



The Global Health Crisis: Alternative Incentive Systems

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April 2023

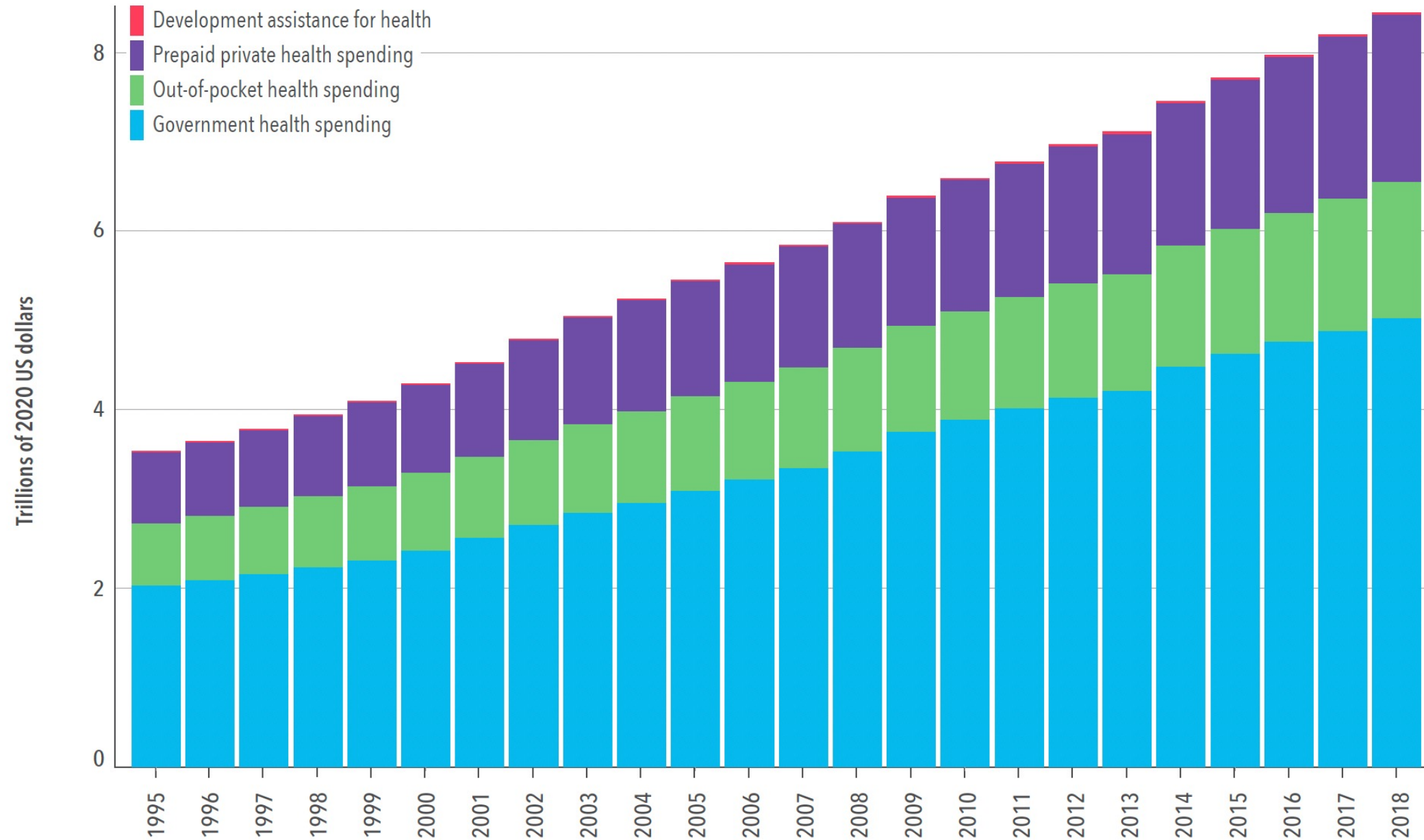


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The terms on which these images may be used or modified are available at <http://ipxcourses.org>.



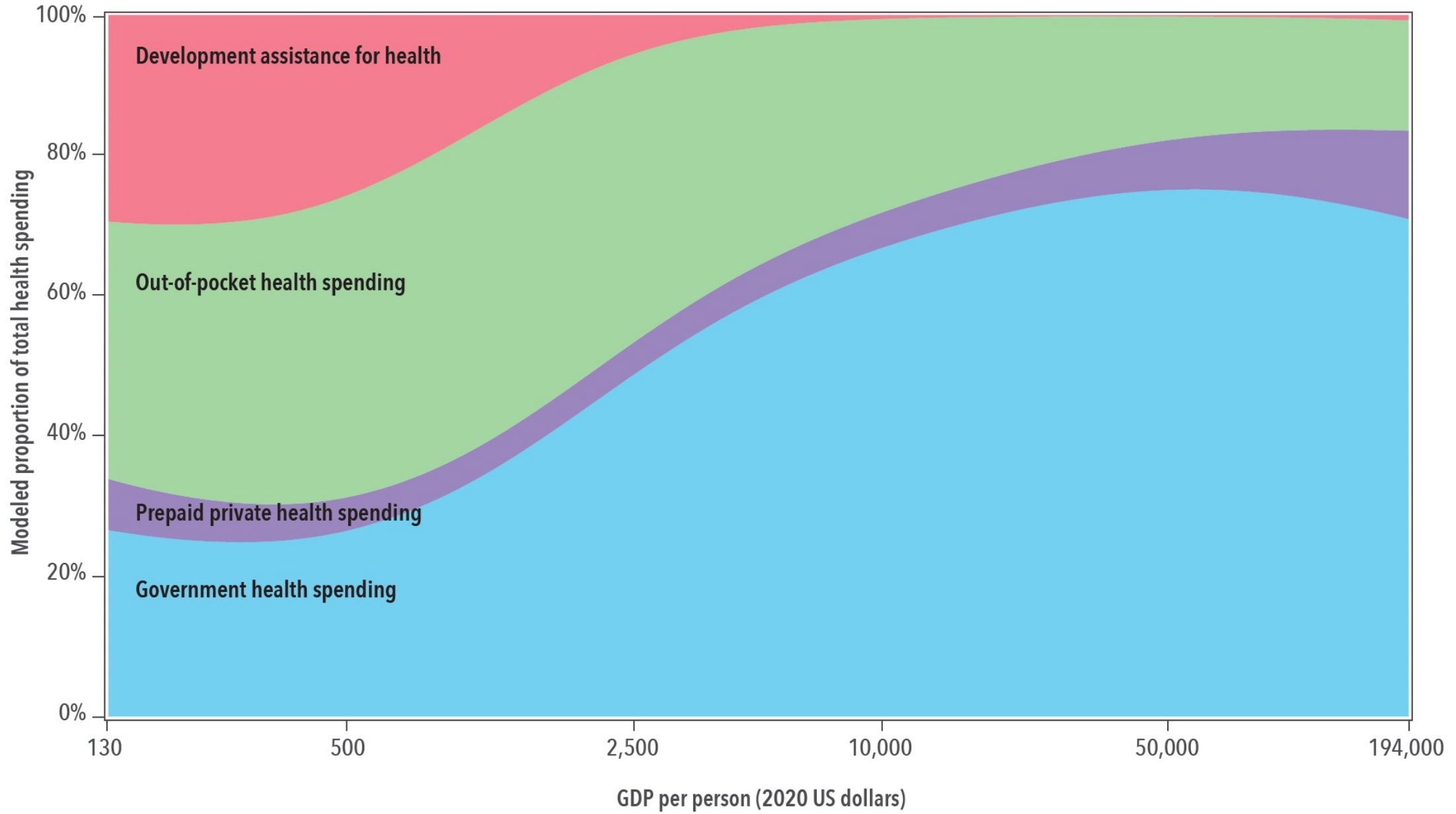
FIGURE 18 Total health spending by source of financing, 1995-2018



Source: Institute for Health Metrics and Evaluation, *Financing Global Health 2020*

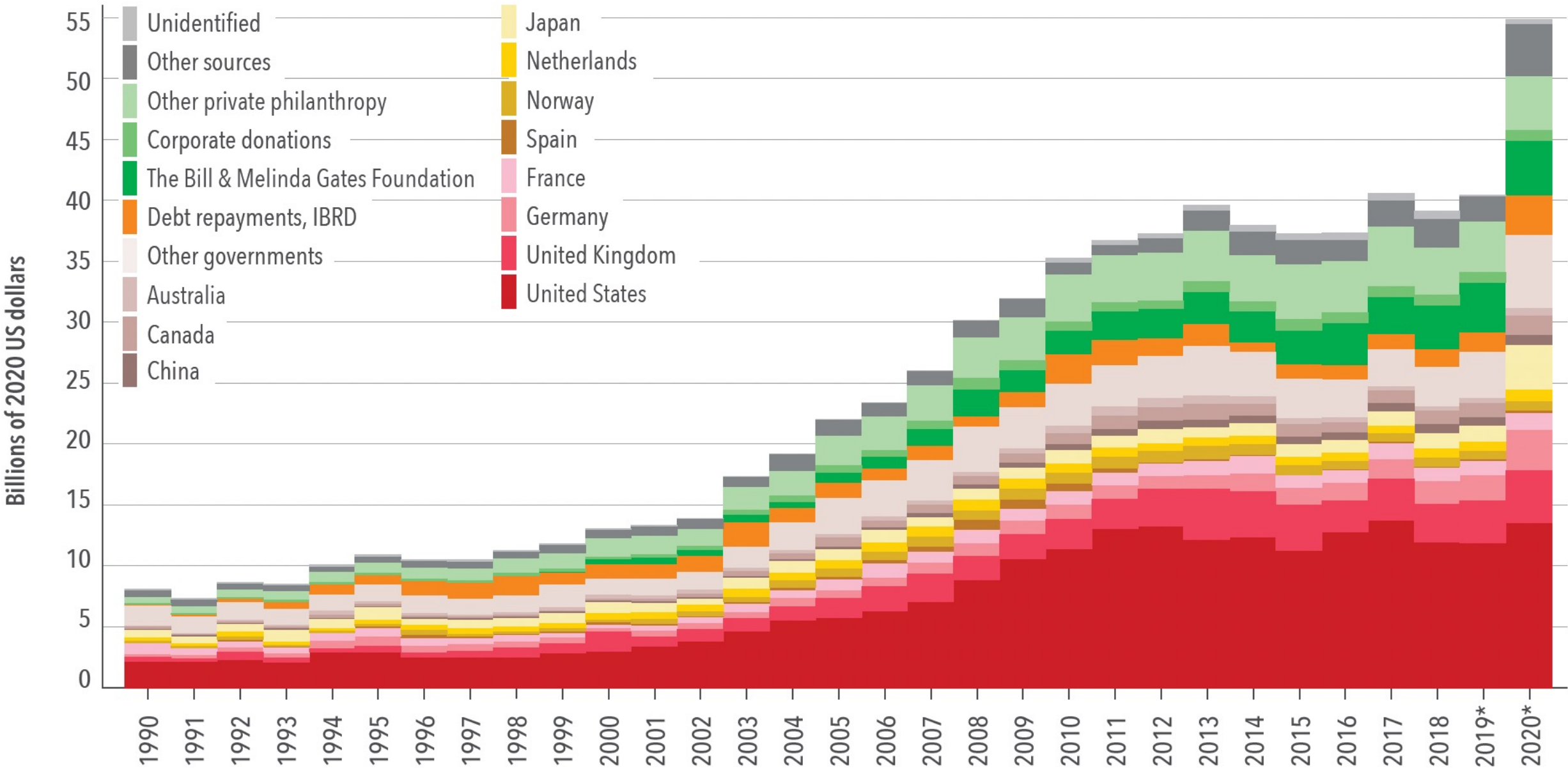


FIGURE 22 The share of health spending by source and GDP per person, 2018



Source: Institute for Health Metrics and Evaluation, *Financing Global Health 2020*

