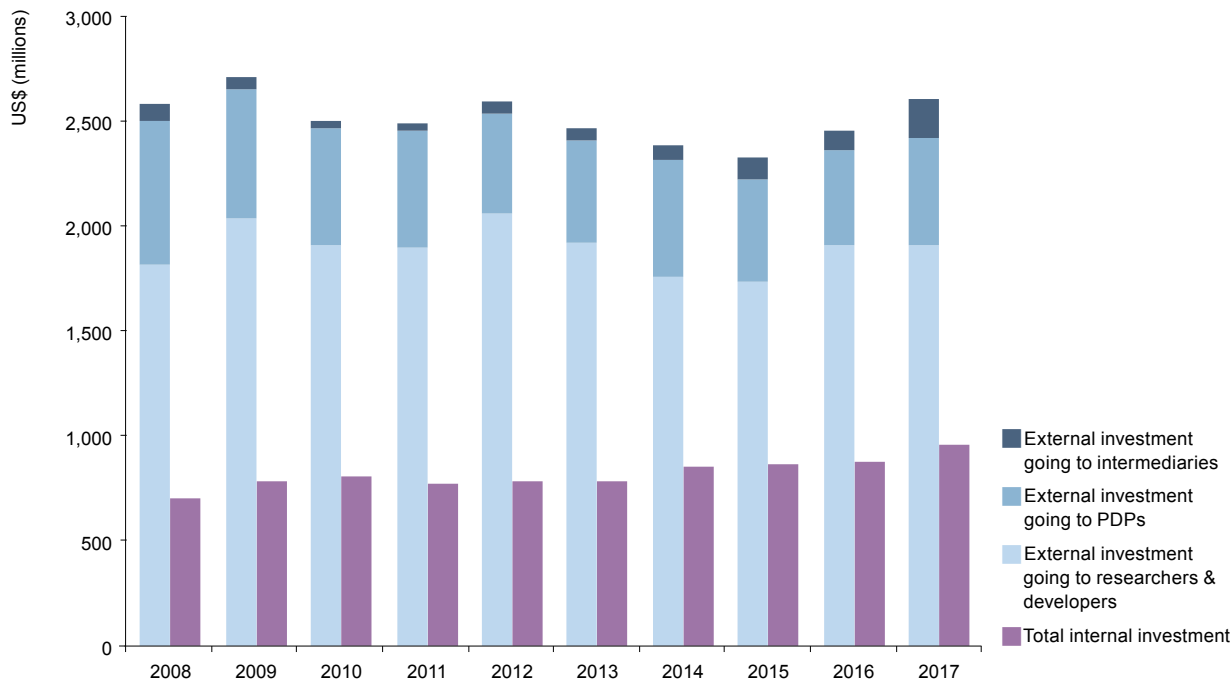
A little over a quarter (\$691m, 27%) of all external funding disbursed in 2017 was given to fund managers, which then either pass this funding on to researchers and developers, or invest it in their own internal R&D activities. This was the largest investment in fund managers (in both absolute terms and as a share of total external funding) since 2008. The increase in share (up from 22% in 2016) was driven by a doubling of funding to non-PDP intermediaries (up \$91m, 99%), as well as a sharp increase in funding to PDPs (up \$52m, 11%).

A total of \$508m (19% of all external investment) was channelled through PDPs in 2017. The growth in funding to PDPs came after an historic low in 2016, and benefitted the majority of PDPs. It was driven by increased investment by UK and US government agencies, including UK DFID (up \$44m, 89%), the US NIH (up \$20m, 98%) and USAID (up \$17m, 36%), as well as new ODA funding via UK DHSC (\$14m in 2017). These increases were collectively more than enough to offset markedly lower funding from the Gates Foundation (down \$38m, -16%) and Unitaid (down \$12m, -69%).

The doubling of funding from the previous year meant that funding for other (i.e. non-PDP) intermediaries reached an unprecedented level in 2017, at \$184m, although this still represented only 7.1% of all external investment. Additional funding for the EDCTP (up \$75m, 318%) accounted for most of this increase, reflecting the significantly increased budget of EDCTP2 compared to EDCTP1. Another intermediary, the Clinton Health Access Initiative (CHAI), received funding for neglected disease product R&D for the first time in 2017, through a \$12m grant from Unitaid.

A more in-depth analysis of funding for PDPs and other intermediaries is presented on the following pages.