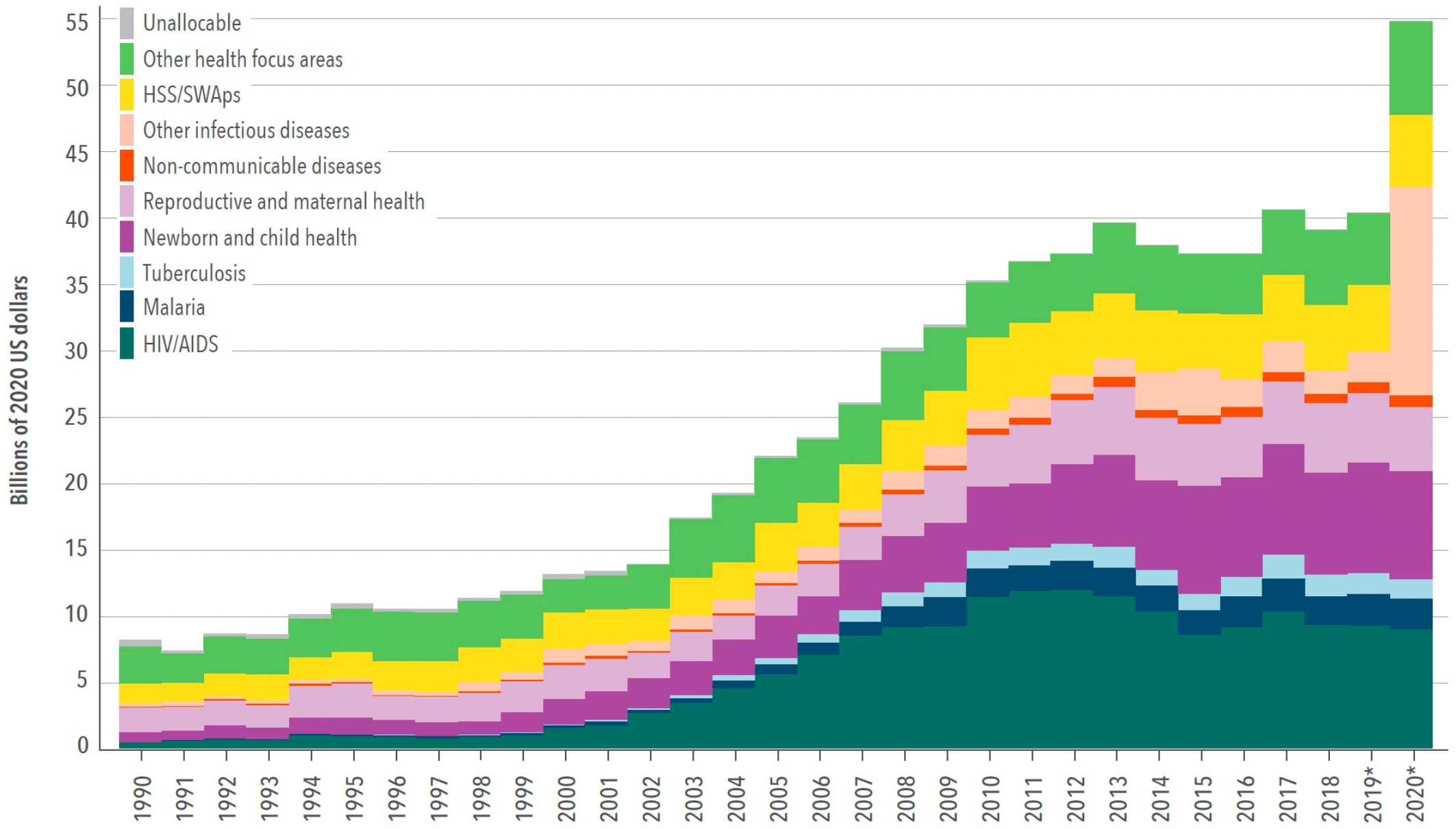
FIGURE 4 Development assistance for health and COVID-19 by source of funding, 1990-2020



Source: Institute for Health Metrics and Evaluation, *Financing Global Health 2020*



FIGURE 5 Development assistance for health by health focus area, 1990-2020

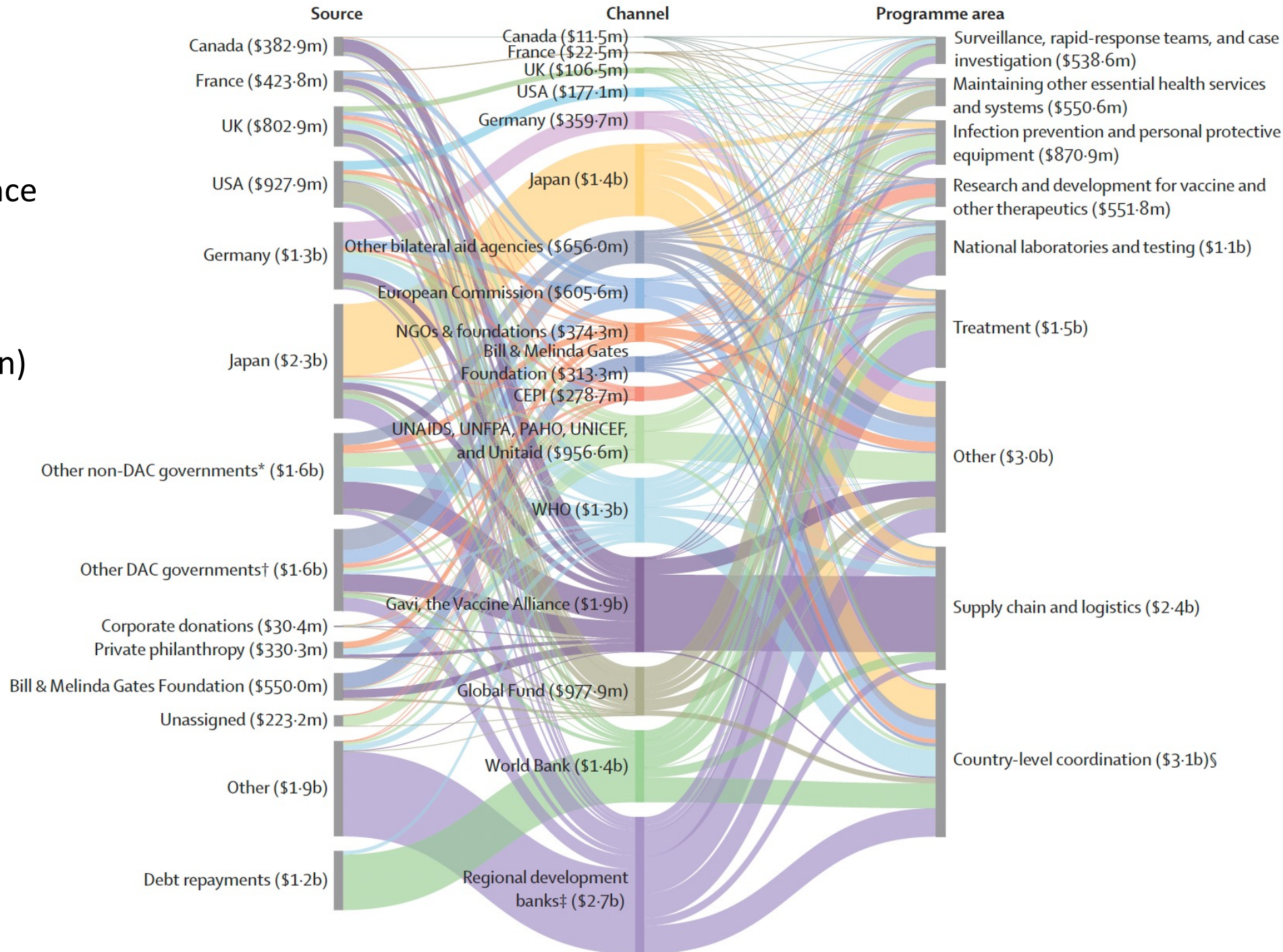


Source: Institute for Health Metrics and Evaluation, *Financing Global Health 2020*



Flows of Assistance For COVID-19 In 2020

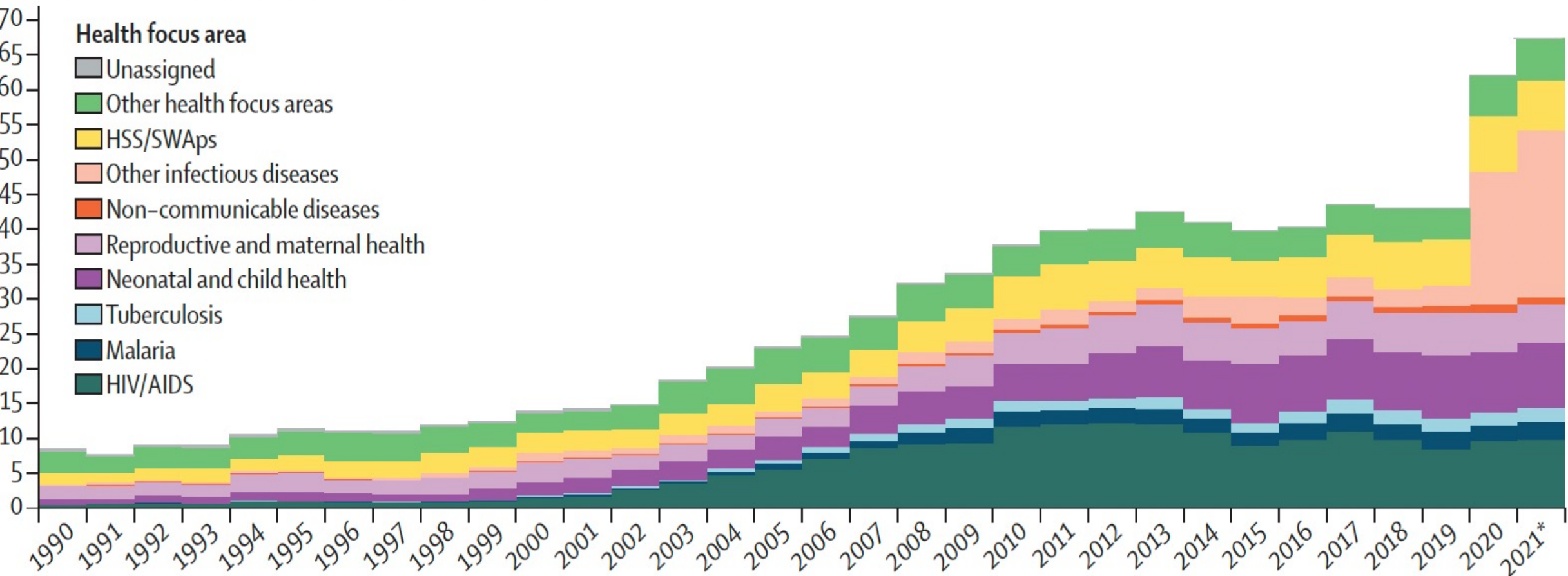
(Total: \$13 billion)



Source: "Tracking development assistance for health and for COVID-19: a review of development assistance, government, out-of-pocket, and other private spending on health for 204 countries and territories, 1990–2050," The Lancet (2021)



A Development assistance for health by health focus area

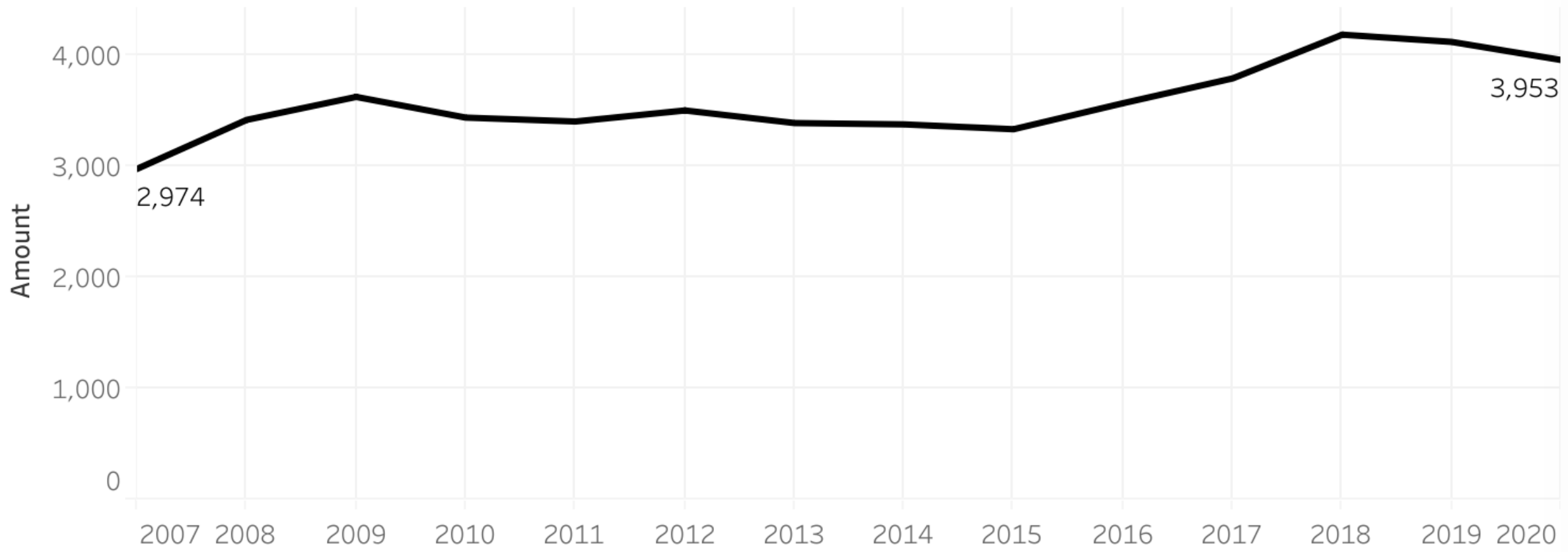


Source: Global investments in pandemic preparedness and COVID-19: development assistance and domestic spending on health between 1990 and 2026," The Lancet 2023



Investments by Governments and Philanthropies in R&D on Neglected Diseases

A. Investments by year (G-FINDER survey) *in million 2020 US\$*



Source: <https://www.who.int/observatories/global-observatory-on-health-research-and-development/monitoring/distribution-of-r-d-funding-flows-for-neglected-diseases-by-country-funder-recipient-organization>

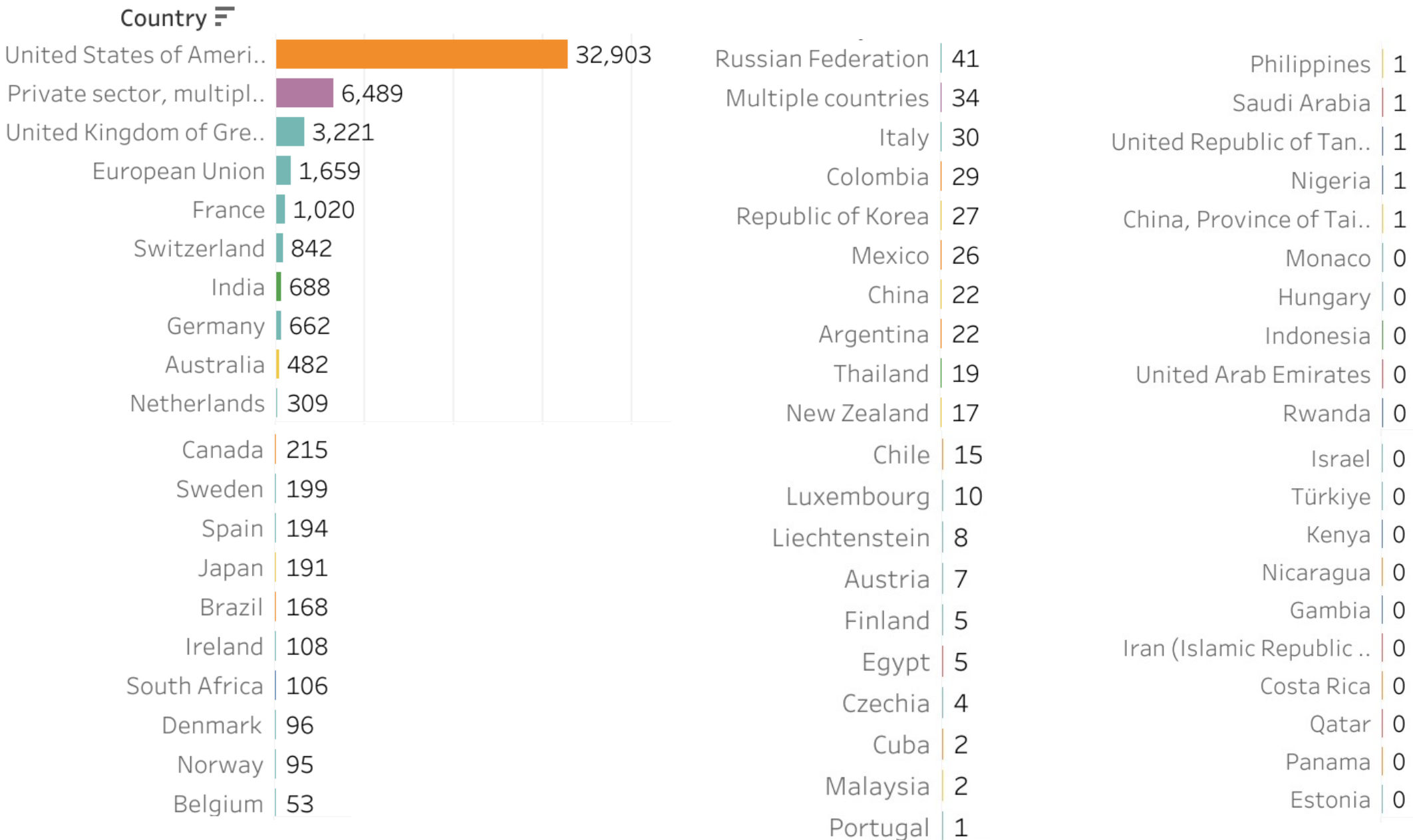


To qualify as “neglected,” a disease must meet three requirements

- The disease disproportionately affects people in developing countries.
- There is a need for new products (i.e. there is either no existing product or improved or additional products are needed).
- There is market failure in developing these new products (i.e. there is an insufficient commercial market to attract R&D by private industry).

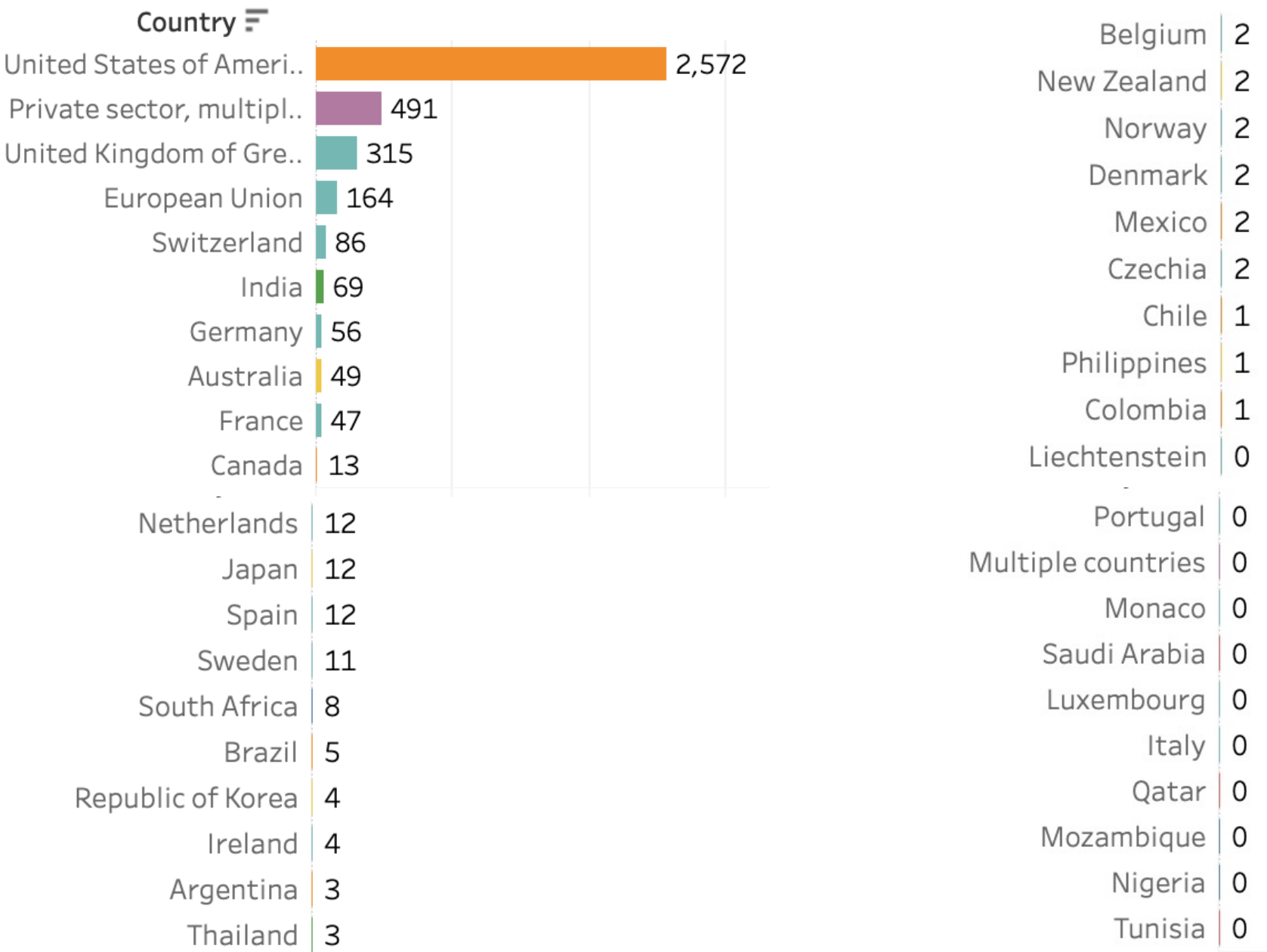
B. Investments by funder country (in million 2020 US\$)

(Totals for 2007-2020)