Figure 22. R&D funding flow trends 2008-2017



FUNDING FLOWS BY R&D STAGE

Funding for neglected disease R&D in 2017 once again focused on basic and early-stage research, which received 45% of overall spending, down slightly from 48% in 2016. Clinical or field development and post-registration studies' share of overall funding remained steady at 33%, while the share allocated to core funding rose from 6.0% to 9.1%. Platform technology funding fell from 1.6% to 1.0% of total spending, with the remaining 12% directed to projects which did not specify an R&D stage.

Just under half (47%) of all self-funding was for clinical or field development and post-registration studies, with a little over a third for basic and early-stage research. However, these headline figures fail to capture the significant differences between industry and non-industry self-funding. Clinical or field development and post-registration studies accounted for two-thirds (65%) of all industry internal investment, and early-stage research only a quarter (26%). In contrast, half (48%) of non-industry self-funding went to basic and early-stage research, and only a quarter (25%) to clinical or field development and post-registration studies – roughly mirroring the distribution for external funding. However, given that most of the remaining non-industry self-funding not allocated to a specific R&D stage likely went to basic and early-stage research, even this figure probably understates the true extent of these funders' upstream focus. Non-industry self-funding was dominated by S&T agencies: the US NIH made up 45% of all non-industry self-funding, with the US DOD (21%) and the Indian ICMR (15%) providing most of the remainder.

External funding provided directly to researchers and developers continued to focus on basic and early-stage research, which made up 61% of the total, while 26% of spending was directed to clinical or field development and post-registration studies. Investment in core funding and other R&D provided to external researchers and developers rose sharply to 6.4% (an increase of \$31m, 34%). Funding to researchers and developers for platform technologies, on the other hand, accounted for only 1.5% of total funding, falling by \$18m (-39%), after a large increase in 2016. The

remaining 5.4% of funding for researchers and developers did not specify an R&D stage.

Funding given to PDPs focused on clinical or field development and post-registration studies (41% of PDP funding), rather than basic and early-stage research (16%). The remainder (34%) was not allocated to a specific R&D stage, although unlike non-industry self-funding, in the case of PDPs this unspecified amount generally represents portfolio-based investment that covers both early-stage and clinical development efforts.

Three-quarters (75%) of all funding to non-PDP intermediaries was core funding and other R&D, and therefore not allocated to a specific R&D stage. This was heavily influenced by funding to the European and Developing Countries Clinical Trials Partnership – it received more than half (54%) of all funding to non-PDP intermediaries, 93% of which was core funding and other R&D – suggesting that a large proportion of funding in this category was ultimately devoted to clinical development.

FUNDING FOR PRODUCT DEVELOPMENT PARTNERSHIPS

PDPs received \$508m in 2017, accounting for 14% of all neglected disease basic research and product development funding, and 19% of all external investment. Funding to PDPs increased by \$52m in 2017 (up 11%), reflecting increased investments from HIC government agencies, after historically low levels of funding in 2016. Annual changes in funding to PDPs should often be interpreted with caution, given the highly cyclical nature of this funding, especially from the Gates Foundation, but the broad-based increase in public funding for PDPs in 2017 is notable.

As always, the role of PDPs is somewhat obscured by the US NIH, which is the largest funder of neglected disease R&D, but allocates only a small proportion of its funding to PDPs. If the US NIH is excluded, PDPs collectively managed one-third (33%) of all non-NIH external grant funding for neglected disease R&D in 2017.

The three highest-funded PDPs in any given year regularly receive between 40% and 50% of total annual PDP funding. In 2017 (just as in 2016), these three PDPs were the International AIDS Vaccine Initiative (IAVI), Medicines for Malaria Venture (MMV) and PATH, which collectively received a little under half (\$225m, 44%) of all PDP funding.

Government agencies in HICs were behind many of the most significant increases in PDP funding. The largest increase was for FHI360 (up \$21m, 164%), due to additional US NIH investment in the HIV Prevention Trials Network. This was followed by IPM (up \$17m, 85%), primarily the result of increased funding from USAID and from a number of European government agencies, and MMV (up \$15m, 24%) driven by increased funding from the UK's DHSC and DFID (which also contributed to the smaller increases to TB Alliance and DNDi). PATH (up \$17m, 34%) was the only PDP whose increase in funding came primarily from the Gates Foundation, while the absence of any disbursements from the Gates Foundation in 2017 was also behind the decrease in funding to IVCC (down \$22m, -67%).

Once again, more than three-quarters of all funding to PDPs in 2017 (\$388m, 76%) was invested in the three diseases that received the most funding overall: \$174m for HIV/AIDS, \$119m for malaria, and \$95m for TB.

Table 39. Funds received by PDPs 2008-2017

PDPs	US\$ (millions)										2017 % of total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
IAVI	95	76	71	65	64	62	42	68	90	84	17
MMV	51	46	73	77	53	68	75	79	61	76	15
PATH	133	148	78	104	88	85	124	85	48	65	13
DNDi	22	33	34	36	31	33	53	31	46	54	11
TB Alliance	39	39	53	38	47	53	57	72	39	48	9.5
IPM	66	34	32	14	23	30	27	27	21	38	7.5
FHI360	27	31	28	31	13	6.8	25	13	13	34	6.6
FIND	36	16	28	23	23	24	25	16	28	26	5.2
Aeras	76	61	43	45	41	41	57	33	31	26	5.1
CONRAD	17	25	19	26	33	27	18	4.0	9.3	13	2.7
IVI	2.3	14	10	5.8	8.6	10	6.7	7.3	6.6	12	2.4
IVCC	12	16	18	2.9	13	25	13	32	33	11	2.1
IDRI	17	20	14	24	12	6.2	14	6.4	8.4	8.8	1.7
TBVI	-	<0.1	3.9	3.7	5.0	5.5	4.2	8.4	8.2	8.0	1.6
EVI	4.1	3.7	5.0	7.3	2.1	6.2	3.0	3.5	1.8	2.2	0.4
Sabin Vaccine Institute	17	11	4.4	9.1	6.6	6.7	5.6	3.2	5.1	1.4	0.3
WHO/TDR ^A	39	35	29	31	-	-	2.2	4.4	4.7	0.2	<0.1
OWH ^B	34	17	23	11	7.4	-	-	-	-	-	-
Total funding to PDPs	688	624	566	556	470	491	551	492	456	508	100

^A TDR's mission extends beyond product development, but it operated as a de facto PDP from the 1970s until 2012, when it decided to focus on implementation research and research capacity strengthening. Funds received in 2014-2017 are related to the CEWG pooled fund demonstration projects only.

^B As of 2013, OWH funding is included under PATH

- No reported funding

FUNDERS OF PDPs

In the past, the majority of funding to PDPs has always come from philanthropic organisations, which typically provide more than half of all funding to PDPs, with HIC government agencies providing approximately two-fifths. In 2017, the distribution of funding to PDPs shifted drastically, marking the first time in the history of the G-FINDER survey that HIC government agencies accounted for a larger proportion of funding to PDPs than philanthropic organisations. HIC governments provided well over half of all PDP funding (\$290m, 57%), while philanthropic organisations provided just two-fifths (\$205m, 40%), respectively their highest and lowest proportions ever recorded. HIC government funding to PDPs came mostly via their aid agencies, which provided \$212m (42% of all funding to PDPs), although the S&T agency contribution (\$63m, 12% of all funding to PDPs) reached a record high.

Almost all of the top PDP funders increased their investments in 2017 – with the Gates Foundation and Unitaid being the exceptions – contributing to a \$52m overall increase in PDP funding (up 11%). This was largely driven by increased funding from UK government agencies (collectively up \$58m, 117%), following a strategic review of the UK DFID’s research portfolio and the allocation of a new stream of ODA through the UK DHSC. DFID’s funding to PDPs nearly doubled (up \$44m, 89%, to \$94m), including increases to MMV (up \$19m, 187%) and DNDi (up \$8.5m, 64%) for malaria and kinetoplastid drug development, respectively. This represented the highest recorded investment in PDPs by the UK DFID in the history of the G-FINDER survey. The new UK DHSC funding stream provided a total of \$14m, which went to MMV and TB Alliance.

PDPs also received more funding from US government agencies. The largest increase came from the US NIH (up \$20m, 98%), which went primarily to FHI360 and took the proportion of US NIH funding allocated to PDPs in 2017 to 2.9% of total investment, its largest share to date. Funding from USAID to PDPs also increased (up \$17m, 36%) as a result of additional funding for IPM (up \$9.3m, 296%) and CONRAD (up \$4.1m, 44%) to support HIV/AIDS microbicide R&D. Other government aid agencies also continued their targeted support of PDPs. Four of the top 12 funders of PDPs – the Dutch DGIS, the Australian Department of Foreign Affairs and Trade (DFAT), the Swiss Agency for Development and Cooperation (SDC) and Irish Aid – allocated 100% of their neglected disease R&D funding to PDPs in 2017.