B. Investments by funder country (in 2020)

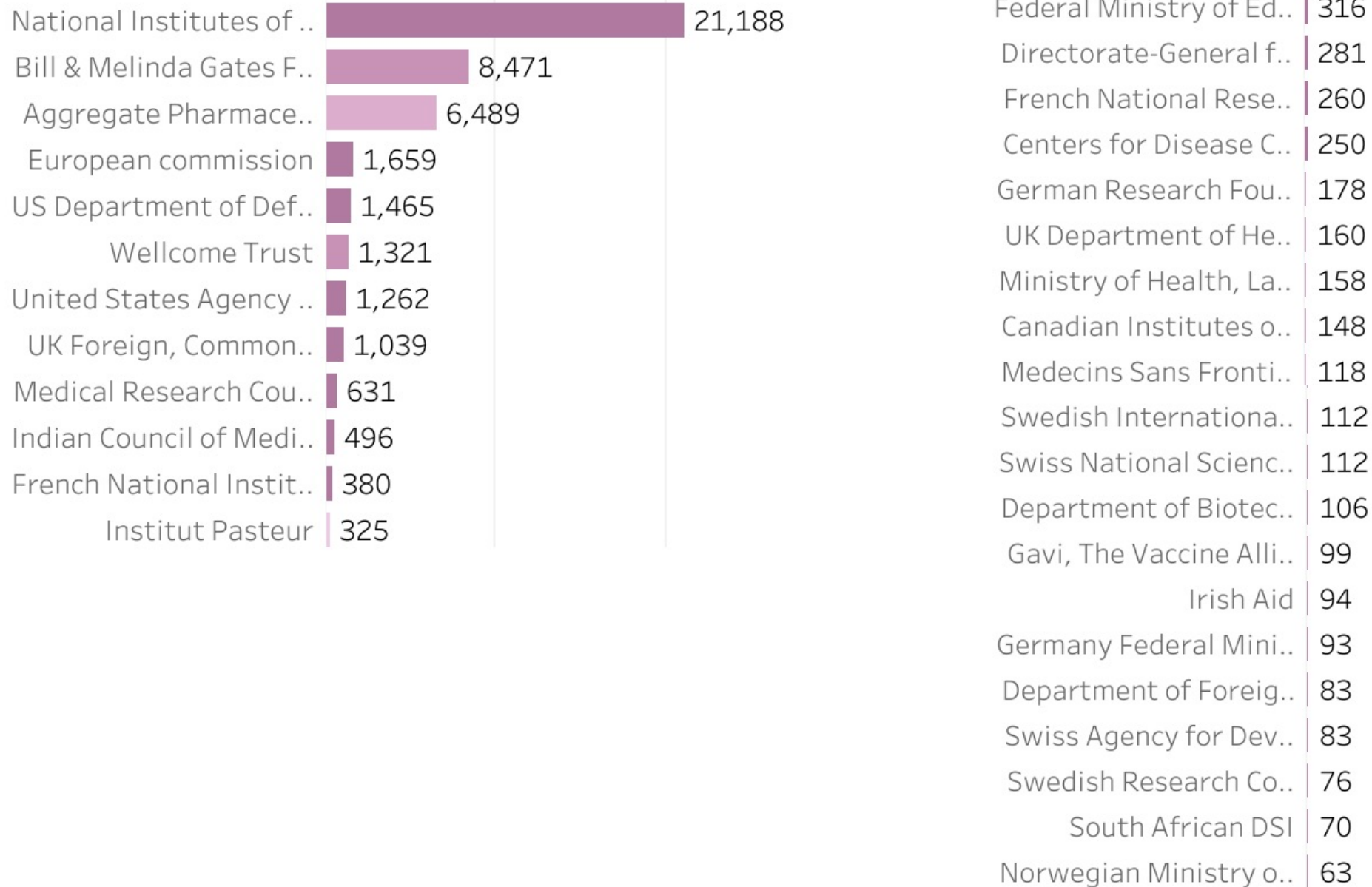
(in million 2020 US\$)



Source: <https://www.who.int/observatories/global-observatory-on-health-research-and-development/monitoring-distribution-of-r-d-funding-flows-for-neglected-diseases-by-country-funder-recipient-organization>



D. Investments by funder (Totals for 2007-2020) (in million 2020 US\$)

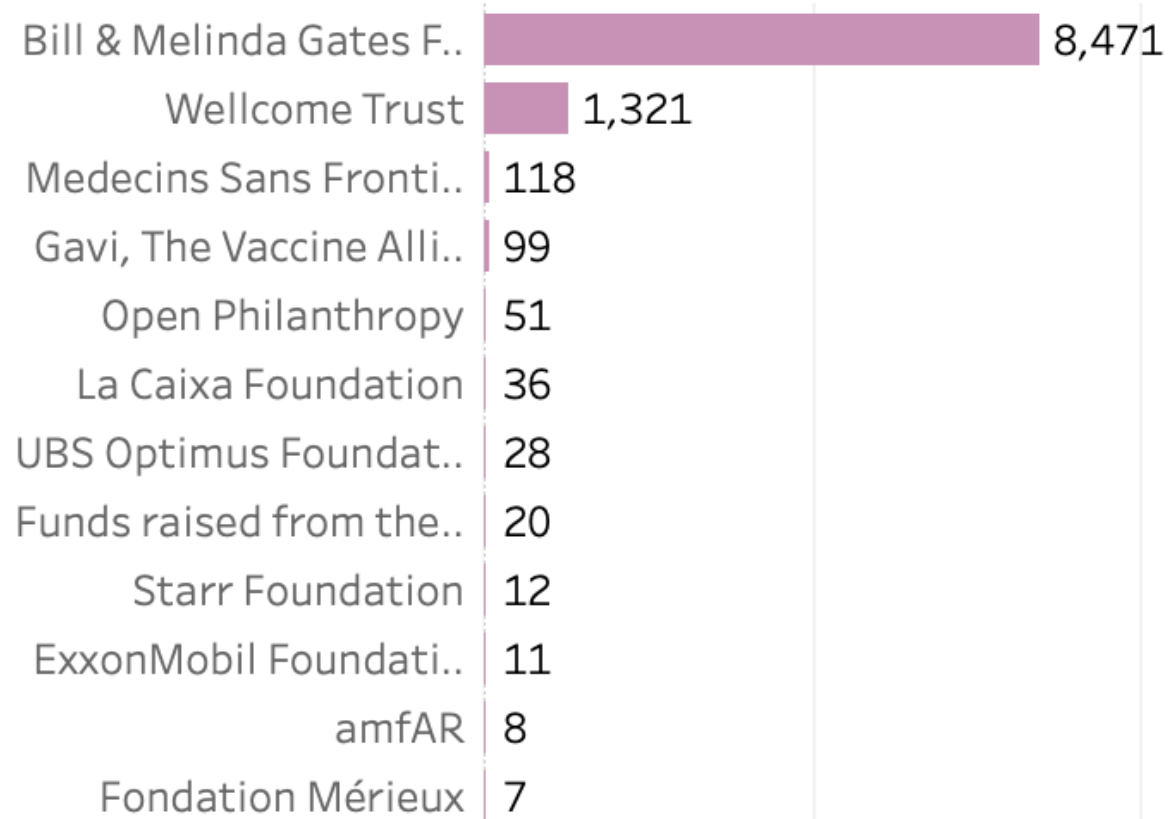




(Philanthropies alone)

D. Investments by funder *(in million 2020 US\$)*

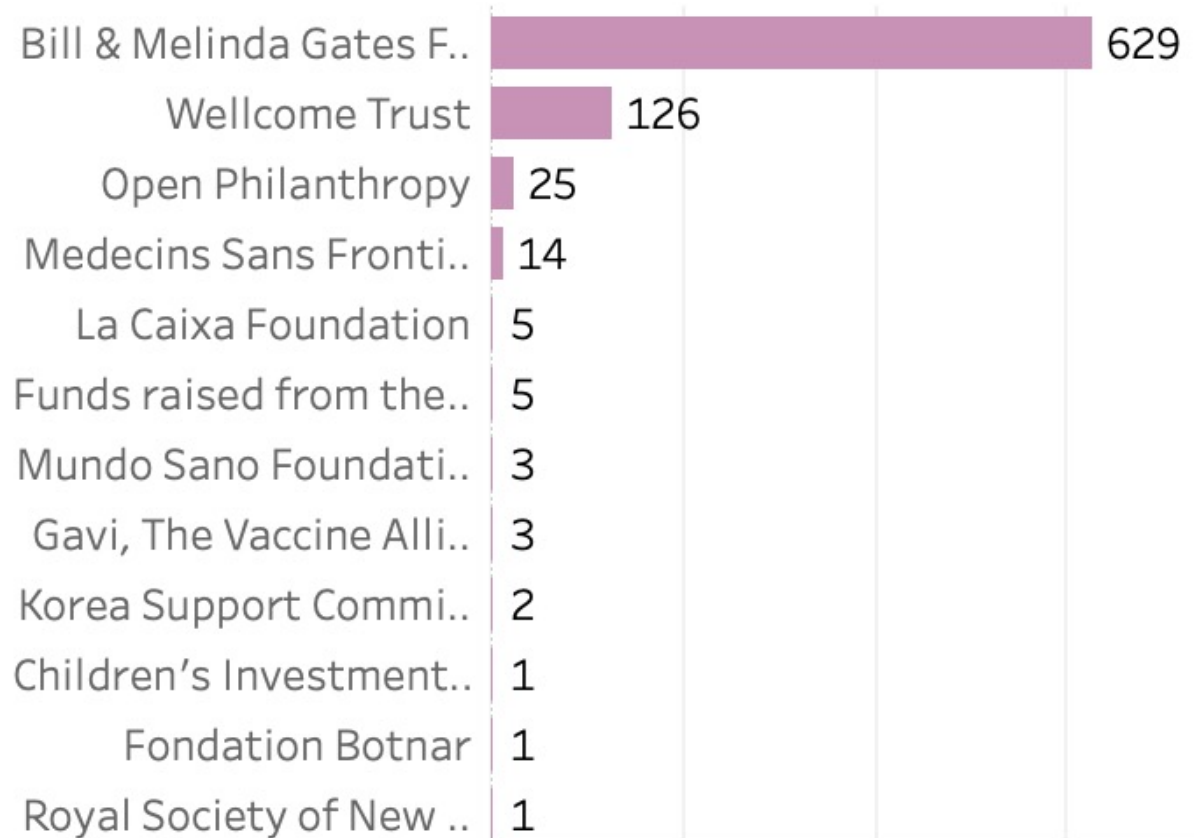
(Totals for 2007-2020)





(Philanthropies alone)