The Gates Foundation’s PDP funding tends to vary cyclically, and fell in 2017 (down \$38m, -16%). The bulk of this drop was due to the front-loading of a five-year grant to IVCC in 2016 (no disbursements in 2017, down from \$28m in 2016). Other PDPs that saw reductions in funding from the Gates Foundation were MMV (down \$10m, -29%), IAVI (down \$9.5m, -20%) and Aeras (down \$4.9m, -17%). Although it remains the largest individual funder of PDPs, with its \$197m contribution representing 39% of all PDP funding in 2017, this was the third consecutive annual decrease in funding and the lowest investment in PDPs by the Gates Foundation in the history of the survey.

Public sector multilateral organisations gave \$7.8m to PDPs in 2017 (1.5% of all PDP funding). More than two-thirds of multilateral funding came from Unitaid (\$5.5m, 70% of all multilateral PDP funding). Unitaid’s funding of PDPs decreased considerably in 2017 (down \$12m, -69%) despite its overall funding for neglected disease R&D increasing to \$49m (up \$1.8m, 3.7%), its highest level ever. Unitaid has historically allocated the vast majority of its investment in neglected disease R&D to PDPs, peaking at 100% of its investments in 2012 and 2013. It has gradually diversified its neglected disease R&D investments in the years since then, with PDPs accounting for just 11% of Unitaid’s 2017 investment in neglected disease R&D.

Table 40. Top funders of PDPs 2017

Funder	US\$ (millions)										2017 % of org's funds given to PDPs	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 % of total PDP funding	2017 % of total PDP funding
Gates Foundation	408	341	303	272	257	250	307	272	235	197	36	39
UK DFID	24	67	80	62	37	60	65	49	49	94	93	18
USAID	81	82	82	79	78	65	59	60	48	65	76	13
US NIH	11	21	11	40	15	14	35	18	20	41	2.9	8.0
Dutch DGIS	19	19	16	20	12	22	17	4.3	23	24	100	4.7
UK DHSC										14	34	2.7
German BMBF		-	-	1.2	6.0	5.0	6.8	8.5	10	13	31	2.6
Australian DFAT					8.5	-	8.0	7.9	7.8	12	100	2.3
EC	-	1.7	7.5	9.7	7.6	8.2	6.3	13	8.2	9.0	7.6	1.8
Swiss SDC	2.3	2.5	4.7	3.6	3.4	4.5	6.8	7.9	5.9	6.6	100	1.3
Irish Aid	6.5	5.0	6.2	6.0	5.9	8.1	2.3	5.8	5.0	5.9	100	1.2
Unitaid	-	-	-	-	0.4	8.8	10	17	18	5.5	11	1.1
Subtotal of top 12 funders of PDPs [^]	628	579	533	516	440	457	531	468	435	486		
Top 12 % of total PDP funding [^]	91	93	94	93	94	93	96	95	96	96		
Total funding to PDPs	688	624	566	556	470	491	551	492	456	508		

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

- No reported funding

■ 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.

FUNDING FOR OTHER INTERMEDIARIES

'Other' intermediary organisations (i.e. those that are not PDPs) also aim to accelerate neglected disease basic research and product development, but do so without managing a product portfolio of their own. Instead, they generally act as coordinating agencies, receiving funding from multiple sources and passing this on to researchers and developers (either directly or via PDPs). They may also perform research themselves (often operational research or research into existing treatment regimens) or be involved in clinical trials of novel products being developed by other organisations.

Non-PDP intermediaries collectively received \$184m in 2017, representing 5.2% of all neglected disease funding and 7.1% of all external funding; this was both the largest amount and largest share ever received by this sector in the history of G-FINDER. The EDCTP received more than half of this investment (\$98m, 54%), followed by the GHIT Fund (\$37m, 20%), CHAI (\$12m, 6.5%), and the German Centre for Infection Research (DZIF, \$11m, 6.1%).

Funding to other intermediaries doubled in 2017 (up \$91m, 99%), primarily as a result of the replenishment of the EDCTP. The increase in funding to the EDCTP (up \$75m, 318%) reflected the significantly increased budget of EDCTP2, with increased contributions from the EC (up \$47m, 534%, after an especially low contribution in 2016) and a new stream of funding from the UK DHSC (with an initial payment of \$25m). CHAI received \$12m from Unitaid for the pilot implementation of early infant HIV/AIDS diagnostics, marking the first time that CHAI – an organisation primarily focusing on increasing access to health technologies and neglected disease implementation research – has received funding for neglected disease product development R&D. Funding to the GHIT Fund also increased (up \$6.3m, 20%), largely due to increased contributions from its Japanese industry partners (up \$5.4m, 71%).

In 2017, three-quarters of all funding for non-PDP intermediaries (\$137m, 75%) was not earmarked by the funder for a specific disease. The majority of non-disease-specific investments was given to the EDCTP, which, in the last two years, has broadened its historical focus on TB, HIV/AIDS and malaria to include neglected tropical diseases; and the GHIT Fund, which allocated just under half of its own investment to kinetoplastid disease R&D, and over a third to malaria. Of the \$47m (25%) of disease-specific funding given to non-PDP intermediaries, the vast majority (\$43m, 92% of disease-specific funding) was invested in the three diseases that received the most funding overall: \$22m for HIV/AIDS, \$13m for TB and \$8.2m for malaria.

FUNDERS OF OTHER INTERMEDIARIES

Non-PDP intermediary organisations usually receive funding from a relatively diverse range of sources, with less reliance on a single ‘type’ of funding organisation than either PDPs or researchers and developers. The majority of funding for other intermediaries typically comes from public funders, with S&T agencies usually providing approximately half of all funding to other intermediaries, and aid agencies around one-fifth.

In 2017, the funding profile for other intermediaries was unusual; although the public sector provided 84% of all funding to other intermediaries, just above its ten-year average, the proportions provided by S&T agencies (\$76m, 41%) and aid agencies (\$21m, 11%) were both much lower than their ten year averages. Other public funders, including multilateral agencies, provided almost a third of all funding (\$57m, 31%) – the highest recorded amount and share in the history of the G-FINDER survey – due to new streams of funding from the UK DHSC and Unitaid.

The EC provided just under a third (\$56m, 31%) of all funding to non-PDP intermediaries, almost exclusively to the EDCTP. This was the EC’s highest ever level of annual funding for EDCTP, and reflects the increased budget of EDCTP2. Two other public sector organisations (the UK DHSC and Unitaid) provided funding to non-PDP intermediaries for the first time, entering the top 12 funders list at second and seventh place respectively. The UK DHSC gave \$25m to the EDCTP with the allocation of a new stream of ODA, and Unitaid provided \$12m to CHAI for the pilot implementation of early infant HIV/AIDS diagnostics. These large increases in funding for non-PDP intermediaries meant that despite the Japanese government’s investment in the GHIT Fund remaining unchanged (down \$0.2m, -1.1%), it fell from first to third in the list of top funders.

Funding to other intermediaries is geographically driven. Of the top 12 funders, essentially all funding to intermediaries from the EC, the UK DHSC, the UK DFID, UK MRC and the Swedish SIDA went to the EDCTP; Japanese government and industry investment went exclusively to the GHIT Fund; and Spanish public sector organisations directed the entirety of their intermediary funding to the Barcelona Institute for Global Health (ISGlobal). Few funders support more than one non-PDP intermediary organisation, the only exceptions being the EC, the German BMBF and the Gates Foundation.

Table 41. Top funders of intermediaries 2017

Funder	US\$ (millions)										2017 % of org's funds given to intermediaries	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017 % of total intermediaries funding	2017 % of total intermediaries funding
EC	37	19	2.1	24	25	25	23	42	8.9	56	47	31
UK DHSC										25	62	14
Japanese Government						10	9.9	11	16	16	100	8.7
German BMBF		-	1.1	0.6	1.7	3.1	5.9	9.1	15	13	31	7.2
Aggregate industry	1.4	3.3	-	-	-	3.7	8.0	5.3	7.5	13	2.3	7.0
Gates Foundation	8.6	14	6.1	5.4	4.3	7.1	7.7	7.7	7.7	12	2.2	6.8
Unitaid	-	-	-	-	-	-	-	-	-	12	24	6.5
USAID	4.4	5.5	6.1	5.9	5.7	5.2	9.6	8.9	12	8.7	10	4.7
UK DFID	13	6.0	-	-	-	-	-	3.2	5.3	6.8	6.7	3.7
Swedish SIDA	1.9	2.1	1.9	<0.1	-	0.6	-	3.1	4.5	4.3	100	2.3
UK MRC	-	-	4.6	-	<0.1	-	-	2.7	2.6	4.2	10	2.3
Fundació La Caixa				1.1	1.0	1.0		1.8	3.4	3.4	68	1.8
Subtotal of top 12 funders of intermediaries [^]	78	56	32	43	56	60	71	101	89	175		
Top 12 % of total intermediary funding [^]	100	99	97	100	98	98	100	98	96	95		
Total funding to intermediaries	78	56	33	43	57	61	71	102	93	184		

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

- No reported funding

■ 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.