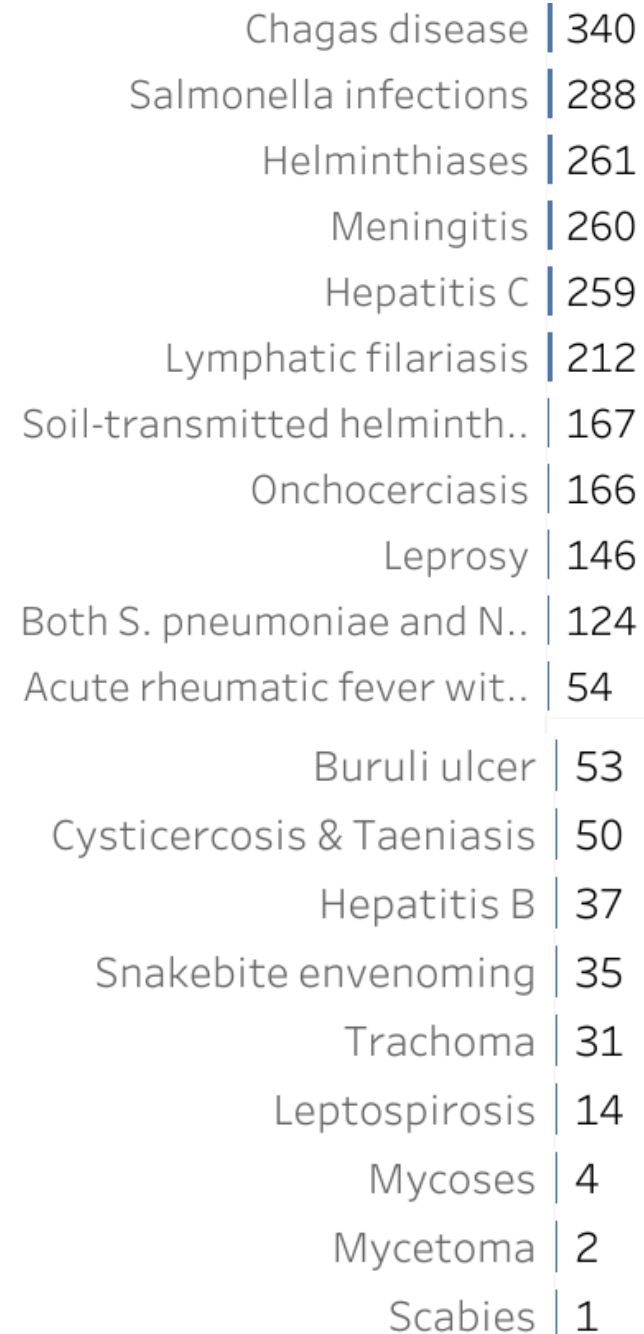
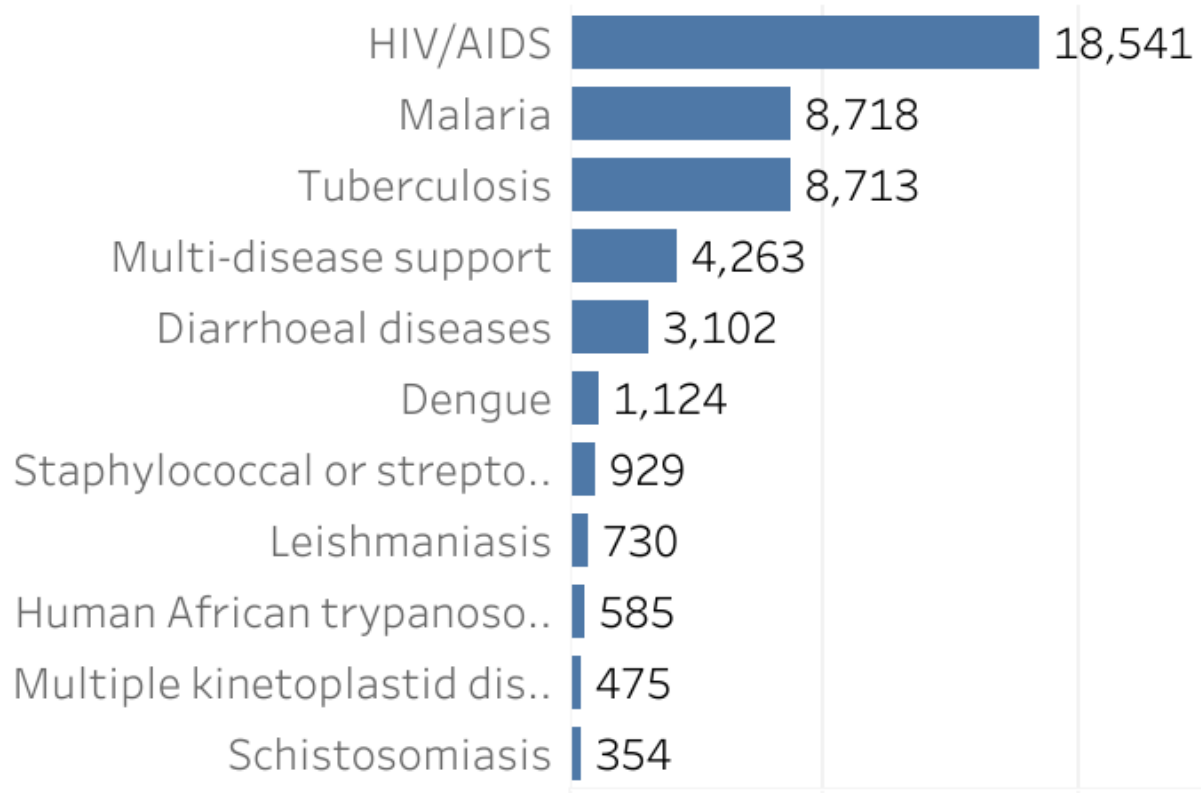
D. Investments by funder (in million 2020 US\$)



C. Investments by disease

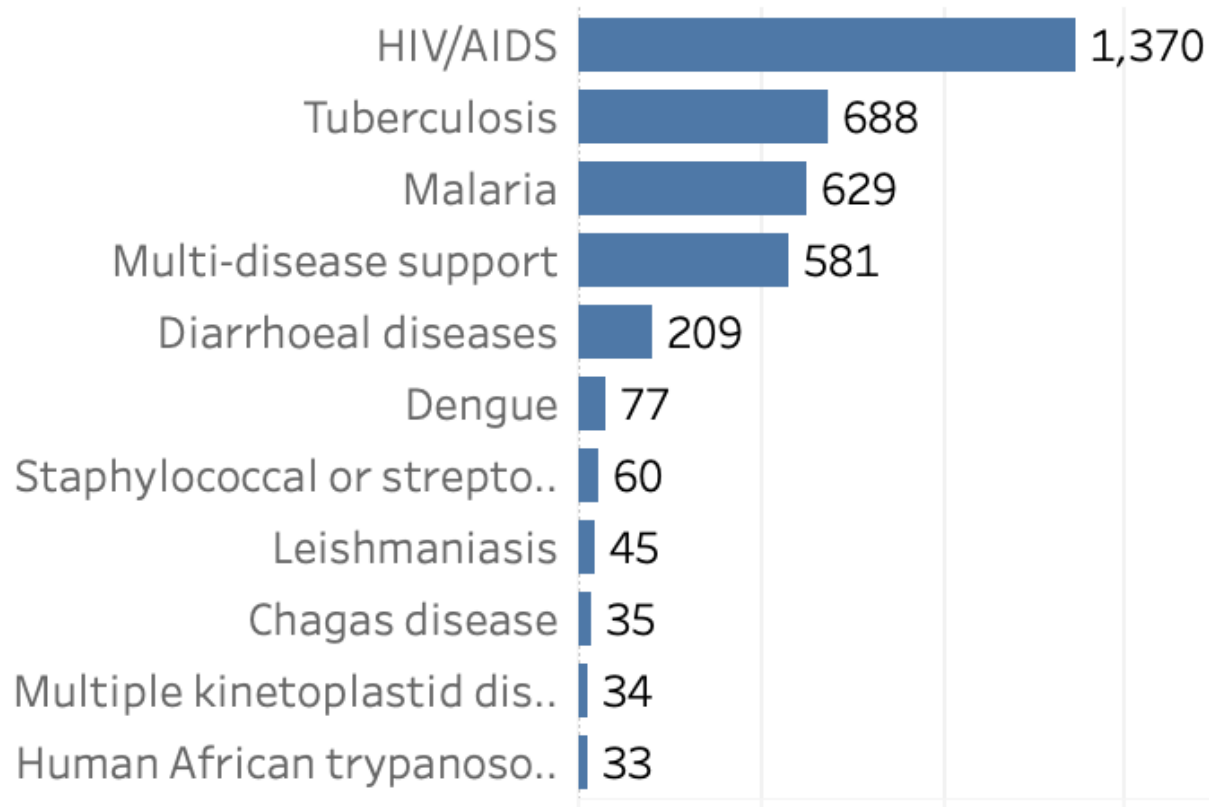
(in million 2020 US\$)

(Totals for 2007-2020)



C. Investments by disease (in 2020)

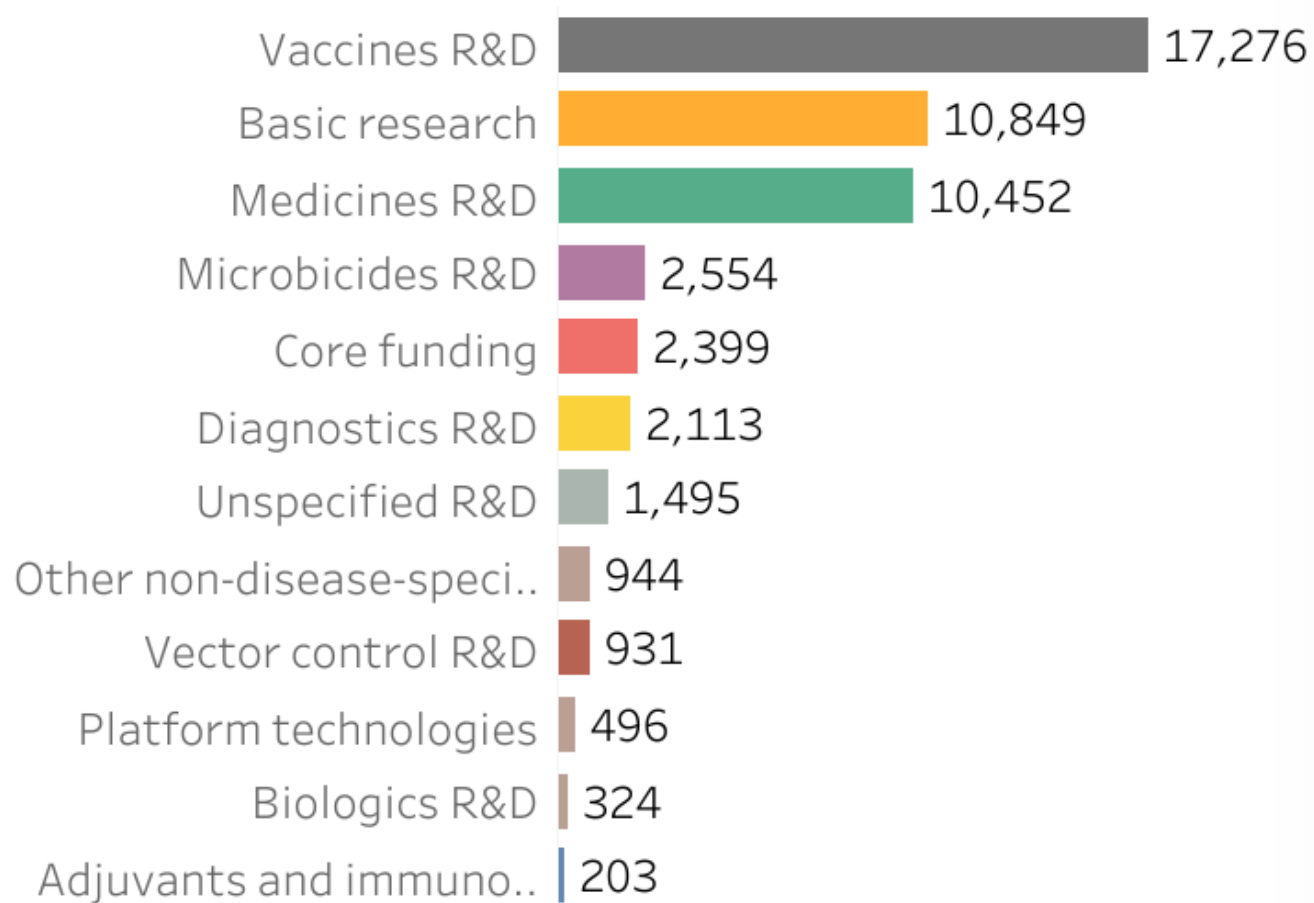
(in million 2020 US\$)





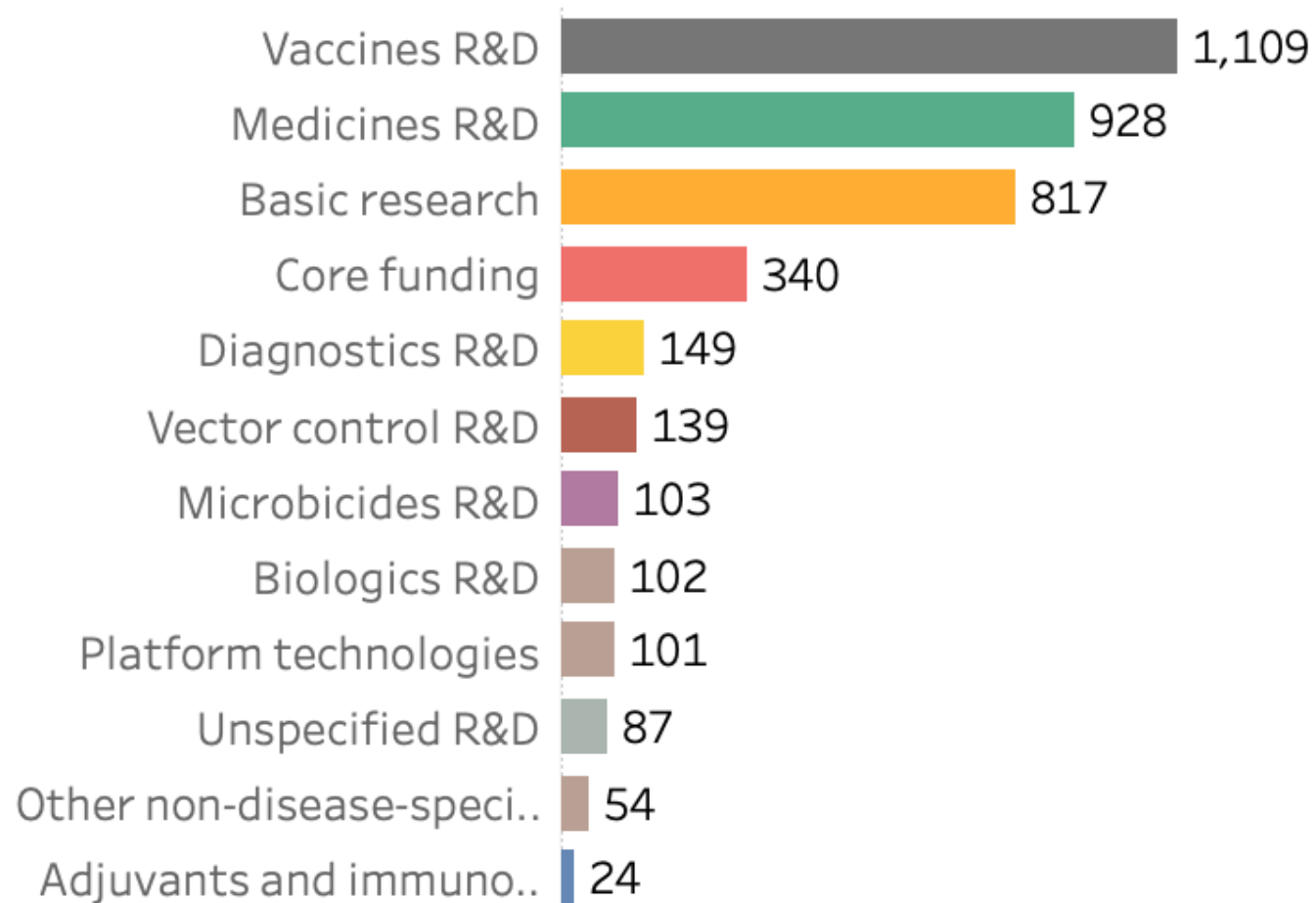
E. Investments by funding category *(in million 2020 US\$)*

(Totals for 2007-2020)





E. Investments by funding category *(in million 2020 US\$)* (in 2020)





Examples of Forms of Funding for Pharmaceutical R&D

In-house Research	Grants	Prizes
Disbursement of Money	Money	Money
	Tax Relief	Priority Review Vouchers
		Honors



The current list of “Tropical Diseases”

- A. Tuberculosis
- B. Malaria
- C. Blinding trachoma
- D. Buruli ulcer
- E. Cholera
- F. Dengue/Dengue haemorrhagic fever
- G. Dracunculiasis (guinea-worm disease)
- H. Fascioliasis
- I. Human African trypanosomiasis
- J. Leishmaniasis
- K. Leprosy
- L. Lymphatic filariasis
- M. Onchocerciasis
- N. Schistosomiasis
- O. Soil transmitted helminthiasis
- P. Yaws
- Q. Filovirus Diseases (added December 16, 2014 by [Pub. L. 113-233](#), amended by [Pub. L. 114-146](#))
- R. Zika Virus Disease (added April 19, 2016 by [Pub. L. 114-146](#))
- S. Any other infectious disease for which there is no significant market in developed nations and that disproportionately affects poor and marginalized populations, designated by order of the Secretary
 - Chagas disease (August 20, 2015 final order)
 - Neurocysticercosis (August 20, 2015 final order)
 - Chikungunya Virus Disease (August 24, 2018 final order)
 - Lassa Fever (August 24, 2018 final order)
 - Rabies (August 24, 2018 final order)
 - Cryptococcal Meningitis (August 24, 2018 final order)
 - Brucellosis (July 15, 2020 final order)
 - Opisthorchiasis (July 15, 2020 final order)
 - Paragonimiasis (July 15, 2020 final order)



Comparing the Forms

1. Government Research

Advantages

- a. Minimizes deadweight loss through reliance on income-tax funding instead of monopoly pricing
(Partially offset by another distortion: By decreasing the benefits of labor, each income tax increase will cause taxpayers to substitute leisure for work, causing economic losses)
- b. Minimizes rent dissipation through duplicative research at the primary and secondary levels, because the government coordinates innovation at both levels
- c. Flexibility in responding to changes in research agenda

Disadvantages

- a. Government officials are prone to errors in determining which projects are (most) socially valuable
- b. Low salaries and bureaucracy make government a poor venue for innovative activity, particularly with respect to artistic creativity



Comparing the Forms

2. Grants

Advantages

- a. Avoids rent dissipation, by targeting resources to one or a few firms
- b. Avoids the inefficiency of multiple firms making redundant assessments of the social value of particular research projects
- c. Minimizes deadweight loss through reliance on income-tax funding instead of monopoly pricing (see above)
- d. Enables correction of the misalignment between the market value of innovations and their social value

Disadvantages

- a. High administrative costs
- b. Government officials are prone to errors in determining which projects are (most) socially valuable and in determining which grant applicants are most qualified
- c. Poor motivator of innovative activity once the grant recipient has been selected
(Gallini/Scotchmer 2002)



Comparing the Forms

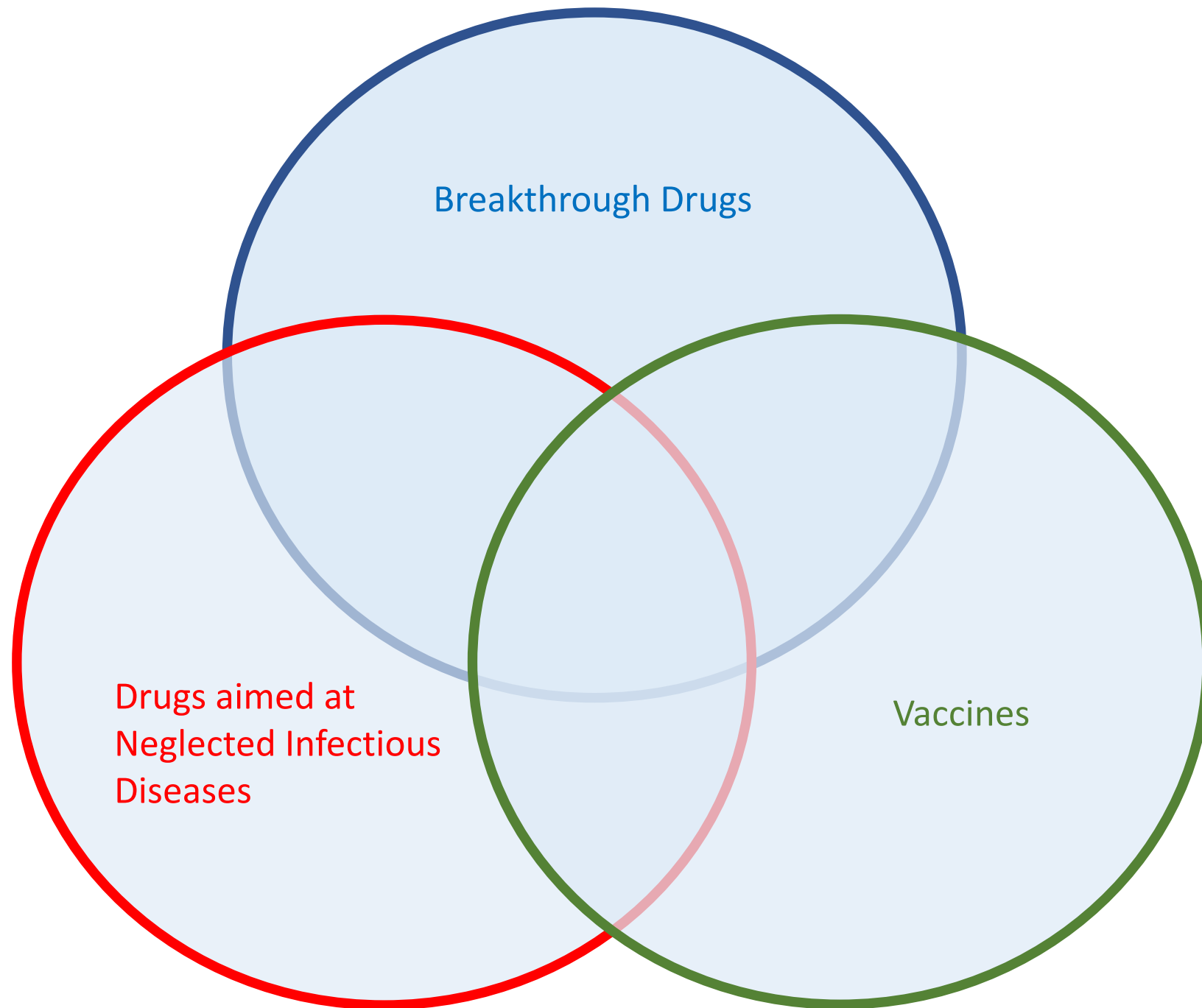
3. Prizes

Advantages

- a. Competition in the quest for the pot of gold fosters fast, focused research
- b. Optional Reward System will optimize incentives for creativity (Shavell & Ypersele 2001)
- c. Minimizes deadweight loss through reliance on income-tax funding instead of monopoly pricing (see above)
- d. Enables correction of the misalignment between the market value of innovations and their social value

Disadvantages

- a. High administrative costs
- b. Government officials are prone to errors in determining which projects are (most) socially valuable; automated mechanisms for making those determinations are imperfect (Liebowitz 2003)
- c. Leads to rent dissipation by fostering wasteful duplicative innovation

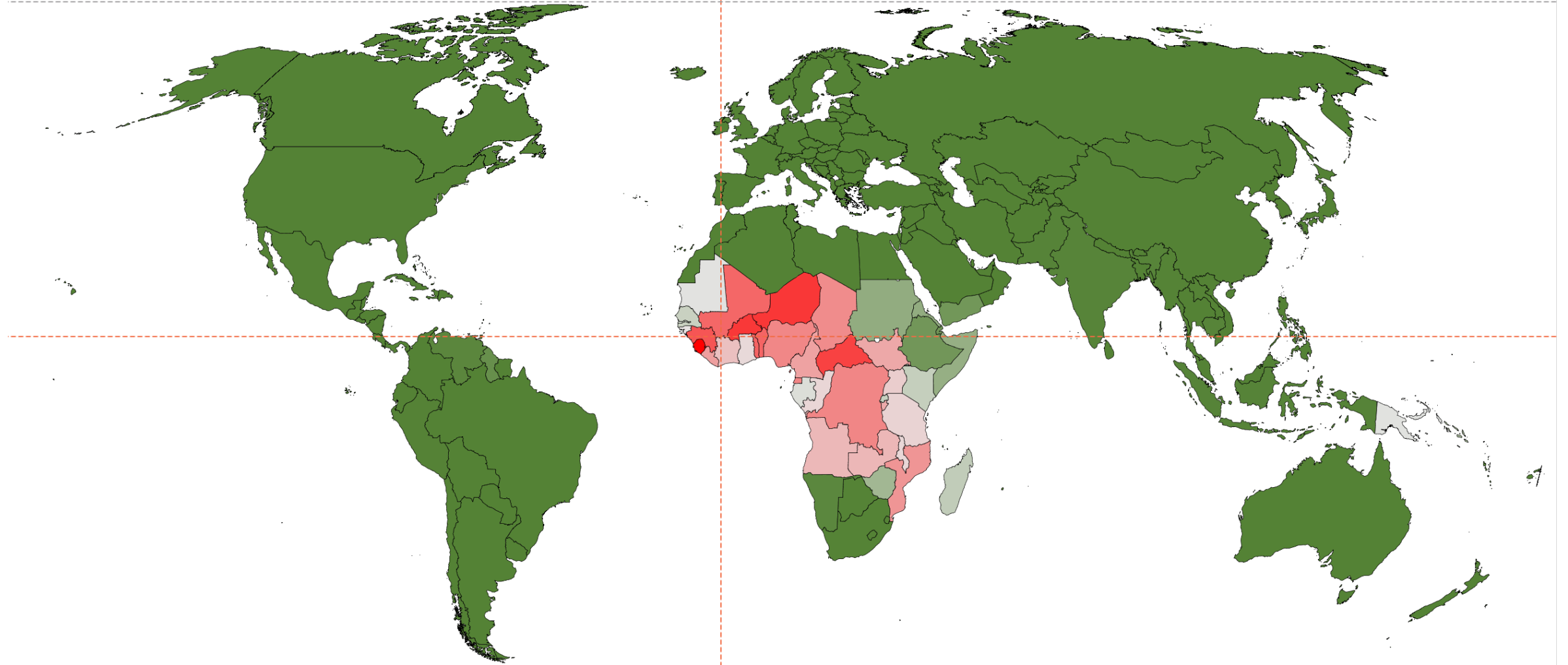


	(thousands)	Global Deaths	Global DALYs
HIV/AIDS		675	40147
Tuberculosis*		1208	66024
Malaria*		411	33398
STDs (excluding HIV/AIDS)			
Syphilis		43	3814
Chlamydia		1	324
Gonorrhoea		2	231
Trichomoniasis		0	282
Genital herpes		0	250
Other STDs		3	352
Diarrhoeal Diseases		1519	79311
Childhood Diseases			
Pertussis (“whooping cough”)		111	9839
Diphtheria		5	420
Measles		165	14528
Tetanus		47	3474
Meningitis		233	16314
Encephalitis		78	4174
Hepatitis			
A		40	2102
B		36	1633
C		22	655
E		2	123

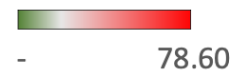
	(thousands)	Global Deaths	Global DALYs
Parasitic and vector diseases (excluding Malaria)			
Trypanosomiasis*		2	102
Chagas*		8	217
Schistosomiasis		12	1628
Leishmaniasis*		6	722
Lymphatic filariasis (elephantiasis)		0	1616
Onchocerciasis (river blindness)		0	1210
Cysticercosis		7	988
Echinococcosis		9	461
Dengue		30	1952
Trachoma (infectious blindness)		0	194
Yellow fever		6	413
Rabies		47	2634
Intestinal nematode infections			
Ascariasis		2	749
Trichuriasis		0	232
Hookworm		0	962
Food-bourne trematodes		7	805
Leprosy		13	36
Other infectious diseases		370	19000
Totals		5101	311318



DALYs per capita from Malaria (2019)

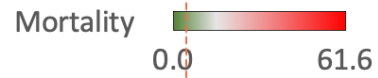
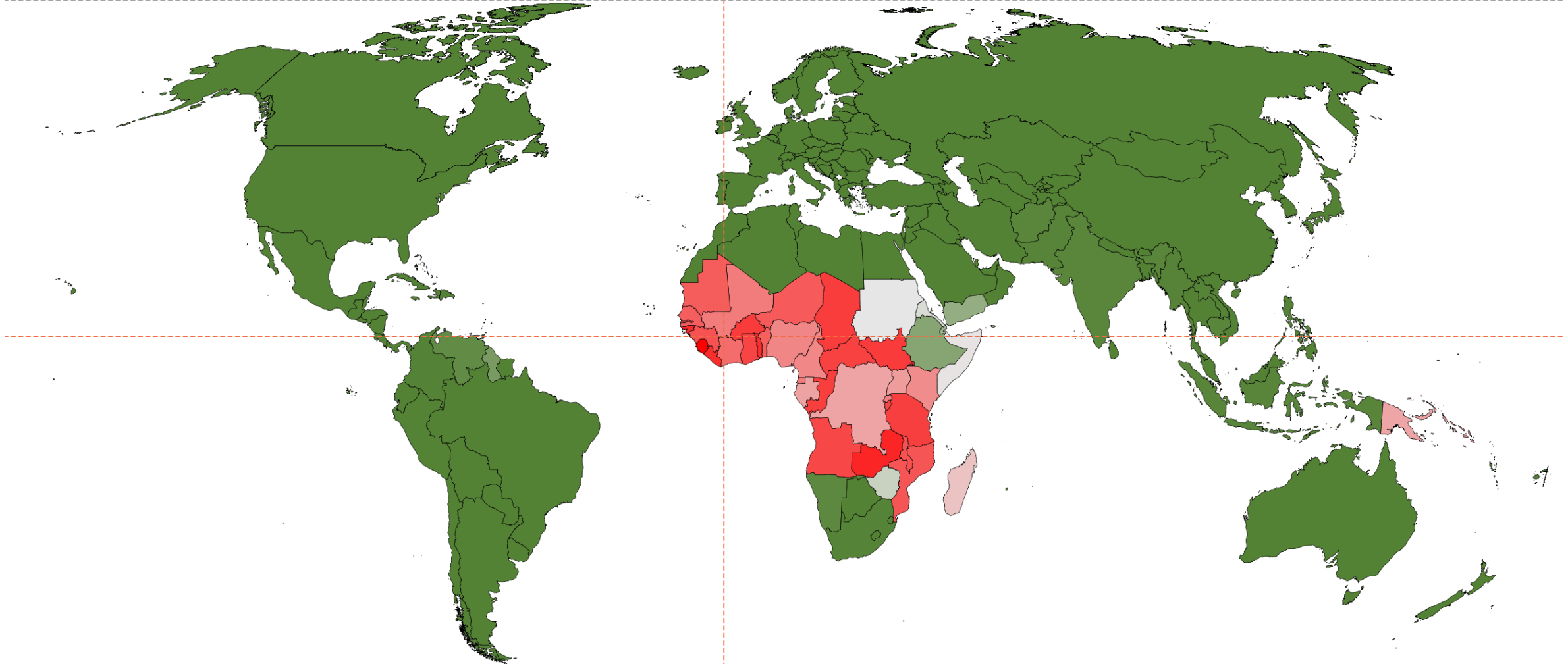


DALYs per capita





Age-Standardized Mortality from Malaria (2019)



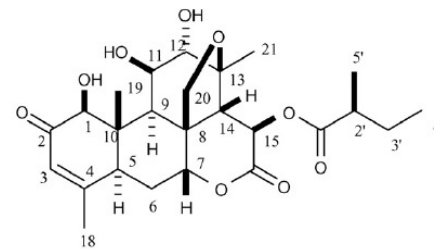
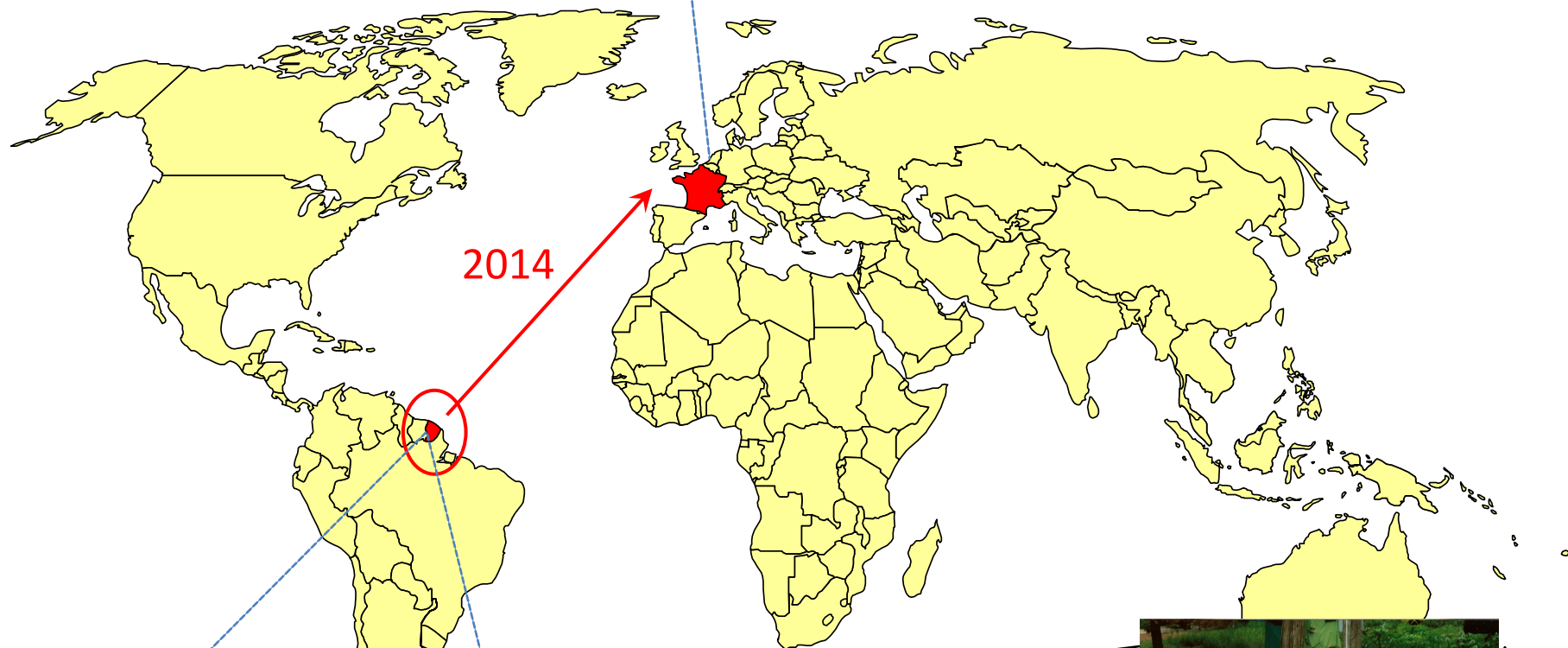
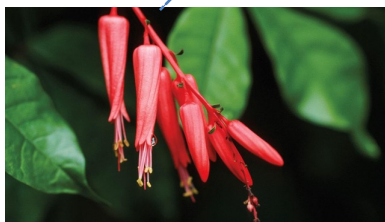


Fig. 1. Simalikalactone D.



Quassia Amara



Kalina
Palikur
Creole
Brazilians
Europeans



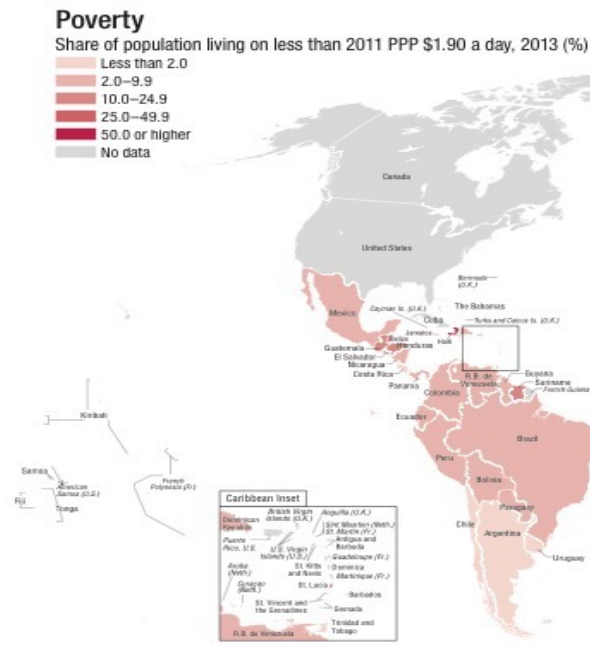


Arguments for Enhanced Protection for Traditional Knowledge

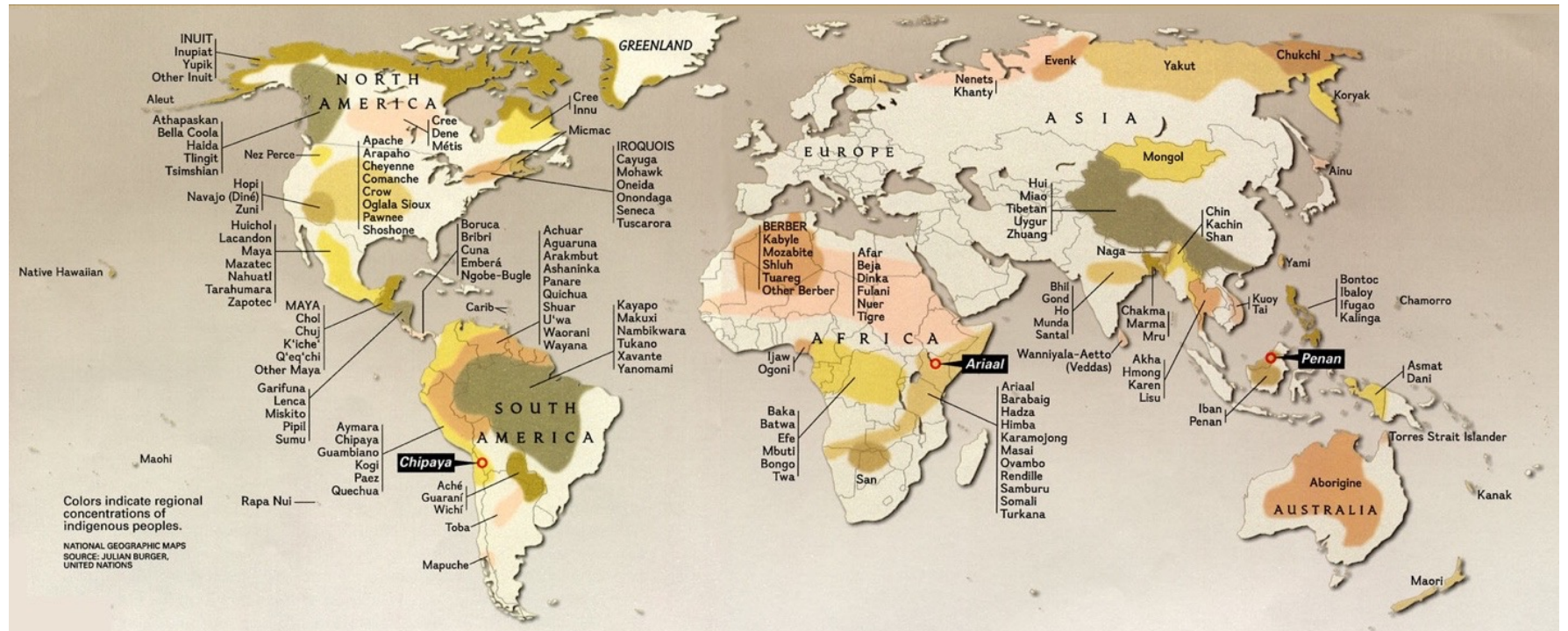
- 1) Labor
- 2) Utility
 - a) Incentives to commercialize
 - b) Incentives to preserve
 - c) Psychic externalities
- 3) Corrective Justice
- 4) Distributive Justice



Geographic Distribution of Wealth



Geographic Distribution of Indigenous Groups





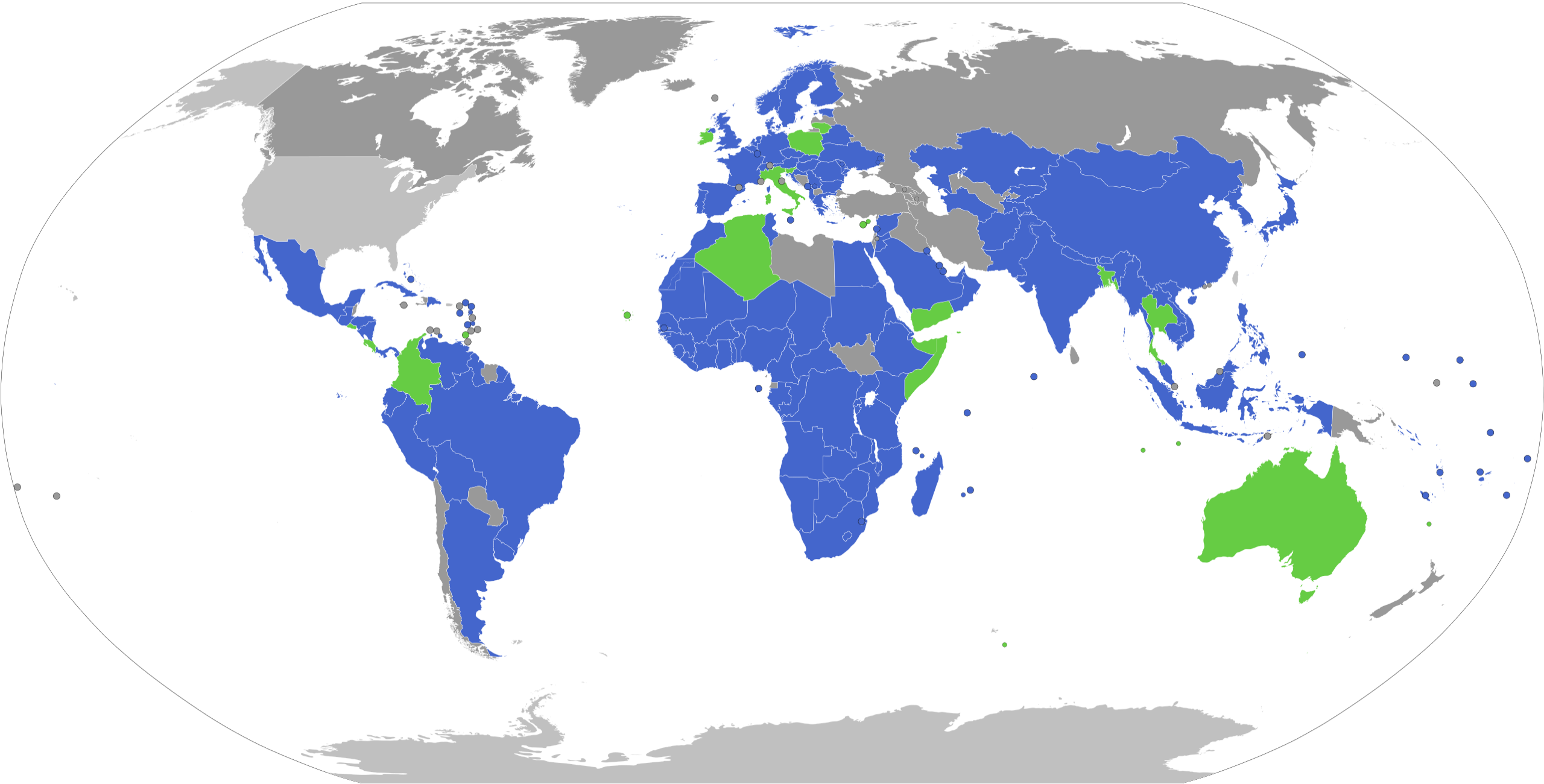
**Table 7: Poverty Gap (FGT1) by Minority/Indigenous Status
across Countries**

China (rural), 2002	Minority	2.0
	Han	0.9
	All	-
India, 2005	Scheduled Tribes (ST)	10.6
	Scheduled Castes (SC)	7.9
	Non-ST/SC	4.4
	All	5.6
Vietnam, 2006	Ethnic minority	15.4
	Ethnic majority	2.0
	All	3.8
Laos, 2003	Non-Lao Tai	13.2
	Lao Tai	5.4
	Total	8.0
DRC, 2005	Indigenous	39.4
	Non-indigenous	32.4
	All	32.3
Gabon, 2003	Indigenous	30.0
	Non indigenous	10.7
	All	10.7

Source: Own calculations



Membership in the Nagoya Protocol





Proposed “Social Responsibility Index”

Each pharmaceutical firm must achieve, each year, a ratio:

- Numerator: the total number of Disability Adjusted Life Years saved as a result of the distribution and consumption of the firm’s products during the year.
- Denominator: a measure of the firm’s size (presumptively its global gross revenues during the year)



Methods of Complying

- 1) Reduce the prices charged in developing countries for drugs already in its portfolio, thereby increasing the number of persons able to afford the drugs and earning more DALYs
- 2) Alter the formulations of drugs already in its portfolio so that they could be distributed more easily in developing countries
- 3) Increase its investment in research projects that promise to generate drugs with large health benefits
- 4) Alter its business-acquisition policies to acquire more “startup” biotechnology companies that have developed products that offer large health benefits.
- 5) Collaborate with governments or NGOs in developing countries to improve the distribution systems for its drugs
- 6) Buy DALYs from other firms better positioned to improve public health
- 7) Reduce the prices of some or all of its products, thereby lowering the denominator of its ratio.